Interim Remedial Action 2023 Annual Performance Report

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Union Pacific Railroad

Grain Handling Facility at Freeman, Freeman, Washington
December 2023

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Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington

December 2023

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Technical Certification

This report has been prepared under the direction of a Registered Civil Engineer in the State of Washington.

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December 1, 2023
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Executive Summary

This annual performance report for the Grain Handling Facility at Freeman, located at 14603 Highway 27, Freeman, Washington (site) presents an assessment of the October 2022 through August 2023 performance of the groundwater extraction, treatment, and infiltration (GWETI) system installed as an interim remedial action (IRA) to address carbon tetrachloride and other constituents in groundwater. The Washington State Department of Ecology (Ecology) required development of an IRA "to remove contaminant mass and lessen the risk to downgradient drinking water receptors" (Ecology 2018). The IRA was conducted in accordance with the 2015 Enforcement Order No. DE 12863 (2015 Order) issued to Union Pacific Railroad (UPRR) and Cenex Harvest States, Inc. by Ecology (Ecology 2015) and relevant Model Toxics Control Act criteria. The purpose of the 2015 Order was to require the completion of a remedial investigation (RI) and feasibility study (FS) at the site, where there had been a suspected historical release. Ecology identified carbon tetrachloride, carbon disulfide, and chloroform as constituents of concern (COCs). The Order allows for interim action to reduce a threat to human health or the environment during completion of RI and FS development.

Construction of the GWETI system was completed in June 2021. The system consists of an extraction well, water treatment plant, and infiltration wells. Following a period of system shakedown testing, operation, troubleshooting, and operational improvements and modifications, consistent operation began in February 2022; system operations through October 2022 were previously reported in the initial *Interim Remedial Action Annual Performance Report* submitted in December 2022 (Jacobs 2022a).

Through August 2023, the cumulative mass of carbon tetrachloride removed from groundwater is about 10.3 kilograms, which is more than twice the cumulative mass removal reported through October 2022 in the previous annual report. The extraction rate was increased to 45 gallons per minute (gpm) in April 2023, which is near the design limit of 50 gpm for the treatment plant. An effective capture zone has been established at an optimal location within the core of the impacted aquifer without any observed adverse impact on the water supply or quality of the surrounding domestic wells. Additionally, the treatment effectiveness of the system is enhanced by providing clean (treated) infiltration water flushing the aquifer inward toward the core of the impacted area. Within less than 2 years of active system operation, significant decreasing carbon tetrachloride concentration trends have been observed in most domestic and monitoring wells with no upward trend in any wells that have been monitored through August 2023.

Continued operation and monitoring of the GWETI system in its current configuration and near the full design capacity of the treatment system (about 50 gpm) is currently recommended for the following reasons:

- Although lower flow rates appear to provide effective hydraulic capture of the plume, a higher flow rate also continues to maintain the strong contaminant flushing and capture dynamics established in the plume core area
- To provide continued progress toward longer-term remedial objectives within the impacted aquifer
- To continue to remove contaminant mass from the core of the plume, thereby reducing contaminant concentrations in groundwater and lessening the risk to downgradient drinking water receptors

The current observed hydraulic capture from the extraction well, in combination with favorable trends exhibited by the statistical trend results, indicates that the GWETI system is providing the anticipated hydraulic capture and achieving the established IRA data quality objectives. The assessment presented in this annual performance report presents multiple lines of evidence that remedial action objectives can be achieved by the current configuration of the IRA. Therefore, the IRA is recommended to be accepted as the remedial action, as selected (Jacobs 2020b) and approved (Ecology 2020) in the FS.

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Acronyms and Abbreviations

µg/L	microgram(s) per liter
ATP	adenosine triphosphate
bgs	below ground surface
COC	constituent of concern
DBP	disinfection by-product
DQO	data quality objective
Ecology	Washington State Department of Ecology
FS	feasibility study
FSD	Freeman School District
GHFF	Grain Handling Facility at Freeman
gpm	gallon(s) per minute
GWETI	groundwater extraction, treatment, and infiltration
HDPE	high-density polyethylene
HP	horsepower
IRA	interim remedial action
kg	kilogram(s)
LGAC	liquid-phase granular activated carbon
MK	Mann-Kendall
MTCA	Model Toxics Control Act
Order	Enforcement Order No. DE 12863
PVC	polyvinyl chloride
RI	remedial investigation
UPRR	Union Pacific Railroad

1. Introduction

On behalf of Union Pacific Railroad (UPRR) and in consultation with Cenex Harvest States, Inc., Jacobs has prepared this annual performance report for operation of the groundwater extraction, treatment, and infiltration (GWETI) system installed as an interim remedial action (IRA) at the Grain Handling Facility at Freeman (GHFF), located at 14603 Highway 27, Freeman, Washington (site). The GWETI system was constructed and operated in accordance with the January 2020 *Third R*evised *Interim Action Work Plan, Grain Handling Facility at Freeman* (IRA Work Plan) (Jacobs 2020a), approved by the Washington State Department of Ecology (Ecology) on January 9, 2020 (Treccani, pers. comm. 2020). Previously provided monthly performance reports and this 2023 annual report provide a summary of the system performance during the operations period October 2022 through August 2023; the previous *Interim Remedial Action Annual Performance Report* (2022 IRA Annual Report) (Jacobs 2022a) summarized performance for operations from initial startup in July 2021 through October 2022.

Figure 1-1 provides a site map; figures are presented at the end of the report.

1.1 Purpose and Scope

The following are the purposes of this annual IRA performance report:

- Describe the construction, physical characteristics, and general reporting-period operating conditions of the GWETI system installed as an IRA at the site.
- Summarize the GWETI system operation, maintenance, and monitoring activities conducted to ensure proper system functioning, evaluate regulatory compliance, and provide the data necessary to document, evaluate, and optimize system performance.
- Document the performance to date of the GWETI system toward achieving the IRA data quality objectives (DQOs) and providing data assessment to support Ecology's preparation of the Cleanup Action Plan, which will describe the cleanup standards for the site, method(s) of cleanup that will be used to achieve these cleanup standards, and any other requirements the cleanup must comply with and the rationale for these decisions.
- Provide recommendations regarding the continued operation of the GWETI as the selected remedial action for the site.

1.2 Regulatory Framework

A remedial investigation (RI) and other activities were conducted from May 2016 through August 2019 at the site in accordance with the 2015 Enforcement Order No. DE 12863 (2015 Order) issued to UPRR and Cenex Harvest States, Inc. by Ecology (Ecology 2015). The purpose of the 2015 Order was to require the completion of an RI and feasibility study (FS) at the GHFF, where there had been a suspected historical release. Ecology identified carbon tetrachloride, carbon disulfide, and chloroform as constituents of concern (COCs). The 2015 Order required an RI to define the extent of impacted media at the GHFF.

In compliance with the 2015 Order, an RI was conducted in accordance with the Model Toxics Control Act (MTCA) Cleanup Regulation (Chapter 173-340 Washington Administrative Code). The site was listed on the U.S. Environmental Protection Agency National Priorities List with the site identification WAN001003081 on September 30, 2015. The draft RI report was submitted to Ecology on September 1, 2018 (Jacobs 2018).

Ecology requested that UPRR develop an IRA "to remove contaminant mass and lessen the risk to downgradient drinking water receptors" (Ecology 2018). The Ecology-approved IRA Work Plan (Jacobs 2020a) provided a description of the IRA. The IRA was designed to achieve these goals. The following are the DQOs for the IRA:

- Remove contaminant mass from the core of the plume, thereby reducing contaminant concentrations in groundwater and lessening the risk to downgradient drinking water receptors.
- Document and evaluate hydraulic and hydrogeochemical effects of the IRA on the local groundwater aquifers, the existing contaminant plume, and the domestic water supply wells to support final remedy selection.

The IRA has been successful in removing carbon tetrachloride mass (and other COCs) from the site and will reduce concentrations over time to meet the first DQO. The second DQO will continue to be met as the IRA is operated and optimized over time, with routine reports documenting system performance.

After several revisions of a combined RI/FS report, a Draft Final RI/FS was submitted (Jacobs 2020b) and approved (Ecology 2020) by Ecology on August 25, 2020. The Final RI/FS was submitted on February 3, 2021 (Jacobs 2021). The Final RI/FS recommended a final remedy consistent with the IRA.

This annual performance report is submitted to support Ecology's evaluation of whether the current configuration of the GWETI system can be accepted as the long-term remedial action in accordance with the approved FS and applicable MTCA criteria.

1.3 Organization of this Report

This report is organized into the following sections:

- **Section 1, Introduction,** presents the purpose, regulatory framework, and general organization of the report.
- **Section 2, Interim Remedial Action Systems,** describes the primary features of the IRA and GWETI system.
- **Section 3, System Operation, Maintenance, and Monitoring,** describes the inspection, monitoring, and sampling tasks associated with the operation and maintenance of the GWETI system.
- **Section 4, System Performance,** summarizes the performance of the GWETI system during the operational period of February 2021 through October 2022.
- **Section 5, Conclusions and Recommendations,** summarizes the conclusions of this annual performance review for the GWETI system and provides recommendations for ongoing operation of the IRA.
- **Section 6, References,** provides a list of documents used in preparing this report.

2. Interim Remedial Action Systems

The Ecology-approved IRA Work Plan (Jacobs 2020a) describes the IRA as consisting of groundwater recirculation (extraction, treatment, and infiltration) targeting the core of impacted groundwater at the site and consisting of the following primary GWETI components (Figure 1-1):

- Groundwater extraction at one well, EW-01, in the core of the impacted aquifer in the vicinity of well MW-19D and well cluster MW-27 through MW-31
- Treatment of extracted groundwater above ground using liquid-phase granular activated carbon (LGAC) at a treatment plant located at the GHFF
- Infiltration (recirculation) of treated groundwater at up to four new wells located up- and cross-gradient of the plume (IW-01, IW-02, IW-03, and IW-04/IW-04R)
- Conveyance piping systems between the extraction and infiltration wells and the treatment plant

The IRA was constructed in accordance with the IRA Work Plan (Jacobs 2020a). However, some modifications to the construction, operation, and monitoring of the system were made to optimize its performance.

Following completion of construction in June 2021, initial operation and troubleshooting was conducted from July 2021 through July 2022. Consistent operation of the system began in February 2022.

2.1 GWETI System Construction

Construction activities to install the GWETI system components (Figure 1-1) were completed during the period of June 2020 through June 2021.

2.1.1 Well Installation

A combination of sonic and air rotary drilling methods were used to advance pilot borings for downhole testing and subsequent drilling and installation of four injection wells (IW-01 through IW-04) and one extraction well (EW-01). Borehole drilling, downhole testing, and well construction activities were conducted from July 2020 to March 2021. Well boring logs and well completion diagrams are included in Appendix A; additional details regarding drilling, borehole testing, and well installation activities are provided in the 2022 IRA Annual Report (Jacobs 2022a).

After downhole testing at pilot boreholes, the following wells were installed:

- IW-01: 6-inch steel blank casing to 87 feet below ground surface (bgs) with nominal 6-inch open borehole (no well screen) to 143 feet bgs
- IW-02: 6-inch Schedule 80 polyvinyl chloride (PVC) casing with 0.020-inch slot stainless steel well screen from 21 to 54 feet bgs
- IW-03: 6-inch Schedule 80 PVC casing with 0.020-inch slot stainless steel well screen from 21 to 54 feet bgs
- IW-04: 6-inch Schedule 80 PVC casing with 0.060-inch slot stainless steel well screen from 42 to 172.5 feet bgs
- EW-01: 6-inch steel blank casing to 91.5 feet bgs with nominal 6-inch open borehole (no well screen) to 202 feet bgs

The original infiltration well IW-04 was found to exhibit significantly lower well capacity than was observed during the initial adjacent pilot borehole testing program, so a higher capacity replacement, IW-04R, was drilled and developed during the July through September 2022 time period. The boring lithology and well construction logs are provided in Appendix A. The concrete subsurface well vault and wellhead appurtenances were moved from IW-04 to IW-04R, and the conveyance piping was redirected to the replacement well location in September 2022. The original IW-04 well was converted to a monitoring well completed with a 12-inch-diameter flush-mount well box with a steel bolt-down lid installed within a small concrete pad. Infiltration at the new IW-04R was initiated on September 30, 2022.

2.1.2 Treatment System Installation

Remediation construction included installation of the groundwater treatment plant and system controls, conveyance piping systems, and underground wellhead vaults and appurtenances.

System conveyance piping and collocated electrical supply wiring were installed in underground trenches and through a horizontally drilled steel conduit underneath Highway 70 (Figure 1-1). The extraction and infiltration wellheads were completed within underground concrete vaults with locking metal lids. The treatment plant was constructed within a climate-controlled steel building on a concrete slab and footing foundation.

Construction activities began in June 2020 and were completed in June 2021, concluding with treatment plant and conveyance piping shakedown testing.

2.1.2.1 Well Vault Components

The extraction and infiltration well vaults include the following equipment:

- Well water level transmitter
- Well piping pressure transmitter
- Variable-speed, stainless steel, 4-inch, 2-horsepower (HP), 460-volt 3-phase Grundfos Model SP 45S20-5 submersible extraction pump with pump fault controls (EW-01 only)
- Vault flood sensor and alarm controls (infiltration wells only)
- Heat trace freeze prevention and controls

2.1.2.2 Conveyance Piping System

The piping system includes the following:

- High-density polyethylene (HDPE) standard dimension ratio 11 piping to injection wells, 2-inch piping to infiltration wells IW-01 and IW-04, and 1-inch piping to wells IW-02 and IW-03
- Double containment piping consisting of a 2-inch-inside-diameter by 4-inch outside-diameter HDPE standard dimension ratio 11 by 17 piping between extraction well EW-01 and the treatment plant, including electronic leak detection and alarms
- 10-inch diameter steel casing conduit (0.25-inch-thick wall) beneath Highway 70
- Detectable marking tape installed in trench bedding/fill above all pipeline runs

2.1.2.3 Treatment Plant

The GWETI treatment plant includes the following equipment:

- Feed (influent) tank and effluent tank: each Poly Processing (Model 1101150) 1,150-gallon integrally molded flange outlet polyethylene tanks with level transmitters
- LGAC vessels: two 4-foot-diameter Calgon Model LM-72 vessels in a series (lead-lag) configuration

- LGAC manifold: manually operated ball valve manifold to establish reversible lead-lag LGAC vessel order and support carbon backflushing
- Bag filters: two Rosedale Model 6 duplex bag filters with high-efficiency bags (one pre-treatment and one post-treatment)
- Feed pump: variable-speed, stainless steel, 1.5-HP, 460-volt 3-phase Grundfos Model CRI 10-2 A-CA-A-V-HQQV vertical multistage centrifugal pump
- Infiltration pump: variable-speed, stainless steel, 1.5-HP, 460-volt 3-phase Grundfos Model CRI 10-2 A-CA-A-V-HQQV vertical multistage centrifugal pump
- Infiltration manifold: individual injection well flow totalizers, piping pressure transmitters, and electronic flow control valves
- System controls: remotely operable programmable logic controller with local and wi-fi remote log-in human-machine interface; includes system alarm email notification system

Due to bacterial fouling observed in infiltration well IW-01 soon after startup of the system in July 2021, down-well chlorine shock treatments were necessary to keep bacterial growth below target values and continue treated water infiltration. Alternatives for the shock treatments were considered, and it was determined that an automated chlorine metering system would provide the most cost-effective control of biofouling versus conducting chlorine shock treatments. A chlorine dosing and metering system was proposed (Jacobs 2022b), approved (Treccani, pers. comm. 2022), and installed in September 2022 and set to provide a target chlorine residual of 2 parts per million to the treated water leaving the plant.

2.2 GWETI System Operations

The IRA design was predicted via groundwater model simulations (Jacobs 2020a) to provide effective hydraulic capture of the core of impacted groundwater and to provide valuable clean water flushing through the aquifer. The extraction well location was selected to be within a relatively high concentration area, just upgradient of water supply wells, and within a fairly uniform fractured basalt unit that facilitates effective contaminant mass removal. The infiltration wells bound the extraction well at the up- and cross-gradient margins just outside of the existing carbon tetrachloride plume and are designed to enhance aquifer restoration efforts by directing clean water flushing toward the interior extraction well. Infiltration is also intended to mitigate potential aquifer dewatering from groundwater extraction alone, thus limiting adverse impacts on nearby domestic water wells and providing a net-zero impact on the volume of groundwater in the aquifer system.

The overall GWETI system operation and treatment process train incorporates the following:

- The EW-01 well pump extracts groundwater conveyed in piping to the treatment plant and discharges the groundwater via drop pipe into the feed tank. Depending on the overall system control scheme desired, the EW-01 pump can do either of the following:
  - Turn on or off at a fixed pump speed (flow rate) based on operator-defined low (pump on) and high (pump off) feed tank levels (not used during 2023).
  - Use variable pump speed control to maintain an operator-defined fixed feed tank level and continuous water to downstream treatment plant demands (control scheme used during 2023).
- The feed pump transfers water from the feed tank through a duplex bag filter and the lead-lag LGAC vessels, and into the effluent tank via a drop pipe. Depending on the overall system control scheme desired, the feed pump can do either of the following:
  - Turn on or off at a fixed pump speed (flow rate) based on operator-defined low and high feed tank or effluent tank levels (not used during 2023).
  - Use variable pump speed control to maintain an operator-defined fixed effluent tank level and continuous water to downstream treatment plant demands (control scheme used during 2023).

- The lead-lag LGAC vessels remove (adsorb) COCs from groundwater during passage through the activated carbon. Monthly samples are collected at influent, midpoint, and effluent sampling ports at the LGAC manifold to accomplish the following: 1) evaluate overall COC removal and confirm effluent achieves the cleanup criteria and 2) evaluate when the lead vessel is near contaminant saturation and requires a carbon exchange. Following a carbon exchange for a lead vessel, the former lag vessel is plumbed to be the new lead vessel, and the freshly exchanged vessel is plumbed in the lag position.
- The infiltration pump transfers water from the effluent tank through a duplex bag filter and a metered chlorine injection system, and through flow controllers and conveyance piping to individual infiltration wells. Depending on the overall system control scheme desired, the infiltration pump operating options include, but are not limited to, the following:
  - Turn pump on or off at a fixed speed (flow rate) based on operator-defined low and high effluent tank levels (undesirable because of potential oxygenation when cycling infiltration wells; not used during 2023).
  - Maintain an operator-defined pump speed (flow rate) to maintain operator-defined (or down-well constant flow device limited) fixed continuous infiltration flow rates (not used during 2023).
  - Use variable pump speed control to maintain an operator-defined pipeline pressure feed for the infiltration manifold flow control valves that are individually programmed to operator-defined flow rates to individual infiltration wells (control scheme used during 2023).
- Chlorine is metered into the treated effluent at a point between the effluent bag filter and the infiltration well distribution manifold and flow controllers. Chlorine dosing is tied to an inline flow meter that can communicate with a peristaltic chlorine delivery pump injecting 5.25 percent sodium hypochlorite through an injection quill in the system piping, followed by passage through a static inline mixer.
- The infiltration well down-well discharge hoses are terminated with assorted constant flow-limiting devices (Dole valves). The constant flow-limiting devices can be used as follows: 1) to establish a predetermined flow rate for each well where the associated treatment plant flow control valve is simply left fully open, or 2) to establish a safety ceiling flow rate limit while the treatment plant flow control valves maintain steady individual infiltration well flows at rates below those of the down-well flow limiters. The greatest system stability has been observed using treatment plant flow control valves to actively maintain a desired infiltration rate below the safety ceiling rate dictated by the selected flow-limiting device.

3. System Operation, Maintenance, and Monitoring

This section describes the operation, maintenance, and monitoring activities conducted for the GWETI system to ensure proper functioning, maximize system uptime, evaluate regulatory compliance, and provide the data necessary to document, evaluate, and optimize system performance toward the IRA objectives.

3.1 Treatment System Inspections and Data Collection

In accordance with the IRA Work Plan (Jacobs 2020a), long-term monitoring of the GWETI system is conducted at least monthly to evaluate and document system operation, including the following:

- Inspect extraction and injection wellheads, in-vault piping and fitting connections, and totalizing flow meters.
- Inspect aboveground extraction and injection piping and fittings, including sampling ports and connections to the treatment system.
- Record current flow rate and cumulative extracted and injected groundwater volume from each totalizing flow meter.
- Inspect the treatment system, including piping, fittings, pumps, carbon vessels, instrumentation, control systems, and power supply.
- Record readings from all treatment system flow and pressure gauges.
- Download depth-to-water transducer data for the new extraction well and each injection well.
- Download depth-to-water transducer data from the IRA monitoring network.

These data are generally recorded automatically at 1-minute intervals by the treatment plant and reported via automated daily emails to system operators; manual data downloads are occasionally required.

3.2 Treatment System Sampling

In accordance with the IRA Work Plan (Jacobs 2020a), treatment system samples of the influent, midpoint, and treated effluent water at the treatment plant are collected from sampling ports installed before, between, and after the two LGAC treatment vessels. These samples are used to evaluate the LGAC vessel change-out schedule. Treatment plant water samples are handled consistent with the existing quarterly groundwater monitoring program and submitted to a Washington-certified laboratory for analysis of volatile organic compounds. A carbon exchange for the lead LGAC vessel is scheduled when midpoint treatment system samples indicate that the lead vessel is nearing contaminant saturation. The decision criteria for conducting a lead LGAC vessel carbon exchange include the following:

- Midpoint sample (and confirmation sample) of chloroform concentration equal to or exceeding the MTCA Method B Cancer criteria of 1.4 micrograms per liter (µg/L)

OR

- Midpoint sample (and confirmation sample) of carbon tetrachloride concentration equal to or exceeding 10 percent of the influent carbon tetrachloride concentration

Following a carbon exchange for a lead vessel, the former lag vessel is plumbed to be the new lead vessel, and the freshly exchanged vessel is plumbed into the lag position.

The first carbon exchange was triggered by midpoint treatment system samples collected on August 24, 2022, and confirmation samples collected on August 30, 2022. The first carbon exchange was conducted in September 2022, including manufacturer-recommended carbon backflushing, and the fresh LGAC vessel was plumbed into the lag position. A second carbon exchange was conducted in February 2023 and a third carbon exchange was conducted in August 2023, with carbon backflushing and lead-lag plumbing reversals conducted each time.

Table 3-1 (tables are presented at the end of the report) summarizes the treatment system sampling results for carbon tetrachloride, chloroform, and carbon disulfide.

Bacterial monitoring is conducted at infiltration wells to evaluate the presence of bacterial fouling, including collecting grab samples for adenosine triphosphate (ATP). ATP is a molecule present in living cells and commonly used as a direct analog for biological concentration. ATP sampling results through August 2023 are provided in Table 3-2.

A disinfection system began operation in September 2022, and chlorine dosing was set to a target of 2 parts per million for treatment plant effluent. The bacterial monitoring program recommends a well disinfection shock treatment be applied if ATP sample results exceed 100,000 cells per milliliter, but no shock treatments have been triggered following startup of the metered disinfection system. Laboratory ATP samples will be collected at least monthly from IW-01 and IW-04R until data indicate a reduction in frequency is warranted.

3.3 Disinfection By-product Monitoring Program

A disinfection by-product (DBP) monitoring program was implemented to evaluate the potential generation and distribution of DBPs within infiltration wells resulting from individual well chlorine shock treatments or metered disinfection of treatment plant effluent. Table 3-3 presents the plan and objectives for the DBP monitoring program. Samples are collected and analyzed for trihalomethanes (Method 524.3), haloacetic acids (Method 552.3), and total residual chlorine (Method 4500CL G). Sampling and analysis for DBPs is anticipated to be included until data indicate that potential generation of DBPs would not adversely affect drinking water. DBP results through August 2023 are presented in Table 3-4.

3.4 Groundwater Monitoring Program

A long-term quarterly groundwater monitoring program has been in place for monitoring wells and domestic supply wells at the site since the RI. The groundwater monitoring program includes collection of groundwater levels and groundwater samples for analysis of volatile organic compounds at a Washington-certified laboratory. A summary of water levels and laboratory analytical results is provided to Ecology on a quarterly basis.

Twenty-one water level transducers (plus one spare) were installed in selected IRA monitoring wells on July 13, 2021, and set to record measurements every 10 minutes. Table 3-5 summarizes the instrumented wells, the measured depth to water during installation, and the sensor reference depth for each transducer.

4. System Performance

This section summarizes the performance of the GWETI system toward achieving the IRA DQOs identified in the IRA Work Plan (Jacobs 2020a) and purposes of the report (Section 1.1). The GWETI system performance is evaluated as follows:

- Reviewing the extraction well pumping rates implemented during system operation through the reporting period and the associated hydraulic responses of the pumping and surrounding monitoring wells to evaluate the following:
  - Zone of influence, or capture zone, of the extraction well
  - Potential adverse impact on water levels at surrounding domestic and Freeman School District (FSD) drinking water wells
- Documenting the mass of site COCs removed by the GWETI system over time
- Reviewing monitoring well sampling data to evaluate the presence of statistically significant trends toward achieving the IRA DQOs

4.1 Extraction Flow Rate and Water Level Measurement

The EW-01 extraction rate was set to 12 gpm beginning at system startup on July 6, 2021, increased to 15 gpm on July 13, 2021, and further increased to about 19.5 gpm on July 20, 2021. This extraction flow rate was maintained until the treatment system required shutdown in late August 2021, to evaluate a loss of infiltration capacity at IW-01, which was determined to be a result of bacterial fouling. The treatment system was off during evaluation, testing, and implementation of corrective actions to address bacterial fouling of IW-01. The treatment system was brought back online on February 18, 2022, with an EW-01 target extraction rate of 18 gpm established and maintained through late September 2022, with the exception of maintenance and repair disruptions. This slightly lower flow rate was a result of stopping infiltration at IW-02 and IW-03 because of low well capacity. The extraction rate set point was subsequently increased over time, as follows:

- 22 gpm on September 30, 2022
- 25 gpm on October 27, 2022
- 28 gpm on December 9, 2022
- 32 gpm on January 4, 2023
- 37 gpm on February 15, 2023
- 42 gpm on March 13, 2023
- 45 gpm on April 13, 2023

These extraction rate set points specify the flow delivered by the EW-01 pump during times when the pump is on. Because of periodic pump cycling and system downtime events, the effective flow rate averaged over daily, weekly, and monthly time scales can be less than the set point.

Figure 4-1 plots the EW-01 extraction rate and the EW-01 water levels for the period of September 2022 through August 2023. Regular on and off cycling of EW-01 (about 15 minutes off every 1.5 to 2 hours) is evident during the period of September 2022 to January 2023, when extraction flow rates were less than the minimum recommended LGAC treatment flow rate of 25 gpm, thus requiring batch-type plant operation. This consistent on and off cycling led to a wide fluctuation in the recorded EW-01 water level, which is visible on Figure 4-1 as a broad blue band of measurements between higher water levels when the pump was off and lower water levels when the pump was running at 18 to 25 gpm. The system programming was revised in January 2023 to take full advantage of available variable-speed pump capabilities after extraction rates had increased above the 25-gpm LGAC treatment threshold during December 2022; this programming revision and increased extraction rate eliminated cycling of EW-01.

IW-04R became operational on September 30, 2022, allowing the extraction rate to be increased to about 22 gpm through most of October 2022. The capacity of IW-04R was further increased once the wellhead was fully sealed to allow low-pressure injection, and the EW-01 extraction rate was set to about 25 gpm on October 27, 2022; extraction was incrementally increased to 45 gpm by April 2023. These extraction rate increases are visible on Figure 4-1 as thin orange measurement bands centered at each extraction rate set point over time. These increased October 2022 through April 2023 extraction rates exhibit corresponding EW-01 water level declines over time (thin blue bands on Figure 4-1). The extraction well level sensor failed in March 2023 just prior to the final extraction increase to 45 gpm. The EW-01 level at 45 gpm is estimated to be about 90 feet below the EW-01 well flange based on well response to the incremental extraction rate increases through 42 gpm. The EW-01 well level sensor is being replaced as part of various extraction and infiltration well vault improvements being completed between August and October 2023.

4.2 Groundwater Response

As described in Section 3, 21 water level transducers (plus one spare) were installed on July 13, 2021, and set to record measurements every 10 minutes. Table 3-5 summarizes the instrumented wells, the measured depth to water during installation, and the sensor reference depth for each transducer. The transducer network supplements the manual collection of water levels as part of the quarterly monitoring program for the site; historical quarterly water level measurements are summarized in Table 4-1.

The quarterly monitoring and transducer data were used to evaluate the hydraulic aquifer response to the pumping and re-infiltration flow dynamic created by the GWETI system, along with changes to the carbon tetrachloride plume distribution as mass is recovered by the system over time. A series of plan-view maps providing groundwater elevation data and illustrating the unconfined aquifer potentiometric surface and resultant groundwater flow paths during March 2022, May/June 2022, November 2022, February 2023, May 2023, and August 2023 are presented on Figures 4-2 through 4-7, respectively. These figures include the quarterly dissolved carbon tetrachloride concentration data and interpreted isoconcentration contours over time. Changes in groundwater carbon tetrachloride concentrations over time are also presented in a series of cross-section figures along a north-south-aligned section between the GHFF and the Primary FSD well WS5 (section location shown on Figures 4-2 through 4-7). Figure 4-8 illustrates the subsurface lithology along this section line, as previously presented in the IRA Work Plan (Jacobs 2020a) and Final RI/FS report (Jacobs 2021). Table 4-2 provides the historical quarterly COC concentration data posted on the figures, and Appendix B provides a collection of plots with carbon tetrachloride concentrations over time at selected wells throughout the site.

Figures 4-2 (March 2022) and 4-3 (May/June 2022) provide plan-view groundwater elevation and concentration data shortly following the full-time restart of the GWETI system in February 2022 when the extraction rate was about 18 gpm and with re-infiltration via IW-01 and the original IW-04. Groundwater mounds are evident even at this reduced treatment system flow rate, particularly at IW-01, which was infiltrating approximately two-thirds of the treated water. Within just a few months of GWETI system operation, the highest carbon tetrachloride concentrations within the plume core were reduced to below 400 µg/L, as shown on Figure 4-3.

By November 2022 (Figure 4-4), the replacement infiltration well IW-04R became active, GWETI flow rates had increased to about 25 gpm, and infiltration of treated water was divided equally between IW-01 and IW-04R. The groundwater mounds around IW-01 and IW-04R became more prominent, as did the cone of depression around extraction well EW-01 at this increased GWETI system processing rate. Groundwater extraction and clean water aquifer flushing continued reducing carbon tetrachloride concentrations within the plume core and shrinking the extent of impacts exceeding 100 µg/L through August 2023 (Figures 4-4 through 4-7) as GWETI processing flows increased to 45 gpm by April 2023. Full lateral hydraulic capture (and flushing) in the area surrounding EW-01, between IW-01 and IW-04R, is clearly evident on Figures 4-4 and 4-5 when the extraction rate was in the range of 25 to 32 gpm; extraction rates at the full design limit of the GWETI system are not necessary to meet the system hydraulic capture objective and various rates can thus be considered as part of long-term system operations and optimization.

Figure 4-9 presents a cross-section view of the generalized distribution of carbon tetrachloride within the core of the impacted aquifer between the GHFF and the FSD well WS5, based on the range of groundwater concentrations measured historically through 2019, prior to construction of the GWETI system. The historical extent of groundwater carbon tetrachloride concentrations exceeding 400 µg/L reached from the GHFF to the vicinity of well MW-19D and the Randall domestic well. As described in Section 2, the GWETI system operated during July and August 2021 and was then off until being restarted in February 2022. By March 2022 (Figure 4-10), the extent of carbon tetrachloride exceeding 400 µg/L had already been significantly reduced, with values at MW-9S and MW-28 just below 400 µg/L and only MW-19D exceeding 400 µg/L. By May and June 2022 (Figure 4-11), no wells had groundwater with concentrations of carbon tetrachloride exceeding 400 µg/L. The extent of carbon tetrachloride exceeding 100 µg/L continued to decrease through the remainder of 2022 and to August 2023, as shown on Figures 4-12 through 4-15.

Collectively, Figures 4-2 through 4-15 (and time-series carbon tetrachloride concentration plots presented in Appendix B) illustrate the hydraulic groundwater flow cell generated using the single central extraction well bounded by re-infiltration wells at the cross-gradient and slightly upgradient plume margins that provides effective aquifer flushing and contaminant reductions within the central core of the impacted aquifer. The flushing effect is most highly focused on, and has the earliest impact on, the plume core area but also exists for the impacted aquifer present between the re-infiltration wells and the FSD well WS5. Significant progress in plume mass removal has occurred within the first 2 years of GWETI system operation, particularly in the latest 6 months since extraction/treatment flow was set near the design limit for the treatment system. Flushing of more distal areas near and beyond FSD well WS5 is anticipated to be more evident over a period of several years as mass loading from the core area is greatly reduced or diminished.

4.3 Mass Removal

The GWETI system removes COCs from extracted groundwater via carbon adsorption within the plant LGAC vessels. Monthly samples are collected from the system influent, LGAC midpoint, and post-LGAC system effluent to document the successful removal of COCs. Table 3-1 summarizes the GWETI system sampling results through August 2023. The mass of each COC removed monthly by the GWETI system is determined by multiplying the cumulative monthly volume passed through the LGAC vessels by the difference between the monthly influent and effluent COC concentrations. Tables of monthly and cumulative mass removal have been documented in monthly reports and are presented for the full history of GWETI operation in Appendix C.

Through August 2023, about 19.2 million gallons of groundwater have been extracted from EW-01, treated through the GWETI system, and infiltrated back to the local aquifer. Figure 4-16 plots the cumulative volume of extracted groundwater sent to the treatment plant along with the EW-01 extraction flow rate set points over time. The cumulative mass of each COC removed through August 2023 is about 10.3 kilograms (kg) of carbon tetrachloride, about 0.6 kg of chloroform, and about 0.01 kg of carbon disulfide (Appendix C). Figure 4-17 plots the cumulative carbon tetrachloride mass removal and monthly GWETI system influent carbon tetrachloride concentrations over time. As expected, influent carbon tetrachloride concentrations decreased over time because of groundwater extraction and diminishing carbon tetrachloride mass in the aquifer system.

4.4 Concentration Trends in Wells

The data from the quarterly site-wide monitoring and sampling program were evaluated for temporal trends using the Mann-Kendall (MK) test, which is commonly applied to evaluate whether a series of data exhibits a decreasing or increasing trend over time or simply exhibits random fluctuations about a mean value (no trend). The specific methodology for the MK testing is described in Appendix D. The MK testing was performed using all available monitoring data over the period from January 2016 through August 2023; this represents the period of record for the monitoring wells installed during the RI. The results of the MK testing are summarized in Appendix D as a collection of trend plots showing measured data over the selected period

of record, a trend line if such exists, and statistical confidence intervals for each of the monitoring, domestic, and school wells included in the monitoring program. Appendix D also presents the summary statistics (Table C-1) for carbon tetrachloride data and the MK test for each well (i.e., minimum, maximum, mean, standard deviation, and trend result) and a collection of time-series plots showing the changes in concentrations (on a logarithmic scale) to illustrate the chronological order of sampling results.

The MK test was run for 58 wells across the site; the locations of broader site wells are shown on Figure 4-15. The cross section presented on Figure 4-8 provides well screen locations and depths along the interpreted downgradient groundwater flow path from the GHFF to primary FSD well WS5. As summarized in Table C-1 of Appendix C, three wells had insufficient data (fewer than four samples) to complete the MK test. Of the 38 wells exhibiting no trend, there were 29 wells where greater than one-half the sampling results were nondetect, thus indicating a lack of significant aquifer impact. Of the 17 wells exhibiting a trend, 16 wells had a decreasing concentration trend and only 1 well (MW-25S) had an increasing trend. Well MW-25S, located on the southern side of the GHFF, indicated an increasing trend consistent with localized redistribution of mass at the source area. MW-25S has not been sampled since December 2019, so a current trend has not been evaluated. All wells consistently sampled through August 2023 show either a decreasing trend or no trend.

The trends for wells MW-9S, MW-9U, and MW-9D at the downgradient boundary of the GHFF are all decreasing, as are the trends for nearby cross-gradient wells MW-7S and MW-8S. All of these wells are anticipated to exhibit decreasing trends over time (first few years of GWETI system operation) as groundwater is flushed toward extraction well EW-01. Well MW-6U exhibited an increasing trend as reported in the 2022 IRA Annual Report (Jacobs 2022a) but now exhibits no trend as concentrations have decreased over the past year. Review of the trend and time-series plots for this well (Appendix D) suggests a period of increasing concentrations from 2017 through 2020, and a subsequent period of decreasing concentrations from 2020 through 2022. This latter decreasing trend is expected to continue leading to the current MK test result of no trend for some period of time before a longer-term decreasing trend can be revealed; these anticipated trends will continue to be evaluated in subsequent annual reports. Alternative MK tests may be conducted in subsequent annual reports, following multiple years of GWETI operation, to specifically assess trends beginning with the initial operation of the GWETI system, in addition to trends over the full period of record for monitoring wells.

The current MK test results indicate progress toward plume stability and cleanup. Monitoring wells MW-5D, MW-12, and MW-17D along the western flank of the site continue to exhibit consistent undetectable carbon tetrachloride concentrations while the low aquifer impacts in this western area indicated at MW-20D exhibit a clear decreasing trend. The Lashaw agricultural well near primary FSD well WS5 continues to exhibit variable (no trend) and generally low concentrations, while the farther downgradient Lashaw domestic well also exhibits variable (no trend) concentrations, ranging from slightly above to slightly below the carbon tetrachloride cleanup standard. Decreasing trends at the deepest intervals of the core area of fractured basalt aquifer impacts at MW-27 and MW-28 near extraction well EW-01 are favorable, as are decreasing concentration trends for shallow domestic wells (Marlow Well and Randall Well) in this core area.

Moreover, concentrations at the downgradient boundary of the GHFF, at MW-9S, MW-9U, and MW-9D, exhibit a continued decreasing trend. Strong evidence for effective aquifer flushing is illustrated by the decreasing concentration trend at Out-of-Use FSD well W26. Concentrations at this well were generally stable during the historical monitoring period beginning in 2016 and continuing through 2020, followed by a distinct reduction in carbon tetrachloride concentrations to near or below the cleanup goal, and frequently not detectable, for late 2021 through 2023 when the GWETI was operational. This indicates that a clean water front is moving through the aquifer from the IW-01 infiltration well and flushing through Out-of-Use FSD well W26, and is expected to continue toward extraction well EW-01.

5. Conclusions and Recommendations

The current observed hydraulic capture from extraction well EW-01, in combination with favorable trends exhibited by the MK testing results, indicates that the GWETI system is providing the anticipated hydraulic capture and achieving the established IRA DQOs. Expanded hydraulic capture and greater mass removal have been exhibited as the EW-01 extraction rate was increased to near the system design limit in April 2023. Significant adverse impacts on nearby domestic water users have not been observed with the current system configuration and extraction rates and are largely mitigated by the infiltration well operation that returns water back to the aquifer. It is recommended that infiltration wells IW-02 and IW-03 remain off for the foreseeable future because of minimal well capacity and that the continued effectiveness of using just infiltration wells IW-01 and IW-04R be monitored.

The existing IRA design using a single extraction well (EW-01) flanked by two primary infiltration wells (IW-01 and IW-04R) is providing strong hydraulic capture at an optimal location within the core of the impacted aquifer and providing clean (treated) infiltration water flushing the aquifer inward toward the core. Direct evidence for such aquifer flushing is provided by groundwater sampling results for Out-of-Use FSD well W26. Continued operation of the system in this existing configuration is recommended, with goals of achieving IRA DQOs and collecting the necessary operational data to do the following:

- Evaluate whether continued groundwater extraction at rates near the maximum design limits of the GWETI system present any adverse impacts on local domestic water users, particularly during the dry summer and autumn agricultural pumping seasons
- Evaluate whether design-limit extraction rates are accommodated by sufficient long-term well capacity of the existing infiltration wells IW-01 and IW-04R
- Identify and implement ongoing optimum extraction flow rates, based on COC concentrations observed in the extraction well and surrounding monitoring wells, and other operational data

The assessment presented in this annual performance report presents multiple lines of evidence that remedial action objectives can be achieved by the current configuration of the IRA. Therefore, the IRA is recommended to be accepted as the remedial action, as selected (Jacobs 2020b) and approved (Ecology 2020) in the FS.

6. References

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Tables

Table 3-1. Summary of System Sampling Results - Carbon Disulfide, Carbon Tetrachloride, and Chloroform
Grain Handling Facility in Freeman, Freeman, WA

			Carbon disulfide	Carbon tetrachloride	Chloroform
			Screening Levels (µg/L)		
	MTCA Method B Cancer		NE	0.63	1.4
	MTCA Method B Non-cancer		800	NU	NU
Sample Date	Sample Port	Type		Analytical Data (µg/L) **	
6/10/2021	Influent	N	0.11 U	319	11.8
6/10/2021	Mid-LGAC	--	--	--	--
6/10/2021	Effluent	N	0.11 U	0.14 U	0.14 U
7/7/2021	Influent	N	0.124 J	189	18.1
7/7/2021	Mid-LGAC	N	0.409 J	0.128 U	0.329 J
7/7/2021	Effluent	N	0.0962 U	0.128 U	0.111 U
7/13/2021	Influent	N	0.19 J	244	18.7
7/13/2021	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
7/13/2021	Effluent	N	0.0962 U	0.144 J	0.111 U
7/20/2021	Influent	N	0.502	301	18.6
7/20/2021	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
7/20/2021	Effluent	N	0.0962 U	0.128 U	0.111 U
7/26/2021	Influent	N	0.189 J	259	17.9
7/26/2021	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
7/26/2021	Effluent	N	0.0962 U	0.128 U	0.111 U
8/3/2021	Influent	N	0.0962 U	223	18.5
8/3/2021	Mid-LGAC	N	0.0962 U	0.262 J	0.111 U
8/3/2021	Effluent	N	0.0962 U	0.171 J	0.111 U
8/9/2021	Influent	N	0.202 J	232	13.7
8/9/2021	Mid-LGAC	N	0.0962 U	0.18 J	0.111 U
8/9/2021	Effluent	N	0.0962 U	0.184 J	0.111 U
8/16/2021	Influent	N	0.481 U	342	15.9
8/16/2021	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
8/16/2021	Effluent	N	0.0962 U	0.128 U	0.111 U
8/23/2021	Influent	N	0.481 U	196	13.1
8/23/2021	Mid-LGAC	N	0.0962 U	0.293 J	0.111 U
8/23/2021	Effluent	N	0.0962 U	0.128 U	0.111 U
2/21/2022	Influent	N	0.481 U	300	13
2/21/2022	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
2/21/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
3/7/2022	Influent	N	0.24 U	297	11.4
3/7/2022	Mid-LGAC	N	0.24 U	0.13 U	0.23 U
3/7/2022	Effluent	N	0.24 U	0.13 U	0.23 U
3/17/2022	Influent	N	0.481 U	230	12.9
3/17/2022	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
3/17/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
3/28/2022	Influent	N	0.427 J	237	14.8
3/28/2022	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
3/28/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
4/11/2022	Influent	N	0.841	232	13.7
4/11/2022	Mid-LGAC	N	0.0962 U	0.401 J	0.118 J
4/11/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
4/28/2022	Influent	N	0.643	250	14.5
4/28/2022	Mid-LGAC	N	0.0962 U	0.338 J	0.111 U
4/28/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
5/4/2022	Influent	N	1.6	212	11.8
5/4/2022	Mid-LGAC	N	0.0962 U	0.422 J	0.111 U
5/4/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
6/6/2022	Influent	N	0.577	231	10.5
6/6/2022	Mid-LGAC	N	0.0962 U	1.28	0.261 J
6/6/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
6/20/2022	Influent	N	1.76	195	10.2
6/20/2022	Mid-LGAC	N	0.0962 U	1.35	0.36 J
6/20/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
7/6/2022	Influent	N	0.0962 U	223	12.8
7/6/2022	Mid-LGAC	N	0.0962 U	7.56	0.813
7/6/2022	Effluent	N	0.0962 U	0.128 U	0.119 J
7/22/2022	Influent	N	0.239 J	223	13.3
7/22/2022	Mid-LGAC	N	0.0962 U	10.4	1.22
7/22/2022	Effluent	N	0.0962 U	0.128 U	0.136 J

Table 3. Summary of System Sampling Results - Carbon Disulfide, Carbon Tetrachloride, and Chloroform
Grain Handling Facility in Freeman, Freeman, WA

			Carbon disulfide	Carbon tetrachloride	Chloroform
			Screening Levels (µg/L)		
	MTCA Method B Cancer		NE	0.63	1.4
	MTCA Method B Non-cancer		800	NU	NU
Sample Date	Sample Port	Type	Analytical Data (µg/L) **		
8/16/2022	Influent	N	0.0962 U	179	9.65
8/16/2022	Mid-LGAC	N	0.0962 U	12.8	1.34
8/16/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
8/24/2022	Influent	N	0.0962 U	164	8.76
8/24/2022	Mid-LGAC	N	0.0962 U	19.7	1.68
8/24/2022	Effluent	N	0.153	0.128 U	0.868
8/30/2022	Influent	N	0.0962 U	153	11.7
8/30/2022	Mid-LGAC	N	0.0962 U	24.8	2.15
8/30/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
9/8/2022	Influent	N	0.0962 U	178	10.2
9/8/2022	Mid-LGAC	N	0.0962 U	33.8	2.9
9/8/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
9/28/2022			Carbon Changeout		
10/6/2022	Influent	N	1.92 J	174	9.84
10/6/2022	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
10/6/2022	Effluent	N	0.0962 U	0.128 U	0.111 U
11/1/2022	Influent	N	0.0962 U	161	8.65
11/1/2022	Mid-LGAC	N	0.0962 U	0.489 J	0.111 U
11/1/2022	Effluent	N	0.0992 J	0.128 U	0.111 U
12/6/2022	Influent	N	0.0962 U	178	8.75
12/6/2022	Mid-LGAC	N	0.0962 U	0.128 U	0.111 U
12/6/2022	Effluent	N	0.128 J	0.128 U	0.311 J
1/4/2023	Influent	N	0.0962 U	134	7.28
1/4/2023	Mid-LGAC	N	0.0962 U	6.69	0.652
1/4/2023	Effluent	N	0.0962 U	0.128 U	0.111 U
2/1/2023	Influent	N	0.0968 J	150	8.06
2/1/2023	Mid-LGAC	N	0.0962 U	29.8	2.49
2/1/2023	Effluent	N	0.0962 U	0.128 U	0.111 U
2/16/2023			Carbon Changeout		
2/20/2023	Influent	N	0.24 U	123	7.2
2/20/2023	Mid-LGAC	N	0.24 U	0.13 U	0.23 U
2/20/2023	Effluent	N	0.24 U	0.13 U	0.23 U
3/14/2023	Influent	N	0.24 U	106	6.2
3/14/2023	Mid-LGAC	N	0.24 U	0.13 U	0.23 U
3/14/2023	Effluent	N	0.24 U	0.13 U	0.23 U
4/13/2023	Influent	N	0.24 U	101	5.8
4/13/2023	Mid-LGAC	N	0.24 U	0.3 J	0.23 U
4/13/2023	Effluent	N	0.24 U	0.13 U	0.23 U
5/15/2023	Influent	N	0.24 U	83.2	5.4
5/15/2023	Mid-LGAC	N	0.24 U	0.13 U	0.23 U
5/15/2023	Effluent	N	0.24 U	0.13 U	0.23 U
6/12/2023	Influent	N	0.24 U	81.1	4.9
6/12/2023	Mid-LGAC	N	0.24 U	0.13 U	0.23 U
6/12/2023	Effluent	N	0.24 U	0.13 U	0.23 U
7/13/2023			Samples not collected due to feed pump malfunction.		
8/7/2023	Influent	N	0.24 U	75.7	4.8
8/7/2023	Mid-LGAC	N	0.24 U	39.5	4.1
8/7/2023	Effluent	N	0.24 U	0.13 U	0.23 U
8/23/2023			Carbon Changeout		

Notes:
** = unvalidated data from laboratory analytical reports
Detected concentrations are shown in bold
-- = not collected or not analyzed
J = estimated value
MTCA = Washington State Department of Ecology Model Toxic Control Act
NA = not available
NE = not established
NU = not used
ug/L = micrograms per liter
U = not detected at or above the indicated reporting limit

Table 3-2. ATP Results
Grain Handling Facility in Freeman, Freeman, WA

Sample Date	IW-01 Vault Lab ATP (cells/ml)	IW-01 70 feet Lab ATP (cells/ml)	IW-04R 50 feet Lab ATP (cells/ml)	Notes
2/22/2022	--	145,000	--	
3/7/2022	--	112,000	--	
3/11/2022	37,000	35,000	--	
3/14/2022	138,000	--	--	
3/16/2022	42,000	107,000	--	
3/22/2022	40,000	--	--	Shock disinfection 3/24/2022
3/25/2022	47,000	--	--	
3/26/2022	31,000	31,000	--	
3/28/2022	31,000	35,000	--	
3/31/2022	36,000	56,000	--	
4/4/2022	37,000	62,000	--	
4/7/2022	43,000	91,000	--	
4/11/2022	42,000	95,000	--	
4/14/2022	37,000	133,000	--	Shock disinfection 4/18/2022
4/26/2022	31,000	55,000	--	
4/28/2022	76,000	86,000	--	
5/3/2022	35,000	75,000	--	
5/5/2022	68,000	133,000	--	Shock disinfection 5/9/2022
5/16/2022	49,000	144,000	--	Shock disinfection 5/23/2022
5/25/2022	58,000	31,000	--	
5/31/2022	54,000	303,000	--	Shock disinfection 6/3/2022
6/7/2022	52,000	29,000	--	
6/9/2022	55,000	207,000	--	
6/13/2022	30,000	185,000	--	Shock disinfection 6/17/2022
6/27/2022	37,000	38,000	--	
6/30/2022	19,000	26,000	--	
7/5/2022	34,000	69,000	--	
7/8/2022	34,000	106,000	--	Shock disinfection 7/11/2022
7/22/2022	35,000	76,000	--	
8/2/2022	23,000	42,000	--	
8/10/2022	25,000	25,000	--	
8/24/2022	28,000	39,000	--	
8/30/2022	32,000	37,000	--	
9/7/2022	27,000	57,000	--	
9/26/2022	29,000	33,000	--	Disinfection system online
10/3/2022	29,000	29,000	23,000	IW-04R operation begins
11/1/2022	39,000	33,000	33,000	
11/15/2022	48,000	37,000	56,000	
12/6/2022	--	--	--	Samples collected in December never arrived at laboratory due to inclement weather.
1/4/2023	29,000	30,000	25,000	
2/20/2023	32,000	21,000	27,000	
3/14/2023	32,000	148,000	30,000	Result at IW-01 70 feet appears to be anomaly based on confirmation sample result on 3/20/2023
3/20/2023	31,000	27,000	26,000	
4/13/2023	31,000	27,000	26,000	
5/15/2023	23,000	106,000	31,000	Result at IW-01 70 feet appears to be the result of a chlorination system malfunction (tubing failure). The system was restored and re-sampled on 5/23/2023.
5/23/2023	31,000	54,000	--	
6/13/2023	58,000	56,000	73,000	
7/13/2023	--	--	--	Samples not collected due to feed pump malfunction.
8/7/2023	39,000	38,000	32,000	

Notes:
-- = not collected or analyzed
ATP = adenosine triphosphate
ml = milliliter

Table 3-3. Disinfection Byproduct Monitoring Plan

Grain Handling Facility in Freeman, Freeman, WA

Location	Frequency	Objectives
Out-of-Use Freeman School District Well (W26) (Surrogate to IW-01)	- Day after backflushing. - One week after backflushing. If monitoring shows the presence of DBPs, then additional weekly samples will be collected until they are no longer present. - Quarterly as part of the groundwater monitoring program.	Evaluate the presence of DBPs immediately after shock disinfection treatment and quarterly at the shock disinfection treatment location.
MW-17D	- Quarterly as part of the groundwater monitoring program.	Evaluate the presence of DBPs directly downgradient of IW-01 but upgradient of the FSD well.
EW-01 (from treatment plant)	- Monthly as part of remedial treatment system sampling.	Evaluate the presence of DBPs in recirculation water reaching the remedial extraction well.
Randall Well	- Monthly as part of residential treatment system sampling.	Evaluate presence of DBPs cross gradient of primary DBP flow direction. Particles released at IW-01 are not predicted to be intercepted at the Randall well (under current modeled extraction/infiltration scenario) due to remedial extraction at EW-01.
MW-34 (Surrogate to Freeman School District Well)	- Quarterly as part of the groundwater monitoring program.	Evaluate the presence of DBPs near the FSD Well.

Note:

Additional monitoring will be evaluated and proposed if shock disinfection treatment is conducted at additional infiltration wells.

Table 3-4. Summary of Disinfection Byproduct Results
Grain Handling Facility in Freeman, Freeman, WA

Sample Date	Sample Location	Chlorine (Total)	Haloacetic Acids (Total)	Trihalomethanes (Total)
Maximum Contaminant Level (mg/L)		4 (residual disinfection level)	60	80
		mg/L	µg/L	µg/L
4/19/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
4/26/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.48 (Chloroform) J
5/5/2022	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	11.6 (Chloroform)
5/4/2022	Randall Well	0.1 U	0.9 U	4.4 (Chloroform)
5/10/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
5/17/2022	Out-of-Use Freeman School District Well (W26)	0.21	0.9 U	0.47 U
5/24/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
5/30/2022	MW-17D	0.1 U	0.9 U	0.47 U
5/31/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
5/31/2022	MW-34	0.1 U	0.9 U	0.47 U
5/31/2022	Out-of-Use Freeman School District Well (W26)	0.1	0.9 U	0.47 U
6/6/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
6/6/2022	Randall Well	0.1 U	0.9 U	5.5 (Chloroform)
6/6/2022	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	9.8 (Chloroform)
6/13/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
6/20/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
6/27/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U
7/13/2022	Out-of-Use Freeman School District Well (W26)	0.1 U	2.6	3.2
7/20/2022	Out-of-Use Freeman School District Well (W26)	0.16	3.8	5.5
8/9/2022	Randall Well	0.1 U	0.9 U	4.1 (Chloroform)
8/18/2022	MW-34	NA	NA	0.47 U
8/18/2022	Out-of-Use Freeman School District Well (W26)	NA	NA	2.1
8/18/2022	MW-17D	NA	NA	0.47 U
8/30/2022	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	0.334 U
9/8/2022	Treatment Plant Influent (EW-01)	NA	NA	NA
9/9/2022	Randall Well	0.11	NA	3.4 (Chloroform)
10/6/2022	Treatment Plant Influent (EW-01)	NA	NA	NA
10/7/2022	Randall Well	0.1 U	0.9 U	2.6 (Chloroform)
11/8/2022	Randall Well	0.1 U	0.9 U	3.4 (Chloroform)
11/8/2022	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	5.6 (Chloroform)
11/14/2022	MW-34	0.1 U	0.9 U	0.47 U
11/14/2022	Out-of-Use Freeman School District Well (W26)	1.3	2.0	6.0 (Bromodichloromethane 1.8; Bromoform 0.67J; Chloroform 1.6; and Dibromochloromethane 1.9)
12/6/2022	Treatment Plant Influent (EW-01)	0.036 J	0.534 U	9.2 (Bromodichloromethane 0.112J; Bromoform 0.141J; Chloroform 8.75; and Dibromochloromethane 0.168J)
1/3/2023	Randall Well	0.1 U	0.9 U	5.9 (Chloroform)
1/4/2023	Treatment Plant Influent (EW-01)	0.1 U	0.529 U	9.4 (Bromodichloromethane 0.141J; Bromoform 0.196J; Chloroform 8.85; and Dibromochloromethane 0.199J)
2/2/2023	Randall Well	0.051 J	0.529 U	3.8 (Chloroform)
2/15/2023	Out-of-Use Freeman School District Well (W26)	3.2	2.1	4.0 (Bromodichloromethane 1.3; Chloroform 2.0; and Dibromochloromethane 0.71J)
2/15/2023	MW-17D	0.1 U	0.9 U	0.47 U
2/20/2023	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	6.9 (Chloroform 6.9)
3/14/2023	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	6.4 (Chloroform 6.4)
3/15/2023	Randall Well	0.1 U	0.9 U	3.6 (Chloroform)

Table 3-4. Summary of Disinfection Byproduct Results
Grain Handling Facility in Freeman, Freeman, WA

Sample Date	Sample Location	Chlorine (Total) Maximum Contaminant Level (mg/L) 4 (residual disinfection level) mg/L	Haloacetic Acids (Total) 60 µg/L	Trihalomethanes (Total) 80 µg/L
4/13/2023	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	7.1 (Bromodichloromethane 0.41J; Chloroform 6.7)
4/13/2023	Randall Well	0.1 U	0.9 U	4.2 (Chloroform)
5/15/2023	Randall Well	0.1 U	0.9 U	3.6 (Chloroform)
5/15/2023	Treatment Plant Influent (EW-01)	0.11	0.9 U	6.0 (Bromoform 0.47J; Chloroform 5.5)
5/23/2023	MW-34	0.1	0.9 U	0.47 U
5/24/2023	Out-of-Use Freeman School District Well (W26)	1.9	0.9 U	0.47 U
5/24/2023	MW-17D	0.1 U	0.9 U	0.47 U
6/12/2023	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	4.5 (Chloroform)
6/12/2023	Randall Well	0.1 U	0.9 U	3.4 (Chloroform)
7/13/2023	Treatment Plant Influent (EW-01)	Samples not collected due to feed pump malfunction.		
7/13/2023	Randall Well	0.1 U	0.9 U	2.6 (Chloroform)
8/7/2023	Treatment Plant Influent (EW-01)	0.1 U	0.9 U	5.4 (Bromodichloromethane 0.38J; Chloroform 5.0)
8/7/2023	Randall Well	0.1 U	0.9 U	3.0 (Chloroform)
8/15/2023	MW-17D	0.1 U	0.9 U	0.47 U
8/15/2023	MW-34	0.1 U	0.9 U	0.47 U
8/15/2023	Out-of-Use Freeman School District Well (W26)	0.1 U	0.9 U	0.47 U

Notes:

Detected concentrations are shown in bold
NA = not analyzed
J = estimated value
mg/L = milligrams per liter
mg/L = micrograms per liter
U = not detected at or above the indicated reporting limit

Haloacetic Acids (Total)
Dibromoacetic Acid
Dichloroacetic Acid
Monobromoacetic Acid
Monochloroacetic Acid
Trichloroacetic Acid

Total Trihalomethanes (Calc.)
Bromodichloromethane
Bromoform
Chloroform
Dibromochloromethane

Table 3-5. Transducer Installation Summary
Grain Handling Facility at Freeman, Freeman, WA

Well ID	Install Date	Model Number	Cable Length (feet)	Initial Depth to Water (feet btoc)	Sensor Reference Depth (feet btoc)
W26	7/13/2021	Solinst 3001-10	75	66.12	74.97
MW-4D	7/13/2021	Solinst 3001-10	130	108.73	130.25
MW-6D	7/13/2021	Solinst 3001-10	150	128.47	151.04
MW-7S	7/13/2021	Solinst 3001-10	40	31.61	40.17
MW-9S	7/13/2021	Solinst 3001-10	40	34.16	40.30
MW-9D	7/13/2021	Solinst 3001-10	40	33.94	41.00
MW-9U	7/13/2021	Solinst 3001-10	40	33.05	40.93
MW-10S	7/13/2021	Solinst 3001-10	70	50.30	70.22
MW-11S	7/13/2021	Solinst 3001-10	70	59.22	70.27
MW-13S	7/13/2021	Solinst 3001-10	35	11.64	33.24
MW-14D	7/13/2021	Solinst 3001-10	35	16.55	36.22
MW-17D	7/13/2021	Solinst 3001-10	75	62.47	71.09
MW-19D	7/13/2021	Solinst 3001-20	100	62.66	100.89
MW-26	7/13/2021	Solinst 3001-20	120	113.02	139.15
MW-27	7/13/2021	Solinst 3001-10	75	69.28	75.70
MW-28	7/13/2021	Solinst 3001-10	75	63.66	75.83
MW-29	7/13/2021	Solinst 3001-10	75	60.75	75.66
MW-30	7/13/2021	Solinst 3001-10	75	60.59	75.74
MW-34	7/13/2021	Solinst 3001-20	140	126.11	141.09
MW-35	7/13/2021	Solinst 3001-20	140	117.15	141.33
MW-36	7/13/2021	Solinst 3001-10	40	22.63	41.07

Notes:
btoc = below top of casing

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
Lashaw Well (Agricultural)	10/03/2018	NM	133.02	NA
MW-1D	08/04/2016	2,598.45	21.63	2,576.82
	12/01/2016	2,598.45	23.54	2,574.91
	02/23/2017	2,598.45	22.31	2,576.14
	03/30/2017	2,598.45	20.57	2,577.88
	05/25/2017	2,598.45	18.21	2,580.24
	08/31/2017	2,598.45	20.03	2,578.42
	12/07/2017	2,598.45	22.18	2,576.27
	03/03/2018	2,598.45	19.23	2,579.22
	06/22/2018	2,598.45	17.27	2,581.18
	10/03/2018	2,598.45	20.60	2,577.85
	01/16/2019	2,598.45	21.80	2,576.65
	03/11/2019	2,598.45	20.58	2,577.87
	06/12/2019	2,598.45	17.92	2,580.53
	09/10/2019	2,598.45	20.26	2,578.19
	12/31/2019	2,598.45	21.96	2,576.49
	06/16/2020	2,598.45	19.33	2,579.12
	08/18/2020	2,598.45	20.15	2,578.30
	11/17/2020	2,598.45	22.39	2,576.06
	06/15/2021	2,598.45	26.25	2,572.20
	08/26/2021	2,598.45	24.62	2,573.83
	11/30/2021	2,598.45	27.00	2,571.45
	03/17/2022	2,598.45	23.86	2,574.59
	06/02/2022	2,598.45	NM	NA
	11/18/2022	2,598.45	23.61	2,574.84
	02/14/2023	2,598.45	23.56	2,574.89
	05/22/2023	2,598.45	24.37	2,574.08
MW-1S	08/04/2016	2,598.63	21.45	2,577.18
	12/01/2016	2,598.63	23.22	2,575.41
	02/23/2017	2,598.63	23.15	2,575.48
	03/30/2017	2,598.63	21.76	2,576.87
	05/25/2017	2,598.63	17.04	2,581.59
	08/31/2017	2,598.63	18.59	2,580.04
	12/07/2017	2,598.63	21.89	2,576.74
	03/03/2018	2,598.63	19.60	2,579.03
	06/22/2018	2,598.63	14.76	2,583.87
	10/03/2018	2,598.63	19.75	2,578.88
	01/16/2019	2,598.63	21.87	2,576.76
	03/11/2019	2,598.63	21.08	2,577.55
	06/12/2019	2,598.63	15.94	2,582.69
	09/10/2019	2,598.63	19.20	2,579.43

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-1S	12/31/2019	2,598.63	21.69	2,576.94
	06/16/2020	2,598.63	18.14	2,580.49
	08/18/2020	2,598.63	18.93	2,579.70
	11/16/2020	2,598.63	22.29	2,576.34
	11/17/2021	2,598.63	23.19	2,575.44
	03/17/2022	2,598.63	23.47	2,575.16
	05/25/2022	2,598.63	23.51	2,575.12
	11/10/2022	2,598.63	22.89	2,575.74
	02/14/2023	2,598.63	23.21	2,575.42
	05/22/2023	2,598.63	24.02	2,574.61
MW-2D	08/04/2016	2,597.66	31.33	2,566.33
	12/01/2016	2,597.66	31.69	2,565.97
	02/23/2017	2,597.66	31.40	2,566.26
	03/30/2017	2,597.66	30.30	2,567.36
	05/25/2017	2,597.66	28.82	2,568.84
	08/31/2017	2,597.66	29.72	2,567.94
	12/07/2017	2,597.66	30.97	2,566.69
	03/03/2018	2,597.66	29.24	2,568.42
	06/22/2018	2,597.66	27.93	2,569.73
	10/03/2018	2,597.66	29.77	2,567.89
	01/16/2019	2,597.66	30.45	2,567.21
	03/11/2019	2,597.66	29.60	2,568.06
	06/12/2019	2,597.66	28.41	2,569.25
	09/10/2019	2,597.66	29.78	2,567.88
	12/31/2019	2,597.66	30.82	2,566.84
	06/16/2020	2,597.66	29.49	2,568.17
	08/18/2020	2,597.66	29.84	2,567.82
	11/17/2020	2,597.66	31.12	2,566.54
	06/15/2021	2,597.66	33.50	2,564.16
	08/26/2021	2,597.66	34.56	2,563.10
	11/30/2021	2,597.66	35.28	2,562.38
	03/17/2022	2,597.66	32.12	2,565.54
	06/02/2022	2,597.66	30.99	2,566.67
	11/18/2022	2,597.66	32.49	2,565.17
	02/14/2023	2,597.66	32.63	2,565.03
	05/22/2023	2,597.66	33.80	2,563.86
MW-3D	08/04/2016	2,604.92	29.08	2,575.84
	12/01/2016	2,604.92	32.85	2,572.07
	02/23/2017	2,604.92	31.74	2,573.18
	03/30/2017	2,604.92	29.96	2,574.96
	05/25/2017	2,604.92	27.97	2,576.95

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-3D	08/31/2017	2,604.92	30.40	2,574.52
	12/07/2017	2,604.92	32.35	2,572.57
	03/03/2018	2,604.92	NM [a]	NA
	06/22/2018	2,604.92	28.04	2,576.88
	10/03/2018	2,604.92	31.03	2,573.89
	01/16/2019	2,604.92	33.90	2,571.02
	03/11/2019	2,604.92	30.28	2,574.64
	06/12/2019	2,604.92	28.01	2,576.91
	09/10/2019	2,604.92	30.50	2,574.42
	12/31/2019	2,604.92	32.44	2,572.48
	06/16/2020	2,604.92	29.04	2,575.88
	08/18/2020	2,604.92	30.57	2,574.35
	11/18/2020	2,604.92	32.89	2,572.03
	06/15/2021	2,604.92	41.68	2,563.24
	08/23/2021	2,604.92	36.60	2,568.32
	11/22/2021	2,604.92	40.19	2,564.73
	03/15/2022	2,604.92	33.82	2,571.10
	05/27/2022	2,604.92	31.63	2,573.29
	11/15/2022	2,604.92	31.61	2,573.31
	02/14/2023	2,604.92	33.13	2,571.79
	05/22/2023	2,604.92	35.21	2,569.71
MW-4D	08/04/2016	2,576.09	114.98	2,461.11
	12/01/2016	2,576.09	113.25	2,462.84
	02/23/2017	2,576.09	111.00	2,465.09
	03/30/2017	2,576.09	110.03	2,466.06
	05/25/2017	2,576.09	108.30	2,467.79
	08/31/2017	2,576.09	114.48	2,461.61
	12/07/2017	2,576.09	111.42	2,464.67
	03/03/2018	2,576.09	107.55	2,468.54
	06/22/2018	2,576.09	108.59	2,467.50
	10/03/2018	2,576.09	111.49	2,464.60
	01/16/2019	2,576.09	107.09	2,469.00
	03/11/2019	2,576.09	105.94	2,470.15
	06/12/2019	2,576.09	106.08	2,470.01
	09/10/2019	2,576.09	109.31	2,466.78
	12/31/2019	2,576.09	106.22	2,469.87
	06/16/2020	2,576.09	103.12	2,472.97
	08/18/2020	2,576.09	107.40	2,468.69
	11/17/2020	2,576.09	106.32	2,469.77
	08/30/2021	2,576.09	112.86	2,463.23
	11/16/2021	2,576.09	110.09	2,466.00

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-4D	03/16/2022	2,576.09	142.00	2,434.09
	06/02/2022	2,576.09	105.70	2,470.39
	08/15/2022	2,576.09	108.89	2,467.20
	11/16/2022	2,576.09	109.92	2,466.17
	02/14/2023	2,576.09	107.90	2,468.19
	05/22/2023	2,576.09	108.38	2,467.71
	08/14/2023	2,576.09	114.23	2,461.86
MW-5D	08/04/2016	2,627.33	63.47	2,563.86
	12/01/2016	2,627.33	53.45[b]	2,573.88
	02/23/2017	2,627.33	63.14	2,564.19
	03/30/2017	2,627.33	63.24	2,564.09
	05/25/2017	2,627.33	62.66	2,564.67
	08/31/2017	2,627.33	62.66	2,564.67
	12/07/2017	2,627.33	63.38	2,563.95
	03/03/2018	2,627.33	62.25	2,565.08
	06/22/2018	2,627.33	62.18	2,565.15
	10/03/2018	2,627.33	62.13	2,565.20
	01/16/2019	2,627.33	62.11	2,565.22
	03/11/2019	2,627.33	62.21	2,565.12
	06/12/2019	2,627.33	62.01	2,565.32
	09/10/2019	2,627.33	61.82	2,565.51
	12/31/2019	2,627.33	61.79	2,565.54
	06/16/2020	2,627.33	61.53	2,565.80
	08/18/2020	2,627.33	61.60	2,565.73
	11/16/2020	2,627.33	61.63	2,565.70
	06/15/2021	2,627.33	61.49	2,565.84
	08/24/2021	2,627.33	62.05	2,565.28
	11/22/2021	2,627.33	62.50	2,564.83
	03/15/2022	2,627.33	62.00	2,565.33
	06/01/2022	2,627.33	62.02	2,565.31
	11/16/2022	2,627.33	62.62	2,564.71
	02/14/2023	2,627.33	61.93	2,565.40
	05/22/2023	2,627.33	63.71	2,563.62
MW-6D	08/04/2016	2,589.52	133.70	2,455.82
	12/01/2016	2,589.52	128.25	2,461.27
	02/23/2017	2,589.52	126.14	2,463.38
	03/30/2017	2,589.52	125.26	2,464.26
	05/25/2017	2,589.52	128.34	2,461.18
	08/31/2017	2,589.52	134.92	2,454.60
	12/07/2017	2,589.52	126.70	2,462.82
	03/03/2018	2,589.52	128.02	2,461.50

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-6D	06/22/2018	2,589.52	128.85	2,460.67
	10/03/2018	2,589.52	126.65	2,462.87
	01/16/2019	2,589.52	122.37	2,467.15
	03/11/2019	2,589.52	126.51	2,463.01
	06/12/2019	2,589.52	125.84	2,463.68
	09/10/2019	2,589.52	127.49	2,462.03
	12/31/2019	2,589.52	125.28	2,464.24
	06/16/2020	2,589.52	118.61	2,470.91
	08/18/2020	2,589.52	126.98	2,462.54
	11/18/2020	2,589.52	121.95	2,467.57
	06/15/2021	2,589.52	126.35	2,463.17
	08/24/2021	2,589.52	131.30	2,458.22
	11/24/2021	2,589.52	125.39	2,464.13
	03/08/2022	2,589.52	122.32	2,467.20
	06/03/2022	2,589.52	120.71	2,468.81
	08/15/2022	2,589.52	127.59	2,461.93
	11/16/2022	2,589.52	125.20	2,464.32
	02/14/2023	2,589.52	143.25	2,446.27
	05/22/2023	2,589.52	142.96	2,446.56
	08/14/2023	2,589.52	131.17	2,458.35
MW-6S	08/04/2016	2,589.92	36.49	2,553.43
	12/01/2016	2,589.92	36.06	2,553.86
	02/23/2017	2,589.92	35.03	2,554.89
	03/30/2017	2,589.92	33.39	2,556.53
	05/25/2017	2,589.92	33.47	2,556.45
	08/31/2017	2,589.92	35.10	2,554.82
	12/07/2017	2,589.92	36.21	2,553.71
	03/03/2018	2,589.92	33.37	2,556.55
	06/22/2018	2,589.92	33.59	2,556.33
	10/03/2018	2,589.92	35.58	2,554.34
	01/16/2019	2,589.92	35.61	2,554.31
	03/11/2019	2,589.92	35.52	2,554.40
	06/12/2019	2,589.92	34.76	2,555.16
	09/10/2019	2,589.92	35.85	2,554.07
	12/31/2019	2,589.92	36.39	2,553.53
	06/16/2020	2,589.92	34.83	2,555.09
	08/18/2020	2,589.92	35.56	2,554.36
	11/22/2020	2,589.92	36.71	2,553.21
	11/17/2021	2,589.92	37.63	2,552.29
	03/17/2022	2,589.92	35.63	2,554.29
	05/25/2022	2,589.92	35.55	2,554.37

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-6S	11/10/2022	2,589.92	37.08	2,552.84
	02/14/2023	2,589.92	36.45	2,553.47
	05/22/2023	2,589.92	37.29	2,552.63
MW-6U	12/07/2017	2,590.83	38.12	2,552.71
	03/03/2018	2,590.83	36.22	2,554.61
	06/22/2018	2,590.83	35.87	2,554.96
	10/03/2018	2,590.83	37.75	2,553.08
	01/16/2019	2,590.83	37.36	2,553.47
	03/11/2019	2,590.83	37.51	2,553.32
	06/12/2019	2,590.83	36.71	2,554.12
	09/10/2019	2,590.83	37.59	2,553.24
	12/31/2019	2,590.83	38.11	2,552.72
	06/16/2020	2,590.83	36.61	2,554.22
	08/18/2020	2,590.83	37.54	2,553.29
	11/18/2020	2,590.83	37.98	2,552.85
	06/15/2021	2,590.83	37.91	2,552.92
	08/24/2021	2,590.83	39.70	2,551.13
	11/24/2021	2,590.83	39.62	2,551.21
	03/08/2022	2,590.83	37.69	2,553.14
	06/03/2022	2,590.83	37.31	2,553.52
	08/15/2022	2,590.83	37.70	2,553.13
	11/16/2022	2,590.83	39.51	2,551.32
	02/14/2023	2,590.83	38.75	2,552.08
	05/22/2023	2,590.83	38.70	2,552.13
	08/14/2023	2,590.83	40.50	2,550.33
MW-7S	08/04/2016	2,596.98	30.35	2,566.63
	12/01/2016	2,596.98	30.16	2,566.82
	02/23/2017	2,596.98	29.13	2,567.85
	03/30/2017	2,596.98	27.14	2,569.84
	05/25/2017	2,596.98	26.93	2,570.05
	08/31/2017	2,596.98	29.41	2,567.57
	12/07/2017	2,596.98	30.58	2,566.40
	03/03/2018	2,596.98	NM [a]	NA
	06/22/2018	2,596.98	27.55	2,569.43
	10/03/2018	2,596.98	29.72	2,567.26
	01/16/2019	2,596.98	29.95	2,567.03
	03/11/2019	2,596.98	26.65	2,570.33
	06/12/2019	2,596.98	28.03	2,568.95
	09/10/2019	2,596.98	29.94	2,567.04
	12/31/2019	2,596.98	31.14	2,565.84
	06/16/2020	2,596.98	29.41	2,567.57

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-7S	08/18/2020	2,596.98	30.62	2,566.36
	11/22/2020	2,596.98	31.46	2,565.52
	11/17/2021	2,596.98	32.91	2,564.07
	03/17/2022	2,596.98	31.02	2,565.96
	05/25/2022	2,596.98	30.19	2,566.79
	08/16/2022	2,596.98	30.69	2,566.29
	11/10/2022	2,596.98	32.42	2,564.56
	02/14/2023	2,596.98	33.64	2,563.34
	05/22/2023	2,596.98	33.87	2,563.11
	08/14/2023	2,596.98	37.73	2,559.25
MW-8S	08/04/2016	2,603.39	36.57	2,566.82
	12/01/2016	2,603.39	36.47	2,566.92
	02/23/2017	2,603.39	35.50	2,567.89
	03/30/2017	2,603.39	33.92	2,569.47
	05/25/2017	2,603.39	33.29	2,570.10
	08/31/2017	2,603.39	35.73	2,567.66
	12/07/2017	2,603.39	36.98	2,566.41
	03/03/2018	2,603.39	34.09	2,569.30
	06/22/2018	2,603.39	33.87	2,569.52
	10/03/2018	2,603.39	36.09	2,567.30
	01/16/2019	2,603.39	35.94	2,567.45
	03/11/2019	2,603.39	35.23	2,568.16
	06/12/2019	2,603.39	34.35	2,569.04
	09/10/2019	2,603.39	36.50	2,566.89
	12/31/2019	2,603.39	37.19	2,566.20
	06/16/2020	2,603.39	35.09	2,568.30
	08/18/2020	2,603.39	37.00	2,566.39
	11/22/2020	2,603.39	37.83	2,565.56
	11/17/2021	2,603.39	32.28	2,571.11
	03/17/2022	2,603.39	37.36	2,566.03
	05/25/2022	2,603.39	36.34	2,567.05
	08/16/2022	2,603.39	37.33	2,566.06
	11/10/2022	2,603.39	38.70	2,564.69
	02/14/2023	2,603.39	40.00	2,563.39
	05/22/2023	2,603.39	40.66	2,562.73
	08/14/2023	2,603.39	41.93	2,561.46
MW-9D	02/23/2017	2,598.96	31.44	2,567.52
	03/30/2017	2,598.96	30.21	2,568.75
	05/25/2017	2,598.96	29.50	2,569.46
	08/31/2017	2,598.96	31.77	2,567.19
	12/07/2017	2,598.96	32.81	2,566.15

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-9D	03/03/2018	2,598.96	30.17	2,568.79
	06/22/2018	2,598.96	30.00	2,568.96
	10/03/2018	2,598.96	32.02	2,566.94
	01/16/2019	2,598.96	31.83	2,567.13
	03/11/2019	2,598.96	31.22	2,567.74
	06/12/2019	2,598.96	30.48	2,568.48
	09/10/2019	2,598.96	32.48	2,566.48
	12/31/2019	2,598.96	33.06	2,565.90
	06/16/2020	2,598.96	31.68	2,567.28
	08/18/2020	2,598.96	32.74	2,566.22
	11/18/2020	2,598.96	33.42	2,565.54
	06/15/2021	2,598.96	33.34	2,565.62
	08/23/2021	2,598.96	34.21	2,564.75
	11/22/2021	2,598.96	35.05	2,563.91
	03/16/2022	2,598.96	33.14	2,565.82
	05/27/2022	2,598.96	32.32	2,566.64
	08/08/2022	2,598.96	32.78	2,566.18
	11/17/2022	2,598.96	36.15	2,562.81
	02/14/2023	2,598.96	35.80	2,563.16
	05/22/2023	2,598.96	35.93	2,563.03
	08/14/2023	2,598.96	38.25	2,560.71
MW-9S	08/04/2016	2,599.31	32.83	2,566.48
	12/01/2016	2,599.31	33.07	2,566.24
	02/23/2017	2,599.31	32.01	2,567.30
	03/30/2017	2,599.31	30.13	2,569.18
	05/25/2017	2,599.31	29.64	2,569.67
	08/31/2017	2,599.31	31.97	2,567.34
	12/07/2017	2,599.31	33.00	2,566.31
	03/03/2018	2,599.31	30.28	2,569.03
	06/22/2018	2,599.31	30.18	2,569.13
	10/03/2018	2,599.31	32.27	2,567.04
	01/16/2019	2,599.31	32.00	2,567.31
	03/11/2019	2,599.31	31.36	2,567.95
	06/12/2019	2,599.31	30.62	2,568.69
	09/10/2019	2,599.31	32.71	2,566.60
	12/31/2019	2,599.31	33.31	2,566.00
	06/16/2020	2,599.31	31.98	2,567.33
	08/18/2020	2,599.31	33.30	2,566.01
	11/22/2020	2,599.31	33.96	2,565.35
	11/17/2021	2,599.31	35.31	2,564.00
	03/17/2022	2,599.31	33.33	2,565.98

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-9S	05/25/2022	2,599.31	32.60	2,566.71
	08/16/2022	2,599.31	33.25	2,566.06
	11/10/2022	2,599.31	34.88	2,564.43
	02/14/2023	2,599.31	35.89	2,563.42
	05/22/2023	2,599.31	36.07	2,563.24
	08/14/2023	2,599.31	38.82	2,560.49
MW-9U	12/07/2017	2,698.00	31.89	2,666.11
	03/03/2018	2,698.00	29.27	2,668.73
	06/22/2018	2,698.00	29.08	2,668.92
	10/03/2018	2,698.00	31.10	2,666.90
	01/16/2019	2,698.00	30.91	2,667.09
	03/11/2019	2,698.00	30.31	2,667.69
	06/12/2019	2,698.00	29.58	2,668.42
	09/10/2019	2,698.00	31.55	2,666.45
	12/31/2019	2,698.00	32.11	2,665.89
	06/16/2020	2,698.00	30.77	2,667.23
	08/18/2020	2,698.00	31.83	2,666.17
	11/16/2020	2,698.00	32.91	2,665.09
	06/15/2021	2,698.00	32.29	2,665.71
	08/23/2021	2,698.00	33.32	2,664.68
	11/22/2021	2,698.00	34.11	2,663.89
	03/16/2022	2,698.00	32.34	2,665.66
	05/27/2022	2,698.00	31.47	2,666.53
	08/08/2022	2,698.00	31.91	2,666.09
	11/18/2022	2,698.00	35.34	2,662.66
	02/14/2023	2,698.00	34.95	2,663.05
	05/22/2023	2,698.00	35.06	2,662.94
	08/14/2023	2,698.00	38.25	2,659.75
MW-10S	08/04/2016	2,615.31	50.93	2,564.38
	12/01/2016	2,615.31	49.52	2,565.79
	02/23/2017	2,615.31	48.17	2,567.14
	03/30/2017	2,615.31	47.09	2,568.22
	05/25/2017	2,615.31	46.42	2,568.89
	08/31/2017	2,615.31	48.29	2,567.02
	12/07/2017	2,615.31	49.41	2,565.90
	03/03/2018	2,615.31	47.52	2,567.79
	06/22/2018	2,615.31	46.70	2,568.61
	10/03/2018	2,615.31	48.51	2,566.80
	01/16/2019	2,615.31	48.51	2,566.80
	03/11/2019	2,615.31	47.99	2,567.32
	06/12/2019	2,615.31	47.26	2,568.05

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-10S	09/10/2019	2,615.31	48.98	2,566.33
	12/31/2019	2,615.31	49.56	2,565.75
	06/16/2020	2,615.31	48.33	2,566.98
	08/18/2020	2,615.31	49.60	2,565.71
	11/22/2020	2,615.31	50.58	2,564.73
	11/17/2021	2,615.31	51.63	2,563.68
	03/17/2022	2,615.31	50.02	2,565.29
	05/25/2022	2,615.31	48.89	2,566.42
	08/16/2022	2,615.31	49.48	2,565.83
	11/10/2022	2,615.31	51.20	2,564.11
	02/14/2023	2,615.31	52.61	2,562.70
	05/22/2023	2,615.31	52.90	2,562.41
	08/14/2023	2,615.31	54.61	2,560.70
MW-11S	08/04/2016	2,623.50	57.63	2,565.87
	12/01/2016	2,623.50	58.02	2,565.48
	02/23/2017	2,623.50	57.06	2,566.44
	03/30/2017	2,623.50	55.96	2,567.54
	05/25/2017	2,623.50	55.29	2,568.21
	08/31/2017	2,623.50	56.93	2,566.57
	12/07/2017	2,623.50	58.01	2,565.49
	03/03/2018	2,623.50	55.58	2,567.92
	06/22/2018	2,623.50	55.47	2,568.03
	10/03/2018	2,623.50	57.05	2,566.45
	01/16/2019	2,623.50	57.11	2,566.39
	03/11/2019	2,623.50	56.70	2,566.80
	06/12/2019	2,623.50	55.97	2,567.53
	09/10/2019	2,623.50	57.48	2,566.02
	12/31/2019	2,623.50	57.99	2,565.51
	06/16/2020	2,623.50	56.96	2,566.54
	08/18/2020	2,623.50	58.11	2,565.39
	11/22/2020	2,623.50	58.75	2,564.75
	11/17/2021	2,623.50	60.08	2,563.42
	03/17/2022	2,623.50	59.12	2,564.38
	05/25/2022	2,623.50	58.45	2,565.05
	11/10/2022	2,623.50	59.83	2,563.67
	02/14/2023	2,623.50	61.72	2,561.78
	05/22/2023	2,623.50	63.07	2,560.43
MW-12S	08/04/2016	2,622.03	41.33	2,580.70
	12/01/2016	2,622.03	44.66	2,577.37
	02/23/2017	2,622.03	41.66	2,580.37
	03/30/2017	2,622.03	40.10	2,581.93

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-12S	05/25/2017	2,622.03	38.54	2,583.49
	08/31/2017	2,622.03	38.79	2,583.24
	12/07/2017	2,622.03	41.28	2,580.75
	03/03/2018	2,622.03	40.86	2,581.17
	06/22/2018	2,622.03	37.53	2,584.50
	10/03/2018	2,622.03	39.11	2,582.92
	01/16/2019	2,622.03	40.70	2,581.33
	03/11/2019	2,622.03	40.18	2,581.85
	06/12/2019	2,622.03	38.23	2,583.80
	09/10/2019	2,622.03	38.80	2,583.23
	12/31/2019	2,622.03	40.35	2,581.68
	06/16/2020	2,622.03	38.73	2,583.30
	08/18/2020	2,622.03	38.54	2,583.49
	11/22/2020	2,622.03	40.32	2,581.71
	11/17/2021	2,622.03	42.24	2,579.79
	03/17/2022	2,622.03	42.23	2,579.80
	05/25/2022	2,622.03	40.67	2,581.36
	11/10/2022	2,622.03	40.51	2,581.52
	02/14/2023	2,622.03	40.61	2,581.42
	05/22/2023	2,622.03	42.38	2,579.65
MW-13S	02/23/2017	2,580.09	10.00	2,570.09
	03/30/2017	2,580.09	8.73	2,571.36
	05/25/2017	2,580.09	8.21	2,571.88
	08/31/2017	2,580.09	10.04	2,570.05
	12/07/2017	2,580.09	11.70	2,568.39
	03/03/2018	2,580.09	9.43	2,570.66
	06/22/2018	2,580.09	9.27	2,570.82
	10/03/2018	2,580.09	10.26	2,569.83
	01/16/2019	2,580.09	9.94	2,570.15
	03/11/2019	2,580.09	9.51	2,570.58
	06/12/2019	2,580.09	8.86	2,571.23
	09/10/2019	2,580.09	10.40	2,569.69
	12/31/2019	2,580.09	11.64	2,568.45
	06/16/2020	2,580.09	9.85	2,570.24
	08/18/2020	2,580.09	10.80	2,569.29
	11/17/2020	2,580.09	11.41	2,568.68
	06/15/2021	2,580.09	15.31	2,564.78
	08/30/2021	2,580.09	15.59	2,564.50
	11/15/2021	2,580.09	15.38	2,564.71
	03/15/2022	2,580.09	10.89	2,569.20
	05/26/2022	2,580.09	10.61	2,569.48

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-13S	11/10/2022	2,580.09	12.29	2,567.80
	02/14/2023	2,580.09	8.97	2,571.12
	05/22/2023	2,580.09	8.65	2,571.44
MW-14D	02/23/2017	2,579.85	18.58	2,561.27
	03/30/2017	2,579.85	16.34	2,563.51
	05/25/2017	2,579.85	13.96	2,565.89
	08/31/2017	2,579.85	14.96	2,564.89
	12/07/2017	2,579.85	16.47	2,563.38
	03/03/2018	2,579.85	14.20	2,565.65
	06/22/2018	2,579.85	12.77	2,567.08
	10/03/2018	2,579.85	14.68	2,565.17
	01/16/2019	2,579.85	15.26	2,564.59
	03/11/2019	2,579.85	14.62	2,565.23
	06/12/2019	2,579.85	13.18	2,566.67
	09/10/2019	2,579.85	14.40	2,565.45
	12/31/2019	2,579.85	15.78	2,564.07
	06/16/2020	2,579.85	14.41	2,565.44
	08/18/2020	2,579.85	14.87	2,564.98
	11/17/2020	2,579.85	16.45	2,563.40
	06/15/2021	2,579.85	17.35	2,562.50
	08/23/2021	2,579.85	19.69	2,560.16
	11/22/2021	2,579.85	20.65	2,559.20
	03/16/2022	2,579.85	17.82	2,562.03
	05/27/2022	2,579.85	16.81	2,563.04
	08/15/2022	2,579.85	14.66	2,565.19
	11/15/2022	2,579.85	7.33	2,572.52
	02/14/2023	2,579.85	6.83	2,573.02
	05/22/2023	2,579.85	0.00	2,579.85
MW-15D	08/31/2017	2,551.32	91.54	2,459.78
	12/07/2017	2,551.32	88.63	2,462.69
	03/03/2018	2,551.32	85.14	2,466.18
	06/22/2018	2,551.32	85.81	2,465.51
	10/03/2018	2,551.32	88.58	2,462.74
	01/16/2019	2,551.32	84.31	2,467.01
	03/11/2019	2,551.32	83.34	2,467.98
	06/12/2019	2,551.32	83.55	2,467.77
	09/10/2019	2,551.32	86.41	2,464.91
	12/31/2019	2,551.32	93.91	2,457.41
	06/16/2020	2,551.32	80.52	2,470.80
	08/18/2020	2,551.32	84.07	2,467.25
	11/16/2020	2,551.32	84.33	2,466.99

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-15D	06/15/2021	2,551.32	83.74	2,467.58
	08/19/2021	2,551.32	88.08	2,463.24
	11/23/2021	2,551.32	86.68	2,464.64
	03/08/2022	2,551.32	84.20	2,467.12
	05/30/2022	2,551.32	82.78	2,468.54
	08/10/2022	2,551.32	85.83	2,465.49
	11/15/2022	2,551.32	87.01	2,464.31
	02/14/2023	2,551.32	84.14	2,467.18
	05/22/2023	2,551.32	84.61	2,466.71
	08/14/2023	2,551.32	88.38	2,462.94
MW-16D	02/23/2017	2,565.73	46.12	2,519.61
	03/30/2017	2,565.73	44.40	2,521.33
	05/25/2017	2,565.73	44.35	2,521.38
	08/31/2017	2,565.73	46.93	2,518.80
	12/07/2017	2,565.73	48.02	2,517.71
	03/03/2018	2,565.73	45.01	2,520.72
	06/22/2018	2,565.73	45.61	2,520.12
	10/03/2018	2,565.73	47.43	2,518.30
	01/16/2019	2,565.73	47.12	2,518.61
	03/11/2019	2,565.73	46.61	2,519.12
	06/12/2019	2,565.73	45.49	2,520.24
	09/10/2019	2,565.73	46.80	2,518.93
	12/31/2019	2,565.73	47.52	2,518.21
	06/16/2020	2,565.73	46.63	2,519.10
	08/18/2020	2,565.73	47.44	2,518.29
	11/16/2020	2,565.73	48.41	2,517.32
	06/15/2021	2,565.73	48.75	2,516.98
	08/19/2021	2,565.73	48.98	2,516.75
	11/23/2021	2,565.73	49.11	2,516.62
	03/10/2022	2,565.73	47.40	2,518.33
	05/30/2022	2,565.73	47.43	2,518.30
	08/10/2022	2,565.73	47.82	2,517.91
	11/15/2022	2,565.73	49.34	2,516.39
	02/14/2023	2,565.73	46.49	2,519.24
	05/22/2023	2,565.73	49.03	2,516.70
	08/14/2023	2,565.73	47.88	2,517.85
MW-17D	05/25/2017	2,613.56	63.39	2,550.17
	08/31/2017	2,613.56	63.22	2,550.34
	12/07/2017	2,613.56	63.30	2,550.26
	03/03/2018	2,613.56	63.89	2,549.67
	06/22/2018	2,613.56	62.59	2,550.97

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-17D	10/03/2018	2,613.56	62.94	2,550.62
	01/16/2019	2,613.56	63.28	2,550.28
	03/11/2019	2,613.56	62.90	2,550.66
	06/12/2019	2,613.56	62.45	2,551.11
	09/10/2019	2,613.56	62.64	2,550.92
	12/31/2019	2,613.56	62.89	2,550.67
	06/16/2020	2,613.56	62.24	2,551.32
	08/18/2020	2,613.56	62.36	2,551.20
	11/16/2020	2,613.56	61.20	2,552.36
	06/15/2021	2,613.56	73.18	2,540.38
	08/24/2021	2,613.56	73.12	2,540.44
	11/26/2021	2,613.56	69.68	2,543.88
	03/16/2022	2,613.56	63.05	2,550.51
	05/30/2022	2,613.56	62.66	2,550.90
	08/11/2022	2,613.56	62.59	2,550.97
	02/14/2023	2,613.56	63.00	2,550.56
	05/22/2023	2,613.56	63.86	2,549.70
	08/14/2023	2,613.56	63.11	2,550.45
MW-18D	02/23/2017	2,513.00	50.19	2,462.81
	03/30/2017	2,513.00	49.22	2,463.78
	05/25/2017	2,513.00	47.57	2,465.43
	08/31/2017	2,513.00	52.96	2,460.04
	12/07/2017	2,513.00	50.75	2,462.25
	03/03/2018	2,513.00	46.91	2,466.09
	06/22/2018	2,513.00	47.33	2,465.67
	10/03/2018	2,513.00	50.57	2,462.43
	01/16/2019	2,513.00	46.50	2,466.50
	03/11/2019	2,513.00	45.26	2,467.74
	06/12/2019	2,513.00	45.10	2,467.90
	09/10/2019	2,513.00	48.30	2,464.70
	12/31/2019	2,513.00	45.79	2,467.21
	06/16/2020	2,513.00	42.54	2,470.46
	08/18/2020	2,513.00	45.53	2,467.47
	11/16/2020	2,513.00	46.35	2,466.65
	06/15/2021	2,513.00	45.37	2,467.63
	08/24/2021	2,513.00	49.79	2,463.21
	11/23/2021	2,513.00	48.71	2,464.29
	03/10/2022	2,513.00	88.77	2,424.23
	05/30/2022	2,513.00	77.91	2,435.09
	11/15/2022	2,513.00	49.02	2,463.98
	02/14/2023	2,513.00	46.50	2,466.50

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-18D	05/22/2023	2,513.00	47.39	2,465.61
MW-19D	05/25/2017	2,624.01	55.58	2,568.43
	08/31/2017	2,624.01	57.65	2,566.36
	12/07/2017	2,624.01	58.54	2,565.47
	03/03/2018	2,624.01	56.19	2,567.82
	06/22/2018	2,624.01	55.98	2,568.03
	10/03/2018	2,624.01	57.78	2,566.23
	01/16/2019	2,624.01	57.58	2,566.43
	03/11/2019	2,624.01	57.14	2,566.87
	06/12/2019	2,624.01	56.57	2,567.44
	09/10/2019	2,624.01	58.22	2,565.79
	12/31/2019	2,624.01	58.76	2,565.25
	06/16/2020	2,624.01	57.50	2,566.51
	08/18/2020	2,624.01	58.90	2,565.11
	11/18/2020	2,624.01	59.02	2,564.99
	06/15/2021	2,624.01	58.90	2,565.11
	08/19/2021	2,624.01	65.56	2,558.45
	11/26/2021	2,624.01	60.81	2,563.20
	03/08/2022	2,624.01	58.97	2,565.04
	06/01/2022	2,624.01	62.57	2,561.44
	08/10/2022	2,624.01	63.27	2,560.74
	11/17/2022	2,624.01	68.04	2,555.97
	02/14/2023	2,624.01	61.42	2,562.59
	05/22/2023	2,624.01	62.31	2,561.70
	08/14/2023	2,624.01	72.27	2,551.74
MW-20D	08/31/2017	2,616.18	92.39	2,523.79
	12/07/2017	2,616.18	93.70	2,522.48
	03/03/2018	2,616.18	92.44	2,523.74
	06/22/2018	2,616.18	92.28	2,523.90
	10/03/2018	2,616.18	92.62	2,523.56
	01/16/2019	2,616.18	92.67	2,523.51
	03/11/2019	2,616.18	92.36	2,523.82
	06/12/2019	2,616.18	92.48	2,523.70
	09/10/2019	2,616.18	92.53	2,523.65
	12/31/2019	2,616.18	92.59	2,523.59
	06/16/2020	2,616.18	91.67	2,524.51
	08/18/2020	2,616.18	92.70	2,523.48
	11/17/2020	2,616.18	92.69	2,523.49
	06/15/2021	2,616.18	94.44	2,521.74
	08/24/2021	2,616.18	94.25	2,521.93
	11/22/2021	2,616.18	94.59	2,521.59

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-20D	03/15/2022	2,616.18	97.25	2,518.93
	06/02/2022	2,616.18	93.37	2,522.81
	08/10/2022	2,616.18	93.43	2,522.75
	11/16/2022	2,616.18	93.97	2,522.21
	02/14/2023	2,616.18	92.25	2,523.93
	05/22/2023	2,616.18	92.35	2,523.83
	08/14/2023	2,616.18	93.89	2,522.29
MW-21D	08/31/2017	2,526.16	66.00	2,460.16
	12/07/2017	2,526.16	64.13	2,462.03
	03/03/2018	2,526.16	NM [a]	NA
	06/22/2018	2,526.16	60.49	2,465.67
	10/03/2018	2,526.16	63.84	2,462.32
	01/16/2019	2,526.16	59.80	2,466.36
	03/11/2019	2,526.16	58.56	2,467.60
	06/12/2019	2,526.16	58.33	2,467.83
	09/10/2019	2,526.16	61.54	2,464.62
	12/31/2019	2,526.16	59.24	2,466.92
	06/16/2020	2,526.16	57.24	2,468.92
	08/18/2020	2,526.16	59.35	2,466.81
	11/16/2020	2,526.16	59.61	2,466.55
	06/15/2021	2,526.16	58.53	2,467.63
	08/19/2021	2,526.16	62.73	2,463.43
	11/23/2021	2,526.16	62.12	2,464.04
	06/01/2022	2,526.16	58.24	2,467.92
	11/15/2022	2,526.16	62.33	2,463.83
	02/14/2023	2,526.16	57.57	2,468.59
	05/22/2023	2,526.16	59.08	2,467.08
MW-24S	01/16/2019	2,602.23	34.30	2,567.93
	03/11/2019	2,602.23	33.59	2,568.64
	06/12/2019	2,602.23	32.73	2,569.50
	09/10/2019	2,602.23	34.90	2,567.33
	12/31/2019	2,602.23	34.79	2,567.44
	06/16/2020	2,602.23	31.52	2,570.71
	08/18/2020	2,602.23	37.64	2,564.59
	11/22/2020	2,602.23	36.89	2,565.34
	11/17/2021	2,602.23	37.62	2,564.61
	03/17/2022	2,602.23	37.36	2,564.87
	05/25/2022	2,602.23	35.03	2,567.20
	08/16/2022	2,602.23	35.43	2,566.80
	02/14/2023	2,602.23	38.32	2,563.91
	05/22/2023	2,602.23	39.20	2,563.03

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-24S	08/15/2023	2,602.23	39.91	2,562.32
MW-25S	01/16/2019	2,600.78	33.19	2,567.59
	03/11/2019	2,600.78	32.60	2,568.18
	06/12/2019	2,600.78	31.56	2,569.22
	09/10/2019	2,600.78	33.90	2,566.88
	12/31/2019	2,600.78	34.53	2,566.25
	06/16/2020	2,600.78	NM	NA
	08/18/2020	2,600.78	NM	NA
	11/22/2020	2,600.78	NM	NA
MW-26	09/10/2019	2,584.76	112.43	2,472.33
	12/31/2019	2,584.76	109.59	2,475.17
	06/16/2020	2,584.76	106.06	2,478.70
	08/18/2020	2,584.76	110.99	2,473.77
	11/17/2020	2,584.76	110.71	2,474.05
	06/15/2021	2,584.76	111.88	2,472.88
	08/26/2021	2,584.76	116.88	2,467.88
	11/29/2021	2,584.76	115.05	2,469.71
	03/16/2022	2,584.76	126.94	2,457.82
	06/03/2022	2,584.76	110.56	2,474.20
	11/16/2022	2,584.76	114.31	2,470.45
	02/14/2023	2,584.76	115.53	2,469.23
	05/22/2023	2,584.76	115.85	2,468.91
MW-27	09/10/2019	2,624.90	67.48	2,557.42
	12/31/2019	2,624.90	68.04	2,556.86
	06/16/2020	2,624.90	66.60	2,558.30
	08/18/2020	2,624.90	67.76	2,557.14
	11/18/2020	2,624.90	68.32	2,556.58
	06/15/2021	2,624.90	73.45	2,551.45
	08/19/2021	2,624.90	77.64	2,547.26
	11/26/2021	2,624.90	74.45	2,550.45
	03/08/2022	2,624.90	69.16	2,555.74
	06/01/2022	2,624.90	68.76	2,556.14
	08/10/2022	2,624.90	69.46	2,555.44
	11/17/2022	2,624.90	71.21	2,553.69
	02/14/2023	2,624.90	70.41	2,554.49
	05/22/2023	2,624.90	71.32	2,553.58
	08/14/2023	2,624.90	73.40	2,551.50
MW-28	09/10/2019	2,624.57	58.85	2,565.72
	12/31/2019	2,624.57	59.36	2,565.21
	06/16/2020	2,624.57	58.12	2,566.45

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-28	08/18/2020	2,624.57	59.61	2,564.96
	11/18/2020	2,624.57	59.65	2,564.92
	06/15/2021	2,624.57	59.72	2,564.85
	08/19/2021	2,624.57	66.68	2,557.89
	11/29/2021	2,624.57	61.48	2,563.09
	03/08/2022	2,624.57	59.58	2,564.99
	06/01/2022	2,624.57	63.84	2,560.73
	08/10/2022	2,624.57	64.50	2,560.07
	11/17/2022	2,624.57	69.04	2,555.53
	02/14/2023	2,624.57	62.02	2,562.55
	05/22/2023	2,624.57	62.95	2,561.62
	08/14/2023	2,624.57	80.85	2,543.72
MW-29	09/10/2019	2,623.96	58.14	2,565.82
	12/31/2019	2,623.96	58.71	2,565.25
	06/16/2020	2,623.96	57.49	2,566.47
	08/18/2020	2,623.96	58.59	2,565.37
	11/18/2020	2,623.96	58.96	2,565.00
	06/15/2021	2,623.96	60.21	2,563.75
	08/19/2021	2,623.96	62.62	2,561.34
	11/29/2021	2,623.96	61.10	2,562.86
	03/08/2022	2,623.96	58.90	2,565.06
	06/01/2022	2,623.96	59.47	2,564.49
	08/10/2022	2,623.96	59.72	2,564.24
	11/17/2022	2,623.96	63.78	2,560.18
	02/14/2023	2,623.96	61.47	2,562.49
	05/22/2023	2,623.96	62.40	2,561.56
	08/14/2023	2,623.96	67.98	2,555.98
MW-30	09/10/2019	2,624.02	58.19	2,565.83
	12/31/2019	2,624.02	58.69	2,565.33
	06/16/2020	2,624.02	57.45	2,566.57
	08/18/2020	2,624.02	58.85	2,565.17
	11/18/2020	2,624.02	49.98	2,574.04
	06/15/2021	2,624.02	58.81	2,565.21
	08/19/2021	2,624.02	61.90	2,562.12
	11/29/2021	2,624.02	60.70	2,563.32
	03/08/2022	2,624.02	58.96	2,565.06
	06/01/2022	2,624.02	59.62	2,564.40
	11/17/2022	2,624.02	63.57	2,560.45
	02/14/2023	2,624.02	61.52	2,562.50
	05/22/2023	2,624.02	62.78	2,561.24
MW-31	09/10/2019	2,588.90	100.16	2,488.74

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-31	12/31/2019	2,588.90	100.25	2,488.65
	06/16/2020	2,588.90	100.88	2,488.02
	08/18/2020	2,588.90	101.46	2,487.44
	11/18/2020	2,588.90	99.70	2,489.20
	06/15/2021	2,588.90	109.33	2,479.57
	08/25/2021	2,588.90	113.49	2,475.41
	11/26/2021	2,588.90	106.40	2,482.50
	03/09/2022	2,588.90	100.68	2,488.22
	06/03/2022	2,588.90	100.34	2,488.56
	11/17/2022	2,588.90	100.82	2,488.08
	02/14/2023	2,588.90	100.36	2,488.54
	05/22/2023	2,588.90	100.29	2,488.61
MW-32	09/10/2019	2,589.10	124.25	2,464.85
	12/31/2019	2,589.10	122.09	2,467.01
	06/16/2020	2,589.10	118.39	2,470.71
	08/18/2020	2,589.10	123.26	2,465.84
	11/18/2020	2,589.10	121.62	2,467.48
	06/15/2021	2,589.10	122.39	2,466.71
	08/25/2021	2,589.10	126.96	2,462.14
	11/26/2021	2,589.10	125.70	2,463.40
	03/09/2022	2,589.10	122.96	2,466.14
	06/03/2022	2,589.10	120.48	2,468.62
	11/17/2022	2,589.10	124.73	2,464.37
	02/14/2023	2,589.10	122.06	2,467.04
	05/22/2023	2,589.10	121.86	2,467.24
MW-33	09/10/2019	2,589.63	124.82	2,464.81
	12/31/2019	2,589.63	122.65	2,466.98
	06/16/2020	2,589.63	118.84	2,470.79
	08/18/2020	2,589.63	123.80	2,465.83
	11/18/2020	2,589.63	122.20	2,467.43
	06/15/2021	2,589.63	122.89	2,466.74
	08/25/2021	2,589.63	127.38	2,462.25
	11/26/2021	2,589.63	125.18	2,464.45
	03/09/2022	2,589.63	123.58	2,466.05
	06/03/2022	2,589.63	120.94	2,468.69
	11/17/2022	2,589.63	125.24	2,464.39
	02/14/2023	2,589.63	122.45	2,467.18
	05/22/2023	2,589.63	121.67	2,467.96
MW-34	09/10/2019	2,589.63	125.01	2,464.62
	12/31/2019	2,589.63	122.11	2,467.52
	06/16/2020	2,589.63	119.02	2,470.61

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-34	08/18/2020	2,589.63	124.95	2,464.68
	11/18/2020	2,589.63	122.13	2,467.50
	06/15/2021	2,589.63	136.79	2,452.84
	08/25/2021	2,589.63	129.55	2,460.08
	11/24/2021	2,589.63	130.63	2,459.00
	03/09/2022	2,589.63	123.51	2,466.12
	05/31/2022	2,589.63	121.76	2,467.87
	08/11/2022	2,589.63	125.52	2,464.11
	11/14/2022	2,589.63	125.14	2,464.49
	02/14/2023	2,589.63	103.70	2,485.93
	05/22/2023	2,589.63	103.26	2,486.37
	08/14/2023	2,589.63	129.03	2,460.60
MW-35	09/10/2019	2,585.40	115.53	2,469.87
	12/31/2019	2,585.40	114.45	2,470.95
	06/16/2020	2,585.40	111.46	2,473.94
	08/18/2020	2,585.40	116.62	2,468.78
	11/17/2020	2,585.40	114.63	2,470.77
	06/15/2021	2,585.40	115.28	2,470.12
	08/26/2021	2,585.40	119.78	2,465.62
	11/29/2021	2,585.40	118.00	2,467.40
	03/16/2022	2,585.40	115.41	2,469.99
	06/03/2022	2,585.40	113.89	2,471.51
	08/15/2022	2,585.40	117.21	2,468.19
	11/16/2022	2,585.40	118.25	2,467.15
	02/14/2023	2,585.40	111.79	2,473.61
	05/22/2023	2,585.40	111.52	2,473.88
	08/14/2023	2,585.40	119.09	2,466.31
MW-36	09/10/2019	2,585.21	20.39	2,564.82
	12/31/2019	2,585.21	20.81	2,564.40
	06/16/2020	2,585.21	19.54	2,565.67
	08/18/2020	2,585.21	21.24	2,563.97
	11/17/2020	2,585.21	19.96	2,565.25
	06/15/2021	2,585.21	20.91	2,564.30
	08/26/2021	2,585.21	22.78	2,562.43
	11/29/2021	2,585.21	22.60	2,562.61
	03/16/2022	2,585.21	21.37	2,563.84
	06/03/2022	2,585.21	20.49	2,564.72
	08/15/2022	2,585.21	21.69	2,563.52
	11/16/2022	2,585.21	24.23	2,560.98
	02/14/2023	2,585.21	23.84	2,561.37
	05/22/2023	2,585.21	23.99	2,561.22

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
MW-36	08/14/2023	2,585.21	114.11	2,471.10
Out-of-Use Freeman School District Well (W26)	12/01/2016	2,637.00	67.21	2,569.79
	02/23/2017	2,637.00	66.25	2,570.75
	03/30/2017	2,637.00	64.90	2,572.10
	05/25/2017	2,637.00	64.18	2,572.82
	08/31/2017	2,637.00	66.02	2,570.98
	12/07/2017	2,637.00	67.18	2,569.82
	03/03/2018	2,637.00	64.79	2,572.21
	06/22/2018	2,637.00	64.43	2,572.57
	10/03/2018	2,637.00	66.25	2,570.75
	01/16/2019	2,637.00	66.26	2,570.74
	03/11/2019	2,637.00	65.74	2,571.26
	06/12/2019	2,637.00	64.95	2,572.05
	09/10/2019	2,637.00	66.70	2,570.30
	12/31/2019	2,637.00	67.25	2,569.75
	06/16/2020	2,637.00	66.09	2,570.91
	08/18/2020	2,637.00	67.25	2,569.75
	06/15/2021	2,637.00	67.62	2,569.38
	08/30/2021	2,637.00	68.08	2,568.92
	11/15/2021	2,637.00	68.77	2,568.23
	03/17/2022	2,637.00	65.65	2,571.35
	05/31/2022	2,637.00	65.19	2,571.81
	08/11/2022	2,637.00	65.11	2,571.89
	11/14/2022	2,637.00	68.20	2,568.80
	02/14/2023	2,637.00	70.08	2,566.92
	05/22/2023	2,637.00	71.30	2,565.70
	08/14/2023	2,637.00	68.53	2,568.47
Out-of-Use Marlow Well (No. 2)	12/07/2017	2,608.32	43.84	2,564.48
	03/03/2018	2,608.32	46.64	2,561.68
	06/22/2018	2,608.32	40.53	2,567.79
	10/03/2018	2,608.32	42.35	2,565.97
	01/16/2019	2,608.32	42.47	2,565.85
	03/11/2019	2,608.32	41.63	2,566.69
Out-of-Use Marlow Well (W20)	12/01/2016	2,579.00	19.80	2,559.20
	02/23/2017	2,579.00	18.80	2,560.20
	03/30/2017	2,579.00	NM [a]	NA
	05/25/2017	2,579.00	17.51	2,561.49
	08/31/2017	2,579.00	19.90	2,559.10
	12/07/2017	2,579.00	17.14	2,561.86
	03/03/2018	2,579.00	14.81	2,564.19
	06/22/2018	2,579.00	14.91	2,564.09

Table 4-1. Quarterly Groundwater Monitoring Historical Water Levels

Grain Handling Facility, Freeman, Washington

Location	Measurement Date	Well Top of Casing Elevation (feet amsl)	Depth to Water Measurement (feet bgs)	Groundwater Elevation (feet amsl)
Out-of-Use Marlow Well (W20)	10/03/2018	2,579.00	16.78	2,562.22
	01/16/2019	2,579.00	16.40	2,562.60
	03/11/2019	2,579.00	16.05	2,562.95
	06/12/2019	2,579.00	15.69	2,563.31
	09/10/2019	2,579.00	17.36	2,561.64
	12/31/2019	2,579.00	17.69	2,561.31
	06/16/2020	2,579.00	16.68	2,562.32
	08/18/2020	2,579.00	18.48	2,560.52
	11/17/2020	2,579.00	18.43	2,560.57
	06/15/2021	2,579.00	19.73	2,559.27
	08/30/2021	2,579.00	21.07	2,557.93
	11/15/2021	2,579.00	20.89	2,558.11
	03/15/2022	2,579.00	38.83	2,540.17
	05/26/2022	2,579.00	18.88	2,560.12
	11/11/2022	2,579.00	21.25	2,557.75
	02/14/2023	2,579.00	20.70	2,558.30
	05/22/2023	2,579.00	22.69	2,556.31
Primary Freeman School District Well (WS5)	10/03/2018	2,590.79	156.30	2,434.49
	01/16/2019	2,590.79	151.36	2,439.43
	03/11/2019	2,590.79	121.74	2,469.05
	06/12/2019	2,590.79	149.85	2,440.94
	09/06/2019	2,590.79	153.10	2,437.69
	12/31/2019	2,590.79	150.39	2,440.40
	06/16/2020	2,590.79	153.23	2,437.56
	08/18/2020	2,590.79	151.52	2,439.27

[a] well inaccessible

[b] measurement questionable

Notes:

amsl above mean sea level

bgs below ground surface

NA not available

NM not measured

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
Asher Well		11/30/16	90		0.2 U	0.079 U	0.21 U
		02/24/17	90		0.2 U	0.079 U	0.21 U
		06/05/17	90		0.2 U	0.079 U	0.21 U
		09/12/17	90		0.37 U	0.2 U	0.46 U
		01/05/18	90		0.37 UJ	0.2 U	0.46 U
	FD	01/05/18	90		0.37 U	0.2 U	0.46 U
		03/20/18	90		0.37 U	0.2 U	0.46 U
	FD	03/20/18	90		0.37 U	0.2 U	0.46 U
		06/27/18	90		0.078 U	0.19 U	0.45 U
		09/28/18	90		0.078 UJ	0.19 U	0.45 U
		01/07/19	90		0.078 UJ	0.19 U	0.45 U
		03/21/19	90		0.078 U	0.19 U	0.45 U
		06/13/19	90		0.078 U	0.19 U	0.45 U
		10/03/19	90		0.19 U	0.19 U	0.45 U
		12/05/19	90		0.19 U	0.19 U	0.45 U
		03/09/20	90		0.19 U	0.19 U	0.45 U
		05/27/20	90		0.2 U	0.14 U	0.16 U
		08/19/20	90		0.2 U	0.14 U	0.16 U
		11/24/20	90		0.2 U	0.14 U	0.16 U
		02/24/21	90		0.2 U	0.14 U	0.16 U
		06/09/21	90		0.11 U	0.14 U	0.14 U
		08/30/21	90		0.11 U	0.14 U	0.14 U
		11/19/21	90		0.101 U	0.159 U	0.086 U
		03/11/22	90		0.24 U	0.13 U	0.23 U
		05/26/22	90		0.24 U	0.13 U	0.23 U
		11/11/22	90		0.24 U	0.13 U	0.23 U
		05/25/23	90		0.24 U	0.13 U	0.23 U
Atwood House		01/04/18	NA		0.37 UJ	0.2 U	0.46 U
		03/19/18	NA		0.37 U	0.2 U	0.46 U
	FD	03/19/18	NA		0.37 U	0.2 U	0.46 U
		07/31/18	NA		0.078 U	0.19 U	0.45 U
		09/28/18	NA		0.078 UJ	0.19 U	0.45 U
		01/04/19	NA		0.078 U	0.19 U	0.45 U
		03/21/19	NA		0.078 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

	Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
		Screening Levels (µg/L)		
MTCA Groundwater Method B Cancer [1]		NE	0.63	1.4
MTCA Groundwater Method B Non-Cancer [2]		800	32	80
Maximum contaminant level [3]		NE	5	NE
Location	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)	
Atwood House	06/17/19	NA	0.078 U	0.19 U	0.45 U
	12/06/19	NA	0.19 U	0.19 U	0.45 U
	03/09/20	NA	0.19 U	0.19 U	0.45 U
	05/27/20	NA	1 U	0.5 U	1 U
	08/19/20	NA	0.2 U	0.14 U	0.16 U
	11/24/20	NA	0.2 U	0.14 U	0.16 U
	02/24/21	NA	0.2 U	0.14 U	0.16 U
	06/16/21	NA	0.101 U	0.159 U	0.086 U
	08/30/21	NA	0.11 U	0.14 U	0.14 U
	11/19/21	NA	0.101 U	0.159 U	0.086 U
	03/11/22	NA	0.24 U	0.13 U	0.23 U
	05/26/22	NA	0.24 U	0.13 U	0.23 U
	11/11/22	NA	0.24 U	0.13 U	0.23 U
Atwood Shop	01/04/18	NA	0.37 UJ	0.2 U	0.46 U
	03/19/18	NA	0.37 U	0.2 U	0.46 U
	07/31/18	NA	0.078 U	0.19 U	0.45 U
	09/28/18	NA	0.078 UJ	0.19 U	0.45 U
	01/04/19	NA	0.078 UJ	0.19 UJ	0.45 UJ
	03/21/19	NA	0.078 U	0.19 U	0.45 U
	06/17/19	NA	0.078 U	0.19 U	0.45 U
Davey Well (W46)	07/27/16	NA	0.2 U	**18.3**	**5.3**
	09/08/16	NA	0.042 U	**22.3**	**5.8**
	02/24/17	NA	0.2 U	**17**	**4.6**
Freeman Store Well	01/21/13	NA	1 U	1 U	1 U
	07/27/16	NA	0.2 U	0.079 U	0.21 U
	08/19/16	NA	0.2 U	0.12 U	0.098 U
Lang Well	09/08/16	225	**1.3**	**0.16**	**220**
	10/18/16	225	0.2 U	0.079 U	**1.9**
	12/01/16	225	0.2 U	0.079 U	0.21 U
	02/24/17	225	0.2 U	0.079 U	0.21 U
	06/06/17	225	0.2 U	0.079 U	0.21 U
	09/12/17	225	0.37 U	0.2 U	0.46 U
	01/05/18	225	0.37 UJ	0.2 U	0.46 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
Lang Well	FD	01/05/18	225		0.37 U	0.2 U	0.46 U
		04/03/18	225		0.37 U	0.2 U	0.46 U
		06/27/18	225		0.078 U	0.19 U	0.45 U
	FD	06/27/18	225		0.078 U	0.19 U	0.45 U
		09/28/18	225		0.078 UJ	0.19 U	0.45 U
		01/15/19	225		0.078 U	0.19 U	0.45 U
		03/21/19	225		0.078 U	0.19 U	0.45 U
		06/17/19	225		0.078 U	0.19 U	0.45 U
		09/18/19	225		0.078 U	0.19 U	0.45 U
		12/05/19	225		0.19 U	0.19 U	0.45 U
		03/09/20	225		0.19 U	0.19 U	0.45 U
		05/27/20	225		0.2 U	0.14 U	0.16 U
		08/19/20	225		0.2 U	0.14 U	0.16 U
		11/24/20	225		0.2 U	0.14 U	0.16 U
		02/24/21	225		0.2 U	0.14 U	0.16 U
		06/09/21	225		0.11 U	0.14 U	0.14 U
		08/30/21	225		0.11 U	0.14 U	0.14 U
		11/19/21	225		0.101 U	0.159 U	0.086 U
		03/15/22	225		0.24 U	0.13 U	0.23 U
		05/26/22	225		0.24 U	0.13 U	0.23 U
		08/11/22	225		0.24 U	0.13 U	0.23 U
		11/11/22	225		0.24 U	0.13 U	0.23 U
		02/15/23	225		0.24 U	0.13 U	0.23 U
		05/26/23	225		0.24 U	0.13 U	0.23 U
		08/16/23	225		0.24 U	0.13 U	0.23 U
Lashaw Well (Agricultural)		09/08/16	NA		0.042 U	**9.1**	**1.7**
		06/06/17	NA		0.2 U	**3.3**	**0.22 J**
		09/12/17	NA		0.37 U	**1.5**	**0.66**
		06/27/18	NA		0.13 UJ	**2**	0.45 U
		10/02/18	NA		**0.11**	**4.1**	**2**
		06/17/19	NA		0.078 U	**2.8**	**2.7**
		10/03/19	NA		0.19 U	**4.3**	0.45 U
		05/27/20	NA		1 U	**8.4**	**0.48 J**
		08/19/20	NA		**0.27 J**	**18.2**	**1.2**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
Lashaw Well (Agricultural)		06/16/21	NA	**7.98**	**3.97**	**0.428**
		08/30/21	NA	0.11 U	**9**	**0.63 J**
		05/30/22	NA	0.56 UJ	**1.8**	0.23 U
		08/11/22	NA	0.24 U	**34.4**	**2.5**
		05/26/23	NA	**0.71 J**	**2.4**	0.23 U
		08/16/23	NA	0.24 U	**15.3**	**1.5**
Lashaw Well (Domestic)		11/30/16	150	0.2 U	**0.89**	0.21 U
		12/15/16	150	0.2 U	**0.7 J**	0.21 U
		02/24/17	150	0.2 U	**0.68**	0.21 U
		06/06/17	150	0.2 U	**0.77**	0.21 U
		09/12/17	150	0.37 U	**0.59**	0.46 U
		01/09/18	150	0.37 U	**0.89**	0.46 U
		03/19/18	150	0.37 U	**0.82**	0.46 U
	FD	03/19/18	150	0.37 U	**1.2**	0.46 U
		06/27/18	150	0.078 U	**0.27 J**	0.45 U
		10/02/18	150	0.078 U	**0.48**	0.45 U
		03/21/19	150	0.078 U	**0.77**	0.45 U
		06/17/19	150	0.078 U	**0.51**	0.45 U
		10/03/19	150	0.19 U	**0.29 J**	0.45 U
	FD	10/03/19	150	0.19 U	**0.51**	0.45 U
		12/05/19	150	0.19 U	**0.54**	0.45 U
		03/09/20	150	0.19 U	**0.63**	0.45 U
		05/27/20	150	0.2 U	**0.58**	0.16 U
		08/19/20	150	0.2 U	**0.29 J**	0.16 U
		11/24/20	150	0.2 U	**0.76**	0.16 U
		02/24/21	150	0.2 U	**0.49 J**	0.16 U
		06/09/21	150	0.11 U	**0.43**	0.14 U
		08/30/21	150	0.11 U	**0.22 J**	0.14 U
		11/19/21	150	0.101 U	**0.512**	0.086 U
	FD	11/19/21	150	0.101 U	**0.536**	0.086 U
		03/11/22	150	0.24 U	**0.44 J**	0.23 U
		05/30/22	150	0.24 U	**0.54**	0.23 U
		08/11/22	150	0.24 U	**0.57**	0.23 U
		11/11/22	150	0.24 U	**0.93 J**	0.23 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Lashaw Well (Domestic)		02/15/23	150	0.24 U	**0.91**	0.23 U
		05/26/23	150	0.24 U	**1**	0.23 U
		08/16/23	150	0.24 U	**0.64**	0.23 U
Marlow Well		07/27/16	82	0.2 U	**120**	**8.4**
		08/19/16	82	0.2 U	**123**	**9**
		09/08/16	82	**2.8**	**109**	**7.8**
		11/30/16	82	**0.23**	**143**	**8.8**
	FD	11/30/16	82	**0.26**	**142**	**8.7**
		02/28/17	82	**0.24 J**	**85.3**	**6.9**
		05/31/17	82	**1.6**	**124**	**9.3**
		09/19/17	82	**0.49 J**	**126**	**9.5**
	FD	09/19/17	82	0.37 U	**142**	**8.7**
		12/12/17	82	**0.66 J**	**134**	**9.4**
	FD	12/12/17	82	**0.71 J**	**139**	**8.3**
		04/10/18	82	0.37 U	**112**	**7.7**
		06/27/18	82	**0.16 J**	**116**	**8.5**
		09/28/18	82	0.078 UJ	**167 J**	**9.7 J**
		01/07/19	82	**0.52 J**	**123**	**8.4**
		03/21/19	82	0.078 U	**104**	**7.6**
		06/17/19	82	**0.57 J**	**109**	**7.7**
		09/18/19	82	0.078 U	0.19 U	0.45 U
		10/10/19	82	0.19 U	**120**	**8.2**
		12/11/19	82	**0.45 J**	**94.9**	**11.4**
	FD	12/11/19	82	**0.43 J**	**97.3**	**10.4**
		03/04/20	82	0.19 U	**73.6**	**6.3**
		05/27/20	82	0.2 U	**105**	**6.6**
		08/19/20	82	**0.25 J**	**85.5**	**6.1**
		11/24/20	82	0.2 U	**84.4**	**6.7**
		02/24/21	82	**0.3 J**	**69.5**	**4.8**
		06/09/21	82	**0.26**	**80.2**	**5.7**
	FD	06/09/21	82	**0.26**	**82.1**	**5.9**
		08/30/21	82	0.11 U	**35.9**	**3.8**
	FD	08/30/21	82	0.101 U	**34**	**3.81**
		11/17/21	82	**0.12 J**	**57.3**	**5.67**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
Marlow Well		03/11/22	82	0.24 U	**23.1**	**2.5**
		05/26/22	82	0.24 U	**20.8**	**2.8**
	FD	05/26/22	82	0.24 U	**21.5**	**2.7**
		08/11/22	82	0.24 U	**20.7**	**2.9**
	FD	08/11/22	82	0.24 U	**21.4**	**3**
		11/14/22	82	0.24 U	**12.3**	**2.1**
	FD	11/14/22	82	0.24 U	**12.1**	**2**
		02/15/23	82	0.24 U	**1.7**	**0.33 J**
		05/26/23	82	0.24 U	**7.6**	**1.2**
		08/16/23	82	0.24 U	**2.2**	**0.36 J**
MW-1D		08/04/16	93	0.2 U	0.12 U	0.098 U
		12/09/16	93	0.2 U	0.079 U	0.21 U
		02/28/17	93	**1.4**	0.079 U	0.21 U
		06/08/17	93	**0.61 J**	0.079 U	0.21 U
		10/10/17	93	0.37 U	0.2 U	0.46 U
		12/21/17	93	0.37 U	0.2 U	0.46 U
		03/15/18	93	0.37 U	0.2 U	0.46 U
		06/29/18	93	0.078 U	0.19 U	0.45 U
		09/27/18	93	0.078 U	0.19 U	0.45 U
		12/21/18	93	0.078 UJ	0.19 U	0.45 U
		03/18/19	93	0.078 U	0.19 U	0.45 U
		06/26/19	93	0.078 U	0.19 U	0.45 U
		09/18/19	93	0.078 U	0.19 U	0.45 U
		12/13/19	93	0.19 U	0.19 U	0.45 U
		03/04/20	93	0.19 U	0.19 U	0.45 U
		05/19/20	93	0.2 U	0.14 U	0.16 U
		08/10/20	93	0.2 U	0.14 U	0.16 U
		11/17/20	93	0.2 U	0.14 U	0.16 U
		02/16/21	93	0.2 U	0.14 U	0.16 U
		06/15/21	93	0.101 U	0.159 U	0.086 U
		08/26/21	93	0.101 U	0.159 U	0.086 U
		11/30/21	93	0.101 U	0.159 U	0.086 U
		03/17/22	93	0.24 U	0.13 U	0.23 U
		06/02/22	93	0.24 U	0.13 U	0.23 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
MW-1D		11/18/22	93	0.24 U	0.13 U	0.23 U
		05/25/23	93	0.24 U	0.13 U	0.23 U
MW-1S		08/04/16	20	0.2 U	0.12 U	0.098 U
		06/02/17	20	0.2 U	0.079 U	0.21 U
		10/12/17	20	0.37 U	0.2 U	0.46 U
		01/15/18	20	0.37 U	0.2 U	0.46 U
		03/16/18	20	0.37 U	0.2 U	0.46 U
		06/26/18	20	0.078 U	0.19 U	0.45 U
		09/25/18	20	0.078 UJ	0.19 U	0.45 U
		12/20/18	20	0.078 UJ	0.19 U	0.45 U
		03/13/19	20	0.078 U	0.19 U	0.45 U
		06/27/19	20	0.078 U	0.19 U	0.45 U
		09/14/19	20	0.078 U	0.19 U	0.45 U
		12/19/19	20	0.19 U	0.19 U	0.45 U
		03/02/20	20	0.19 U	0.19 U	0.45 U
		05/21/20	20	0.2 U	0.14 U	0.16 U
		08/19/20	20	0.2 U	0.14 U	0.16 U
		11/19/20	20	0.2 U	0.14 U	0.16 U
		06/15/21	20	0.101 U	0.159 U	0.086 U
		11/10/22	20	0.24 U	0.13 U	0.23 U
		05/25/23	20	0.24 U	0.13 U	0.23 U
MW-2D		08/03/16	140	0.2 U	0.12 U	0.098 U
	FD	08/03/16	140	0.2 U	0.12 U	0.098 U
		12/09/16	140	0.2 U	0.079 U	0.21 U
		02/28/17	140	0.2 U	0.079 U	0.21 U
		06/08/17	140	0.2 U	0.079 U	0.21 U
		09/14/17	140	0.37 U	0.2 U	0.46 U
		01/15/18	140	**0.78 J**	0.2 U	0.46 U
		03/15/18	140	0.37 U	**1.2**	0.46 U
		06/29/18	140	0.078 U	0.19 U	0.45 U
		09/27/18	140	0.078 U	0.19 U	0.45 U
		12/21/18	140	0.078 UJ	0.19 U	0.45 U
	FD	12/21/18	140	0.078 UJ	0.19 U	0.45 U
		03/18/19	140	0.078 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-2D		06/26/19	140	0.078 U	0.19 U	0.45 U
		09/18/19	140	0.078 U	0.19 U	0.45 U
		12/13/19	140	0.19 U	0.19 U	0.45 U
		03/04/20	140	0.19 U	**0.29 J**	0.45 U
		05/19/20	140	0.2 U	0.14 U	0.16 U
		08/10/20	140	0.2 U	0.14 U	0.16 U
		11/17/20	140	0.2 U	0.14 U	0.16 U
		02/16/21	140	0.2 U	0.14 U	0.16 U
		06/15/21	140	0.101 U	0.159 U	0.086 U
		08/26/21	140	0.101 U	0.159 U	0.086 U
		11/30/21	140	0.101 U	0.159 U	0.086 U
		03/17/22	140	0.24 U	0.13 U	0.23 U
		06/02/22	140	0.24 U	0.13 U	0.23 U
		11/18/22	140	0.24 U	0.13 U	0.23 U
		05/25/23	140	0.24 U	0.13 U	0.23 U
MW-3D		06/13/16	173	0.2 U	0.12 U	0.098 U
	FD	06/13/16	173	0.2 U	0.12 U	0.098 U
		12/10/16	173	0.2 U	0.079 U	0.21 U
		03/03/17	173	0.2 U	0.079 U	0.21 U
		06/09/17	173	0.2 U	0.079 U	0.21 U
		09/14/17	173	0.37 U	0.2 U	0.46 U
		01/15/18	173	0.37 U	0.2 U	0.46 U
		03/14/18	173	0.37 U	0.2 U	0.46 U
		06/29/18	173	0.078 U	0.19 U	0.45 U
		09/27/18	173	0.078 U	0.19 U	0.45 U
		12/18/18	173	0.078 U	0.19 U	0.45 U
	FD	12/18/18	173	0.078 U	0.19 U	0.45 U
		03/15/19	173	0.078 U	0.19 U	0.45 U
	FD	03/15/19	173	0.078 U	0.19 U	0.45 U
		06/26/19	173	0.078 U	0.19 U	0.45 U
	FD	06/26/19	173	0.078 U	0.19 U	0.45 U
		09/20/19	173	0.078 U	0.19 U	0.45 U
		12/10/19	173	0.19 U	0.19 U	0.45 U
		03/04/20	173	0.19 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-3D		05/18/20	173	0.2 U	0.14 U	0.16 U
		08/10/20	173	0.2 U	0.14 U	0.16 U
		11/18/20	173	0.2 U	0.14 U	0.16 U
		02/16/21	173	0.2 U	0.14 U	0.16 U
		06/07/21	173	0.11 U	0.14 U	0.14 U
		08/23/21	173	0.101 U	0.159 U	0.086 U
		11/22/21	173	0.101 U	0.159 U	0.086 U
		03/15/22	173	0.24 U	0.13 U	0.23 U
		05/27/22	173	0.24 U	0.13 U	0.23 U
		11/15/22	173	0.24 U	0.13 U	0.23 U
		05/23/23	173	0.24 U	0.13 U	0.23 U
MW-4D		08/04/16	185	0.2 U	**4.8**	**0.6**
	FD	08/04/16	185	0.2 U	**4.4**	**0.58**
		12/08/16	185	0.2 U	**6.7**	**0.85**
		03/03/17	185	0.2 U	**4.7**	**0.97**
		06/09/17	185	0.2 U	**5.1**	**0.89 J**
		10/05/17	185	0.37 U	**4.4**	**1**
		12/15/17	185	0.37 U	**6.4**	0.46 U
		03/12/18	185	0.37 U	**3.3**	**0.55**
		06/27/18	185	0.078 U	**1.8**	**1.2**
		09/26/18	185	0.078 UJ	**7.3 J**	0.45 UJ
		01/15/19	185	0.078 U	**6.5**	**1**
		03/19/19	185	0.078 U	**0.37 J**	0.45 U
		06/26/19	185	0.078 U	**3.2**	**0.84 J**
		09/17/19	185	0.078 U	**2.8**	**1**
		12/18/19	185	0.19 U	**7.9**	**1.3 J**
		03/04/20	185	0.19 U	**0.95**	**1**
		06/15/20	185	0.2 U	**0.41 J**	**1.2**
		08/17/20	185	0.2 U	**0.51**	**0.68 J**
		11/17/20	185	0.2 U	**0.84**	**0.33**
		08/30/21	185	0.182 UJ	0.159 U	0.086 U
		11/16/21	185	**0.149 J**	0.159 U	0.086 U
		03/16/22	185	0.24 U	**5.9**	**0.83**
		06/02/22	185	0.24 U	**6.8**	**1.1**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide
Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	**NE**	**0.63**	**1.4**
			MTCA Groundwater Method B Non-Cancer [2]	**800**	**32**	**80**
			Maximum contaminant level [3]	**NE**	**5**	**NE**
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-4D		08/15/22	185	0.24 U	**11.9**	**1.5**
		11/16/22	185	0.24 U	**12.1**	**1.4**
		02/17/23	185	0.24 U	**5.4**	**1.3**
		05/24/23	185	0.24 U	**0.22 J**	**0.28 J**
		08/15/23	185	0.24 U	**2.4**	**0.78**
MW-5D		08/03/16	145	0.2 U	0.12 U	0.098 U
		12/08/16	145	0.2 U	0.079 U	0.21 U
		03/01/17	145	0.2 U	0.079 U	0.21 U
		06/09/17	145	0.2 U	0.079 U	0.21 U
		10/10/17	145	0.37 U	0.2 U	0.46 U
		12/19/17	145	0.37 U	0.2 U	0.46 U
		03/13/18	145	0.37 U	0.2 U	0.46 U
		06/28/18	145	**0.082 J**	0.19 U	0.45 U
		09/26/18	145	0.078 U	0.19 U	0.45 U
		12/18/18	145	0.078 UJ	0.19 UJ	0.45 UJ
		03/18/19	145	0.078 U	0.19 U	0.45 U
		06/25/19	145	0.078 U	0.19 U	0.45 U
		09/17/19	145	0.078 U	0.19 U	0.45 U
		12/16/19	145	0.19 U	0.19 U	0.45 U
		03/03/20	145	0.19 U	0.19 U	0.45 U
		06/11/20	145	0.2 U	0.14 U	0.16 U
		08/10/20	145	0.2 U	0.14 U	0.16 U
		11/16/20	145	0.2 U	0.14 U	0.16 U
		02/19/21	145	0.2 U	0.14 U	0.16 U
		06/07/21	145	0.11 U	0.14 U	0.14 U
		08/24/21	145	0.101 U	0.159 U	0.086 U
		11/22/21	145	0.101 U	0.159 U	0.086 U
		03/15/22	145	0.24 U	0.13 U	0.23 U
		06/01/22	145	0.24 U	0.13 U	0.23 U
		11/16/22	145	0.24 U	0.13 U	0.23 U
		05/24/23	145	0.24 U	0.13 U	0.23 U
MW-6D		08/19/16	222	0.2 U	**2**	0.098 U
		12/08/16	222	0.2 U	**1.4**	0.21 U
	FD	12/08/16	222	0.2 U	**1.2**	0.21 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-6D		03/01/17	222		0.2 U	**2.5**	**0.35**
	FD	03/01/17	222		0.2 U	**2.5**	**0.33**
		06/15/17	222		0.2 U	**3.6**	**0.3 J**
		10/05/17	222		0.37 U	**2.7**	0.46 U
		12/20/17	222		0.37 U	**2.2**	0.46 U
		03/12/18	222		0.37 U	**2.4**	0.46 U
		06/27/18	222		0.078 U	**0.34 J**	0.45 U
	FD	06/27/18	222		0.078 U	**0.33 J**	0.45 U
		09/25/18	222		0.078 U	**1**	0.45 U
		03/14/19	222		0.078 U	**3.4**	0.45 U
		06/26/19	222		0.078 U	0.19 U	0.45 U
	FD	06/26/19	222		0.078 U	0.19 U	0.45 U
		09/19/19	222		0.078 U	0.19 U	0.45 U
		12/12/19	222		0.19 U	**0.48 J**	0.45 U
		03/03/20	222		0.19 U	**1.8**	0.45 U
		06/10/20	222		0.2 U	**1.1**	0.16 U
		08/11/20	222		0.2 U	0.14 U	0.16 U
		11/18/20	222		0.2 U	**3.9**	**0.38**
		02/18/21	222		0.2 U	**3.2**	0.16 U
		06/11/21	222		0.101 U	0.159 U	0.086 U
		08/24/21	222		0.101 U	0.159 U	0.086 U
		11/24/21	222		0.101 U	**4**	0.34 UJ
		03/08/22	222		0.24 U	**5.6**	**0.43 J**
		06/03/22	222		0.24 U	**4.3**	**0.3 J**
		08/15/22	222		0.24 U	**0.35 J**	0.23 U
		11/16/22	222		0.24 U	**3.9**	**0.27 J**
		02/16/23	222		0.24 U	**0.83**	0.23 U
		05/23/23	222		0.24 U	**0.92**	0.23 U
	FD	05/23/23	222		0.24 U	**1.3**	0.23 U
		08/16/23	222		0.24 U	**1.6**	0.23 U
MW-6S		08/04/16	40		0.2 U	0.12 U	0.098 U
		12/05/16	40		**0.4 J**	0.079 U	0.21 U
		03/02/17	40		0.2 U	0.079 U	0.21 U
		06/02/17	40		0.2 U	0.079 U	0.21 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
MW-6S		10/12/17	40	0.37 U	0.2 U	0.46 U
		12/14/17	40	0.37 U	0.2 U	0.46 U
		03/16/18	40	0.37 U	0.2 U	0.46 U
		06/26/18	40	0.078 U	0.19 U	0.45 U
		09/25/18	40	0.078 UJ	0.19 U	0.45 U
	FD	09/25/18	40	0.078 UJ	0.19 U	0.45 U
		12/20/18	40	0.078 UJ	0.19 U	0.45 U
		03/13/19	40	0.078 U	0.19 U	0.45 U
		06/27/19	40	0.078 U	0.19 U	0.45 U
		09/14/19	40	0.078 U	0.19 U	0.45 U
		12/19/19	40	0.19 U	0.19 U	0.45 U
	FD	12/19/19	40	0.19 U	0.19 U	0.45 U
		03/02/20	40	0.19 U	**1.3**	0.45 U
		06/11/20	40	0.2 U	0.14 U	0.16 U
		08/19/20	40	0.2 U	0.14 U	0.16 U
		11/19/20	40	0.2 U	0.14 U	0.16 U
		02/24/21	40	0.2 U	0.14 U	0.16 U
		06/17/21	40	0.11 U	0.14 U	0.14 U
		11/17/21	40	0.101 U	0.159 U	0.086 U
		03/17/22	40	0.24 U	0.13 U	0.23 U
		05/25/22	40	0.24 U	0.13 U	0.23 U
		11/10/22	40	0.24 U	0.13 U	0.23 U
		05/23/23	40	0.24 U	0.13 U	0.23 U
MW-6U		08/25/17	55	0.37 U	**15.3**	**2.2**
		10/12/17	55	0.37 U	**40.3**	**1.6**
		01/15/18	55	0.37 U	**62.3**	**2.6**
		03/12/18	55	0.37 U	**55.7**	**2.2**
		06/27/18	55	0.23 UJ	**51.1**	**2.1**
		09/25/18	55	**0.5 J**	**50.2 J**	**2.3 J**
		03/14/19	55	0.078 U	**26.6**	**1.2**
		06/26/19	55	**0.65 J**	**46.1**	**2.2**
		09/19/19	55	0.078 U	**82.3**	**2.7**
		12/12/19	55	**0.21 J**	**80.9**	**4.6**
		03/03/20	55	0.19 U	**84.9**	**4.1**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-6U		06/10/20	55		0.2 U	**112**	**4.1**
		08/11/20	55		0.2 U	**89.7**	**4.2**
	FD	08/11/20	55		0.2 U	**94.5**	**4.2**
		11/18/20	55		**0.32**	**125**	**5.1**
		02/18/21	55		0.2 U	**87.7**	**2.8**
		06/11/21	55		**0.126**	**85.8**	**4.27**
		08/24/21	55		0.101 U	**66.7**	**3.33**
		11/24/21	55		0.101 U	**88.1**	**4.6**
		03/08/22	55		0.24 U	**84.8**	**3.3**
		06/03/22	55		0.24 U	**68.1**	**2.8**
		08/15/22	55		0.24 U	**61.7**	**2.7**
		11/16/22	55		0.24 U	**60.1**	**2.4**
		02/16/23	55		0.24 U	**34.7**	**1.7**
		05/23/23	55		0.24 U	**20.3**	**0.98**
		08/16/23	55		0.24 U	**19.3**	**0.94**
MW-7S		06/13/16	43.5		0.2 U	**1.1**	**0.26 J**
		12/07/16	43.5		0.2 U	**1.4**	0.21 U
		03/01/17	43.5		0.2 U	**1.5**	0.21 U
		05/31/17	43.5		0.2 U	**1.3**	0.21 U
		10/10/17	43.5		0.37 U	**1.3**	0.46 U
		12/14/17	43.5		0.37 U	**1.5**	0.46 U
		03/16/18	43.5		0.37 U	0.2 U	0.46 U
		06/26/18	43.5		0.078 U	**0.38 J**	0.45 U
		09/25/18	43.5		0.078 UJ	**2**	0.45 U
		12/20/18	43.5		0.078 UJ	**1.3**	0.45 U
		03/13/19	43.5		0.078 U	**1**	0.45 U
		06/27/19	43.5		0.078 U	**1.5**	0.45 U
		09/14/19	43.5		0.078 U	**2.1**	0.45 U
		12/19/19	43.5		0.19 U	**1.1**	0.45 U
		03/02/20	43.5		0.19 U	**0.29 J**	0.45 U
		05/21/20	43.5		0.2 U	**3.4**	**0.38 J**
		08/19/20	43.5		0.2 U	**1.3**	0.16 U
		11/19/20	43.5		0.2 U	**0.43**	0.16 U
		02/24/21	43.5		0.2 U	**0.35 J**	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
MW-7S		06/17/21	43.5	0.11 U	**1.5**	0.14 U
		08/17/21	43.5	--	**0.847 J**	**0.0959 J**
		11/17/21	43.5	0.101 U	**0.25 J**	**0.194 J**
		03/17/22	43.5	0.24 U	0.13 U	0.23 U
		05/25/22	43.5	0.24 U	**0.58**	0.23 U
		08/16/22	43.5	0.24 U	**0.99**	0.23 U
		11/10/22	43.5	0.24 U	**0.2 J**	0.23 U
		02/15/23	43.5	0.24 U	**0.29 J**	**0.29 J**
		05/25/23	43.5	0.24 U	**0.16 J**	0.23 U
		08/16/23	43.5	0.24 U	**1.1**	**0.35 J**
MW-8S		06/13/16	49.5	0.2 U	**181**	**60**
		12/05/16	49.5	**0.26 J**	**274**	**61.5**
		03/03/17	49.5	**1.1**	**231**	**57.2**
		06/02/17	49.5	**1.2 J**	**190**	**49.5**
		10/12/17	49.5	**1**	**208**	**51.7**
		12/14/17	49.5	**1**	**222**	**46**
		03/16/18	49.5	0.37 U	**147**	**49.2**
		06/26/18	49.5	**0.27 J**	**121**	**43.1**
		09/25/18	49.5	0.078 UJ	**157**	**46.2**
		12/20/18	49.5	0.078 UJ	**147**	**43.5**
		03/13/19	49.5	0.078 U	**214**	**51.4**
		06/27/19	49.5	0.078 U	**133**	**42.6**
		09/14/19	49.5	0.078 U	**193**	**43.4**
		12/19/19	49.5	0.19 U	**167**	**38.9**
		03/02/20	49.5	0.19 U	**114**	**40.8**
		05/21/20	49.5	0.2 U	**185**	**42.8**
		08/19/20	49.5	**0.46 J**	**184**	**40.3**
		11/19/20	49.5	0.2 U	**132**	**35.1**
		02/24/21	49.5	0.2 U	**145**	**31.1**
		06/17/21	49.5	0.11 U	**129**	**24.9**
		08/17/21	49.5	--	**135 J**	**36.1 J**
		11/17/21	49.5	**0.214 J**	**153**	**36.2**
		03/17/22	49.5	0.24 U	**95.7**	**24.1**
		05/25/22	49.5	0.24 U	**42.3**	**12.6**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-8S		08/16/22	49.5	**0.29 J**	**86.8**	**26.3**
		11/10/22	49.5	0.24 U	**148 J**	**37.4**
		02/15/23	49.5	0.24 U	**130**	**42.2**
		05/23/23	49.5	0.24 U	**78.4**	**38.5**
		08/16/23	49.5	0.24 U	**67.8**	**34**
MW-9D		02/27/17	90	**0.36**	**132**	**5.6**
		06/26/17	90	**0.28 J**	**104**	**4.2**
		10/05/17	90	0.37 U	**78.4**	**3.6**
		12/20/17	90	**0.58 J**	**95.7**	**3.3**
		03/13/18	90	0.37 U	**101**	**3.8**
		06/28/18	90	**0.082 J**	**93.2**	**4.1**
	FD	06/28/18	90	**0.28 J**	**94.8**	**4.1**
		09/27/18	90	0.078 U	**96.6 J**	**4.1**
	FD	09/27/18	90	0.078 UJ	**101 J**	**4.2 J**
		12/18/18	90	0.078 U	**86.8**	**4.1**
	FD	12/18/18	90	0.078 U	**85.9**	**3.8**
		03/15/19	90	0.078 U	**124**	**4.5**
	FD	03/15/19	90	0.078 U	**135**	**4.6**
		06/24/19	90	0.078 U	**119**	**4.4**
		09/20/19	90	0.078 U	**74.4**	**4**
		12/13/19	90	0.19 U	**114**	**5.5**
		03/04/20	90	0.19 U	**86.8**	**4.9**
	FD	03/04/20	90	0.19 U	**85.1**	**4.9**
		05/18/20	90	0.2 U	**131**	**5.2**
	FD	05/18/20	90	0.2 U	**134**	**5.1**
		08/10/20	90	0.2 U	**98.7 J**	**4.7**
	FD	08/10/20	90	0.2 U	**97.1 J**	**4.8**
		11/18/20	90	0.2 U	**50.6**	**3**
	FD	11/18/20	90	0.2 U	**49.9**	**2.9**
		02/16/21	90	0.2 U	**74.3**	**2.6**
	FD	02/16/21	90	0.2 U	**75.5**	**2.6**
		06/10/21	90	0.11 U	**51.9**	**3.8**
	FD	06/10/21	90	0.11 U	**52.9**	**3.7**
		08/23/21	90	0.101 U	**17.6**	**2.72**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		Analytical Results (µg/L)		
MW-9D	FD	08/23/21	90		0.101 U	**17**	**2.71**
		11/22/21	90		0.101 U	**13.8**	**2.9**
	FD	11/22/21	90		0.101 U	**14.9**	**2.88**
		03/16/22	90		0.24 U	**57.4**	**4**
		05/27/22	90		0.24 U	**18**	**1.1**
		08/08/22	90		0.24 U	**21.6**	**2.7**
		11/17/22	90		0.24 U	**10.4**	**1.2**
	FD	11/17/22	90		0.24 U	**10.3**	**1.2**
		02/16/23	90		0.24 U	**2.9**	**0.71**
		05/23/23	90		0.24 U	**5.5**	**1.1**
		08/15/23	90		0.24 U	**11.2**	**0.99**
MW-9S		06/13/16	38.5		0.2 U	**506**	**95.1**
		12/05/16	38.5		**0.6 J**	**1,000**	**102**
		03/01/17	38.5		**1.4**	**540**	**74.4**
		06/02/17	38.5		**2.7 J**	**512**	**72.4**
		10/12/17	38.5		**2.4**	**557**	**72.5**
		12/14/17	38.5		**6.4**	**541**	**65.8**
		03/16/18	38.5		0.74 U	**289**	**53.4**
		06/26/18	38.5		**0.13 J**	**309**	**57**
		09/25/18	38.5		0.16 UJ	**408**	**54.8**
	FD	09/25/18	38.5		**0.27 J**	**409**	**58.3**
		12/21/18	38.5		0.078 UJ	**226**	**34.1**
	FD	12/21/18	38.5		0.078 UJ	**227**	**37.7**
		03/13/19	38.5		0.078 U	**326**	**51.4**
		06/27/19	38.5		0.078 U	**286**	**48.4**
		09/14/19	38.5		**0.97 J**	**347**	**54.5**
	FD	09/14/19	38.5		**0.88 J**	**331**	**55.1**
		12/19/19	38.5		0.19 U	**442**	**73.6**
	FD	12/19/19	38.5		0.19 U	**368**	**64.2**
		03/02/20	38.5		0.95 U	**252**	**45.8**
	FD	03/02/20	38.5		0.19 U	**209**	**48.5**
		05/21/20	38.5		0.2 U	**328**	**57.6**
	FD	05/21/20	38.5		0.2 U	**360**	**57.1**
		08/19/20	38.5		**0.71 J**	**345**	**52.5**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
MW-9S		11/19/20	38.5	**0.22**	**211**	**42.4**
		02/24/21	38.5	0.2 U	**157**	**31.5**
		06/17/21	38.5	0.11 U	**200**	**33.1**
		08/17/21	38.5	--	**271 J**	**53.2 J**
		11/17/21	38.5	**0.362 J**	**342**	**55.4**
		03/17/22	38.5	0.24 U	**64.5**	**15.4**
		05/25/22	38.5	0.24 U	**121 J**	**31.2 J**
	FD	05/25/22	38.5	0.24 U	**17.9 J**	**1.1 J**
		08/16/22	38.5	**0.46 J**	**155**	**32**
	FD	08/16/22	38.5	**0.53 J**	**172**	**37.7**
		11/10/22	38.5	0.24 U	**67.6 J**	**12.1**
		02/16/23	38.5	0.24 U	**150**	**37.4**
	FD	02/16/23	38.5	0.24 U	**158**	**38.4**
		05/23/23	38.5	0.24 U	**187**	**46.8**
	FD	05/23/23	38.5	0.24 U	**183**	**46.6**
MW-9U		08/25/17	66	**4.3**	**820**	**50.8**
		10/12/17	66	**2**	**639**	**17.3**
		01/15/18	66	**0.76 J**	**298**	**8.7**
		03/14/18	66	**0.79**	**772**	**17**
		06/28/18	66	**0.54 J**	**584 J**	**16.7**
	FD	06/28/18	66	**0.66 J**	**606**	**16.5**
		09/27/18	66	0.16 U	**618**	**14.8**
	FD	09/27/18	66	**0.42 J**	**623**	**16**
		12/18/18	66	0.078 U	**15.9**	0.45 U
	FD	12/18/18	66	**0.17 J**	**15.1**	0.45 U
		03/15/19	66	0.078 U	**810**	**21.8**
	FD	03/15/19	66	**0.42 J**	**754**	**21.2**
		06/24/19	66	0.078 U	**378**	**10.1**
	FD	06/24/19	66	0.078 U	**386**	**11**
		09/20/19	66	**1.6**	**514**	**14.4**
	FD	09/20/19	66	**1.4**	**528**	**14.9**
		12/13/19	66	0.19 U	**153**	**3.6 J**
		03/04/20	66	0.19 U	**492**	**17.9**
	FD	03/04/20	66	0.19 U	**498**	**19.1**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-9U		05/18/20	66		**0.4 J**	**653**	**19**
	FD	05/18/20	66		**0.49 J**	**529**	**17.7**
		08/10/20	66		**0.43 J**	**553**	**16.8**
	FD	08/10/20	66		0.2 U	**553**	**16.3**
		11/16/20	66		**0.88**	**281**	**8.8**
	FD	11/16/20	66		**0.76**	**337**	**8.7**
		02/16/21	66		**0.47 J**	**503**	**12**
	FD	02/16/21	66		**0.45 J**	**510**	**12.5**
		06/10/21	66		0.11 U	**520**	**12.1**
	FD	06/10/21	66		0.11 U	**507**	**11.6**
		08/23/21	66		0.101 U	**276**	**7.61**
	FD	08/23/21	66		0.101 U	**264**	**7.27**
		11/22/21	66		**0.272 J**	**347**	**10.5**
	FD	11/22/21	66		**0.25 J**	**347**	**10.3**
		03/16/22	66		0.24 U	**372 J**	**9.2**
		05/27/22	66		0.24 U	**203**	**6.9**
	FD	05/27/22	66		0.24 U	**208**	**7**
		08/08/22	66		0.24 U	**206**	**7.5**
		11/18/22	66		0.24 U	**193**	**6.8**
	FD	11/18/22	66		0.24 U	**203**	**6.6**
		02/16/23	66		0.24 U	**174**	**6.7**
		05/23/23	66		0.49 U	**184**	**6**
		08/15/23	66		0.24 U	**185**	**5.6**
MW-10S		08/04/16	71		0.2 U	**3.8**	**1.5**
		12/07/16	71		0.2 U	**25.8**	**1.1**
		03/03/17	71		**0.21**	**31.6**	**1.5**
		05/31/17	71		**0.66 J**	**34**	**2.3**
		10/12/17	71		0.37 U	**1.9**	0.46 U
		12/14/17	71		0.37 U	**0.86**	0.46 U
		03/16/18	71		0.37 U	**7.3**	0.46 U
		06/26/18	71		0.078 U	**0.46 J**	0.45 U
		09/25/18	71		0.078 UJ	**0.84**	0.45 U
		12/20/18	71		0.078 UJ	**0.42 J**	0.45 U
		03/13/19	71		0.078 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-10S		06/27/19	71	0.078 U	0.19 U	0.45 U
		09/14/19	71	0.078 U	**0.31 J**	0.45 U
		12/19/19	71	0.19 U	0.19 U	0.45 U
		03/02/20	71	0.19 U	**3.2**	0.45 U
		06/11/20	71	0.2 U	**0.61**	0.16 U
		08/19/20	71	0.2 U	**0.35 J**	0.16 U
		11/19/20	71	0.2 U	0.14 U	0.16 U
		06/17/21	71	0.11 U	0.14 U	0.14 U
		08/17/21	71	--	**1.2 J**	--
		11/17/21	71	0.101 U	0.159 U	0.086 U
		03/17/22	71	0.24 U	**1.2**	0.23 U
		05/25/22	71	0.24 U	**0.55**	0.23 U
		08/16/22	71	0.24 U	**0.74**	0.23 U
		11/10/22	71	0.24 U	**0.23 J**	0.23 U
		02/15/23	71	0.24 U	0.13 U	0.23 U
		05/24/23	71	0.24 U	0.13 U	0.23 U
		08/15/23	71	0.24 U	0.13 U	0.23 U
MW-11S		08/04/16	72.5	0.2 U	0.12 U	**0.54**
	FD	08/04/16	72.5	0.2 U	0.12 U	**0.38 J**
		12/07/16	72.5	0.2 U	0.079 U	**0.33**
		03/02/17	72.5	0.2 U	0.079 U	0.21 U
		05/31/17	72.5	0.2 U	0.079 U	0.21 U
		10/12/17	72.5	0.37 U	0.2 U	0.46 U
		12/14/17	72.5	0.37 U	0.2 U	0.46 U
		03/16/18	72.5	0.37 U	0.2 U	0.46 U
		06/26/18	72.5	0.078 U	0.19 U	0.45 U
		09/25/18	72.5	0.078 UJ	0.19 U	0.45 U
		12/20/18	72.5	0.078 UJ	0.19 U	0.45 U
		03/13/19	72.5	0.078 U	0.19 U	0.45 U
		06/27/19	72.5	0.078 U	0.19 U	0.45 U
		09/14/19	72.5	0.078 U	0.19 U	0.45 U
		12/19/19	72.5	0.19 U	0.19 U	0.45 U
		03/02/20	72.5	0.19 U	0.19 U	0.45 U
		06/11/20	72.5	0.2 U	0.14 U	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

		Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
			Screening Levels (µg/L)		
MTCA Groundwater Method B Cancer [1]			NE	0.63	1.4
MTCA Groundwater Method B Non-Cancer [2]			800	32	80
Maximum contaminant level [3]			NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**	
MW-11S		08/19/20	72.5	0.2 U	0.14 U	0.16 U
		11/19/20	72.5	0.2 U	0.14 U	0.16 U
		02/24/21	72.5	0.2 U	0.14 U	0.16 U
		06/17/21	72.5	0.11 U	0.14 U	0.14 U
		11/17/21	72.5	0.101 U	0.159 U	0.086 U
		03/17/22	72.5	0.24 U	0.13 U	0.23 U
		05/25/22	72.5	0.24 U	0.13 U	0.23 U
		11/10/22	72.5	0.24 U	0.13 U	0.23 U
		05/24/23	72.5	0.24 U	0.13 U	0.23 U
MW-12S		08/04/16	51	0.2 U	0.12 U	0.098 U
		12/05/16	51	**0.27 J**	0.079 U	0.21 U
		03/02/17	51	**0.2**	0.079 U	0.21 U
		05/31/17	51	0.2 U	0.079 U	0.21 U
		10/12/17	51	0.37 U	0.2 U	0.46 U
		12/14/17	51	0.37 U	0.2 U	0.46 U
		03/16/18	51	0.37 U	0.2 U	0.46 U
		06/26/18	51	0.078 U	0.19 U	0.45 U
		09/25/18	51	0.078 UJ	**0.97**	0.45 U
		12/20/18	51	0.078 UJ	0.19 U	0.45 U
		03/13/19	51	0.078 U	0.19 U	0.45 U
		06/27/19	51	0.078 U	0.19 U	0.45 U
		09/14/19	51	0.078 U	0.19 U	0.45 U
		12/19/19	51	0.19 U	0.19 U	0.45 U
		03/02/20	51	0.19 U	0.19 U	0.45 U
		06/11/20	51	0.2 U	0.14 U	0.16 U
		08/19/20	51	0.2 U	0.14 U	0.16 U
		11/19/20	51	0.2 U	0.14 U	0.16 U
		02/24/21	51	0.2 U	0.14 U	0.16 U
		06/17/21	51	0.11 U	0.14 U	0.14 U
		11/17/21	51	0.101 U	0.159 U	0.086 U
		03/17/22	51	0.24 U	0.13 U	0.23 U
		05/25/22	51	0.24 U	0.13 U	0.23 U
		11/10/22	51	0.24 U	0.13 U	0.23 U
		05/23/23	51	0.24 U	0.13 U	0.23 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-12S	FD	05/23/23	51	0.24 U	0.13 U	0.23 U
MW-13S		02/28/17	26	0.2 U	0.079 U	0.21 U
		05/31/17	26	0.2 U	0.079 U	0.21 U
		10/12/17	26	0.37 U	0.2 U	0.46 U
		12/11/17	26	0.37 U	0.2 U	0.46 U
		03/14/18	26	0.37 U	0.2 U	0.46 U
		06/25/18	26	0.078 U	0.19 U	0.45 U
		09/24/18	26	0.078 U	0.19 U	0.45 U
		01/10/19	26	0.078 U	0.19 U	0.45 U
		03/19/19	26	0.078 U	0.19 U	0.45 U
		06/28/19	26	0.078 UJ	**0.56 J**	0.45 UJ
	FD	06/28/19	26	0.078 UJ	**0.35 J**	0.45 UJ
		09/16/19	26	0.078 U	0.19 U	0.45 U
		12/18/19	26	0.19 U	0.19 U	0.45 U
		03/09/20	26	0.19 U	0.19 U	0.45 U
		05/21/20	26	0.2 U	0.14 U	0.16 U
		08/12/20	26	0.2 U	0.14 U	0.16 U
		11/17/20	26	0.2 U	0.14 U	0.16 U
		02/23/21	26	0.2 U	0.14 U	0.16 U
		06/15/21	26	0.101 U	0.159 U	0.086 U
		08/30/21	26	0.101 U	0.159 U	0.086 U
		11/15/21	26	0.101 U	0.159 U	0.086 U
		03/15/22	26	0.24 U	0.13 U	0.23 U
		05/26/22	26	0.24 U	0.13 U	0.23 U
		11/10/22	26	0.24 U	0.13 U	0.23 U
		05/24/23	26	0.24 U	**0.46 J**	**0.73**
	FD	05/24/23	26	0.24 U	**0.46 J**	**0.72**
MW-14D		02/27/17	127	0.2 U	0.079 U	0.21 U
		06/09/17	127	0.2 U	0.079 U	0.21 U
		09/14/17	127	0.37 U	0.2 U	0.46 U
		12/15/17	127	0.37 U	0.2 U	0.46 U
		03/13/18	127	0.37 U	0.2 U	0.46 U
		06/28/18	127	**0.15 J**	0.19 U	0.45 U
		09/26/18	127	0.078 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-14D		01/14/19	127	0.078 U	0.19 U	0.45 U
		03/18/19	127	0.078 U	0.19 U	0.45 U
		06/26/19	127	0.078 U	0.19 U	0.45 U
		09/19/19	127	0.078 U	0.19 U	0.45 U
		12/10/19	127	0.19 U	0.19 U	0.45 U
		03/03/20	127	0.19 U	0.19 U	0.45 U
		05/19/20	127	0.2 U	0.14 U	0.16 U
		08/10/20	127	0.2 U	0.14 U	0.16 U
		11/17/20	127	0.2 U	0.14 U	0.16 U
		02/19/21	127	0.2 U	0.14 U	0.16 U
		06/10/21	127	0.11 U	0.14 U	0.14 U
		08/23/21	127	0.101 U	0.159 U	0.086 U
		11/22/21	127	0.101 U	0.159 U	0.086 U
		03/16/22	127	0.24 U	0.13 U	0.23 U
		05/27/22	127	0.24 U	0.13 U	0.23 U
		08/15/22	127	0.24 U	0.13 U	0.23 U
		11/15/22	127	0.24 U	**0.22 J**	**0.24 J**
		02/15/23	127	0.24 U	0.13 U	**0.97**
	FD	02/15/23	127	0.24 U	**0.25 J**	**1**
		05/23/23	127	0.24 U	0.13 U	**0.88**
		08/15/23	127	0.24 U	0.13 U	**0.89**
	FD	08/15/23	127	0.24 U	0.13 U	**0.96**
MW-15D		07/07/17	126	0.2 U	**8.9**	**0.48 J**
		10/02/17	126	0.37 U	**9.7**	**0.56**
		12/20/17	126	0.37 U	**9.7**	0.46 U
		03/12/18	126	0.37 U	**9.5**	**0.48**
		06/28/18	126	**0.12 J**	**8.7**	0.45 U
		09/26/18	126	0.078 U	**10.1**	0.45 U
		03/14/19	126	0.078 U	**10.7**	**0.55 J**
		06/25/19	126	0.078 U	**7.9**	0.45 U
		09/17/19	126	0.078 U	**7.5**	0.45 U
		12/09/19	126	0.19 U	**7.9**	0.45 U
		03/03/20	126	0.19 U	**8.2**	**0.49 J**
		05/21/20	126	0.2 U	**10**	**0.49 J**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-15D		08/10/20	126		0.2 U	**9.5**	**0.45 J**
		11/16/20	126		0.2 U	**8.1**	**0.42**
		02/19/21	126		0.2 U	**8.4 J**	0.16 U
		06/10/21	126		0.11 U	**7.7**	**0.39**
		08/19/21	126		--	**7.04 J**	**0.493 J**
		11/23/21	126		0.101 U	**6.58**	**0.466 J**
		03/08/22	126		0.24 U	**7.9**	**0.42 J**
		05/30/22	126		0.24 U	**8.2**	**0.46 J**
		08/10/22	126		0.24 U	**7.8**	**0.47 J**
		11/15/22	126		0.24 U	**8.4**	**0.48 J**
		02/16/23	126		0.24 U	**7.9**	**0.49 J**
	FD	02/16/23	126		0.24 U	**7.9**	**0.49 J**
		05/25/23	126		0.24 U	**9.2**	**0.6**
		08/16/23	126		0.24 U	**9**	**0.58**
MW-16D		03/02/17	97.5		0.2 U	0.079 U	0.21 U
	FD	03/02/17	97.5		0.2 U	0.079 U	0.21 U
		06/07/17	97.5		0.2 U	0.079 U	0.21 U
	FD	06/07/17	97.5		0.2 U	0.079 U	0.21 U
		10/02/17	97.5		0.37 U	0.2 U	0.46 U
		12/20/17	97.5		0.37 U	0.2 U	0.46 U
		03/12/18	97.5		0.37 U	0.2 U	0.46 U
		06/29/18	97.5		0.078 U	0.19 U	0.45 U
	FD	06/29/18	97.5		0.078 U	0.19 U	0.45 U
		09/26/18	97.5		0.078 U	0.19 U	0.45 U
		03/19/19	97.5		0.078 U	0.19 U	0.45 U
		06/25/19	97.5		0.078 U	0.19 U	0.45 U
		09/17/19	97.5		0.078 U	0.19 U	0.45 U
		12/12/19	97.5		0.19 U	0.19 U	0.45 U
		03/03/20	97.5		0.19 U	0.19 U	0.45 U
		05/18/20	97.5		0.2 U	0.14 U	0.16 U
		08/12/20	97.5		0.2 U	0.14 U	0.16 U
		11/16/20	97.5		0.2 U	0.14 U	0.16 U
		02/18/21	97.5		0.2 U	0.14 U	0.16 U
		06/09/21	97.5		0.11 U	0.14 U	0.14 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-16D		11/23/21	97.5	0.101 U	0.159 U	0.086 U
		03/10/22	97.5	0.24 U	0.13 U	0.23 U
		05/30/22	97.5	0.24 U	0.13 U	0.23 U
		08/10/22	97.5	0.24 U	0.13 U	0.23 U
		11/15/22	97.5	0.24 U	0.13 U	0.23 U
		02/16/23	97.5	0.24 U	**0.3 J**	0.23 U
		05/25/23	97.5	0.24 U	0.13 U	0.23 U
	FD	05/25/23	97.5	0.24 U	0.13 U	0.23 U
		08/15/23	97.5	0.24 U	0.13 U	0.23 U
MW-17D		04/13/17	204	0.2 U	0.079 U	0.21 U
		06/14/17	214	**7.7**	0.079 U	0.21 U
		10/10/17	214	**3**	0.2 U	0.46 U
		12/21/17	214	**2.2**	0.2 U	0.46 U
		03/13/18	214	**1.3**	0.2 U	0.46 U
		06/28/18	214	**1**	0.19 U	0.45 U
		09/26/18	214	**0.95 J**	0.19 U	0.45 U
		12/18/18	214	**0.41 J**	0.19 U	0.45 U
		03/20/19	214	**0.46 J**	0.19 U	0.45 U
	FD	03/20/19	214	**0.54 J**	0.19 U	0.45 U
		06/25/19	214	0.078 U	0.19 U	0.45 U
		09/19/19	214	0.078 U	0.19 U	0.45 U
		12/12/19	214	0.19 U	0.19 U	0.45 U
		03/02/20	214	0.19 U	0.19 U	0.45 U
		06/09/20	214	0.2 U	0.14 U	0.16 U
		08/10/20	214	0.2 U	0.14 U	0.16 U
		11/16/20	214	0.2 U	0.14 U	0.16 U
		02/23/21	214	0.2 U	0.14 U	0.16 U
		06/07/21	214	0.11 U	0.14 U	0.14 U
		08/24/21	214	**0.107 J**	0.159 U	0.086 U
		11/26/21	214	0.101 U	0.159 U	0.086 U
		03/16/22	214	0.24 U	0.13 U	0.23 U
		05/30/22	214	0.24 U	0.13 U	0.23 U
		08/11/22	214	0.24 U	0.13 U	0.23 U
		08/18/22	214	--	--	0.44 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
MW-17D		02/15/23	214	0.24 U	0.13 U	0.23 U
		05/24/23	214	0.24 U	0.13 U	0.23 U
		08/15/23	214	0.24 U	0.13 U	0.23 U
MW-18D		03/02/17	154	0.2 U	0.079 U	0.21 U
		06/07/17	154	0.2 U	0.079 U	0.21 U
		10/02/17	154	0.37 U	0.2 U	0.46 U
		12/15/17	154	0.37 U	0.2 U	0.46 U
		03/12/18	154	0.37 U	0.2 U	0.46 U
		06/29/18	165	0.078 U	0.19 U	0.45 U
		09/26/18	165	0.078 UJ	0.19 UJ	0.45 UJ
		03/19/19	165	0.078 U	0.19 U	0.45 U
		06/25/19	165	0.078 U	0.19 U	0.45 U
		09/17/19	154	0.078 U	0.19 U	0.45 U
		12/12/19	154	0.19 U	0.19 U	0.45 U
		03/03/20	154	0.19 U	0.19 U	0.45 U
		05/21/20	154	0.2 U	0.14 U	0.16 U
		08/12/20	154	0.2 U	0.14 U	0.16 U
		11/16/20	165	0.2 U	0.14 U	0.16 U
		02/18/21	165	0.2 U	0.14 U	0.16 U
		06/09/21	165	0.11 U	0.14 U	0.14 U
		08/24/21	165	0.101 U	0.159 U	0.086 U
		11/23/21	165	0.101 U	0.159 U	0.086 U
		03/10/22	165	0.24 U	0.13 U	0.23 U
		05/30/22	165	0.24 U	0.13 U	0.23 U
		11/15/22	165	0.24 U	0.13 U	0.23 U
		05/25/23	165	0.24 U	0.13 U	0.23 U
MW-19D		05/10/17	167	**0.25**	**334**	**27.3**
		06/15/17	167	**1.1 J**	**412**	**25**
		10/05/17	165	**0.97**	**329**	**18.9**
	FD	10/05/17	165	**0.89**	**345**	**21.7**
		12/21/17	165	**2.6**	**402**	**19.4**
		03/13/18	165	**0.42**	**423**	**18.9**
		06/28/18	165	**0.44 J**	**443**	**20.9**
		09/26/18	165	0.16 U	**448**	**17**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-19D		01/14/19	165	**1.1**	**509**	**21.4**
		03/20/19	165	**0.23 J**	**386**	**21**
	FD	03/20/19	165	**0.26 J**	**400**	**21.5**
		06/27/19	165	0.078 U	**401**	**26.2**
	FD	06/27/19	165	0.078 U	**408**	**26.4**
		09/17/19	167	**1.4**	**455**	**24.2**
		12/10/19	167	**0.77 J**	**433**	**34.9**
		03/05/20	167	0.38 U	**346**	**24.3**
	FD	03/05/20	167	0.19 U	**353**	**29.1**
		06/11/20	167	**0.42 J**	**372**	**25.6**
		08/11/20	165	**0.79 J**	**445**	**24.6**
	FD	08/11/20	165	**0.5 J**	**454**	**25.8**
		11/18/20	167	**1.2**	**376**	**26.4**
	FD	11/18/20	167	**1.2**	**385**	**26.5**
		02/17/21	167	**0.44 J**	**441**	**20.2**
	FD	02/17/21	167	**0.42 J**	**440**	**19.8**
		06/14/21	167	**0.316**	**76**	**23.9**
		08/19/21	167	--	**383 J**	**20.6 J**
		11/26/21	167	0.505 U	**102 J**	**7.71 J**
	FD	11/26/21	167	**0.2 J**	**387 J**	**23.2 J**
		03/08/22	167	0.24 U	**474**	**26.6**
	FD	03/08/22	167	0.24 U	**444**	**26.9**
		06/01/22	167	0.24 U	**260**	**16.7**
		08/10/22	167	0.49 U	**221**	**13.1**
		11/17/22	167	0.24 U	**218**	**13.3**
		02/14/23	167	0.49 U	**113**	**8.6**
		05/22/23	167	0.24 U	**70.7**	**6.4**
		08/15/23	167	0.24 U	**89.6**	**5.3**
MW-20D		07/07/17	140	**0.29 J**	**32.1**	**1.3**
		10/05/17	140	0.37 U	**29.3**	**1.5**
		12/14/17	140	0.37 U	**38.2**	**0.93 J**
		03/15/18	140	0.37 U	**29.5**	**1.3**
		06/28/18	140	**0.091 J**	**27.7**	**1.1**
		09/26/18	140	0.078 U	**30.7**	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-20D	FD	09/26/18	140		0.078 U	**28.8**	0.45 U
		01/15/19	140		0.078 U	**27.6**	**1.1**
		03/15/19	140		0.078 U	**35.6**	**1.3 J**
		06/25/19	140		**0.5 J**	**23.9**	**0.92 J**
		09/18/19	140		0.078 U	**25.5**	0.45 U
	FD	09/18/19	140		0.078 U	**27.7**	0.45 U
		12/09/19	140		0.19 U	**23.7**	**0.97 J**
		03/03/20	140		0.19 U	**27.7**	**1.2**
		06/11/20	140		0.2 U	**25.9**	**1**
		08/12/20	140		0.2 U	**25.5**	**0.99 J**
		11/17/20	140		0.2 U	**20**	**0.78**
		02/19/21	140		0.2 U	**22.6**	**0.69 J**
		06/07/21	140		0.11 U	**21.9**	**0.69**
		08/24/21	140		0.101 U	**17.8**	**0.832**
		11/22/21	140		0.101 U	**18.8**	**0.892**
		03/15/22	140		0.24 U	**19.8**	**0.78**
		06/02/22	140		0.24 U	**20.4**	**0.84**
		08/10/22	140		0.24 U	**18.8**	**0.76 J**
		11/16/22	140		0.24 U	**18.7**	**0.79**
		02/17/23	140		0.24 U	**6.1**	**1.4**
		05/24/23	140		0.24 U	**0.47 J**	**0.43 J**
		08/16/23	140		0.24 U	**16.3**	**0.75**
MW-21D		07/11/17	120		0.2 U	0.079 U	0.21 U
		10/02/17	120		0.37 U	0.2 U	0.46 U
		12/14/17	120		0.37 U	0.2 U	0.46 U
		04/03/18	120		0.37 U	0.2 U	0.46 U
		06/29/18	120		**0.11 J**	0.19 U	0.45 U
		09/26/18	120		0.078 UJ	0.19 UJ	0.45 UJ
		03/14/19	120		0.078 U	0.19 U	0.45 U
		06/25/19	120		0.078 U	0.19 U	0.45 U
		09/17/19	120		0.078 U	0.19 U	0.45 U
		12/09/19	120		0.19 U	0.19 U	0.45 U
		03/06/20	120		0.19 U	0.19 U	0.45 U
		05/19/20	120		0.2 U	0.14 U	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	**NE**	**0.63**	**1.4**
			MTCA Groundwater Method B Non-Cancer [2]	**800**	**32**	**80**
			Maximum contaminant level [3]	**NE**	**5**	**NE**
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-21D		08/17/20	120	0.2 U	0.14 U	0.16 U
		11/16/20	120	0.2 U	0.14 U	0.16 U
		02/16/21	120	0.2 U	0.14 U	0.16 U
		06/09/21	120	0.11 U	0.14 U	0.14 U
		11/23/21	120	0.101 U	0.159 U	0.086 U
		06/01/22	120	0.24 U	0.13 U	0.23 U
		11/15/22	120	0.24 U	0.13 U	0.23 U
		05/25/23	120	0.24 U	0.13 U	0.23 U
MW-22S		12/12/17	10.5	0.37 U	**2.2**	0.46 U
MW-24S		12/21/18	46	0.078 UJ	**6.9**	**6.5**
		03/13/19	46	0.078 U	**66.5**	**41.7**
		06/27/19	46	0.078 U	**63.4**	**37.1**
		10/04/19	46	**1.4**	**107**	**54.1**
		12/19/19	46	0.19 U	**58.6**	**24.2**
		03/02/20	46	0.19 U	**102**	**53.3**
		05/21/20	46	0.2 U	**101**	**47.8**
		08/19/20	46	**2.1**	**78.2**	**60.4**
		11/19/20	46	0.2 U	**93.4**	**56.3**
		02/24/21	46	0.2 U	**120**	**43.7**
		06/17/21	46	0.11 U	**109**	**41.9**
		08/17/21	46	--	**119 J**	**62.4 J**
		11/17/21	46	**0.169 J**	**112**	**56.4**
		03/17/22	46	0.24 U	**92.2**	**42.3**
		05/25/22	46	0.24 U	**122**	**52.4**
		08/16/22	46	**0.34 J**	**87.6**	**45.8**
		11/10/22	46	0.24 U	**28.7 J**	**13.1**
		02/15/23	46	0.24 U	**24.2**	**28.5**
	FD	02/15/23	46	0.24 U	**20.1**	**24.9**
		05/23/23	46	0.24 U	**33.5**	**44.1**
		08/16/23	46	0.24 U	**13.9**	**27.4**
MW-25S		12/21/18	45	0.078 UJ	**52.9**	**24.9**
		03/13/19	45	0.078 U	**34**	**8.9**
		06/27/19	45	0.078 U	**119**	**44.7**
		10/04/19	45	0.19 U	**127**	**47.2**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-25S		12/19/19	45	0.19 U	**225**	**61.2**
MW-26		05/23/19	225	0.078 U	0.19 U	0.45 U
	FD	05/23/19	225	0.078 U	0.19 U	0.45 U
		03/05/20	225	0.19 U	0.19 U	0.45 U
		06/15/20	225	0.2 U	0.14 U	0.16 U
		08/17/20	225	0.2 U	0.14 U	0.16 U
		11/17/20	225	0.2 U	0.14 U	0.16 U
		02/23/21	225	0.2 U	0.14 U	0.16 U
		06/14/21	225	0.101 U	0.159 U	0.086 U
		08/26/21	225	0.101 U	0.159 U	0.086 U
		11/29/21	225	0.101 U	0.159 U	0.086 U
		03/16/22	225	0.24 U	0.13 U	0.23 U
		06/03/22	225	0.24 U	0.13 U	0.23 U
		11/16/22	225	0.24 U	0.13 U	0.23 U
		02/17/23	225	0.24 U	0.13 U	0.23 U
		05/24/23	225	0.24 U	0.13 U	0.23 U
		08/16/23	225	0.24 U	0.13 U	0.23 U
MW-27		07/25/19	233	0.078 U	**15.6**	**5.7**
		08/30/19	238	0.078 U	**11.7**	**5.6**
		12/10/19	238	0.19 U	**3.3**	**2.6 J**
		12/16/19	238	0.19 U	**3.9**	**2.9 J**
		03/05/20	233	0.19 U	**1.6**	**1.1**
	FD	03/05/20	233	0.19 U	**2**	**1.5**
		06/12/20	233	0.2 U	**1.3**	**0.67 J**
	FD	06/12/20	233	0.2 U	**1.3**	**0.69 J**
		08/11/20	238	0.2 U	**1.6**	**0.69 J**
		11/18/20	238	0.2 U	**1.4**	**0.63**
		02/17/21	238	0.2 U	**1.3**	0.16 U
		06/14/21	238	0.101 U	**0.17**	**0.484**
		08/19/21	233	--	**1.09 J**	**0.535 J**
		11/26/21	233	0.101 U	**1.06**	**0.536**
		03/08/22	233	0.24 U	**1.1**	**0.41 J**
	FD	03/08/22	233	0.24 U	**1**	**0.4 J**
		06/01/22	233	0.24 U	**1.1**	**0.49 J**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-27		08/10/22	233	0.24 U	**0.97**	**0.39 J**
		11/17/22	233	0.24 U	**0.97**	**0.52**
		02/14/23	233	0.24 U	**0.65**	**0.24 J**
		05/22/23	233	0.24 U	**0.75**	**0.27 J**
		08/15/23	233	0.24 U	**0.91**	**0.29 J**
MW-28		07/18/19	180	0.078 U	**314**	**15.1**
		12/10/19	180	**0.69 J**	**429**	**27.9**
		03/05/20	180	0.38 U	**347**	**21.2**
		06/12/20	180	0.39 U	**391**	**19**
	FD	06/12/20	180	**1 J**	**417**	**20.6**
		08/11/20	185	**0.75 J**	**391**	**21**
	FD	08/11/20	185	**1.1**	**413 J**	**21**
		11/18/20	185	**1.1**	**363**	**23.1**
	FD	11/18/20	185	**1**	**385**	**23.5**
		02/17/21	185	**0.51 J**	**386**	**16.6**
		06/14/21	185	**0.308**	**359**	**19.5**
		08/19/21	180	--	**157 J**	**23.1 J**
		11/29/21	180	**0.251 J**	**330**	**25.4**
		03/08/22	180	0.24 U	**379 J**	**27.7**
	FD	03/08/22	180	0.24 U	**214 J**	**27.1**
		06/01/22	180	0.24 U	**310**	**19.8**
		08/10/22	180	0.49 U	**288**	**15.8**
		11/17/22	180	0.24 U	**253**	**15.8**
		02/14/23	180	0.24 U	**188**	**10.6**
		05/22/23	180	0.49 U	**226**	**10.8**
		08/15/23	180	0.24 U	**87.3**	**4.9**
	FD	08/15/23	180	0.24 U	**88.1**	**5**
MW-29		07/19/19	120	0.078 U	**399 J**	**22.1**
		12/16/19	120	0.19 U	**412**	**87.2**
		03/05/20	120	0.19 U	**105**	**24.8**
		06/12/20	120	**0.5 J**	**220 J**	**47.6**
		08/11/20	130	**0.4 J**	**241**	**68.1**
		11/18/20	130	**0.83**	**237**	**71.9**
	FD	11/18/20	130	**0.67**	**261**	**69.3**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
MW-29		02/17/21	130		**0.28 J**	**220**	**40.9**
	FD	02/17/21	130		**0.28 J**	**188**	**40.9**
		06/14/21	130		**0.275**	**338**	**48.4**
		08/19/21	130		--	**341 J**	**20.2 J**
		11/29/21	130		**0.176 J**	**255**	**52.1**
		03/08/22	130		0.24 U	**87.5**	**8.4**
	FD	03/08/22	130		0.24 U	**69**	**6.3**
		06/01/22	130		**0.48 J**	**219**	**17.4**
		08/10/22	130		0.49 U	**229**	**14.5**
		11/17/22	130		0.24 U	**212**	**13.5**
		02/14/23	130		0.24 U	**122**	**7.6**
		05/22/23	130		0.24 U	**119**	**6.5**
		08/15/23	130		0.24 U	**65.9**	**4.2**
	FD	08/15/23	130		0.24 U	**67.9**	**4.4**
MW-30		12/16/19	80		0.19 U	0.19 U	0.45 U
		03/05/20	80		0.19 U	**0.43 J**	0.45 U
		06/12/20	80		0.2 U	0.14 U	0.16 U
		08/11/20	90		0.2 U	0.14 U	0.16 U
		11/18/20	90		0.2 U	0.14 U	0.16 U
		02/17/21	90		0.2 U	0.14 U	0.16 U
	FD	02/17/21	90		0.2 U	**0.18 J**	0.16 U
		06/14/21	90		0.101 U	0.159 U	0.086 U
		11/29/21	90		0.101 U	0.159 U	0.086 U
		03/08/22	90		0.24 U	0.13 U	0.23 U
	FD	03/08/22	90		0.24 U	0.13 U	0.23 U
		06/01/22	90		0.24 U	0.13 U	0.23 U
		08/10/22	90		0.24 U	0.13 U	0.23 U
		11/17/22	90		0.24 U	**0.14 J**	0.23 U
		02/14/23	90		0.24 U	**8.2**	**0.63**
		05/22/23	90		0.24 U	**1.4**	0.23 U
		08/15/23	90		0.24 U	**0.14 J**	0.23 U
MW-31		08/07/19	380		0.078 U	0.19 U	0.45 U
		12/16/19	380		0.19 U	0.19 U	0.45 U
		03/06/20	380		0.19 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
MW-31		06/10/20	380	0.2 U	0.14 U	0.16 U
		08/11/20	382.5	0.2 U	0.14 U	0.16 U
		11/18/20	382.5	0.2 U	0.14 U	0.16 U
		02/17/21	382.5	0.2 U	0.14 U	0.16 U
		06/11/21	382.5	0.101 U	0.159 U	0.086 U
		08/25/21	382.5	0.101 U	0.159 U	0.086 U
		11/26/21	382.5	0.101 U	0.159 U	0.086 U
		03/09/22	382.5	0.24 U	0.13 U	0.23 U
		06/03/22	382.5	0.24 U	0.13 U	0.23 U
		11/17/22	382.5	0.24 U	0.13 U	0.23 U
		05/23/23	382.5	0.24 U	**0.16 J**	0.23 U
MW-32		07/25/19	284	0.078 U	0.19 U	0.45 U
		12/16/19	284	0.19 U	0.19 U	0.45 U
		03/06/20	284	0.19 U	0.19 U	0.45 U
		06/10/20	284	0.2 U	0.14 U	0.16 U
		08/11/20	298	0.2 U	0.14 U	0.16 U
		11/18/20	298	0.2 U	0.14 U	0.16 U
		02/17/21	284	0.2 U	0.14 U	0.16 U
		06/11/21	284	0.101 U	0.159 U	0.086 U
		08/25/21	284	0.101 U	0.159 U	0.086 U
		11/26/21	284	0.101 U	0.159 U	0.086 U
		03/09/22	284	0.24 U	0.13 U	0.23 U
		06/03/22	284	0.24 U	0.13 U	0.23 U
		11/17/22	284	0.24 U	0.13 U	0.23 U
		05/23/23	284	0.24 U	**0.14 J**	0.23 U
MW-33		07/24/19	264	0.078 U	**11.2**	**1**
		08/30/19	264	0.078 U	**1.1**	0.45 U
		12/17/19	264	0.19 U	0.19 U	0.45 U
		03/06/20	264	0.19 U	0.19 U	0.45 U
	FD	03/06/20	264	0.19 U	0.19 U	0.45 U
		06/10/20	264	0.2 U	0.14 U	0.16 U
		08/11/20	264	**0.34 J**	0.14 U	0.16 U
		11/18/20	264	**0.33**	0.14 U	0.16 U
		02/18/21	264	0.2 U	0.14 U	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	Notes	Sample Date	Depth (feet)	Analytical Results (µg/L)		
MW-33		06/11/21	264	0.101 U	0.159 U	0.086 U
		08/25/21	264	0.101 U	0.159 U	0.086 U
		11/26/21	264	0.101 U	0.159 U	0.086 U
		03/09/22	264	0.24 U	0.13 U	0.23 U
		06/03/22	264	0.24 U	0.13 U	0.23 U
		11/17/22	264	0.24 U	0.13 U	0.23 U
		05/23/23	264	0.24 U	0.13 U	0.23 U
MW-34		12/17/19	165	0.19 U	0.19 U	0.45 U
		03/09/20	165	0.19 U	0.19 U	0.45 U
		06/15/20	165	0.2 U	0.14 U	0.16 U
		08/11/20	175	0.2 U	0.14 U	0.16 U
		11/18/20	175	**0.2**	0.14 U	0.16 U
		02/18/21	175	0.2 U	0.14 U	0.16 U
		06/11/21	175	0.101 U	0.159 U	0.086 U
		08/25/21	175	**0.135 J**	0.159 U	0.086 U
		11/24/21	175	**0.159 J**	0.159 U	0.086 U
		03/09/22	175	0.24 U	0.13 U	0.23 U
		05/31/22	175	0.24 U	0.13 U	0.23 U
		08/18/22	175	--	--	0.44 U
		11/14/22	175	0.24 U	0.13 U	0.23 U
		02/16/23	175	--	--	0.44 U
		05/23/23	175	--	--	0.44 U
		08/16/23	175	--	--	0.44 U
MW-35		08/22/19	162	0.078 U	**40**	**2.6**
		12/18/19	162	0.19 U	**65.9**	**4.4**
		03/05/20	162	0.19 U	**52.9**	**3.7**
		06/15/20	162	**0.67 J**	**73.8**	**4.6**
		08/17/20	162	**0.55 J**	**161**	**10.4**
		11/17/20	162	**0.57**	**136**	**9.2**
		02/23/21	162	0.2 U	**101**	**4.8**
		06/14/21	162	0.101 U	**54.3**	**4.11**
		08/26/21	162	0.101 U	**42.5**	**3.48**
		11/29/21	162	0.101 U	**40.8**	**3.28**
		03/16/22	162	0.24 U	**43.9**	**2.9**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
MW-35		06/03/22	162	0.24 U	**45**	**2.8**
		08/15/22	162	0.24 U	**47.4**	**3**
		11/16/22	162	0.24 U	**37.5**	**2.4**
		05/24/23	162	0.24 U	**56.5**	**3.6**
		08/16/23	162	0.24 U	**47.7**	**3**
	FD	08/16/23	162	0.24 U	**47.2**	**3**
MW-36		08/16/19	65	--	**116 J**	**8.5 J**
		12/18/19	65	0.19 U	**180**	**9.3**
		03/05/20	65	0.19 U	**109**	**8.1**
		06/15/20	65	**0.9 J**	**145**	**8.2**
		08/17/20	65	**0.51 J**	**148**	**8.1**
		11/17/20	65	**0.52**	**176**	**9.2**
		02/23/21	65	0.2 U	**124**	**6.3**
		06/14/21	65	**0.124**	**109**	**7.97**
		08/26/21	65	0.101 U	**88.1**	**6.45**
		11/29/21	65	0.101 U	**89**	**6.97**
		03/16/22	65	0.24 U	**79.6**	**5.8**
		06/03/22	65	0.24 U	**61.9**	**4.4**
		08/15/22	65	0.24 U	**48.9**	**4.1**
		11/16/22	65	0.24 U	**53.8**	**4.4**
		02/17/23	65	0.24 U	**16.9**	**1.8**
		05/24/23	65	0.24 U	**56.2**	**3.6**
Out-of-Use Freeman School District Well (W26)		01/21/13	92	1 U	1 U	1 U
		04/22/14	92	--	**23**	**1.9**
		04/22/14	92	0.5 U	**23**	**1.9**
		08/04/16	92	0.2 U	**19.8**	**2.1**
		12/09/16	92	0.2 U	**22.5**	**1.5**
		03/09/17	92	0.2 U	**28**	**2.2**
		06/15/17	92	**0.26 J**	**34.6**	**2.5**
		10/16/17	92	0.37 U	**27**	**1.5**
		01/16/18	92	0.37 U	**24.2**	**1.7**
		03/14/18	92	0.37 U	**29.7**	**2.4**
		06/25/18	92	0.097 UJ	**34.7**	**2.8**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	**Analytical Results (µg/L)**		
Out-of-Use Freeman School District Well (W26)		09/24/18	92	0.078 U	**27.1**	**1.6**
		01/10/19	92	0.078 U	**25.2**	**2**
		03/20/19	92	0.078 U	**34.9**	**2.7 J**
		06/28/19	92	0.078 UJ	**31.8 J**	**2.5 J**
		09/16/19	92	0.078 U	**24.3**	**2**
		12/17/19	92	0.19 U	**30.4**	**2.5 J**
		03/02/20	92	0.19 U	**28.9**	**2.6**
		06/11/20	92	0.2 U	**26**	**2.1**
		08/17/20	92	0.2 U	**26.5**	**2.1**
		11/19/20	92	0.2 U	**21.5**	**1.9**
		02/24/21	92	0.2 U	**25.4**	**2**
		06/16/21	92	0.101 U	**9.12**	**1.02**
		08/30/21	92	0.246 UJ	**0.578**	0.086 U
		11/15/21	92	0.101 U	**2.3**	**0.3 J**
		03/17/22	92	0.24 U	**1.5**	**0.28 J**
		05/31/22	92	0.24 U	**0.33 J**	0.23 U
		08/11/22	92	0.24 U	0.13 U	0.23 U
	FD	08/11/22	92	0.24 U	0.13 U	0.23 U
		08/18/22	92	--	--	0.44 U
		11/14/22	92	0.24 U	0.13 U	**1.6**
		02/15/23	92	0.24 U	**0.3 J**	**2**
		05/24/23	92	0.24 U	0.13 U	**0.35 J**
		08/15/23	92	0.24 U	0.13 U	0.23 U
Out-of-Use Marlow Well (No. 2)		10/07/16	80	**0.37**	**120**	**6.7**
		03/09/17	80	0.2 U	**0.25**	**0.27**
		06/26/17	80	0.2 U	**1.1**	**1.1**
		10/16/17	80	0.37 U	**13**	0.46 U
		01/16/18	80	0.37 U	**8.6**	**3.9**
		03/16/18	80	0.37 U	**66**	**5.9**
		06/25/18	80	0.22 UJ	**49.6**	**3.6**
		09/24/18	80	0.078 U	**30.6**	**1.1**
		01/10/19	80	0.078 U	**69.1**	**3.8**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Out-of-Use Marlow Well (No. 2)		03/20/19	80	0.078 U	**49.5**	**4.7**
		06/27/19	80	**0.2 J**	**5.9**	**21.3**
		10/10/19	80	0.19 U	**9.6**	**1.4**
		12/11/19	80	0.19 U	**9.7**	0.45 U
	FD	12/11/19	80	0.19 U	**10.4**	0.45 U
		01/03/20	80	0.19 U	**9.6**	**1 J**
		01/16/20	80	0.19 U	**16.7**	**2.5 J**
		01/28/20	80	0.19 U	**23.5**	**3.4 J**
		03/04/20	80	0.19 U	**9.8**	**2.6**
		04/23/20	80	0.2 U	**52.3**	**4.4**
		05/07/20	80	0.2 U	**28.8**	**2.7**
		05/20/20	80	**0.79 J**	**45.4**	**3.5**
		05/27/20	80	1 U	**35.3**	**3**
		06/04/20	80	**0.37 J**	**35.8**	**3**
		06/18/20	80	**0.31 J**	**28.8**	**3.2**
		07/01/20	80	**0.91 J**	**25.2**	**2.9**
		07/16/20	80	**0.24 J**	**8.8**	**1.1**
		07/29/20	80	**0.78**	**13.7**	**1.1**
		08/13/20	80	**0.45 J**	**26.3**	**1.5**
		08/19/20	80	0.2 U	**33.4**	**2.1**
		08/27/20	80	**0.28 J**	**21.3**	**1.5**
		09/10/20	80	**0.51 J**	**37.9**	**2.5**
		09/24/20	80	**0.46 J**	**25.6**	**3.2**
		10/06/20	80	**0.59 J**	**46.6**	**2.5**
		10/22/20	80	**0.84 J**	**28.4**	**1.9**
		11/05/20	80	**0.26**	**30.9**	**1.9**
		11/19/20	80	**0.26**	**36.7**	**2.3**
		11/24/20	80	0.2 U	**43.1**	**2.7**
		12/03/20	80	**0.29 J**	**20.1**	**1.7**
		12/15/20	80	**0.36 J**	**17.5**	**1.4**
		12/29/20	80	**0.43 J**	**13.9**	**1.1**
		01/15/21	80	0.2 U	**47.8**	**2.4**
		01/28/21	80	0.2 U	**61.8**	**3.4**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Out-of-Use Marlow Well (No. 2)		02/11/21	80	0.2 U	**55.1**	**3.2**
		02/24/21	80	**0.2 J**	**29.6**	**2.6**
		02/24/21	80	**0.22 J**	**39.7 J**	**3.1 J**
		03/12/21	80	0.2 U	**22.4**	**3.6**
		03/25/21	80	0.2 U	**30.7**	**5.2**
		04/08/21	80	0.2 U	**48.4**	**3.4**
		04/22/21	80	**0.313 J**	**28.7**	**2.95**
		05/05/21	80	**0.138 J**	**46.8**	**3.29**
		05/16/21	80	**0.119 J**	**51.8**	**3.16**
		06/02/21	80	**0.134 J**	**37.5**	**2.98**
		06/09/21	80	0.11 U	**20.1**	**1.4**
	FD	06/09/21	80	0.11 U	**19.9**	**1.4**
		06/16/21	80	0.101 U	**9.3**	**1.06**
		07/01/21	80	**0.39 J**	**38.5**	**1.8**
		07/13/21	80	**0.47 J**	**7.4**	**0.5 J**
		07/29/21	80	0.11 U	**3**	**0.16 J**
		08/11/21	80	**0.12 J**	**18.2**	**0.91 J**
		08/26/21	80	**0.13 J**	**37.7**	**2**
		08/30/21	80	0.11 U	**23.8**	**2.2**
	FD	08/30/21	80	0.101 U	**24.7**	**2.47**
		10/07/21	80	0.101 U	**39.6**	**2.87**
		10/21/21	80	**0.121 J**	**14.7**	**1.48**
		11/03/21	80	**0.115 J**	**25.3**	**2.15**
		11/17/21	80	0.101 U	**28.3**	**3.12**
		11/18/21	80	0.101 U	**41.4**	**2.93**
		12/01/21	80	0.101 U	**33.1**	**2.55**
		12/14/21	80	**0.108 J**	**32.8**	**2.67**
		01/06/22	80	0.24 U	**31.3**	**2**
		02/02/22	80	0.24 U	**52.8**	**3.9**
		03/11/22	80	0.24 U	**48.8**	**3.7**
		03/11/22	80	0.24 U	**40.1**	**3.6**
		04/07/22	80	0.24 U	**28.6**	**2.3**
		05/04/22	80	0.24 U	**37.9**	**2.9**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Out-of-Use Marlow Well (No. 2)		05/26/22	80	0.24 U	**27.6**	**2.4**
	FD	05/26/22	80	0.24 U	**25.3**	**2.4**
		06/06/22	80	0.24 U	**35.9**	**2.8**
		07/04/22	80	0.24 U	**29.1**	**2.8**
		08/09/22	80	0.24 U	**20.5**	**1.7**
		09/09/22	80	**0.29 J**	**23.3**	**1.9**
		09/09/22	80	1 U	0.5 U	0.5 U
		10/07/22	80	0.24 U	**18.8**	**1.5**
		11/08/22	80	0.24 U	**25**	**2.2**
		11/14/22	80	0.24 U	**41 J**	**4.7**
	FD	11/14/22	80	0.24 U	**101 J**	**3.3**
		05/26/23	80	0.24 U	**0.74**	0.23 U
Out-of-Use Marlow Well (W20)		01/21/13	82	1 U	**21.2**	**2.04**
		08/04/16	82	0.2 U	0.12 U	0.098 U
		12/10/16	82	0.2 U	0.079 U	0.21 U
		03/03/17	82	0.2 U	0.079 U	0.21 U
		06/14/17	82	0.2 UJ	0.079 UJ	0.21 UJ
		10/16/17	82	0.37 U	0.2 U	0.46 U
		12/11/17	82	0.37 U	0.2 U	0.46 U
		03/15/18	82	0.37 U	0.2 U	0.46 U
		06/25/18	82	0.078 U	0.19 U	0.45 U
		09/24/18	82	0.078 U	0.19 U	0.45 U
		01/10/19	82	0.078 U	0.19 U	0.45 U
		03/19/19	82	0.078 U	0.19 U	0.45 U
		06/28/19	82	0.078 UJ	0.19 UJ	0.45 UJ
		09/16/19	82	0.078 U	0.19 U	0.45 U
		12/18/19	82	0.19 U	0.19 U	0.45 U
		03/09/20	82	0.19 U	0.19 U	0.45 U
		06/15/20	82	0.2 U	0.14 U	0.16 U
		08/17/20	82	0.2 U	0.14 U	0.16 U
		11/17/20	82	0.2 U	0.14 U	0.16 U
		02/23/21	82	0.2 U	0.14 U	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

	Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
		Screening Levels (µg/L)		
MTCA Groundwater Method B Cancer [1]		**NE**	**0.63**	**1.4**
MTCA Groundwater Method B Non-Cancer [2]		**800**	**32**	**80**
Maximum contaminant level [3]		**NE**	**5**	**NE**
Location	**Notes** **Sample Date** **Depth (feet)**		Analytical Results (µg/L)	
Out-of-Use Marlow Well (W20)	06/15/21 82	0.101 U	0.159 U	0.086 U
	08/30/21 82	0.101 U	0.159 U	0.086 U
	11/15/21 82	0.101 U	0.159 U	0.086 U
	03/15/22 82	0.24 U	0.13 U	0.23 U
	05/26/22 82	0.24 U	0.13 U	0.23 U
	11/11/22 82	0.24 U	0.13 U	0.23 U
	05/25/23 82	0.24 U	**8.9**	**0.59**
Primary Freeman School District Well (WS5)	05/27/92 189	--	0.5 U	0.5 U
	11/13/92 189	--	0.5 U	0.5 U
	01/30/01 189	--	**0.7**	0.5 U
	03/22/01 189	--	**0.7**	**0.7**
	07/11/01 189	--	0.5 U	0.5 U
	06/20/02 189	--	**1.4**	0.5 U
	08/12/03 189	--	0.5 U	0.5 U
	11/16/04 189	--	**1.64**	0.5 U
	05/31/06 189	--	0.5 U	0.5 U
	04/30/07 189	--	**2.31**	0.5 U
	04/03/08 189	--	**7.78**	0.5 U
	05/20/08 189	--	**2.34**	0.5 U
	09/12/08 189	--	**2.14**	0.5 U
	11/13/08 189	--	**3.72**	0.5 U
	06/25/09 189	--	**1.8**	0.5 U
	08/18/10 189	--	**2.22**	0.5 U
	10/27/10 189	--	**3.13**	0.5 U
	03/31/11 189	--	**3.9**	--
	06/22/11 189	--	0.5 U	--
	09/21/11 189	--	0.5 U	--
	12/07/11 189	--	0.5 U	0.5 U
	03/21/12 189	--	**5.9**	0.5 U
	04/19/12 189	--	**7.2**	0.5 U
	06/14/12 189	--	**2.1**	0.5 U
	09/05/12 189	--	**3.1**	0.5 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

	Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
		Screening Levels (µg/L)		
MTCA Groundwater Method B Cancer [1]		NE	0.63	1.4
MTCA Groundwater Method B Non-Cancer [2]		800	32	80
Maximum contaminant level [3]		NE	5	NE
Location	**Notes** **Sample Date** **Depth (feet)**	Analytical Results (µg/L)		
Primary Freeman School District Well (WS5)	12/12/12 189	--	**8**	**0.51**
	01/24/13 189	--	**7.6**	**0.36**
	01/25/13 189	--	**22**	--
	01/25/13 189	1 U	**22**	**1.28**
	04/10/13 189	--	**9.3**	**0.62**
	07/02/13 189	--	**3.3**	0.29 U
	09/18/13 189	--	**3.8**	0.29 U
	11/06/13 189	--	**5.5**	**0.38**
	04/22/14 189	--	8.8 U	**0.52**
	04/22/14 189	0.5 U	**8.8**	**0.52**
	05/07/14 189	--	**6.7**	**0.46**
	09/17/14 189	--	**3.2**	0.5 U
	03/04/15 189	--	**11**	**0.69**
	06/03/15 189	--	**4.2**	**0.33**
	09/30/15 189	--	**4**	**0.52**
	10/21/15 189	--	**5**	**0.29**
	01/27/16 189	--	**11**	**0.72**
	04/12/16 189	--	**13**	**0.74**
	07/16/16 189	--	**3.3**	**0.3**
	07/27/16 189	0.2 U	**4**	**0.29 J**
	09/30/16 189	--	**4**	**0.52**
	10/05/16 189	--	0.5 U	**0.38**
	12/07/16 189	0.2 U	**11.6**	**0.55**
	04/05/17 189	--	**0.0081**	**0.0005**
	06/14/17 189	0.2 U	**4.5**	**0.33 J**
	07/19/17 189	--	**3.7**	**0.39**
	09/06/17 189	--	**0.19**	0.5 U
	10/04/17 189	--	**6.7**	**0.43**
	10/11/17 189	0.37 U	**8.1**	0.46 U
	01/10/18 189	--	**16.4**	**0.9**
	01/19/18 189	0.37 U	**61.8**	**2.3**
	03/15/18 189	0.37 U	**33.6**	**1.7**
	04/25/18 189	--	**17.1**	**1.35**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Primary Freeman School District Well (WS5)		06/06/18	189	--	0.5 U	0.5 U
		07/17/18	189	0.078 U	**5.5**	0.45 U
		10/01/18	189	0.078 UJ	**6.8**	0.45 U
		10/10/18	189	0.078 U	**8.6**	**0.49 J**
		12/19/18	189	0.078 U	**23**	**1.1**
		01/09/19	189	--	**25.9**	**1.43**
		02/06/19	189	--	**1.07**	0.5 U
		03/07/19	189	--	**0.61**	0.5 U
		04/10/19	189	--	**11.9**	**0.7**
		05/07/19	189	0.078 U	**7.1**	**0.47 J**
		06/17/19	189	0.078 U	**5**	0.45 U
		07/31/19	189	--	**7.4**	**0.53**
		08/06/19	189	--	0.5 U	0.5 U
		09/19/19	189	0.078 U	**4.7**	0.45 U
		11/06/19	189	--	0.5 U	0.5 U
		12/06/19	189	0.19 U	**7.4**	0.45 U
		01/08/20	189	--	**21.5**	**1.41**
		03/04/20	189	0.19 U	**17.4**	**0.95 J**
		04/15/20	189	--	**22.5**	**1.2**
		05/06/20	189	--	0.5 U	0.5 U
		06/18/20	189	**0.39 J**	**41.7**	**2.5**
		08/27/20	189	0.2 U	**5.3**	**0.43 J**
		11/24/20	189	0.2 U	**20.9**	**1.1**
		12/02/20	189	--	0.5 U	0.5 U
		01/06/21	189	--	**18.7**	**1.04**
		02/17/21	189	--	**0.5**	0.5 U
		03/03/21	189	0.2 U	**11.3**	**0.67 J**
		04/08/21	189	--	**13.6**	**0.81**
		06/02/21	189	--	0.5 U	0.5 U
		06/15/21	189	0.101 U	**4.28**	**0.478**
		08/31/21	189	0.101 U	**3.63**	**0.385 J**
		09/08/21	189	--	0.5 U	0.5 U
		10/13/21	189	--	**6.03**	**0.51**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**	Analytical Results (µg/L)		
Primary Freeman School District Well (WS5)		11/03/21	189	--	0.5 U	0.5 U
		11/23/21	189	0.101 U	**9.77**	**0.882**
	FD	11/23/21	189	0.101 U	**12.1**	**0.85**
		03/16/22	189	0.24 U	**15.1**	**0.85**
		05/27/22	189	0.24 U	**10.5**	**0.84**
		08/11/22	189	0.24 U	**5.5**	**0.49 J**
		11/16/22	189	0.24 U	**13.3**	**0.87**
		02/15/23	189	0.24 U	**8.4**	**0.73**
		05/24/23	189	0.24 U	0.13 U	0.23 U
		08/16/23	189	0.24 U	0.13 U	0.23 U
Randall Well		07/27/16	73	1 U	**324**	**12**
		08/19/16	73	0.39 U	**287**	**15.2**
		11/29/16	73	**0.32 J**	**364**	**13.8**
		02/28/17	73	**0.7 J**	**324**	**12.7**
		05/31/17	73	**1.6**	**268**	**13.4**
	FD	05/31/17	73	**2.4**	**272**	**13.4**
		09/19/17	73	0.37 U	**260**	**11.5**
	FD	09/19/17	73	**0.54**	**256**	**10.5**
		12/12/17	73	**1.5 J**	**289**	**10.2**
	FD	12/12/17	73	**2.5**	**292**	**9.9**
		04/10/18	73	0.37 U	**251**	**10.3**
		06/27/18	73	**0.12 J**	**202**	**8.8**
		09/28/18	73	0.078 UJ	**207 J**	**8.9**
		01/07/19	73	**0.76 J**	**250**	**9.8**
		03/21/19	73	0.078 U	**182**	**8**
		06/17/19	73	**0.71 J**	**191**	**7.9**
		10/10/19	73	**2.9**	**218**	**8**
		12/06/19	73	0.19 U	**166**	**6.9**
		03/04/20	73	0.19 U	**150**	**7.2**
		05/27/20	73	0.2 U	**221**	**7.9**
		08/19/20	73	**0.65 J**	**199**	**8.2**
		11/24/20	73	**0.27**	**156**	**6.8**
		02/24/21	73	**0.52 J**	**191 J**	**5.5 J**

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
Randall Well		06/09/21	73		0.11 U	**161**	**5.6**
	FD	06/09/21	73		0.11 U	**180**	**6.2**
		08/30/21	73		0.11 U	**135**	**5.4**
	FD	08/30/21	73		0.101 U	**130**	**5.58**
		11/17/21	73		**0.187 J**	**137**	**5.76**
		03/11/22	73		0.24 U	**154 J**	**5.3 J**
		05/26/22	73		0.24 U	**138**	**4.7**
	FD	05/26/22	73		0.24 U	**136**	**4.8**
		08/11/22	73		0.24 U	**103**	**4.2**
	FD	08/11/22	73		0.24 U	**102**	**4.2**
		11/14/22	73		0.24 U	**99.5 J**	**3.8**
	FD	11/14/22	73		0.24 U	**41.9 J**	**4.6**
		02/15/23	73		0.24 U	**92.1**	**3.9**
		05/26/23	73		0.24 U	0.13 U	0.23 U
		08/16/23	73		0.24 U	**74**	**2.8**
Reed Well (W30)		01/25/13	119.5		1 U	1 U	1 U
		07/27/16	119.5		0.2 U	0.079 U	0.21 U
	FD	07/27/16	119.5		0.2 U	0.079 U	0.21 U
		12/01/16	119.5		0.2 U	0.079 U	0.21 U
		02/24/17	119.5		0.2 U	0.079 U	0.21 U
		06/20/17	119.5		0.2 U	0.079 U	0.21 U
		09/13/17	119.5		0.37 U	0.2 U	0.46 U
		01/09/18	119.5		0.37 U	0.2 U	0.46 U
		09/28/18	119.5		0.078 UJ	0.19 U	0.45 U
		01/07/19	119.5		0.078 UJ	0.19 U	0.45 U
		03/21/19	119.5		0.078 U	0.19 U	0.45 U
		06/13/19	119.5		0.078 U	0.19 U	0.45 U
		10/03/19	119.5		0.19 U	0.19 U	0.45 U
		12/13/19	119.5		0.19 U	0.19 U	0.45 U
	FD	12/13/19	119.5		0.19 U	0.19 U	0.45 U
		03/09/20	119.5		0.19 U	0.19 U	0.45 U
		05/27/20	119.5		0.2 U	0.14 U	0.16 U
		08/19/20	119.5		0.2 U	0.14 U	0.16 U
		11/24/20	119.5		0.2 U	0.14 U	0.16 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

			Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
			MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
			MTCA Groundwater Method B Non-Cancer [2]	800	32	80
			Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
Reed Well (W30)		06/09/21	119.5	0.11 U	0.14 U	0.14 U
		08/30/21	119.5	0.11 U	0.14 U	0.14 U
		11/30/21	119.5	0.101 U	0.159 U	0.086 U
		03/15/22	119.5	0.24 U	0.13 U	0.23 U
		05/26/22	119.5	0.24 U	0.13 U	0.23 U
		08/11/22	119.5	0.24 U	0.13 U	0.23 U
		11/14/22	119.5	0.24 U	0.13 U	0.23 U
		05/26/23	119.5	0.24 U	0.13 U	0.23 U
Silva Well		09/08/16	133.5	0.042 U	0.076 U	0.1 U
		11/30/16	133.5	0.2 U	0.079 U	0.21 U
		02/24/17	133.5	0.2 U	0.079 U	0.21 U
	FD	02/24/17	133.5	0.2 U	0.079 U	0.21 U
		06/01/17	133.5	0.2 U	0.079 U	0.21 U
		09/12/17	133.5	0.37 U	**0.98**	0.46 U
		09/25/17	133.5	0.37 U	0.2 U	0.46 U
		09/29/17	133.5	0.37 U	0.2 U	0.46 U
		01/05/18	133.5	0.37 UJ	0.2 U	0.46 U
	FD	01/05/18	133.5	0.37 U	0.2 U	0.46 U
		03/20/18	133.5	0.37 U	0.2 U	0.46 U
		06/27/18	133.5	0.078 U	0.19 U	0.45 U
		09/28/18	133.5	0.078 UJ	**1.3**	0.45 U
		01/04/19	133.5	0.078 U	0.19 U	0.45 U
		05/07/19	133.5	0.078 U	0.19 U	0.45 U
		06/13/19	133.5	0.078 U	0.19 U	0.45 U
		10/03/19	133.5	0.19 U	0.19 U	0.45 U
		12/10/19	133.5	0.19 U	0.19 U	0.45 U
		03/20/20	133.5	0.2 U	0.14 U	0.16 U
		05/27/20	133.5	0.2 U	0.14 U	0.16 U
		08/19/20	133.5	0.2 U	**0.67**	0.16 U
		06/09/21	133.5	0.11 U	0.14 U	0.14 U
		08/30/21	133.5	0.11 U	0.14 U	0.14 U
		03/11/22	133.5	0.24 U	0.13 U	0.23 U
		05/26/22	133.5	0.24 U	0.13 U	0.23 U
Stark Well (W15)		03/03/17	104	0.2 U	0.079 U	0.21 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

				Parameter:	Carbon disulfide	Carbon tetrachloride	Chloroform
					Screening Levels (µg/L)		
				MTCA Groundwater Method B Cancer [1]	NE	0.63	1.4
				MTCA Groundwater Method B Non-Cancer [2]	800	32	80
				Maximum contaminant level [3]	NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**		
Stark Well (W15)		06/01/17	104		0.2 U	0.079 U	0.21 U
	FD	06/01/17	104		0.2 U	0.079 U	0.21 U
		09/12/17	104		0.37 U	0.2 U	0.46 U
		01/04/18	104		0.37 UJ	0.2 U	0.46 U
		03/19/18	104		0.37 U	0.2 U	0.46 U
	FD	03/19/18	104		0.37 U	0.2 U	0.46 U
		06/27/18	104		0.078 U	0.19 U	0.45 U
		09/28/18	104		0.078 UJ	0.19 U	0.45 U
		01/04/19	104		0.078 U	0.19 U	0.45 U
		03/21/19	104		0.078 U	0.19 U	0.45 U
		06/13/19	104		0.078 U	0.19 U	0.45 U
		09/18/19	104		0.078 U	0.19 U	0.45 U
		12/05/19	104		0.19 U	0.19 U	0.45 U
	FD	12/05/19	104		0.19 U	0.19 U	0.45 U
		03/09/20	104		0.19 U	0.19 U	0.45 U
		05/27/20	104		0.2 U	0.14 U	0.16 U
		08/19/20	104		0.2 U	0.14 U	0.16 U
		11/24/20	104		0.2 U	0.14 U	0.16 U
		02/24/21	104		0.2 U	0.14 U	0.16 U
		06/09/21	104		0.11 U	0.14 U	0.14 U
		08/30/21	104		0.11 U	0.14 U	0.14 U
		11/19/21	104		0.101 U	0.159 U	0.086 U
		03/15/22	104		0.24 U	0.13 U	0.23 U
		05/26/22	104		0.24 U	0.13 U	0.23 U
		11/14/22	104		0.24 U	0.13 U	0.23 U
		05/26/23	104		0.24 U	0.13 U	0.23 U
Thorson Well		03/02/17	160		0.2 U	0.079 U	0.21 U
		06/26/17	160		0.2 U	0.079 U	0.21 U
		09/12/17	160		0.37 U	0.2 U	0.46 U
		01/05/18	160		0.37 UJ	0.2 U	0.46 U
		03/19/18	160		0.37 U	0.2 U	0.46 U
		06/27/18	160		0.11 UJ	0.19 U	0.45 U
		09/28/18	160		0.078 UJ	0.19 U	0.45 U
		01/07/19	160		0.078 U	0.19 U	0.45 U

Table 4-2. Summary of Analytical Groundwater Data from Wells – Carbon Tetrachloride, Chloroform, and Carbon Disulfide

Grain Handling Facility, Freeman, Washington

Parameter:				Carbon disulfide	Carbon tetrachloride	Chloroform
				Screening Levels (µg/L)		
MTCA Groundwater Method B Cancer [1]				NE	0.63	1.4
MTCA Groundwater Method B Non-Cancer [2]				800	32	80
Maximum contaminant level [3]				NE	5	NE
Location	**Notes**	**Sample Date**	**Depth (feet)**		**Analytical Results (µg/L)**	
Thorson Well		03/21/19	160	0.078 U	0.19 U	0.45 U
		06/17/19	160	0.078 U	0.19 U	0.45 U
		09/18/19	160	0.078 U	0.19 U	0.45 U
		12/06/19	160	0.19 U	0.19 U	0.45 U
		03/09/20	160	0.19 U	0.19 U	0.45 U
		05/27/20	160	0.2 U	0.14 U	0.16 U
		08/19/20	160	0.2 U	0.14 U	0.16 U
		11/24/20	160	0.2 U	0.14 U	0.16 U
		06/09/21	160	0.11 U	0.14 U	0.14 U
		08/30/21	160	0.11 U	0.14 U	0.14 U
		11/19/21	160	0.101 U	0.159 U	0.086 U
		03/11/22	160	0.24 U	0.13 U	0.23 U
		05/26/22	160	0.24 U	0.13 U	0.23 U
		11/11/22	160	0.24 U	0.13 U	0.23 U
		05/26/23	160	0.24 U	0.13 U	0.23 U

Notes:

--	not analyzed
µg/L	micrograms per liter
FD	field duplicate
J	estimated result
NA	sample collected at undocumented depth
NE	not established
U	not detected at or above the indicated reporting limit
UJ	not detected; indicated reporting limit is estimated

Detected concentrations are **bold**.

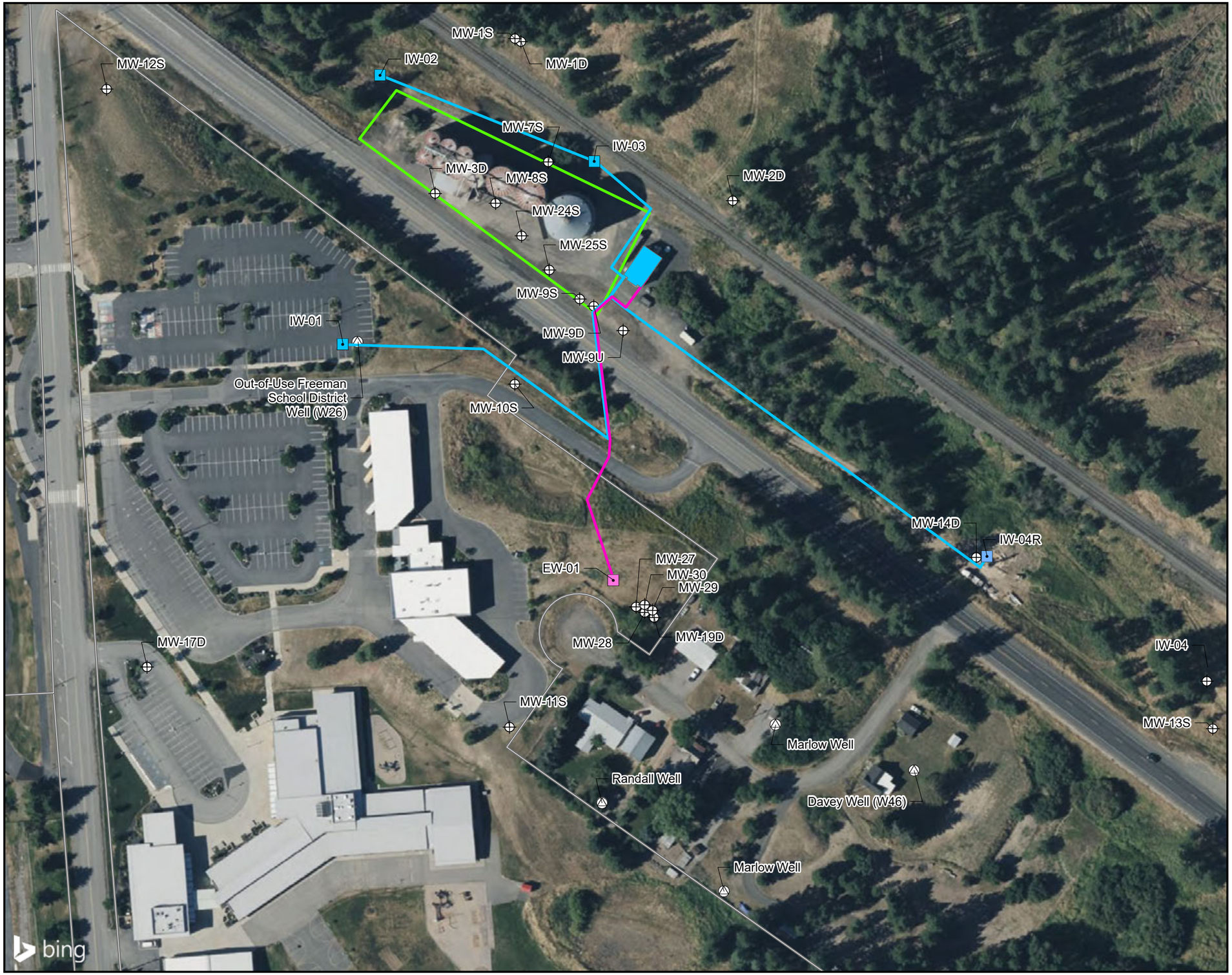
Screening Level Detail:

1 Model Toxics Control Act, Groundwater, Method B, Cancer

2 Model Toxics Control Act, Groundwater, Method B, Non-Cancer

3 Maximum contaminant level

Figures



LEGEND

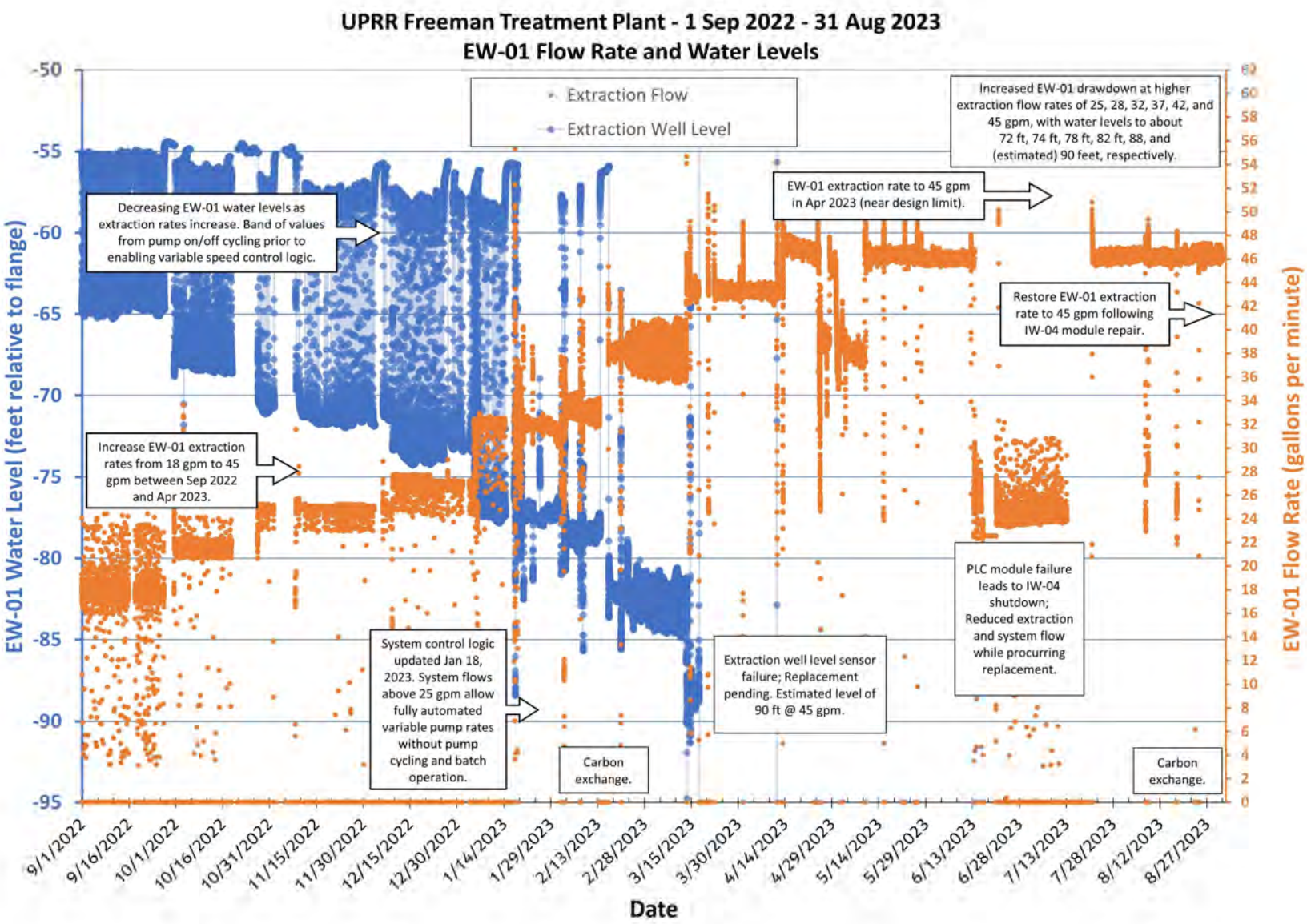
- Monitoring Well
- Domestic Well
- Grain Handling Facility at Freeman
- Freeman School District
- Treatment Plant
- Injection Well
- Extraction Well
- Injection Pipeline
- Extraction Pipeline

N

0 75 150 300 Feet

Figure 1-1
Interim Remedial Action Layout
Grain Handling Facility at Freeman,
Freeman, Washington

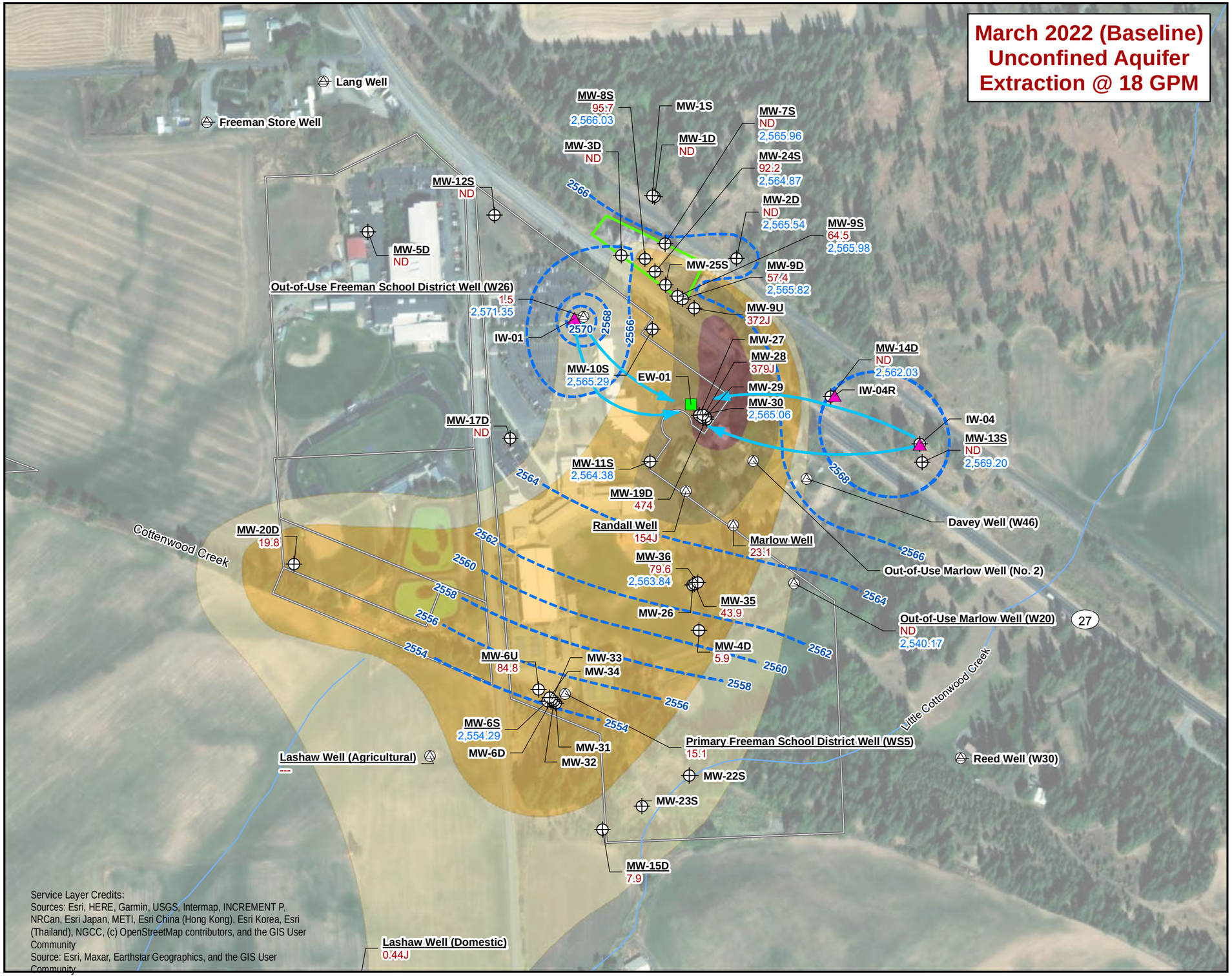
Jacobs



Jacobs

Figure 4-1
EW-01 Flow Rate and Water Levels
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington

March 2022 (Baseline) Unconfined Aquifer Extraction @ 18 GPM



Service Layer Credits:
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L
- ≥400 µg/L

Well ID — MW-24S
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

N

0 205 410 820 Feet

Figure 4-2
Groundwater and Carbon Tetrachloride Contours
March 2022
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

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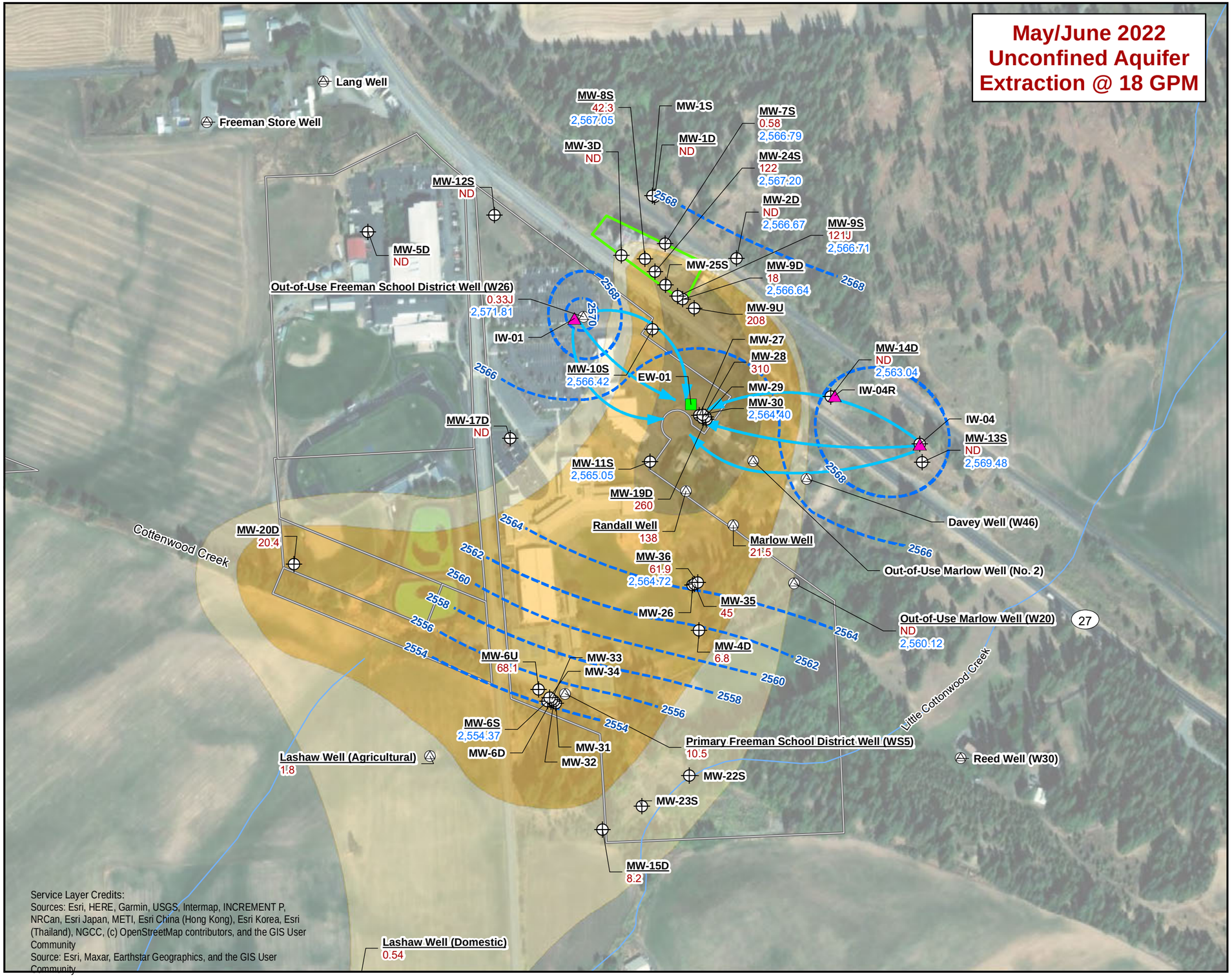
May/June 2022 Unconfined Aquifer Extraction @ 18 GPM



Service Layer Credits:
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L

Well ID — MW-24S
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

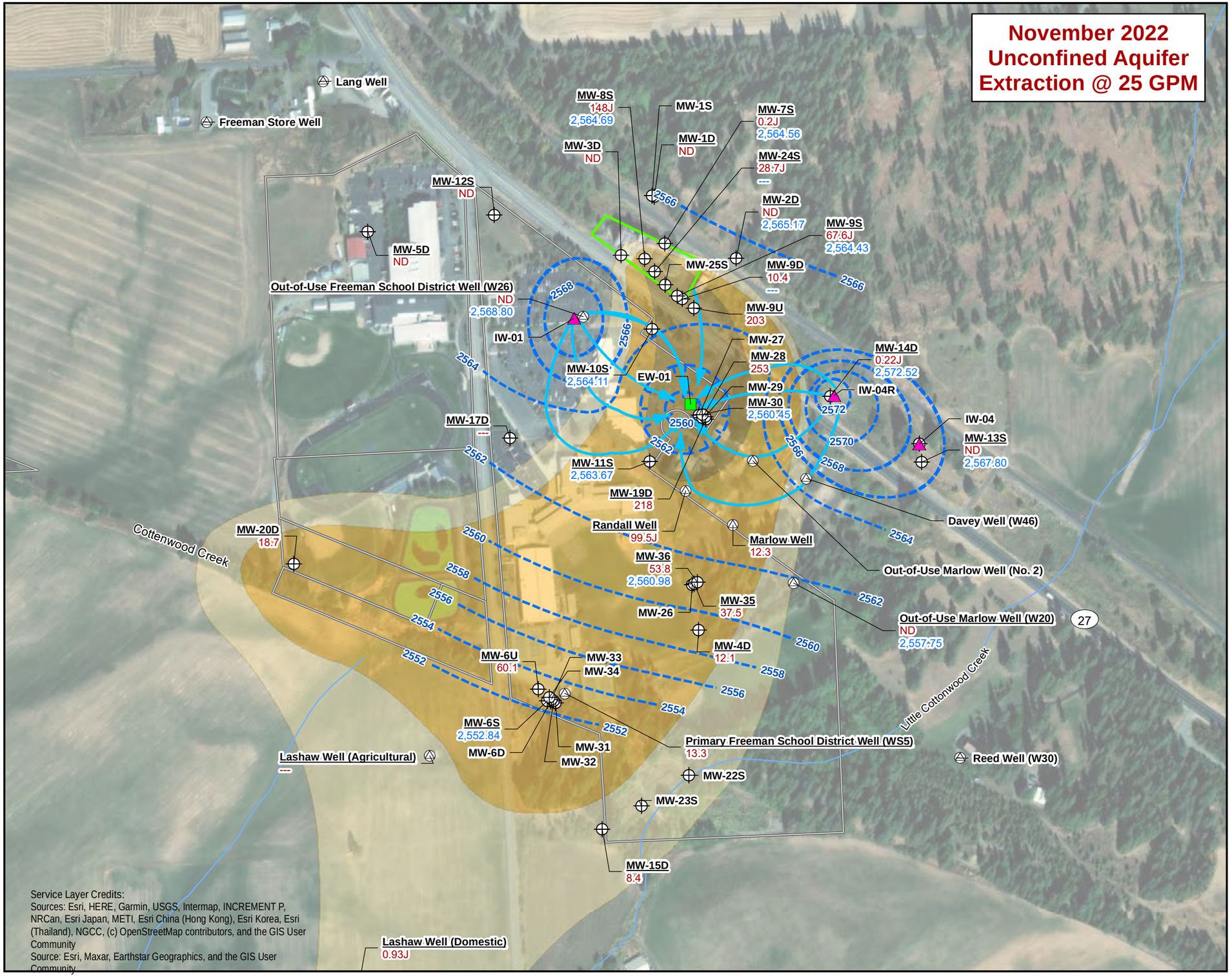
N

0 205 410 820 Feet

Figure 4-3
Groundwater and Carbon Tetrachloride Contours
May/June 2022
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

JACOBS

November 2022 Unconfined Aquifer Extraction @ 25 GPM



LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Groundwater Depression
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L

Well ID — MW-24S
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
--- = not available or not used for contouring
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

N

0 205 410 820 Feet

Service Layer Credits:
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

Figure 4-4
Groundwater and Carbon Tetrachloride Contours
November 2022
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

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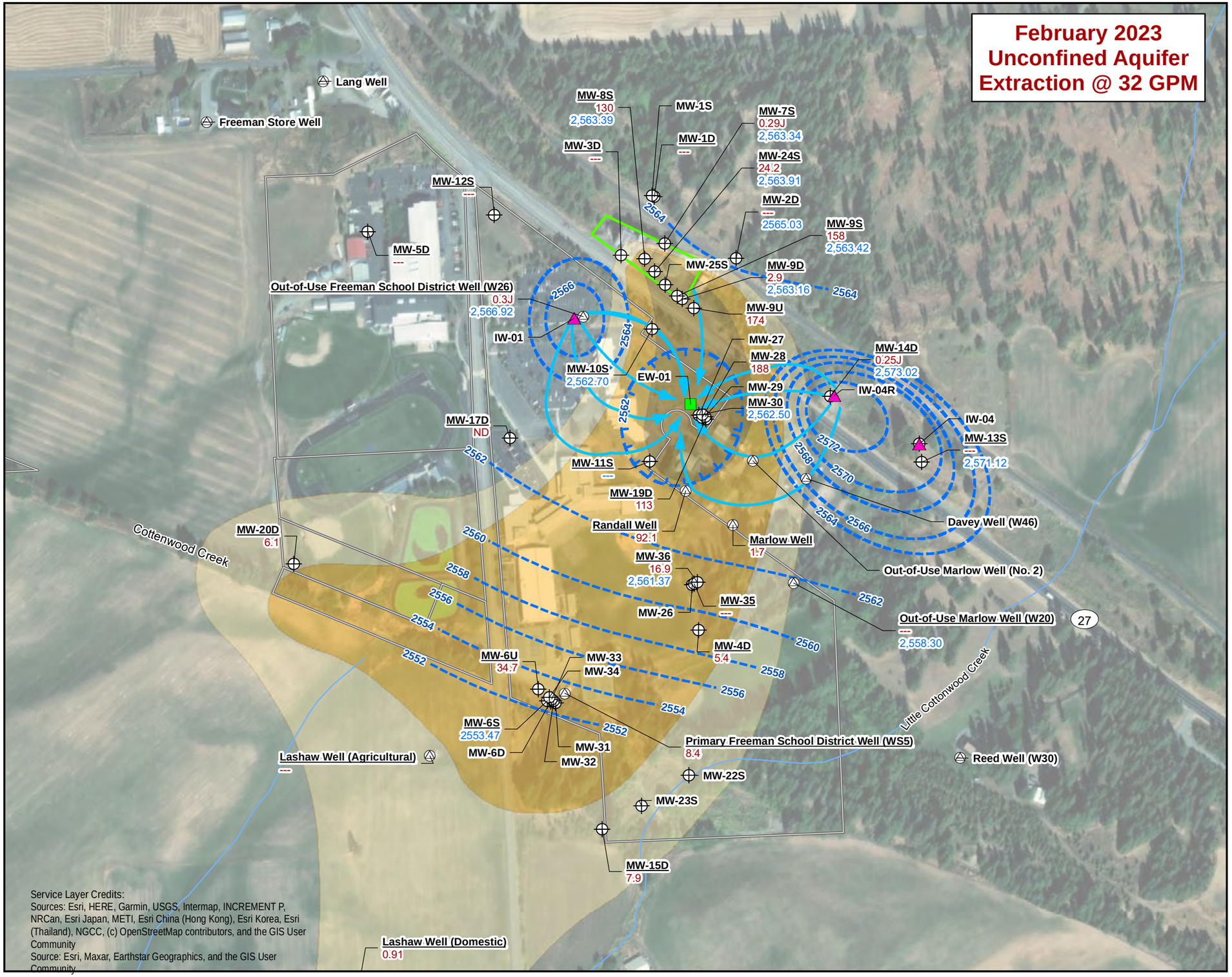
February 2023 Unconfined Aquifer Extraction @ 32 GPM



Service Layer Credits:
Sources: Esri, HERE, Garmin, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri (Thailand), NGCC, (c) OpenStreetMap contributors, and the GIS User Community
Source: Esri, Maxar, Earthstar Geographics, and the GIS User Community

LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Groundwater Depression
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L

Well ID — MW-24S
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
--- = not available or not used for contouring
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

N

0 205 410 820 Feet

Figure 4-5
Groundwater and Carbon Tetrachloride Contours
February 2023
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

\\DC1VS01\GISPROJ\U\UPRR\UPRR_FREEMAN\MAPS\REPORT\2023\IRA_ANNUALRPT\FIG4-X_GW_CTET.MXD GMOON 11/10/2023 6:24:56 AM

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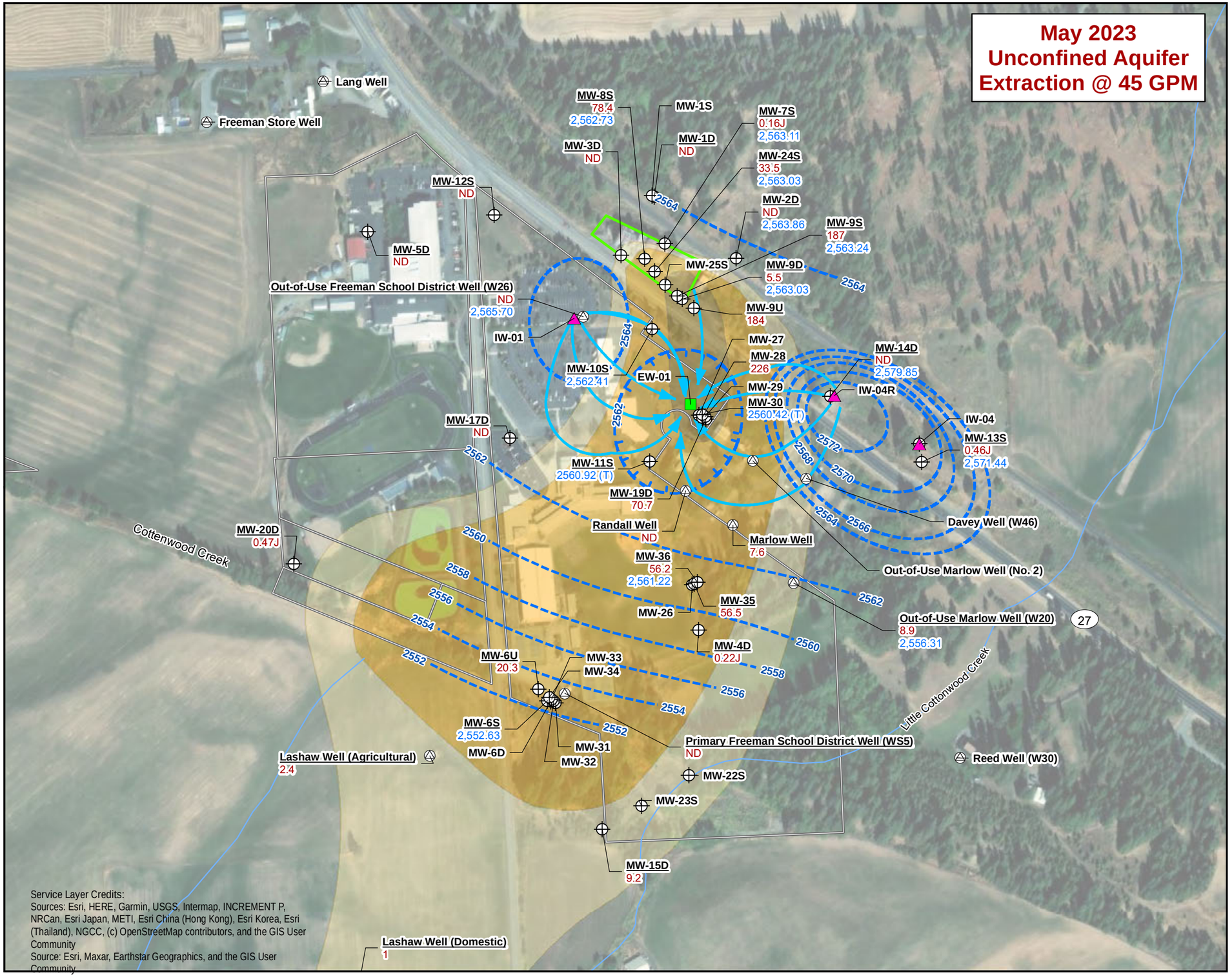
May 2023 Unconfined Aquifer Extraction @ 45 GPM



LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Groundwater Depression
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L

Well ID — **MW-24S**
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

N

0 205 410 820 Feet

Figure 4-6
Groundwater and Carbon Tetrachloride Contours
May 2023
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

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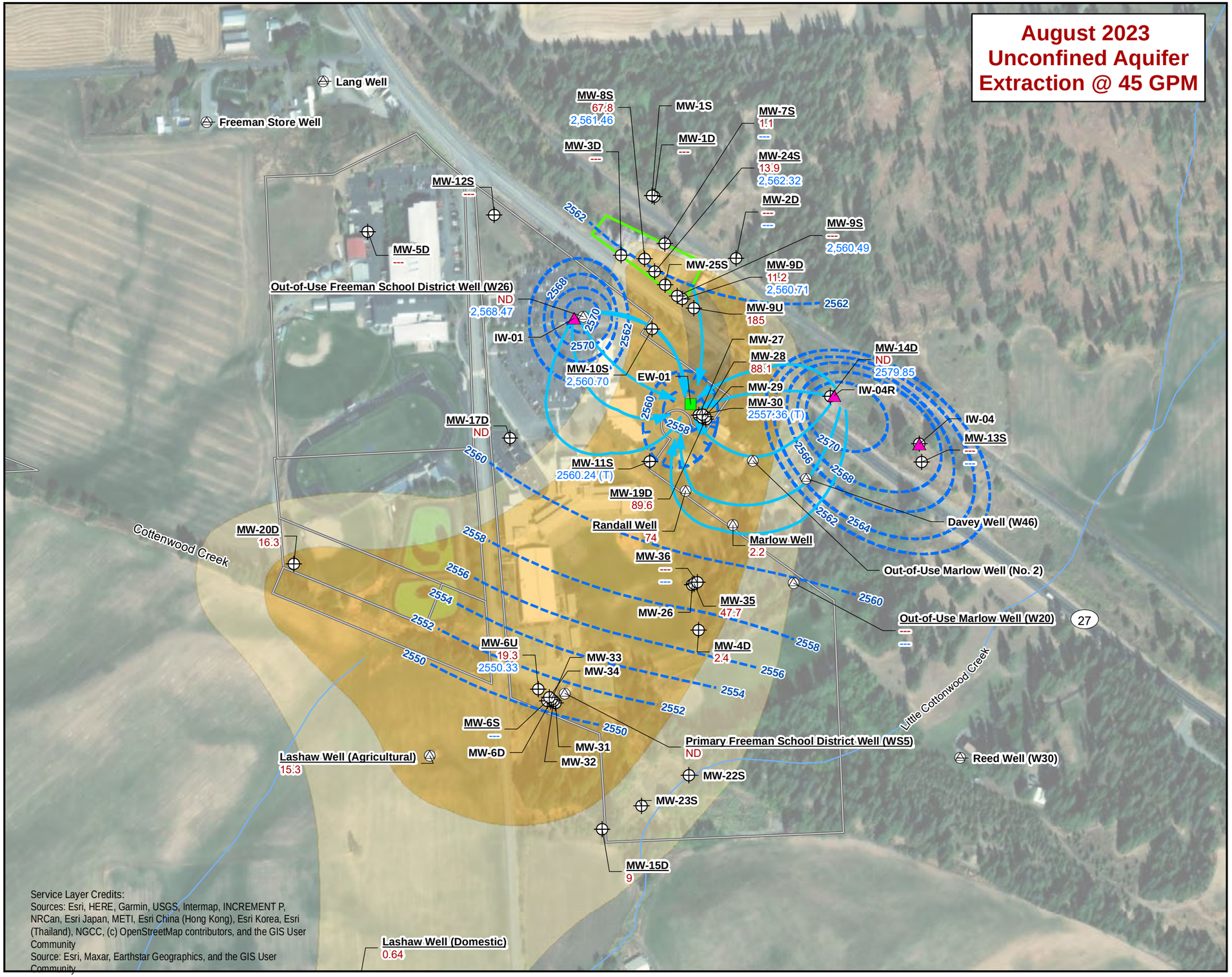
August 2023 Unconfined Aquifer Extraction @ 45 GPM



LEGEND

- Monitoring Well
- Domestic Well
- Extraction Well
- Infiltration Well
- Grain Handling Facility at Freeman
- Freeman School District
- Stream
- Unconfined Groundwater Elevation
- Groundwater Depression
- Inferred Extraction Groundwater Flow Path

Carbon Tetrachloride Concentration

- >0.625 µg/L to <10 µg/L
- ≥10 µg/L to <100 µg/L
- ≥100 µg/L to <400 µg/L

Well ID — MW-24S
CCl4 Groundwater Concentration (µg/L) — 92.2
Groundwater Elevation — 2,564.87 (T)

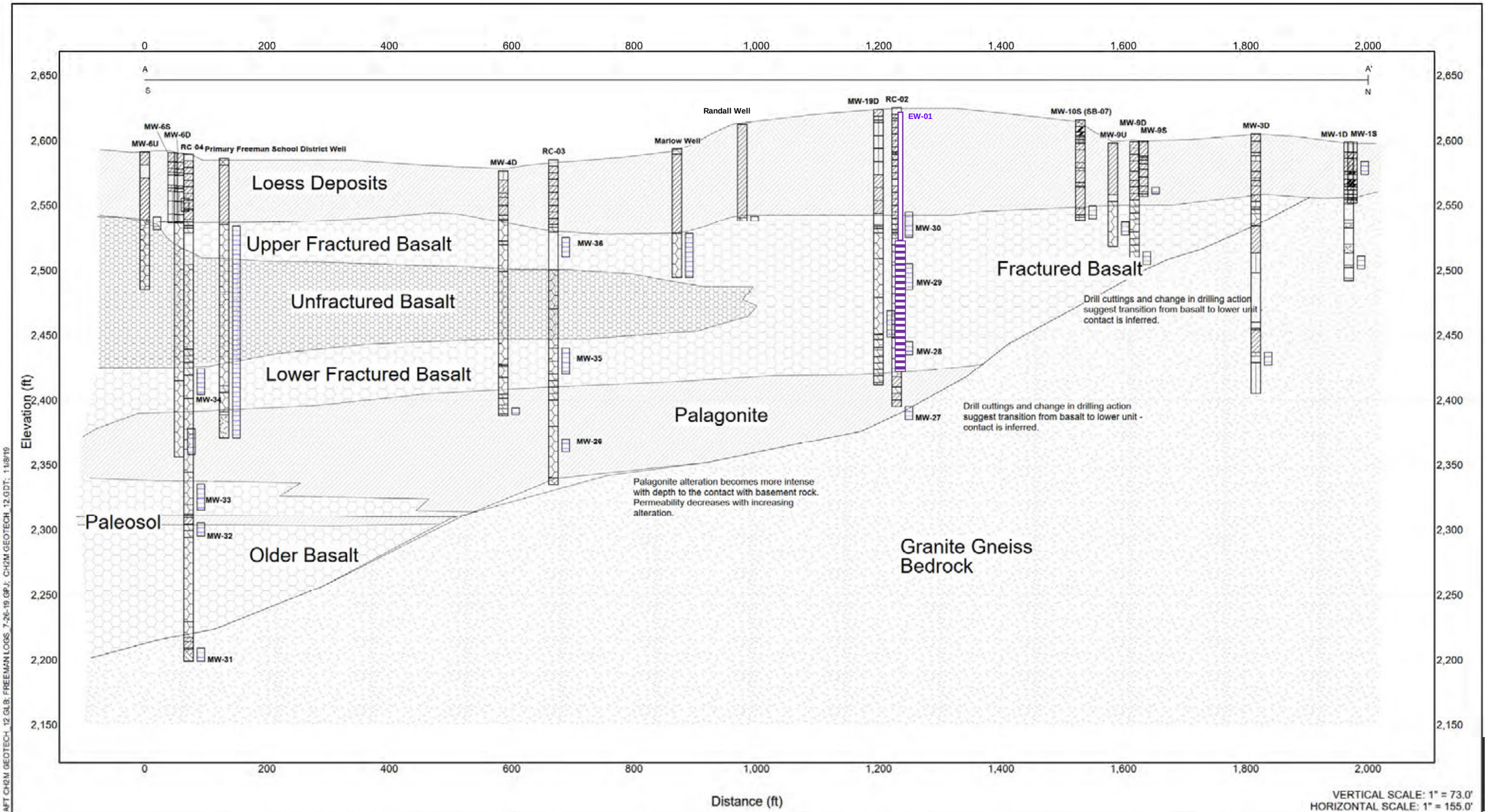
Notes:
µg/L = micrograms per liter
CCl4 = Carbon Tetrachloride
GPM = gallons per minute
ND = non-detect
(T) = indicates transducer daily average value
--- = not available or not used for contouring
Posted unconfined groundwater elevations were used for contouring.
Lashaw Well (Domestic) is located approximately 600 feet south of the map area.
IW-04 was converted to a monitoring well after replacement infiltration well IW-04R was installed.

N

0 205 410 820 Feet

Figure 4-7
Groundwater and Carbon Tetrachloride Contours
August 2023
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman, Freeman, Washington

JACOBS



11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12.GLB; FREEMAN LOGS_7-26-19.GPJ; CH2M GEOTECH_12.GDT; 11/8/19

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LITHOLOGY GRAPHICS

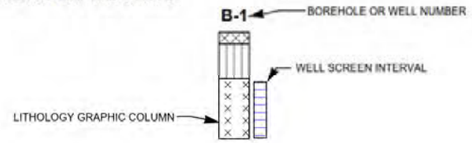
- Organic Clay or Silt
- BR-Lean Clay
- Well-Graded Sand
- Basalt
- Silt
- Fat Clay
- Well-Graded Sand with Silt
- Poorly Graded Sand with Silt
- BR-Lean Clay
- Clayey Sand
- Clayey Gravel
- Poorly Graded Sand
- Bedrock

LEGEND

- – – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

BOREHOLE LEGEND



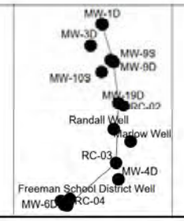
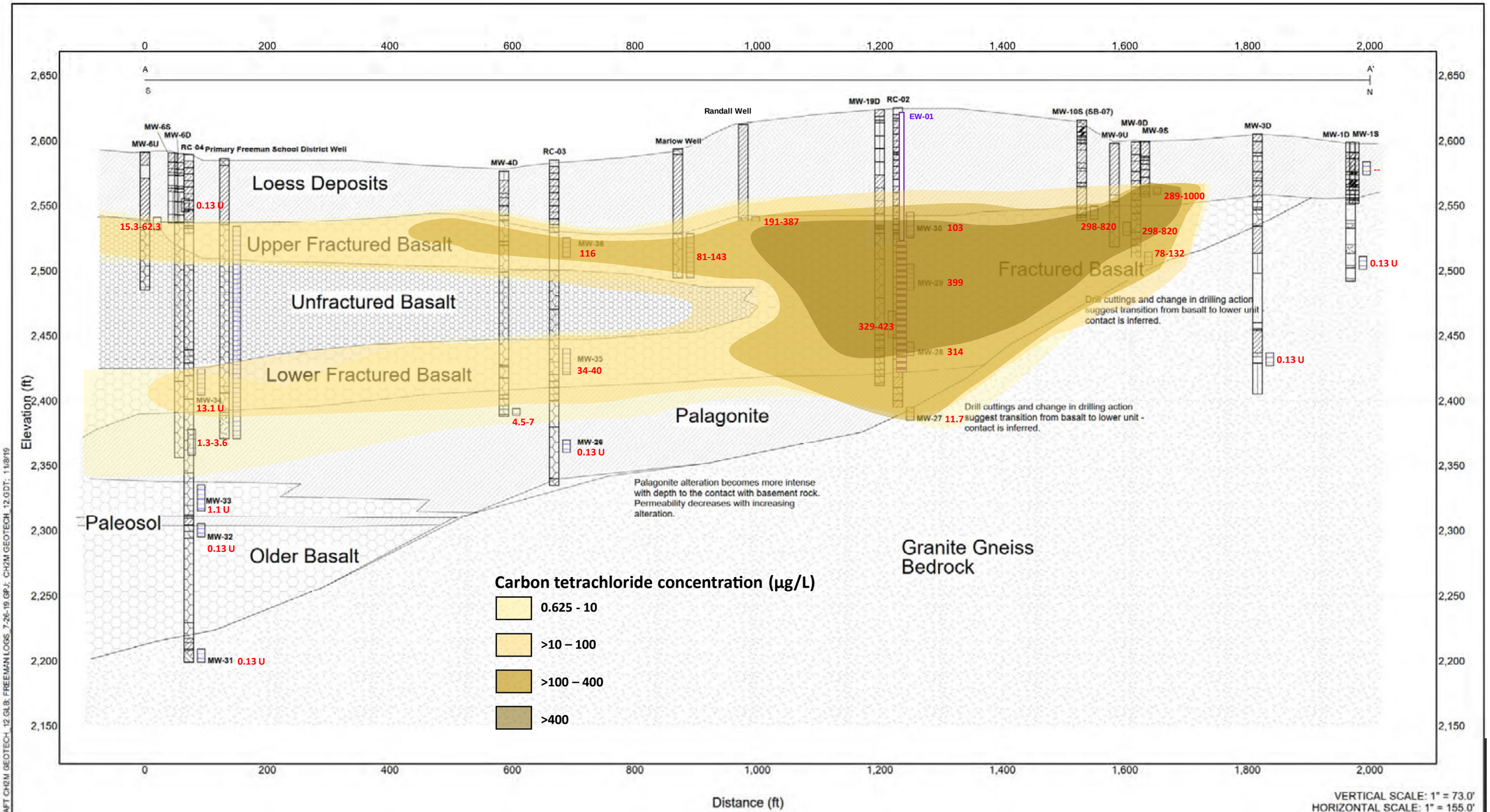


Figure 4-8
Hydrogeologic Cross Section
(North to South)
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



VERTICAL SCALE: 1" = 73.0'
HORIZONTAL SCALE: 1" = 155.0'

11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

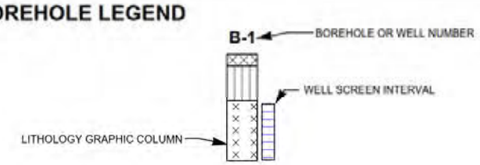
LEGEND

– – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit

BOREHOLE LEGEND



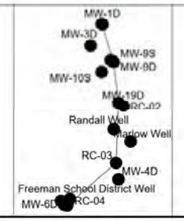
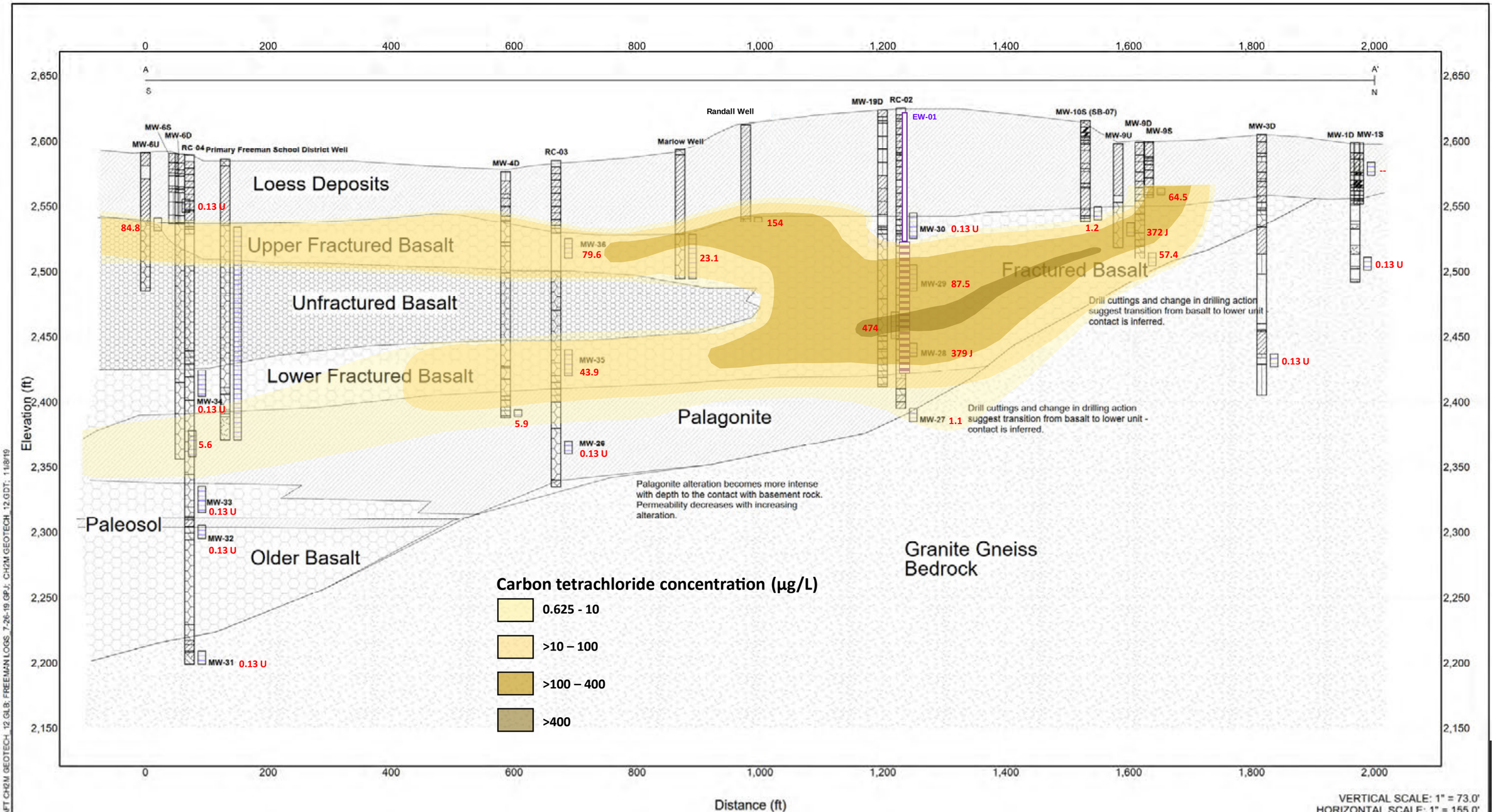


Figure 4-9
Historical Carbon Tetrachloride Concentration Ranges through 2019 (Baseline Conditions)
Interim Remedial Action 2023 Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

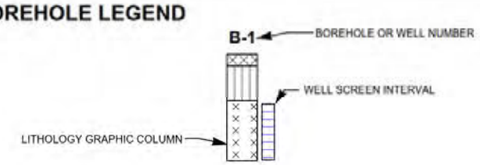
LEGEND

– – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit
J Estimated value between the reporting limit and method detection limit

BOREHOLE LEGEND



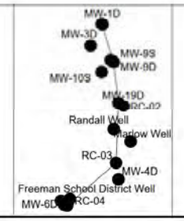
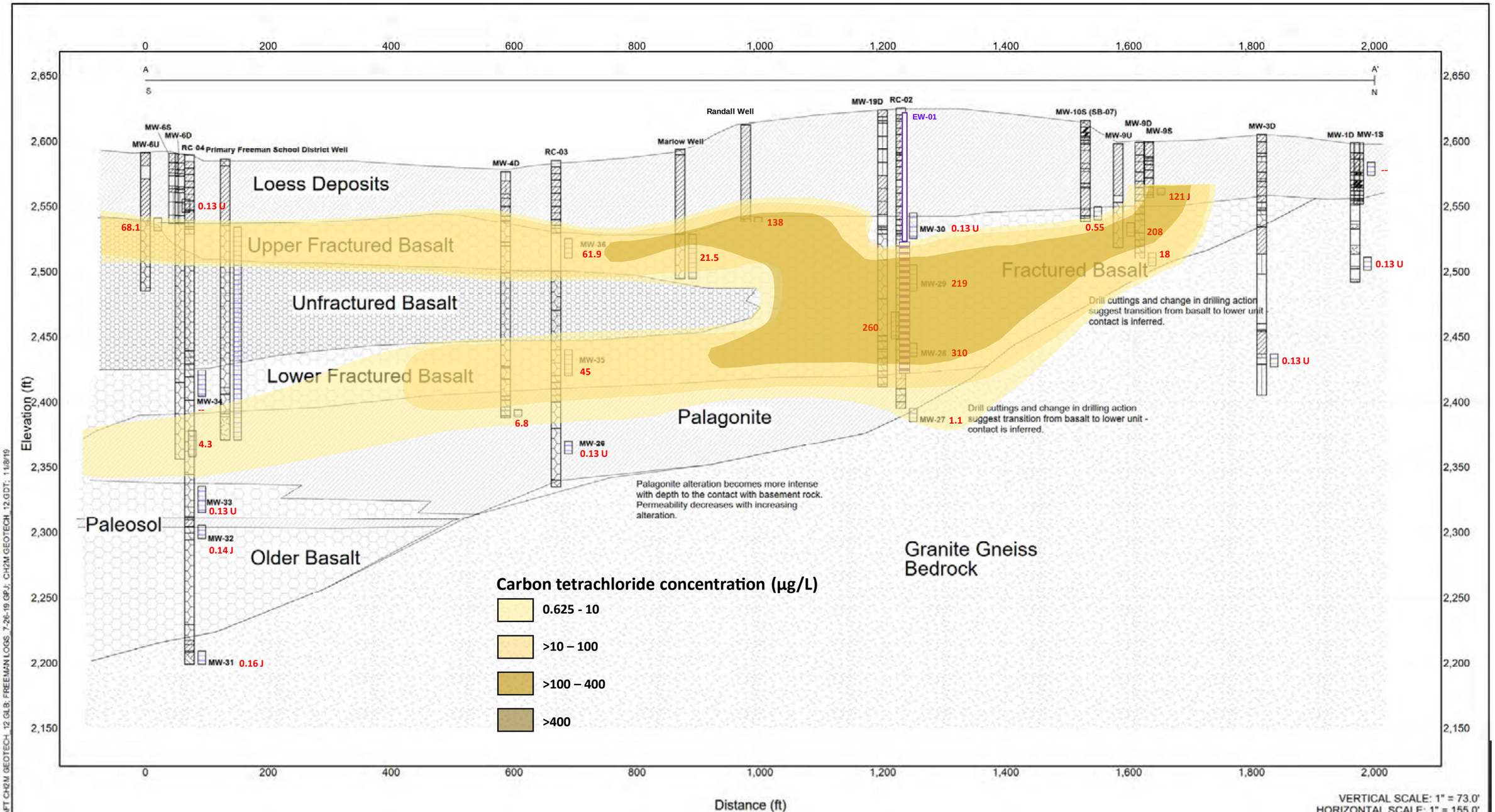


Figure 4-10
Carbon Tetrachloride Concentration
March 2022
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

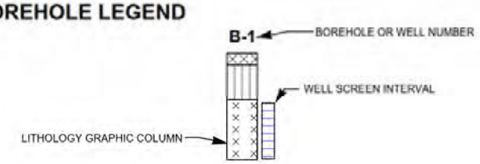
LEGEND

– – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit
J Estimated value between the reporting limit and method detection limit

BOREHOLE LEGEND



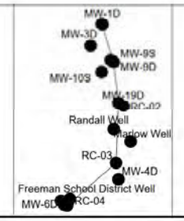
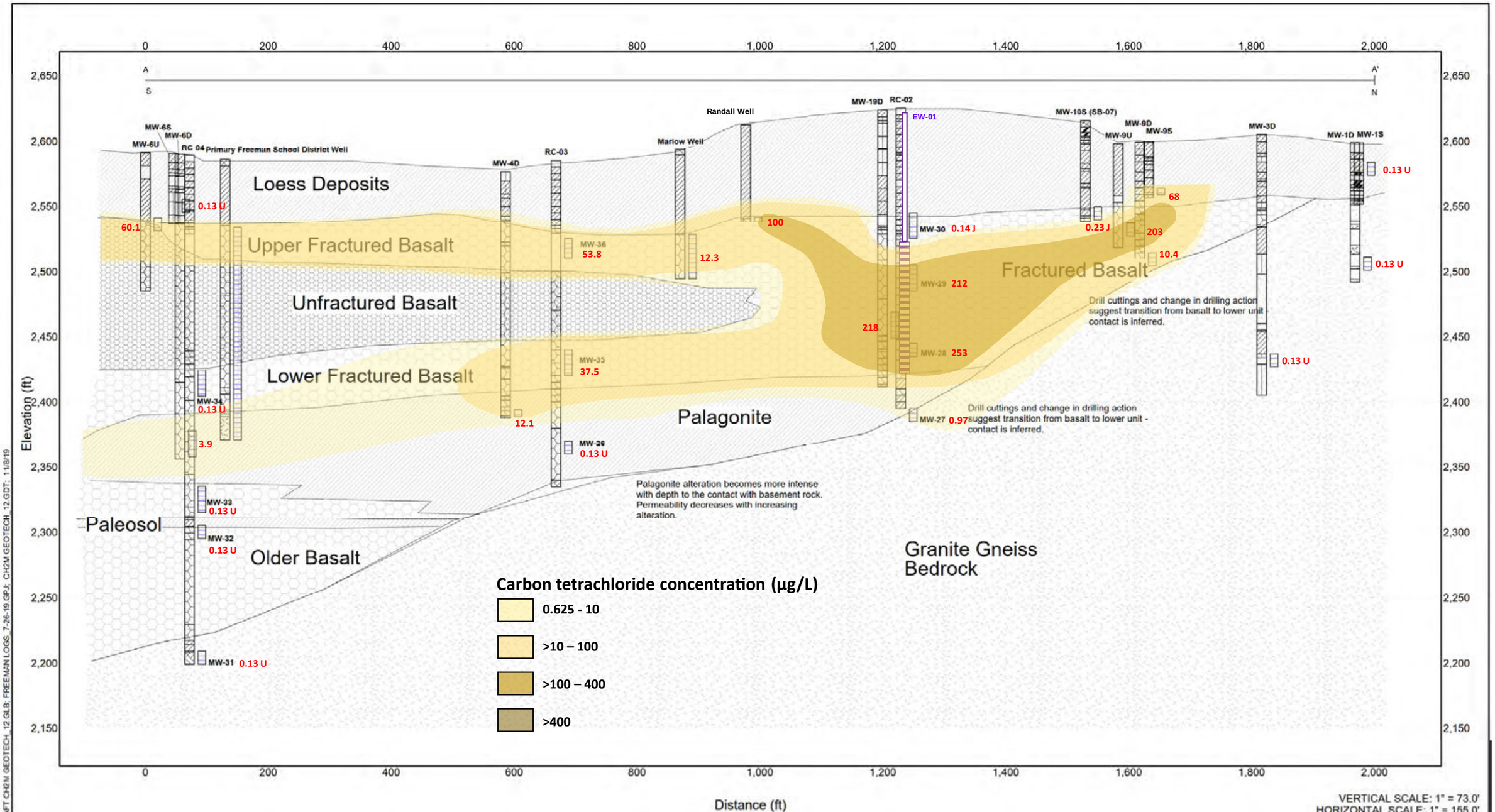


Figure 4-11
Carbon Tetrachloride Concentration
May/June 2022
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

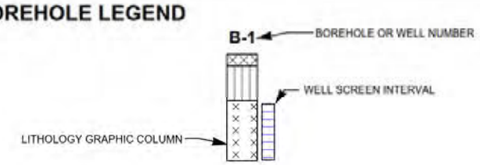
LEGEND

– – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit
J Estimated value between the reporting limit and method detection limit

BOREHOLE LEGEND



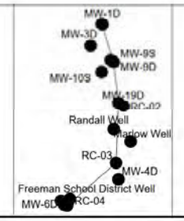
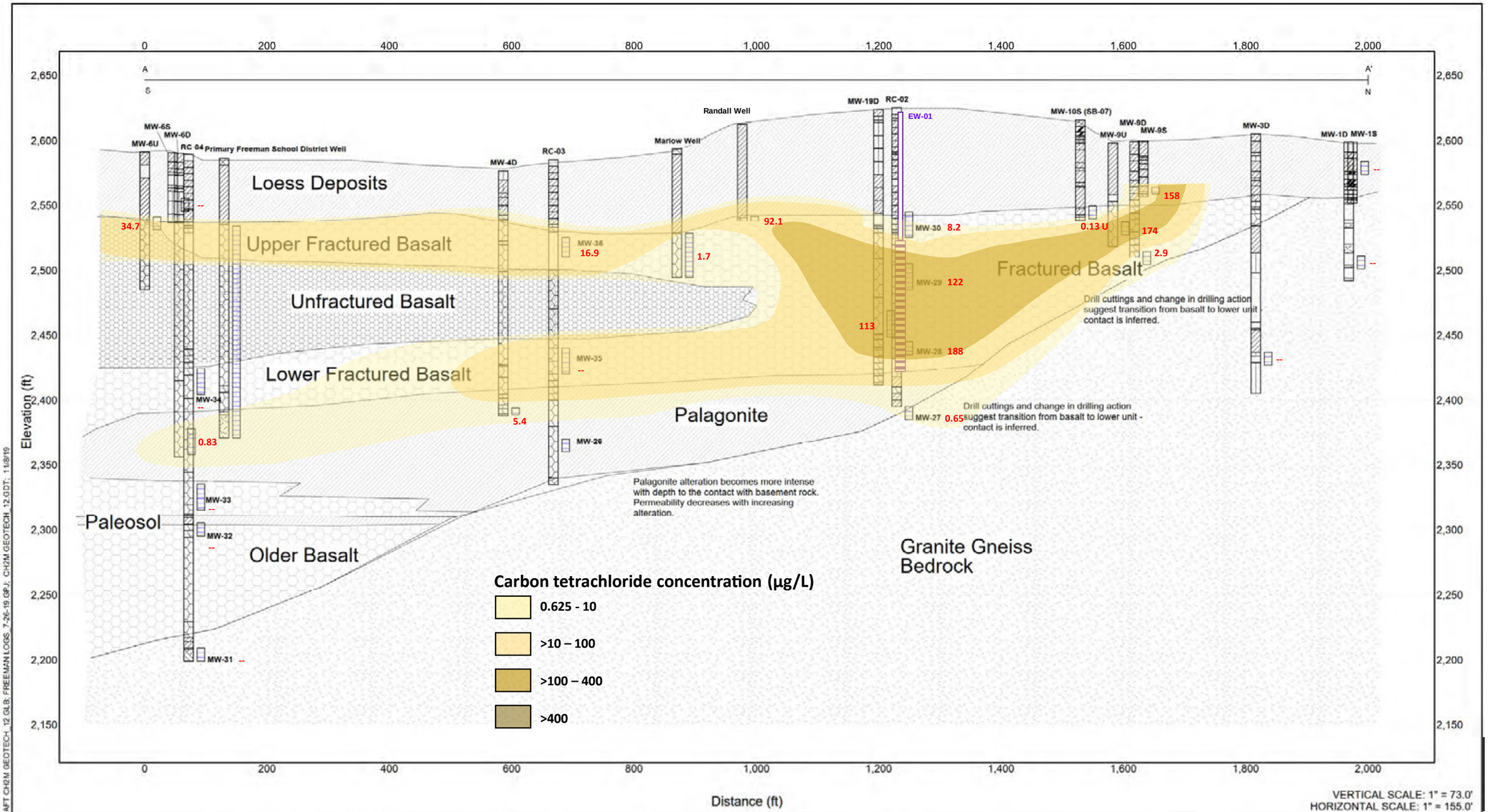


Figure 4-12
Carbon Tetrachloride Concentration
November 2022
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOGWITHLEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

LEGEND

– – – – – Inferred Geologic Contact

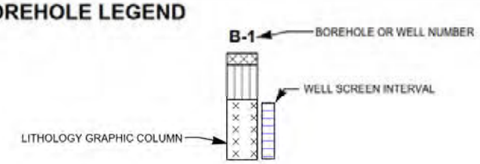
Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)

-- Not available

U Not detected at the listed reporting limit

BOREHOLE LEGEND



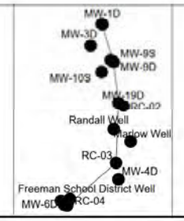
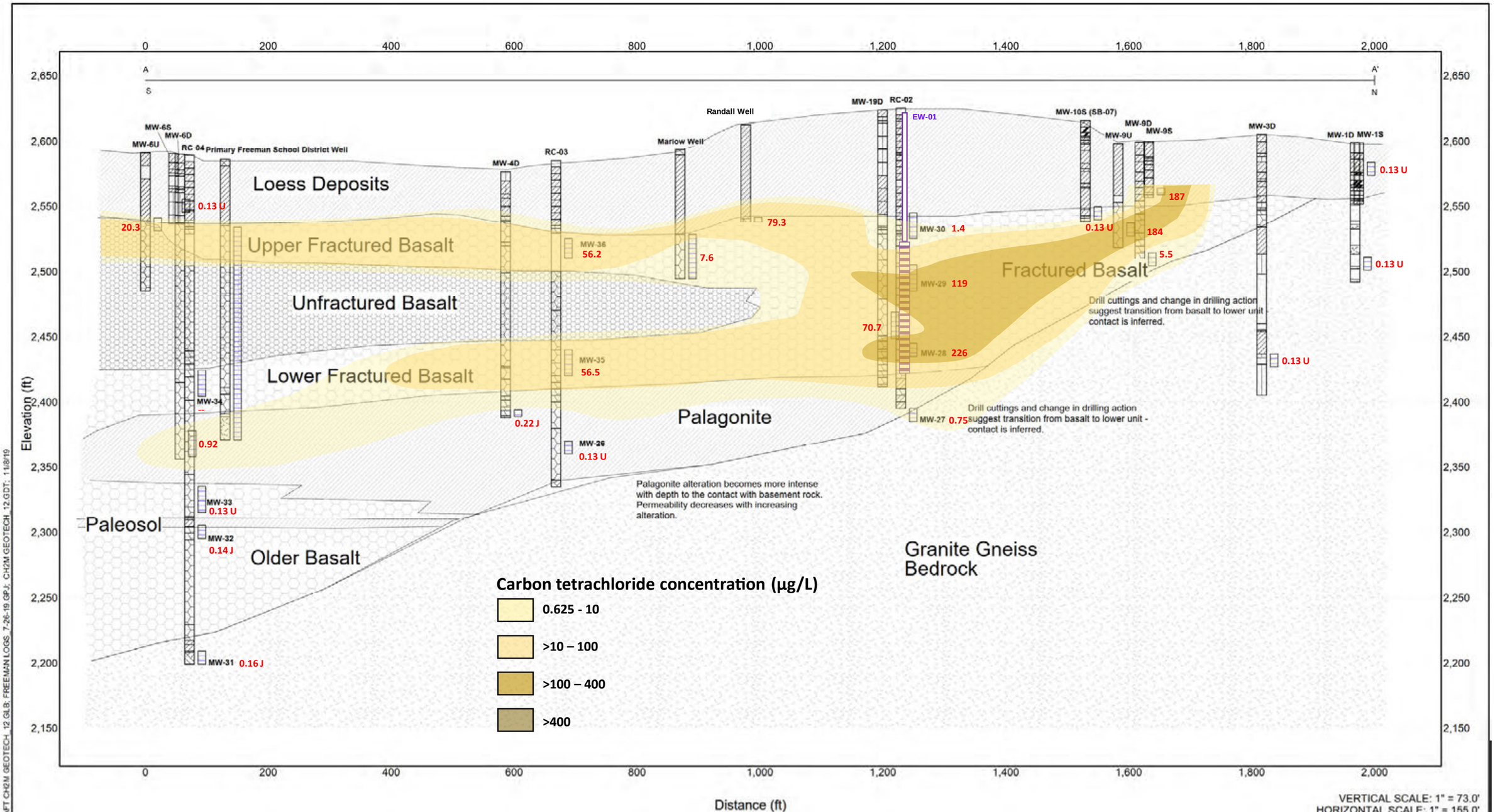


Figure 4-13
Carbon Tetrachloride Concentration
February 2023
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOG WITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12 GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

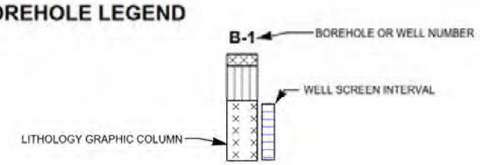
LEGEND

Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit
J Estimated value between the reporting limit and method detection limit

BOREHOLE LEGEND



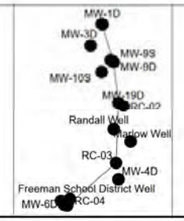
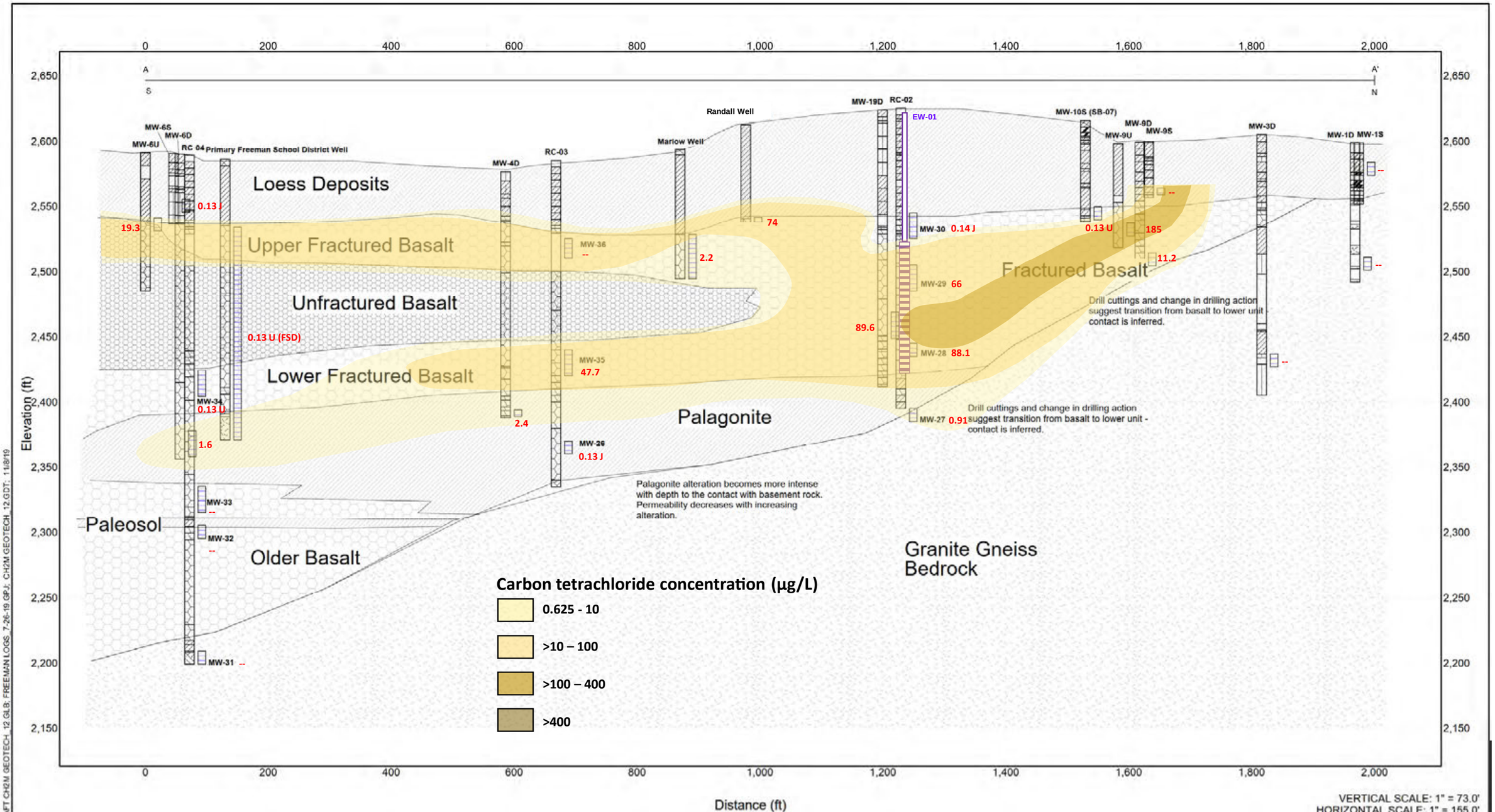


Figure 4-14
Carbon Tetrachloride Concentration
May 2023
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



11X17 STICK LOGWITH LEGEND_DRAFT CH2M GEOTECH_12 GLB; FREEMAN LOGS_7-26-19 GPJ; CH2M GEOTECH_12.GDT; 11/8/19

JACOBS

LITHOLOGY GRAPHICS

Organic Clay or Silt; Well-Graded Sand with Silt; Bedrock; BR-Lean Clay; Poorly Graded Sand with Silt; Well-Graded Sand; BR-Lean Clay; Basalt; Clayey Sand; Silt; Clayey Gravel; Fat Clay; Poorly Graded Sand

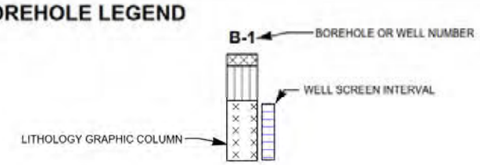
LEGEND

- – – – – Inferred Geologic Contact

Note:
Ground surface shown is connected between boring logs and does not represent actual surface topography on the section line.

124 Carbon tetrachloride concentration (µg/L)
-- Not available
U Not detected at the listed reporting limit
J Estimated value between the reporting limit and method detection limit

BOREHOLE LEGEND



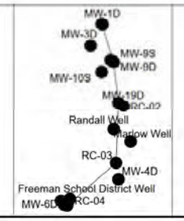
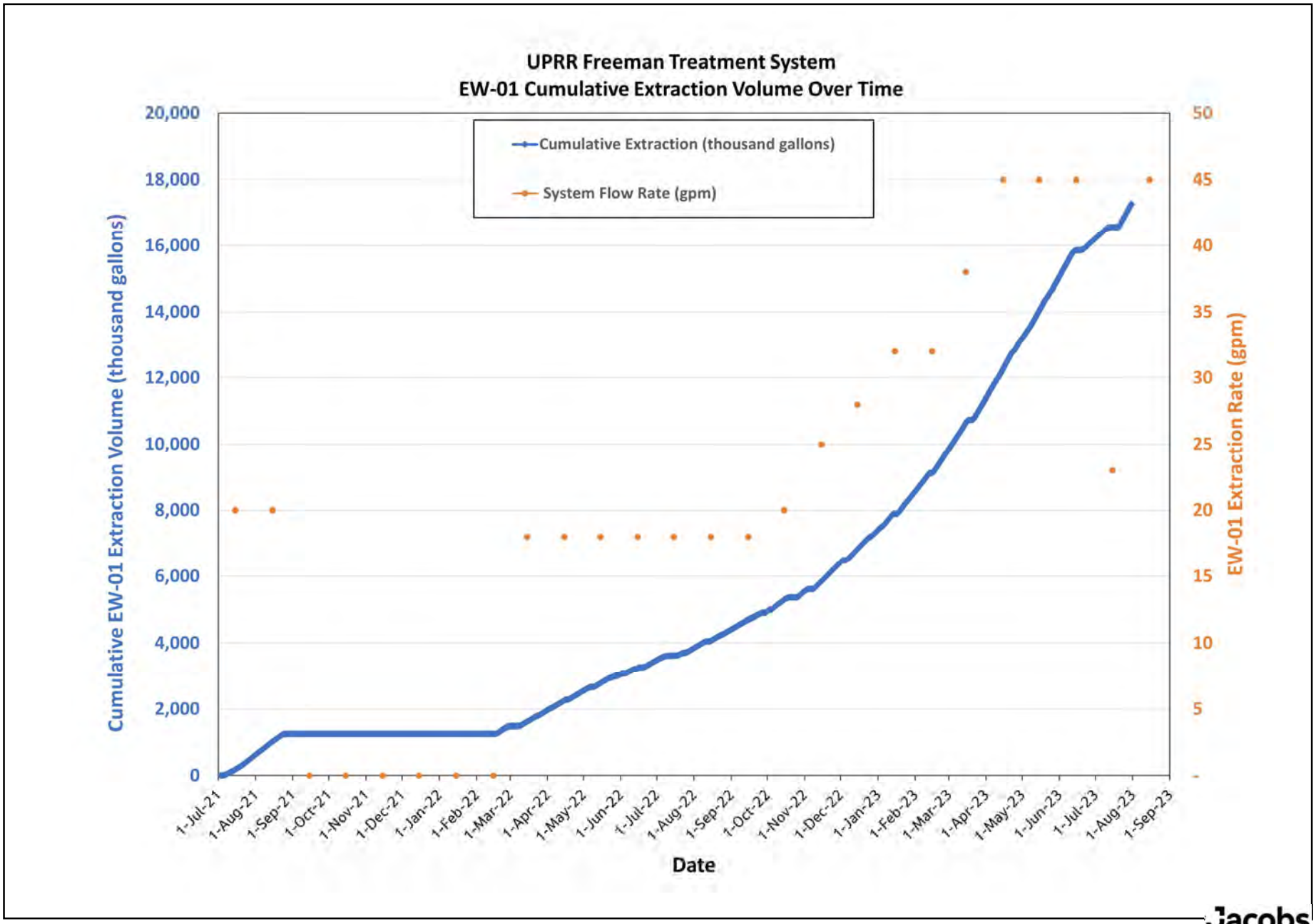
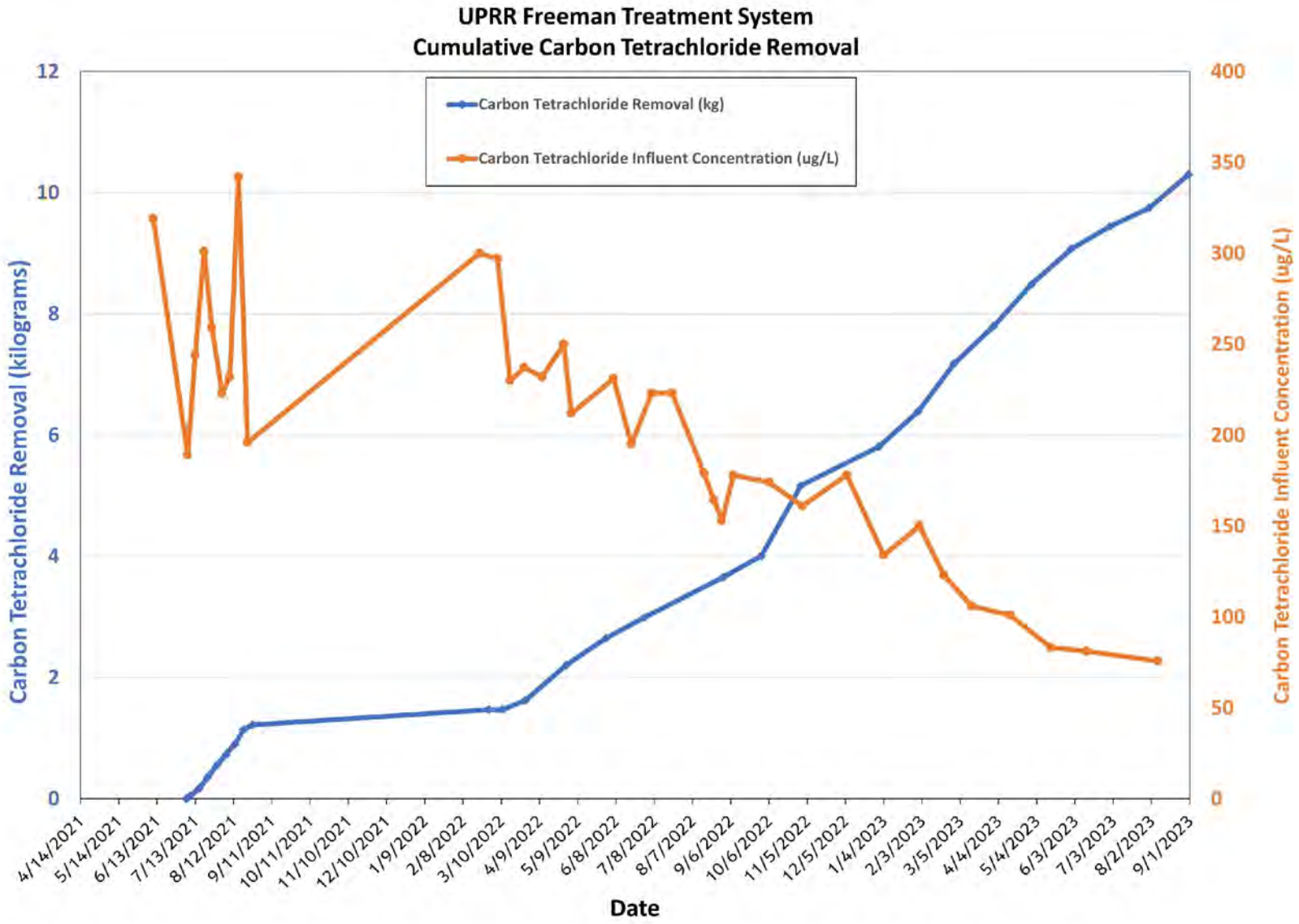


Figure 4-15
Carbon Tetrachloride Concentration
August 2023
Interim Remedial Action 2023
Annual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



Jacobs

Figure 4-16
EW-01 Cumulative Extraction Volume Over Time
Interim Remedial **A**ction 2023 **A**nnual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington



Jacobs

Figure 4-17
Cumulative Carbon Tetrachloride Removal Over Time
Interim Remedial **A**ction 2023 **A**nnual Performance Report
Grain Handling Facility at Freeman
Freeman, Washington

Appendix A
Lithology and Well Construction Logs

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 1 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
0.0				**Topsoil** 0.0 - 0.5'			PID results taken every 5', all results were 0 ppm
				Clay (CL) 0.5 - 45.0' - brown, dry, medium dense, medium plasticity			
5							
10							Began adding water at 10', rest of cuttings will be wet
15							
20							
25							
30							

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 2 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
35							
40							
45				**Clay (CL)** 45.0 - 88.0' - brown, wet, soft, some small angular black 1/4" gravel, some sand			Softer drilling at 45'
50							
55							
60							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 3 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
65							
70							
75							
80							Added more water, dry
85							
90				**Basalt** 88.0 - 93.0' - variety of colors, weak, highly decomposed, some soft clay			

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 4 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
							Harder drilling
95				**Basalt** 93.0 - 96.0' - black with some red oxidation, moderate, some soft clay			
				Basalt 96.0 - 105.0' - black with less red oxidation, strong, slightly decomposed to fresh			
100							Water in borehole at 100', formation water, sealed at 101'
105				**Basalt** 105.0 - 115.0' - black, strong, fresh, competent			
110							
115				**Basalt** 115.0 - 145.0' - black with some red oxidation, strong, slightly decomposed			
120							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 5 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Air Rotary
WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
125							
130							
135							
140							
145				**Basalt** 145.0 - 175.0' - black, strong, fresh			Harder drilling at 145'
150							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 6 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
155							
160							
165							
170							
175				**Basalt** 175.0 - 180.0' - black with red oxidation, moderate to strong, slight to moderate decomposed			Increase in water production
180							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 7 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Air Rotary
WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
				Basalt 180.0 - 185.0' - brown to tan with some black, moderate density, highly decomposed			Increase in water production
185				**Basalt** 185.0 - 195.0' - black, moderate to strong, fresh, slight oxidation at 190'			
190							
195				**Basalt** 195.0 - 202.0' - dark brown with black, moderate density, slightly decomposed			Increase in water production
200							
205				**Clay with Weathered Basalt (CL)** 202.0 - 215.0' - very few cuttings, hammer having hard time firing, gray, very soft			Increase in water production
210							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	EW-01	SHEET 8 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near RC-02 cluster

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/31/2020
END : 8/2/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
215				**Clay (CL)** 215.0 - 218.0' - white, very soft, high plasticity			Very few cuttings from borehole, increase in water production, hammer almost unable to fire, color change in water to tan/orange
220				**Clay with Sand (CL)** 218.0 - 222.0' - tan orangish tan, very soft, high plasticity with fine quartz sand and trace amounts of muscovite at the bottom			
225							
	228.0			Bottom of Boring at 228.0 ft bgs.			6,300 gallons of water produced from 101 - 228'
230							
235							
240							

Jacobs

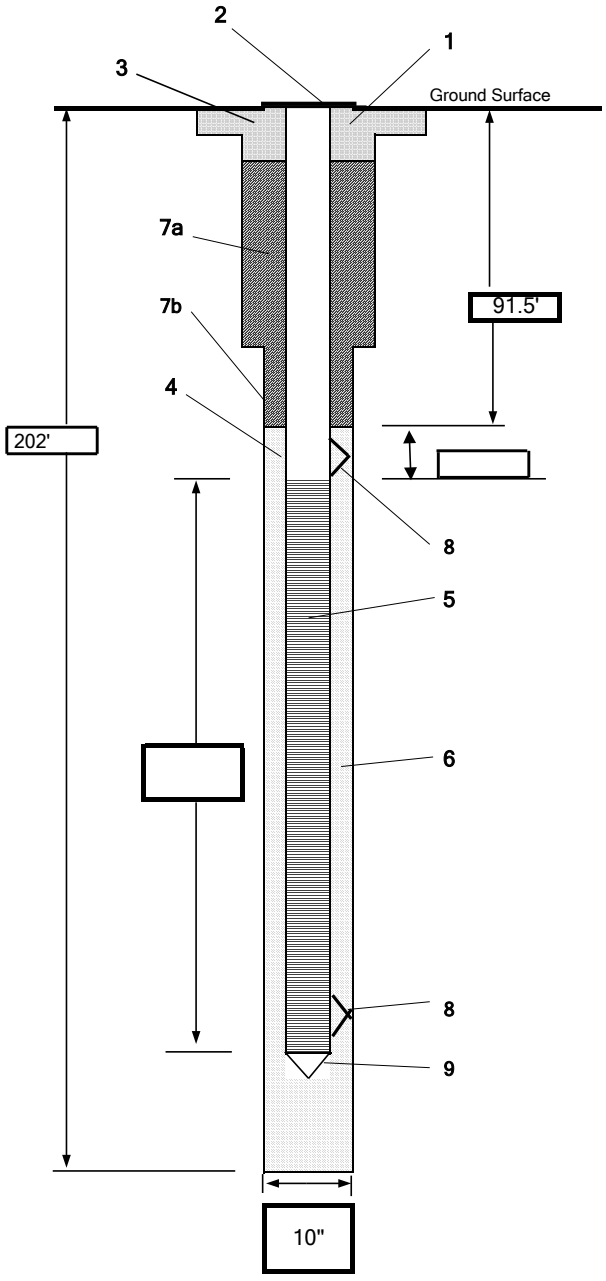
DATE: 2/26/2021 WELL ID: EW-01

EXTRACTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : Field behind FSD bus barn. Near MW-19D cluster.

Drilling Method: Sonic/Air Rotary Drilling Contractor: Environmental West

Well Construction Start Date: 2/26/2021 Completion Date: 3/9/21 Project Number : UPSRWA05



Generalized Monitoring Well Completion Diagram

1-	Surface completion	Concrete vault
2-	Casing flush mount	Vault Lid
3-	Surface completion/pad	Concrete Vault
4-	Dia./type of well casing	6" Mild Steel Casing
5-	Type/slot/size of screen	NA
6-	Type screen filter	NA NA
7a-	Type of seal - depth	Neat cement
7b-	Type of seal - depth	
8-	Centralizers (if applicable)	
9-	Sump below screen	NA

Well development: Developed on 3/10/21. Approx. 2,750 gallons of water removed from well.

Comments: Extraction well completed as an open hole well below sealed 6" SS casing installed at 91.5'. Borehole diameter was reduced from 10" to 6" nominal at 91.5'.

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 1 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near school Freeman sign

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/25/2020
END : 7/28/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
0.0				**Topsoil** 0.0 - 0.5'			PID readings = 0 ppm
				Silt (ML) 0.5 - 5.0' - brown, dry, medium dense, non-plastic, trace soft clay			
5				**Clay (CL)** 5.0 - 31.0' - brown, wet, medium dense, medium plasticity			Add water at 5', all samples will be wet
10							
15							
20							
25							
30							

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 2 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near school Freeman sign

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/25/2020 END : 7/28/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
				Clayey Gravel with Sand (GW) 31.0 - 33.0' - brown to tan, some soft medium plasticity, some coarse sand			
35				**Clay (CL)** 33.0 - 55.0' - brown, soft, medium plasticity			
40							
45							
50							
55				**Clay (CL)** 55.0 - 120.0' - brown, saturated, soft, plastic, some black sand and gravel, increases in size to small gravel at 75', few medium sand in tan clay at 106'			
60							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 3 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near school Freeman sign

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/25/2020 END : 7/28/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
65							
70							
75							
80							
85							
90							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 4 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near school Freeman sign

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/25/2020
END : 7/28/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
95							
100							
105							Very difficult to take sample due to water added creating mud
110							
115							
120							

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 5 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near school Freeman sign

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/25/2020 END : 7/28/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
125				**Clayey Sand (SC)** 120.0 - 155.0' - tan, soft, low plasticity clay, poorly graded quartz sand, muscovite present			
130							
135							
140							Stop injecting water
145							
150							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 6 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near school Freeman sign
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Air Rotary
WATER LEVELS : ---
START : 7/25/2020
END : 7/28/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
155				**Sand (SP)** 155.0 - 177.0' - tan, moist, dense, fine grained, some quartz and muscovite, trace silt and clay			
160							
165							
170							
175							
180				**Clayey Sand (SC)** 177.0 - 218.0' - tan, dry, soft, low plasticity, poorly graded quartz sand, muscovite present, wet at 190' and then moist			

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 7 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near school Freeman sign

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/25/2020 END : 7/28/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
185							
190							Water in borehole
195							
200							Increase in water downhole
205							Increase in water downhole
210							Increase in water downhole

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-01	SHEET 8 OF 8

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near school Freeman sign

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/25/2020 END : 7/28/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
215							
220				**Granite** 218.0 - 222.0' - pieces of feldspar approx 1/4" in size, fine quartz and muscovite, all loose, no competent granite, weathered, moist at 215'			
	222.0			Bottom of Boring at 222.0 ft bgs.			
225							
230							
235							
240							

Jacobs

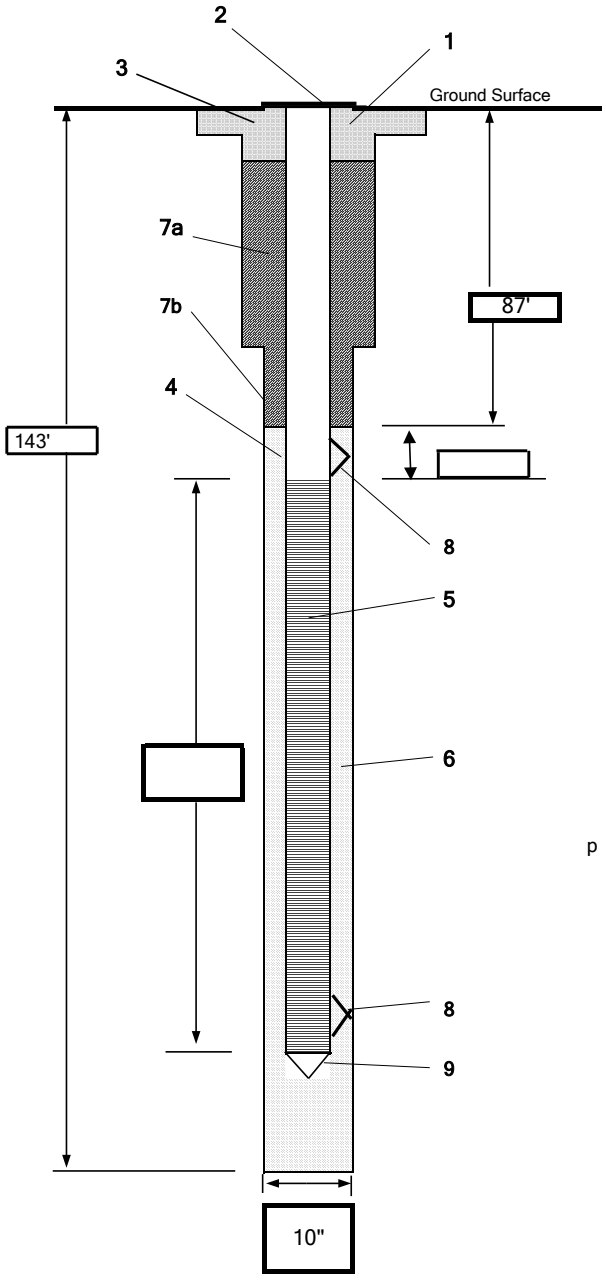
DATE: 2/17/2021 WELL ID: IW-01

INJECTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : Freeman School District Overflow Parking Lot

Drilling Method: Sonic/Air Rotary Drilling Contractor: Environmental West

Well Construction Start Date: 2/17/2021 Completion Date: 2/25/21 Project Number : UPSRWA05



Generalized Monitoring Well Completion Diagram

1- Surface completion: Concrete vault

2- Casing flush mount: Vault lid

3- Surface completion/pad: Concrete vault

4- Dia./type of well casing: 6" Mild Steel Casing

5- Type/slot/size of screen: NA

6- Type screen filter: NA
NA

7a- Type of seal - depth: Neat cement
7b- Type of seal - depth:

8- Centralizers (if applicable):

9- Sump below screen: NA

Well development: Developed on 3/10/21. Approx. 1,800 gallons of water removed from well.

p

Comments: Injection well was completed as an open hole well below sealed 6" mild steel casing installed at 87'. Borehole diameter was reduced from 10" to 6" nominal at 87'.

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-02	SHEET 1 OF 3

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : North end of grain silos
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Sonic
WATER LEVELS : ---
START : 11/5/2020
END : 11/6/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
0.0				**Topsoil** 0.0 - 1.0'			PID readings = 0 ppm
				Clay (CL) 1.0 - 3.0' - brown, dry, hard, medium to low plasticity			
5				**Clay (CL)** 3.0 - 7.0' - tan, dry, hard, medium to low plasticity, quartz and muscovite present, contains some angular gravel, large, a couple inches in size			
10				**Silt (ML)** 7.0 - 19.0' - gray with reddish brown, dry, medium to stiff, non plastic, trace amounts of low plasticity clay, lots of muscovite and quartz, weathered granite			
15							
20				**Sand (SP)** 19.0 - 24.0' - gray with reddish brown and white, dry, medium dense, fine sand, contains non plastic fines and trace amounts of clay, very large muscovite over 1-7" in size			
25				**Silt (ML)** 24.0 - 34.0' - gray with white, dry, medium to stiff, non plastic, trace amounts of fine sand and plastic clay, muscovite present			Water in borehole, no water in sample
30							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-02	SHEET 2 OF 3

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : North end of grain silos
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Sonic
WATER LEVELS : ---
START : 11/5/2020
END : 11/6/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
35				**Silt with Sand (ML)** 34.0 - 51.0' - gray with reddish brown, dry, medium dense, non plastic, fine sand, trace clay, muscovite, wet at 36', samples remain mostly dry, little moist			
40							
45							
50				**Sand (SP)** 51.0 - 53.0' - gray, moist, loose, fine to medium sand, muscovite			
55				**Silt with Sand (ML)** 53.0 - 65.0' - tan with gray and white, moist, medium to stiff, fine sand, muscovite and quartz, trace clay			
60							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-02	SHEET 3 OF 3

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : North end of grain silos

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Sonic

WATER LEVELS : --- START : 11/5/2020 END : 11/6/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft) / RECOVERY (ft) / SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
65					Harder drilling
66.0		**Sand (SP)** 65.0 - 66.0' - gray, moist, medium to dense, fine to medium sand, muscovite Bottom of Boring at 66.0 ft bgs.			
70					
75					
80					
85					
90					

Jacobs

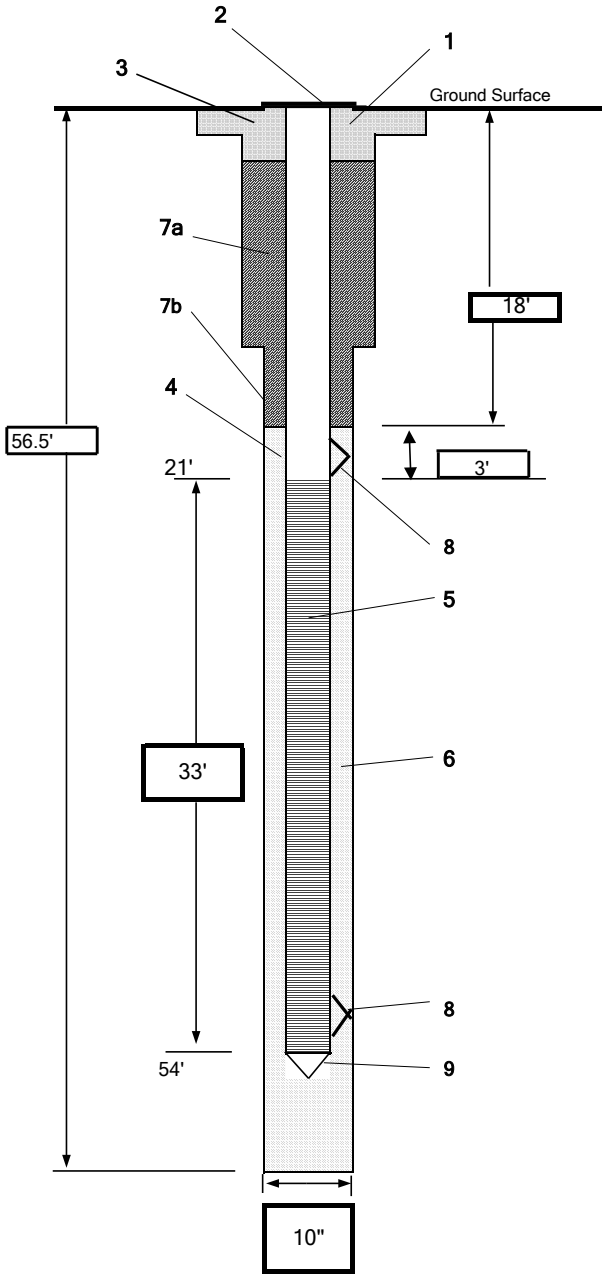
DATE: 11/6/2020 WELL ID: IW-02

INJECTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : NE of Grain Silos

Drilling Method: Sonic Drilling Contractor: Environmental West

Well Construction Start Time: 12:00 Completion Time: 14:30 Project Number : UPSRWA05



Generalized Monitoring Well Completion Diagram

1-	Surface completion	Concrete vault
2-	Casing flush mount	Vault lid
3-	Surface completion/Pad	Concrete vault
4-	Dia./type of well casing	6" Sch 80 PVC
5-	Type/slot/size of screen	0.020" Slot
6-	Type screen filter	8x16 Filter pack 20x40 Transition sand
7a-	Type of seal - depth	Neat cement
7b-	Type of seal - depth	3/8" Bentonite chips
8-	Centralizers (if applicable)	11', 21', 37.5', and 54'
9-	Sump below screen	2' flat bottom

Well development: Well developed on 3/11/21. Purged dry, approx. 85 gallons of water removed from well.

Comments: Backfilled with bentonite from 66' to 56.5'.

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-03	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near 75

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Sonic

WATER LEVELS : --- START : 11/3/2020 END : 11/3/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
0.0				**Topsoil** 0.0 - 0.5'			PID readings = 0 ppm
				Gravel (GW) 0.5 - 1.0' - black, loose, well-graded, some sand, old railroad ballast material			
5				**Clay (CL)** 1.0 - 2.0' - brown dry, stiff, high plasticity, some small gravel			
				Silt (ML) 2.0 - 4.0' - reddish brown with gray, dry, soft, no plasticity, few very soft low plasticity clay			
				Clay (CL) 4.0 - 12.0' - brown with reddish brown and gray, dry, medium density, medium plasticity			
10							
				Clay (CL) 12.0 - 13.0' - red with orange and brown, dry, medium density, medium to low plasticity, few silts			
15				**Clay (CL)** 13.0 - 25.0' - reddish brown, dry, medium density, low to medium plasticity, few silt, 2" gravel seam at 20'			
20							
25				**Clay (CL)** 25.0 - 26.0' - gray with reddish brown, dry, medium density, high plasticity			
				Clay (CL) 26.0 - 39.0' - reddish brown, dry, medium to soft, low to medium plasticity, few silt			
30							

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-03	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near 75

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Sonic

WATER LEVELS : --- START : 11/3/2020 END : 11/3/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
35							
40				**Clay (CL)** 39.0 - 41.0' - gray, moist, very soft, high plasticity, few fine sand			
				Clay (CL) 41.0 - 42.0' - gray, dry, stiff, medium plasticity			
				Clay with Sand (CL) 42.0 - 44.0' - gray, moist, very soft, high plasticity, medium to fine sand			
45				**Silt with Sand (ML)** 44.0 - 46.0' - brown, dry, very stiff, no plasticity, medium to fine sand			
				Basalt 46.0 - 53.0' - dark gray with red oxidation, dry, weak, lots of gravel and fine to medium sand, wet at bottom			
50							Water, DTW in borehole at 28'
				No recovery 53.0 - 56.0'			
55							
	56.0			Bottom of Boring at 56.0 ft bgs.			
60							

Jacobs

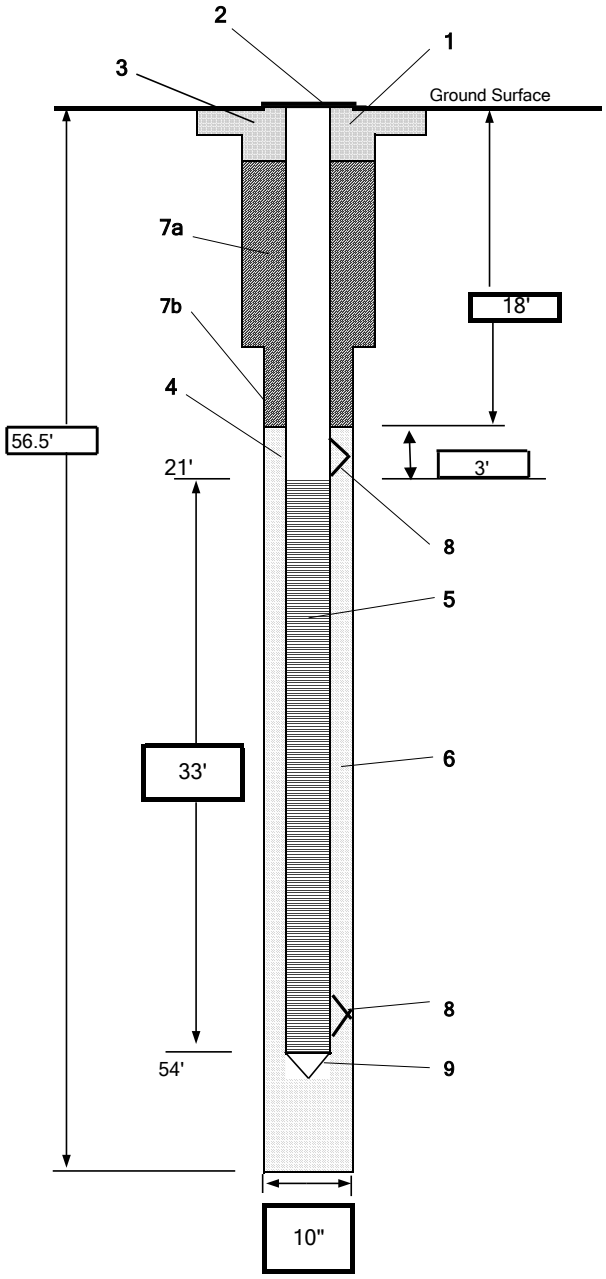
DATE: 11/4/2020 WELL ID: IW-03

INJECTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : NE of Grain Silos

Drilling Method: Sonic Drilling Contractor: Environmental West

Well Construction Start Time: 13:00 Completion Time: 16:30 Project Number : UPSRWA05



Generalized Monitoring Well Completion Diagram

1-	Surface completion	Concrete vault
2-	Casing flush mount	Vault lid
3-	Surface completion/pad	Concrete vault
4-	Dia./type of well casing	6" Sch 80 PVC
5-	Type/slot/size of screen	0.020" Slot
6-	Type screen filter	8x16 Filter pack 20x40 Transition sand
7a-	Type of seal - depth	Bentonite grout
7b-	Type of seal - depth	3/8" Bentonite chips
8-	Centralizers (if applicable)	11', 21', 37.5', and 54'
9-	Sump below screen	2.5' flat bottom

Well development: Developed on 3/11/21. Approx. 160 gallons of water

Comments:

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 1 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near MW-13S

ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : ---
START : 7/23/2020
END : 7/25/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
0.0				**Topsoil** 0.0 - 0.5'			PID readings = 0 ppm
				Clay (CL) 0.5 - 20.0' - brown, dry, medium density, low to medium plasticity			
5							
10							Begin injecting water downhole, all samples will be wet
15							
20				**Clay (CL)** 20.0 - 35.0' - brown, wet, very soft, low plasticity, trace silt nodules			
25							
30							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 2 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near MW-13S

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/23/2020 END : 7/25/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
35				**Clay (CL)** 35.0 - 42.0' - brown, wet, very soft, low plasticity, trace to few weathered basalt chips, very weak, highly decomposed			
40							Water from formation, end injection
45				**Basalt** 42.0 - 85.0' - black with red, very weak, highly decomposed, trace clay at 42', chip size increasing, less red color with depth, then soft at 46'			
50							End 10' casing sections, begin 5' sections
55							
60							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 3 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near MW-13S

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/23/2020 END : 7/25/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
65							
70							
75							
80							
85				**Basalt** 85.0 - 88.0' - black with some discoloration, very weak, highly decomposed			1500 gallons of water from 42 - 85'
90				**Basalt** 88.0 - 94.0' - black, moderate, slightly decomposed			Hard drilling

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 4 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near MW-13S

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/23/2020 END : 7/25/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
							Very hard drilling
95				**Basalt** 94.0 - 100.0' - black with some red, moderate to weak, slightly decomposed, softer than above			Soft drilling
100				**Basalt** 100.0 - 105.0' - black, moderate to strong, fresh, very hard drilling, sealed at 105'			Very hard 1500 gallons of water from 85 - 103'
105				**Basalt** 105.0 - 120.0' - black, moderate to strong, fresh			Signifcantly less water after setting seal
110							Water resumes
115							
120							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 5 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near MW-13S
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Air Rotary
WATER LEVELS : ---
START : 7/23/2020
END : 7/25/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
				Basalt 120.0 - 125.0' - black with some red discoloration, weak to moderate, slightly decomposed			Softer drilling
125				**Basalt** 125.0 - 135.0' - black with red and some green, moderate to weak, moderately decomposed with increasing discoloration, highly decomposed			Color change to brown, formation water
130							
							Softer drilling
135				**Basalt** 135.0 - 145.0' - brown with red and some black, weak, highly decomposed, some soft plastic clay			Hard drilling
140							
145							450 gallons of water from 105 - 144'
				Basalt 145.0 - 170.0' - black with some red discoloration, moderate, slightly to moderately decomposed, some clay and discoloration at 165'			
150							

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 6 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington
LOCATION : Near MW-13S
ELEVATION :
DRILLING CONTRACTOR : Environmental West Exploration, Inc
DRILLING METHOD AND EQUIPMENT : Air Rotary
WATER LEVELS : ---
START : 7/23/2020
END : 7/25/2020
LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
155							
160							Hard drilling
165							Increase in water
170				**Basalt** 170.0 - 178.0' - mostly green with some black, moderate, decomposed			
175							
180				**Clay (CL)** 178.0 - 179.0' - tan, soft, plastic, with some basalt			

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04	SHEET 7 OF 7

SOIL BORING LOG

PROJECT : Grain Handling Facility at Freeman, Washington LOCATION : Near MW-13S

ELEVATION : DRILLING CONTRACTOR : Environmental West Exploration, Inc

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/23/2020 END : 7/25/2020 LOGGER : JE

DEPTH BELOW EXISTING GRADE (ft)	INTERVAL (ft)	RECOVERY (ft)	SAMPLE TYPE/#	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	SYMBOLLIC LOG	PID (ppm)	COMMENTS
				Clay (CL) 179.0 - 182.0' - white, soft, some fine sand, quartz present, high plasticity, some basalt			
				Sand (SP) 182.0 - 184.0' - clear with some white, coarse grained, some white clay, trasition from basalt to granite			
184.0				Bottom of Boring at 184.0 ft bgs.			6000 gallons of water produced from 144 - 184'
185							
190							
195							
200							
205							
210							

Jacobs

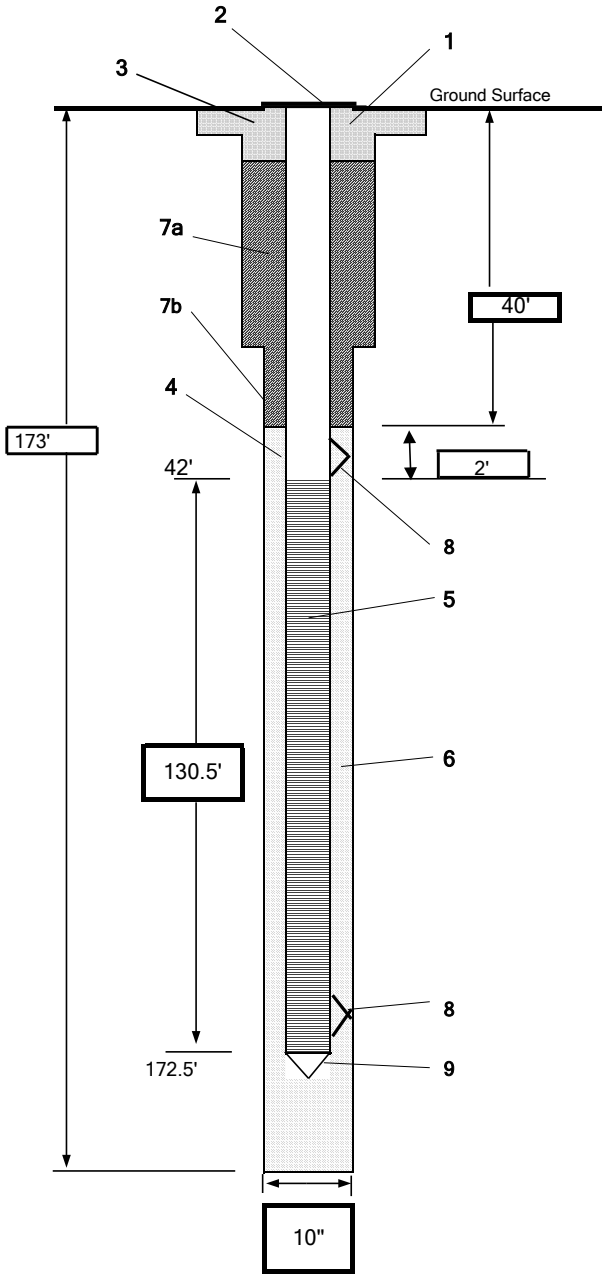
DATE: 2/11/2021 WELL ID: IW-04

INJECTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : Southeast of Grain Handling Facility, near MW-13S.

Drilling Method: Sonic/Air Rotary Drilling Contractor: Environmental West

Well Construction Start Date: 2/11/2021 Completion Date: 2/16/21 Project Number : UPSRWA05



Generalized Monitoring Well Completion Diagram

1- Surface completion	Concrete vault
2- Casing flush mount	Vault lid
3- Surface completion/pad	Concrete vault
4- Dia./type of well casing	6" Sch 80 PVC
5- Type/slot/size of screen	Stainless Steel 0.060" Slot
6- Type screen filter	6x12 Filter pack
7a- Type of seal - depth	Neat cement
7b- Type of seal - depth	Benonite pellets (TR30)
8- Centralizers (if applicable)	
9- Sump below screen	6" flat bottom

Well development: Developed on 3/11/21. Approx. 1,750 gallons of water removed from well.

Comments: Borehole diameter transitioned from 10" to 8" at 91.5'.

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 1 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
		0.0-9.0' LEAN CLAY (CL) very dark grayish brown (10YR 3/2), slightly damp, soft, medium plasticity, no odor		0		
5						
		9.0-19.0' SILT WITH GRAVEL (ML) dark brown (7.5YR 3/3) with pale brown mottling (2.5Y 8/3), stiff, trace subrounded to subangular fine gravel, some clumps of very dense fine to medium-grained sand, possible chucks of weathered basalt at 16.0'				Start adding water, unable to determine moisture content
10						
15						

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 2 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
				0		
20		**19.0-28.0' LEAN CLAY (CL)** grayish brown (10YR 5/2), very stiff to hard, some silty clumps				Clay getting emmulsified in water to push out of hose
25				0.4		
30		**28.0-47.0' WEATHERED BASALT** dark greenish gray (G1 4/10Y) to trace pale yellowish green (10Y 5G Y/6) minerals, trace dark reddish brown rock fragments, rock fragments are fine-grained sand to coarse-grained gravel, rock fragments are wet				No water added, but still wet from residued water in system

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 3 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman LOCATION : Freeman, WA

ELEVATION : DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/11/22 09:30 END : 8/4/22 10:35 LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
35						Hydraulic test conducted in temp well from 37.0-47.0' bgs
40						
45						

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 4 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman LOCATION : Freeman, WA

ELEVATION : DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/11/22 09:30 END : 8/4/22 10:35 LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
		47.0-57.0' WEATHERED BASALT WITH CLAY dark greenish gray (G1 4/10Y) with light yellowish brown (2.5Y 6/3) clay, pale yellowish green (5GY/4), dark reddish brown (5YR 4/2) rock fragments, lots of water produced				
50				0		
55		**57.0-67.0' WEATHERED BASALT WITH CLAY** dark greenish gray (G1 4/10Y) with light yellowish brown (2.5Y 6/3) clay, pale yellowish green (5GY/4), dark reddish brown (5YR 4/2) rock fragments, more clay than above unit		0		Most of clay is getting emmulsified in water
60						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 5 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman LOCATION : Freeman, WA

ELEVATION : DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/11/22 09:30 END : 8/4/22 10:35 LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
65						
		67.0-72.0' LEAN CLAY (CL) brown (7.5YR 5/4), wet, some sand and fine-grained gravel sized rock fragments		0		
70						Cuttings are still wet, but borehole is producing less water
		72.0-75.0' WEATHERED BASALT WITH CLAY dark greenish gray (G1 4/10Y) with light yellowish brown (2.5Y 6/3) clay, pale yellowish green (5GY/4), dark reddish brown (5YR 4/2) rock fragments, chunks of gray clay				
75						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 6 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
		75.0-83.0' LEAN CLAY (CL) chunks of gray (G1 7/N) and reddish brown clay, fine-grained sand to coarse-grained gravel size rock fragments				Driller thinks water is following the bit down from the upper productive zone
80		color change to yellow (10YR 7/6)				
		83.0-87.0' SAND WITH SILT (SM) brown (10YR 5/3), wet, fine grained, some silt, trace fine-grained gravel				
85						
		87.0-90.0' BASALT grayish brown sand with few pale green minerals, fine to coarse grained		0		hard drilling, competent rock, not producing water
90						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 7 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
95		**90.0-98.0' LEAN CLAY (CL)** yellowish red (5YR 5/6), wet				Clay getting emmulsified in water from the borehole. Unclear if water is from this zone or followed down from upper productive zone
		98.0-100.0' SILTY SAND (SM) light red (2.5YR 6/8), abundant mica				Lots of water produced from formation
100		**100.0-105.0' LEAN CLAY (CL)** red (2.5YR 5/8), micaceous		0		Driller added water. Very little cutting make it to surface from emmulsification
105						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 8 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
		105.0-112.0' LEAN CLAY (CL) red (2.5), micaceous		0		
110						
		112.0-123.0' WELL GRADED SAND WITH SILT AND CLAY (SW) light gray to gray, wet, medium to coarse grained, subangular to angular, quartz throughout with mica and some feldspar				
115						Abundant water from formation
						Abundant water from formation
120						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 9 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman | LOCATION : Freeman, WA

ELEVATION : | DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- | START : 7/11/22 09:30 | END : 8/4/22 10:35 | LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
				0		
		123.0-125.0' WELL GRADED SAND WITH SILT AND CLAY (SW) light gray to gray, wet, medium to coarse grained, subangular to angular, quartz throughout with mica and some feldspar, thick layers of medium gray clay, micaceous				Water not as abundant but present
125		**125.0-160.0' DECOMPOSED GRANITE** well graded "sands" with mica and some very fine (pulverized?) sands				
						2' "cavern". Driller believes it caused by pea gravel from top well
130						
135						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 10 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman LOCATION : Freeman, WA

ELEVATION : DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/11/22 09:30 END : 8/4/22 10:35 LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
140						~ 1500 gals produced in last 10' section
145						Hammer not firing, very fine sands
150						

Jacobs

PROJECT NUMBER:	BORING NUMBER:	
UPSRWA05	IW-04R	SHEET 11 OF 11

SOIL BORING LOG

PROJECT : UPRR Freeman LOCATION : Freeman, WA

ELEVATION : DRILLING CONTRACTOR : Environmental West

DRILLING METHOD AND EQUIPMENT : Air Rotary

WATER LEVELS : --- START : 7/11/22 09:30 END : 8/4/22 10:35 LOGGER : G. Gardner & M. Henry

DEPTH BELOW SURFACE AND ELEVATION (ft)	SAMPLE INTERVAL (ft) / RECOVERY (ft) / SAMPLER (TYPE)	SOIL DESCRIPTION: DEPTH INTERVAL, SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY	GRAPHIC LOG	PID (ppm)	Grain Size Distribution G/S/M/C (%)	COMMENTS
						significant water produced (~2000 gals)
155						last 5-7 ft section was firmer, longer water column
160		**160.0-162.0' SANDY LEAN CLAY (CL)** tan, medium stiff, sand is fine to medium-grained				
		Bottom of Boring at 162.0 ft below ground surface				
165						

Jacobs

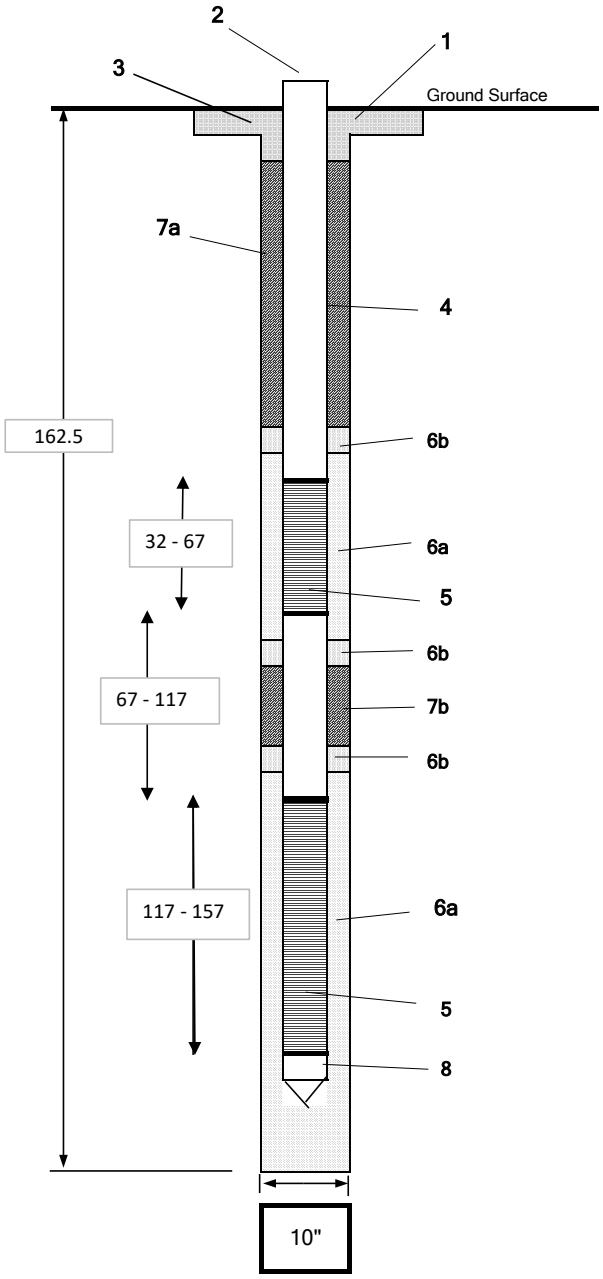
DATE: 8/11/2022 WELL ID: IW-04R

INJECTION WELL COMPLETION DIAGRAM

PROJECT : UPRR Freeman LOCATION : Southeast of Grain Handling Facility, near MW-14D

Drilling Method: Air Rotary Drilling Contractor: Environmental West

Well Construction Start Date: 7/11/2022 Completion Date: 8/11/22 Project Number : UPSRWA05



Generalized Well Completion Diagram

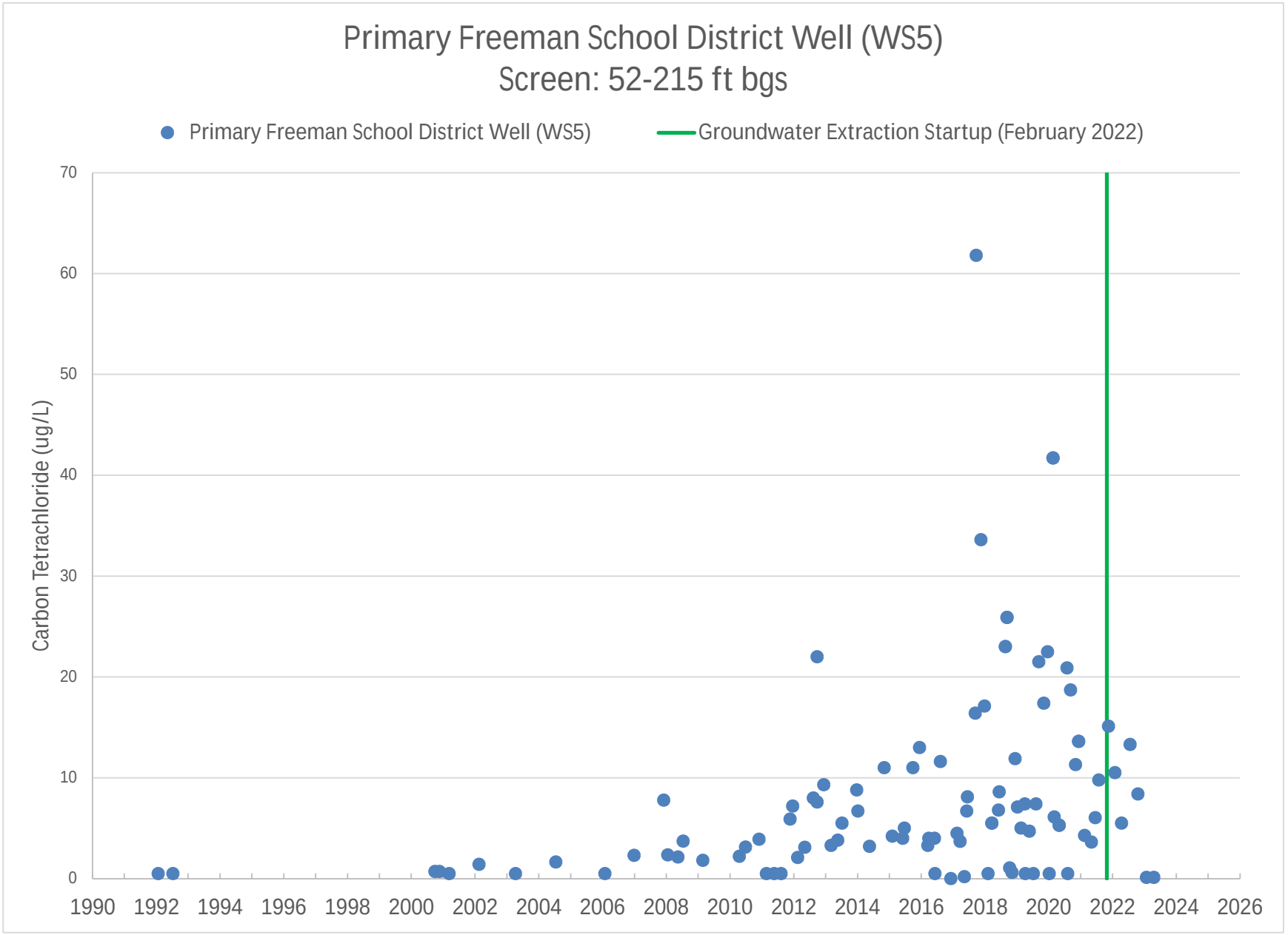
1- Surface completion	Concrete vault
2- Top of Casing	Vault lid
3- Surface completion/pad	Concrete vault
4- Dia./type of well casing	6" Sch 80 PVC
5- Type/slot/size of screen	0.060" Slot, stainless steel Upper sceen in fractured basalt Lower screen in decomposed granite
6a- Screen Pack	3/8-inch rounded pea gravel
6b- Transition sand	#8 - 12 sand to 2 feet above pea gravel
7a- Type of seal - depth	3/8-inch benonite chips (hydrated)
7b- Type of seal - depth	3/8-inch benonite pellets (TR30)
8- Sump below screen	5-foot blank with 6-inch threaded (flat) end cap (157 - 162)

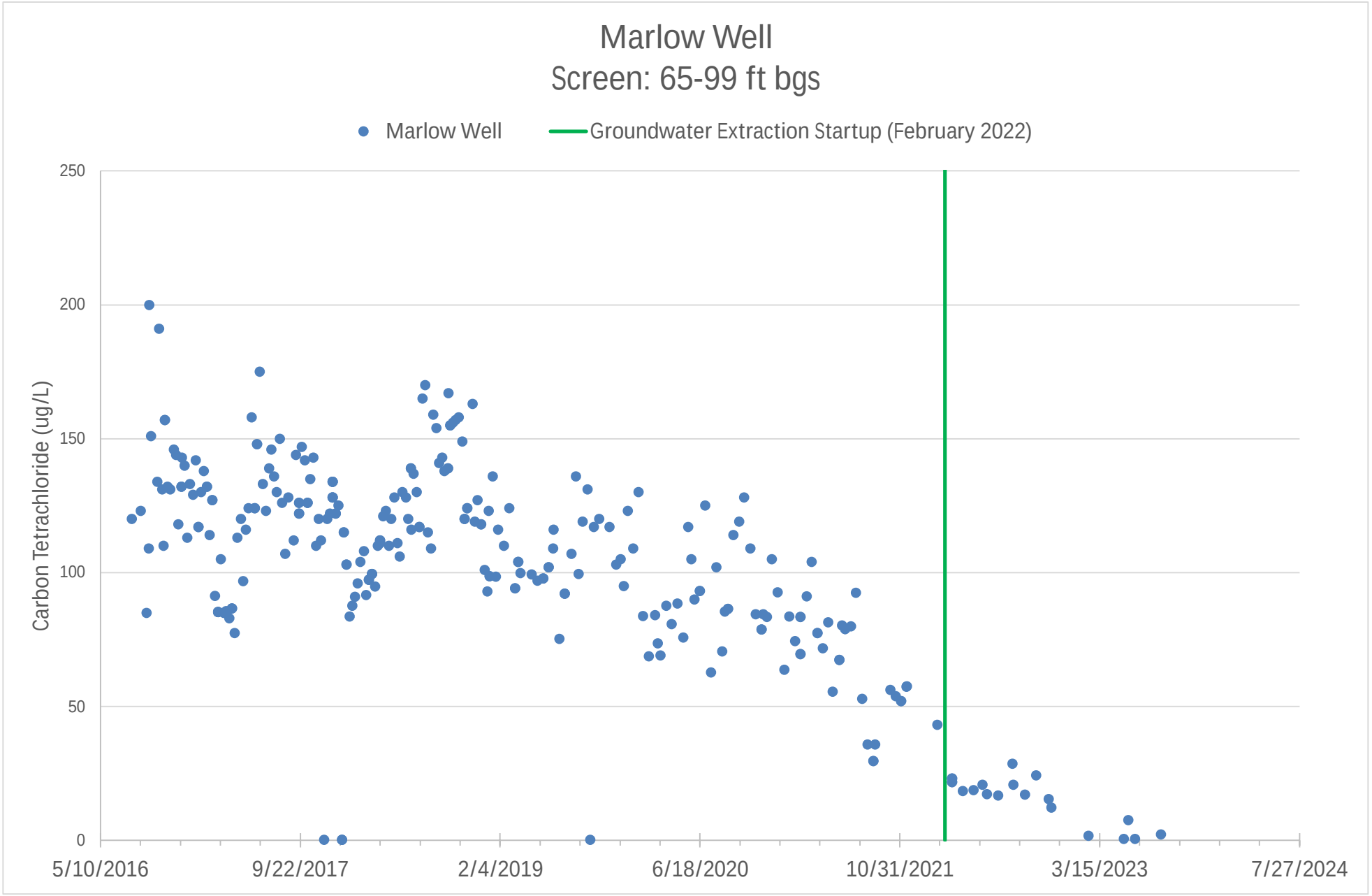
Well development: Significant fines in bottom of borehole necessitated airlifting, surging, bailing, and pumping

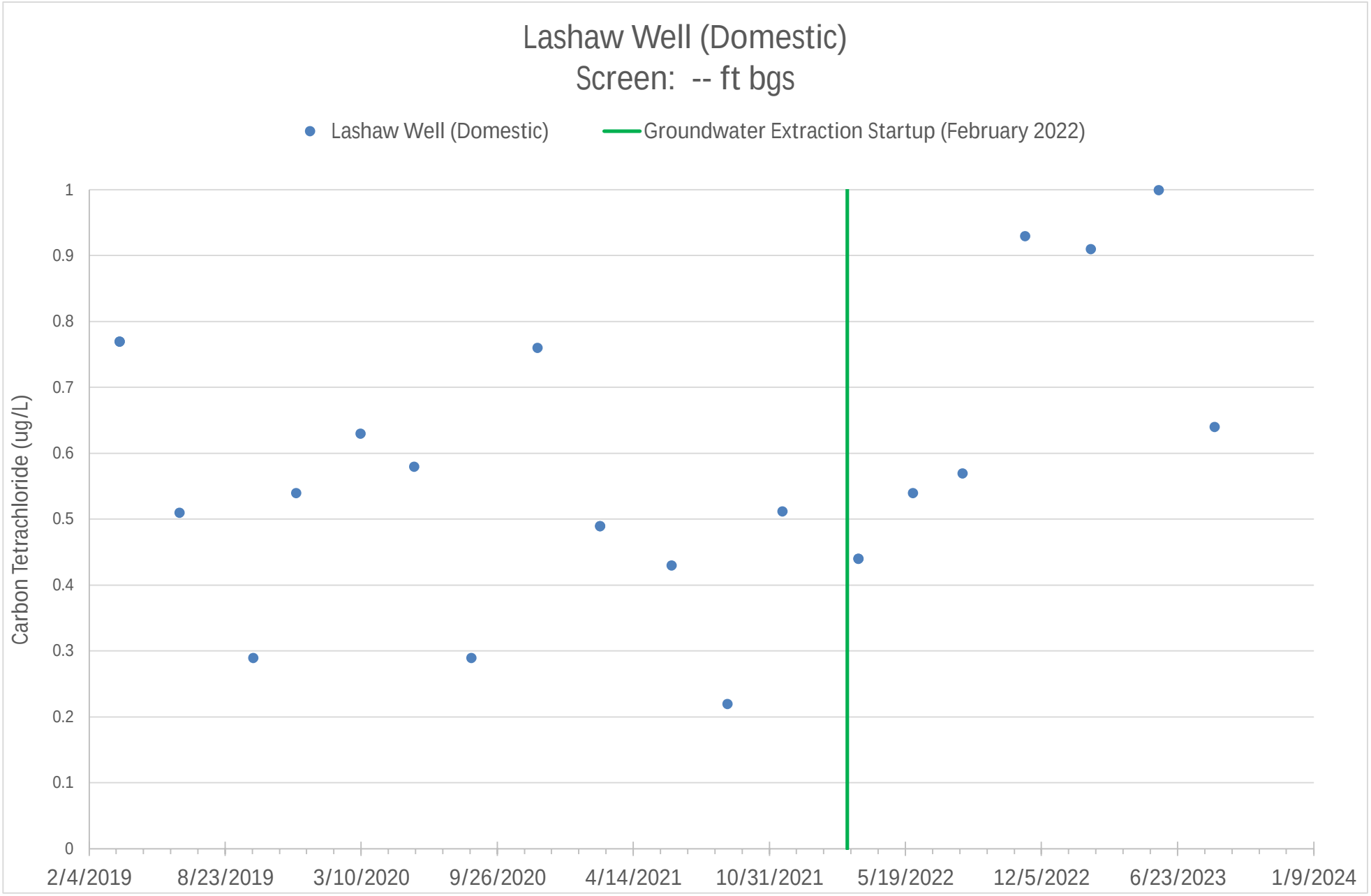
Upper (basalt) screened interval much cleaner than lower (decomposed granite) screened interval

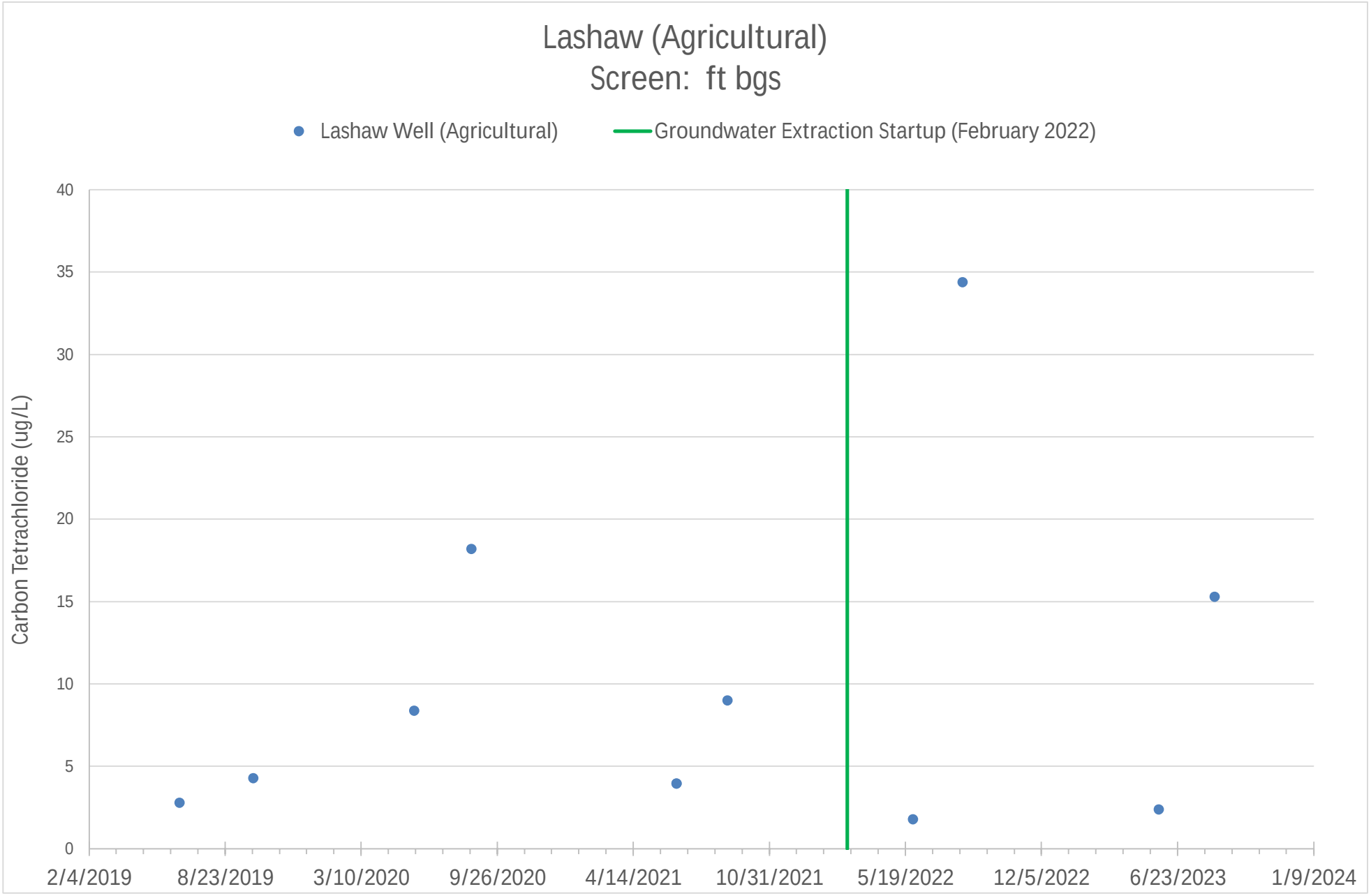
Comments:

Appendix B
Carbon Tetrachloride Concentrations over Time at Selected Wells


Primary Freeman School District Well (WS5)
Screen: 52-215 ft bgs
Primary Freeman School District Well (WS5)
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
70
60
50
40
30
20
10
0
1990
1992
1994
1996
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
2018
2020
2022
2024
2026


Marlow Well
Screen: 65-99 ft bgs
Marlow Well
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
250
200
150
100
50
0
5/10/2016
9/22/2017
2/4/2019
6/18/2020
10/31/2021
3/15/2023
7/27/2024


Lashaw Well (Domestic)
Screen: -- ft bgs
Lashaw Well (Domestic)
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


Lashaw (Agricultural)
Screen: ft bgs
Lashaw Well (Agricultural)
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
40
35
30
25
20
15
10
5
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
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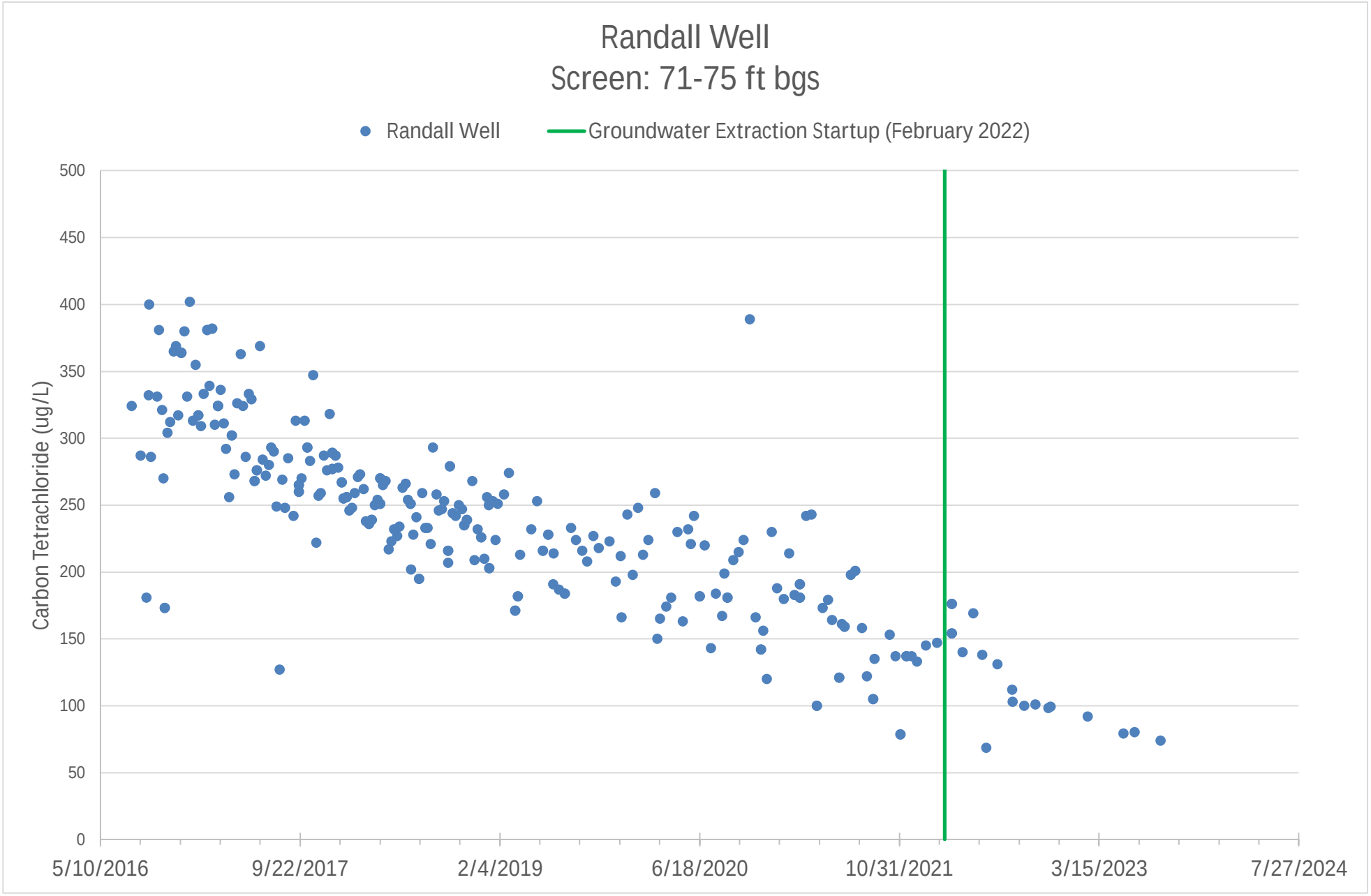
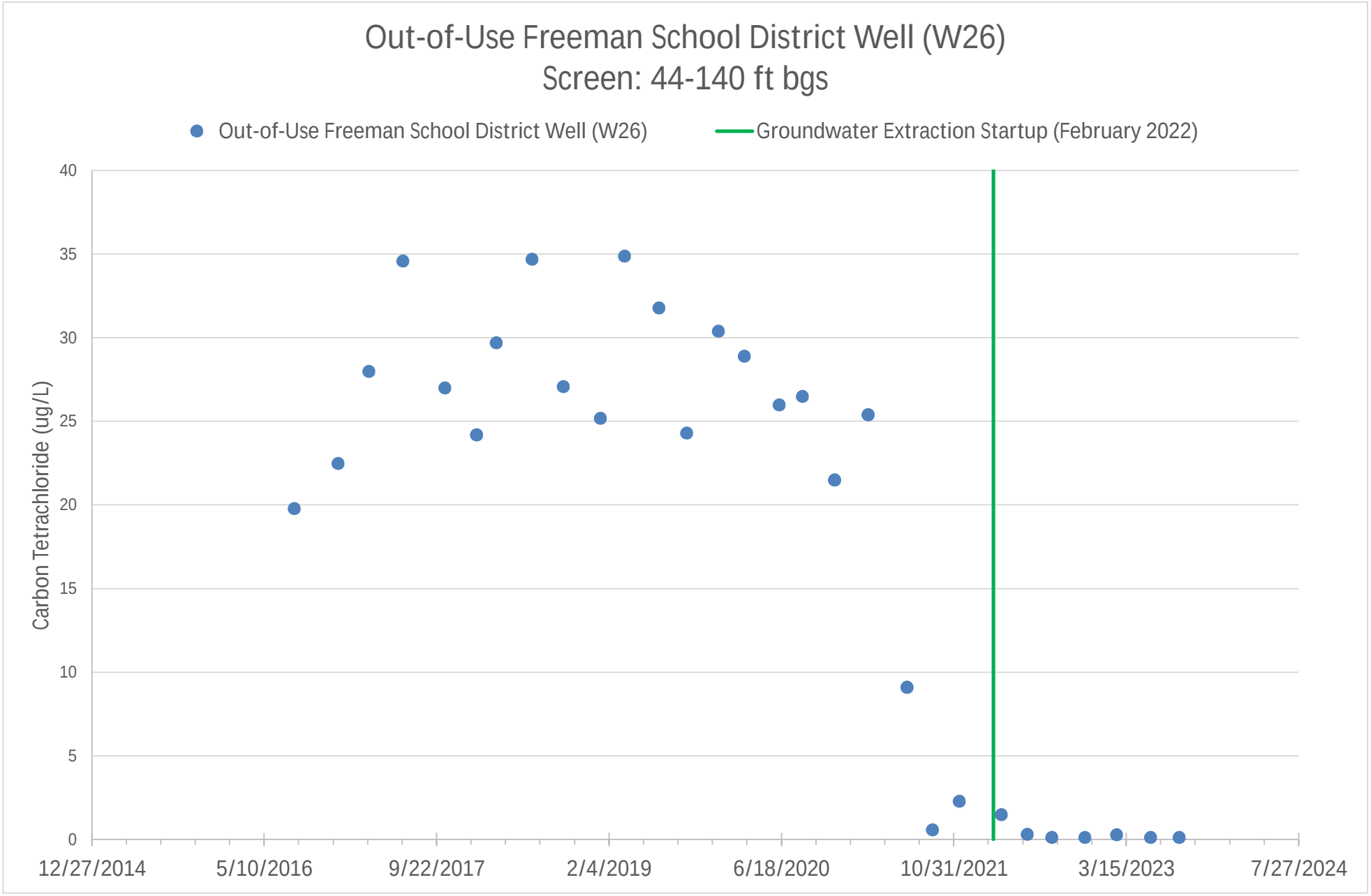
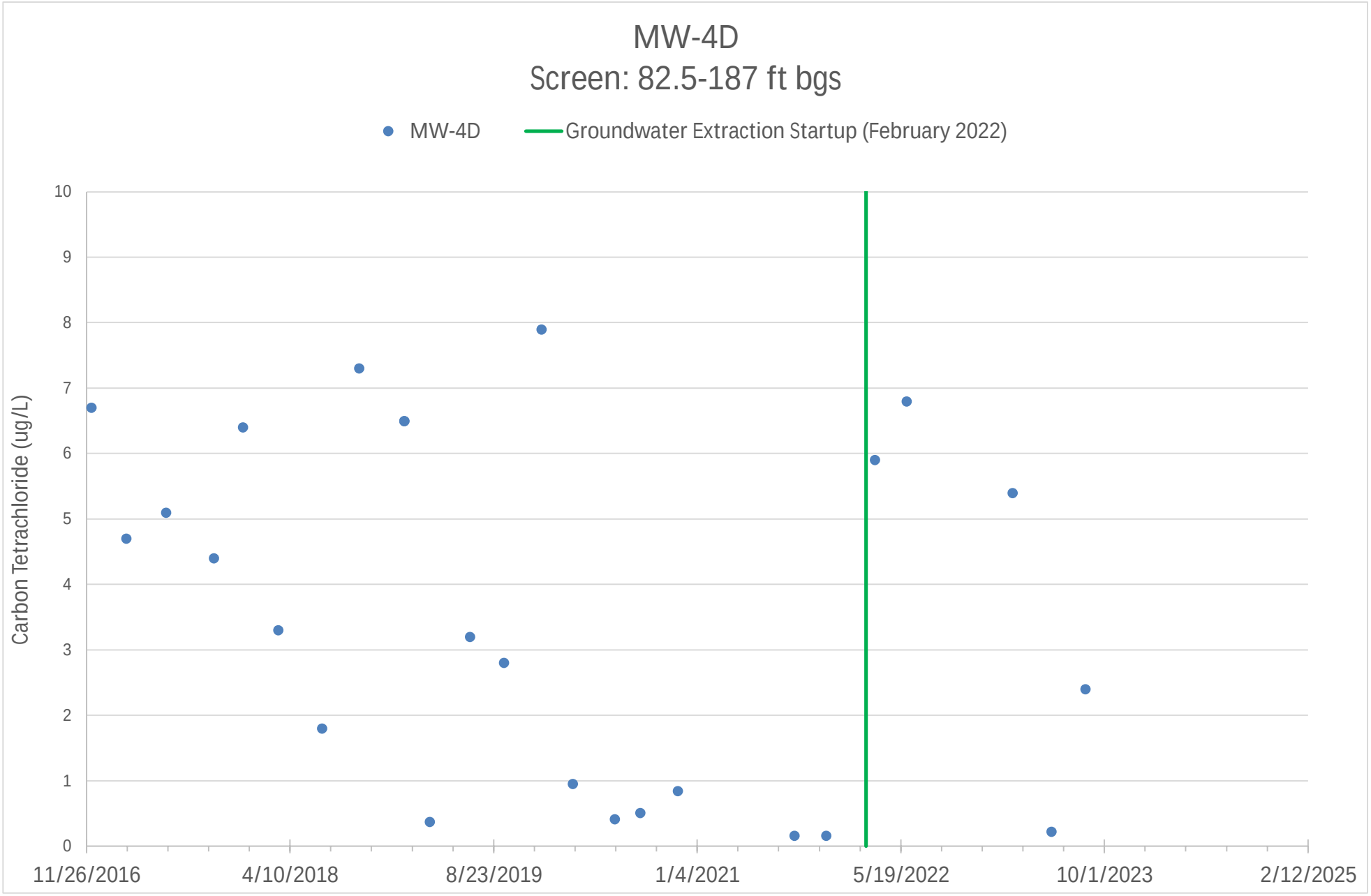
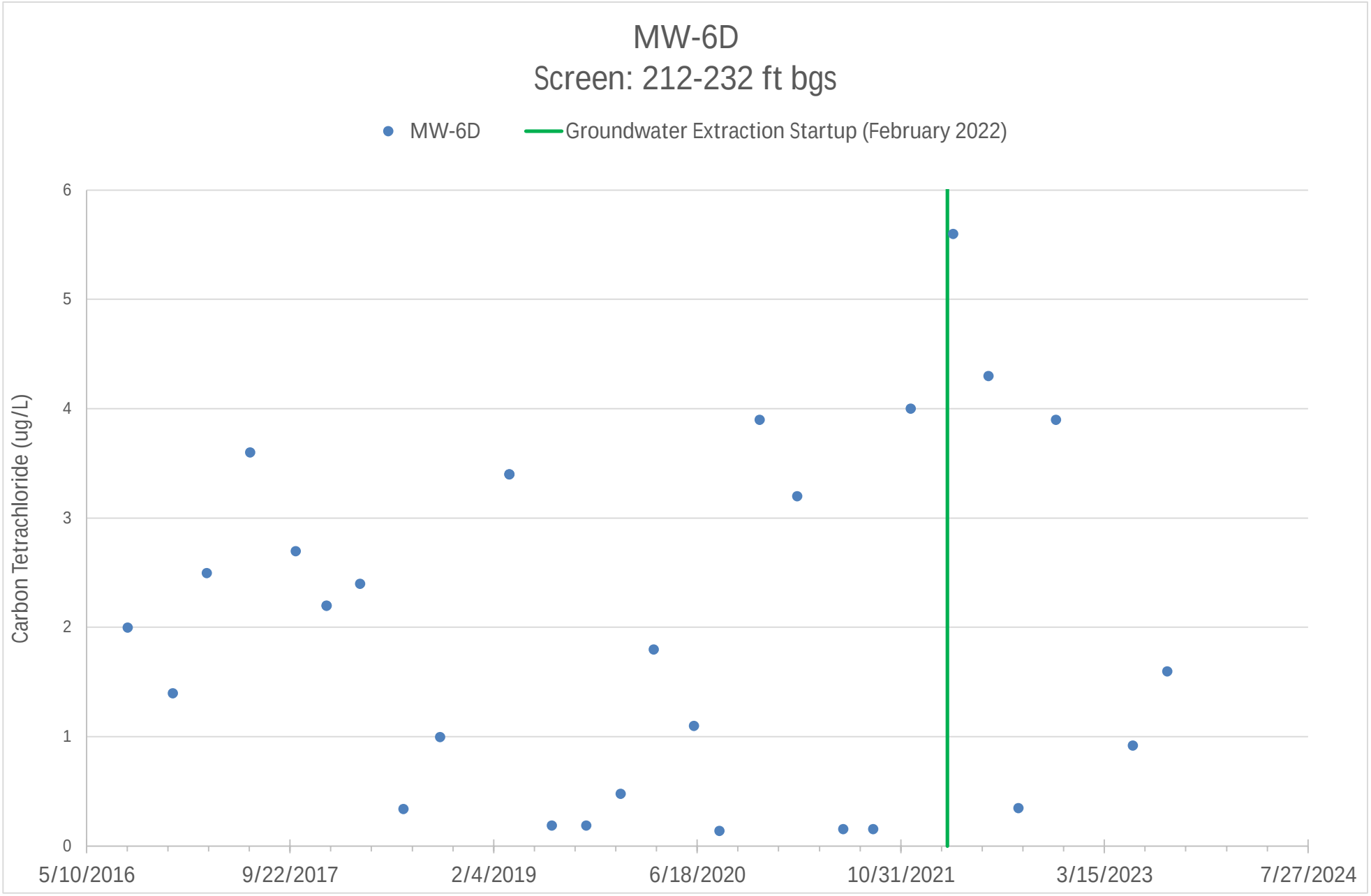
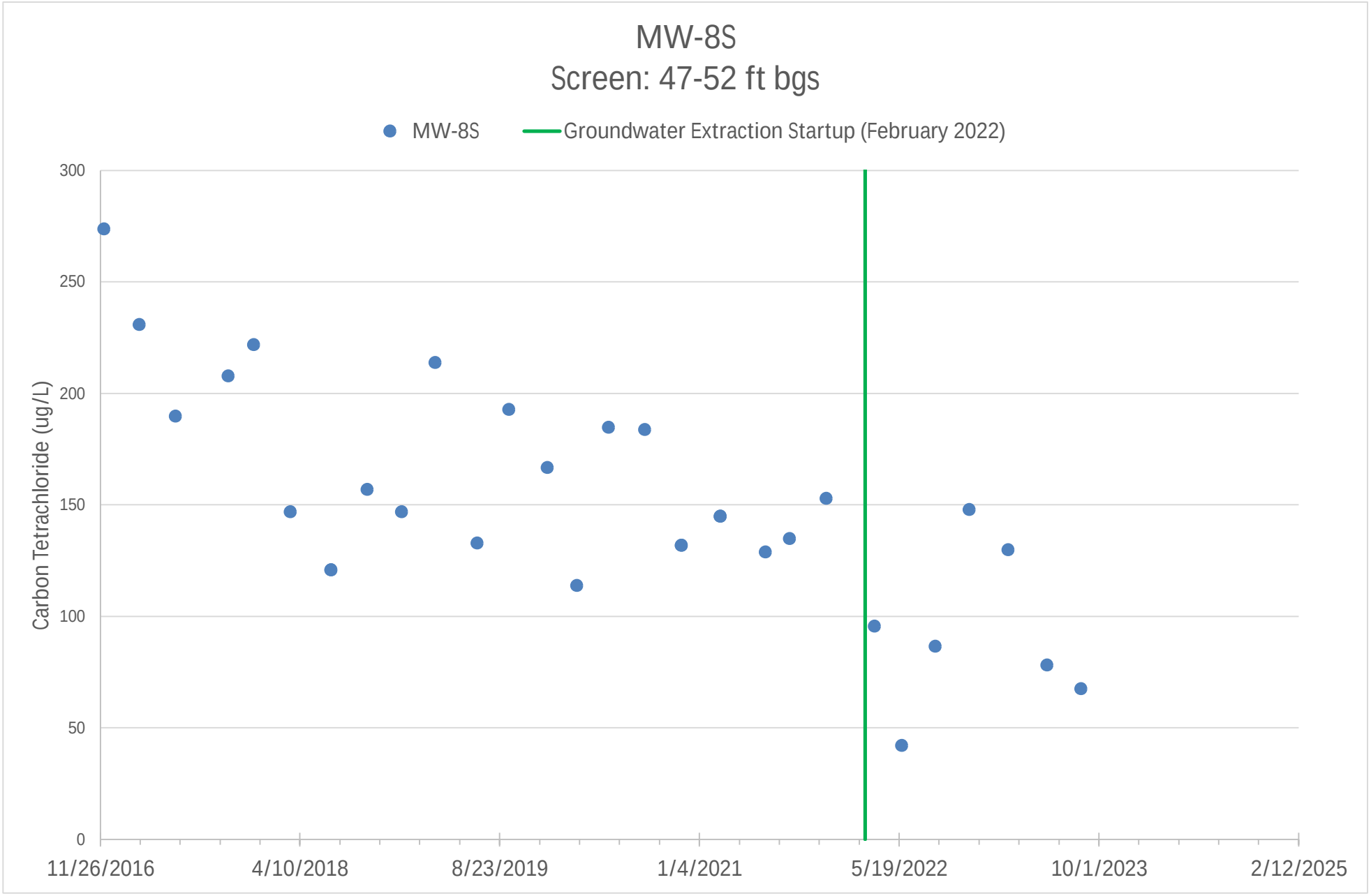
6/23/2023
1/9/2024

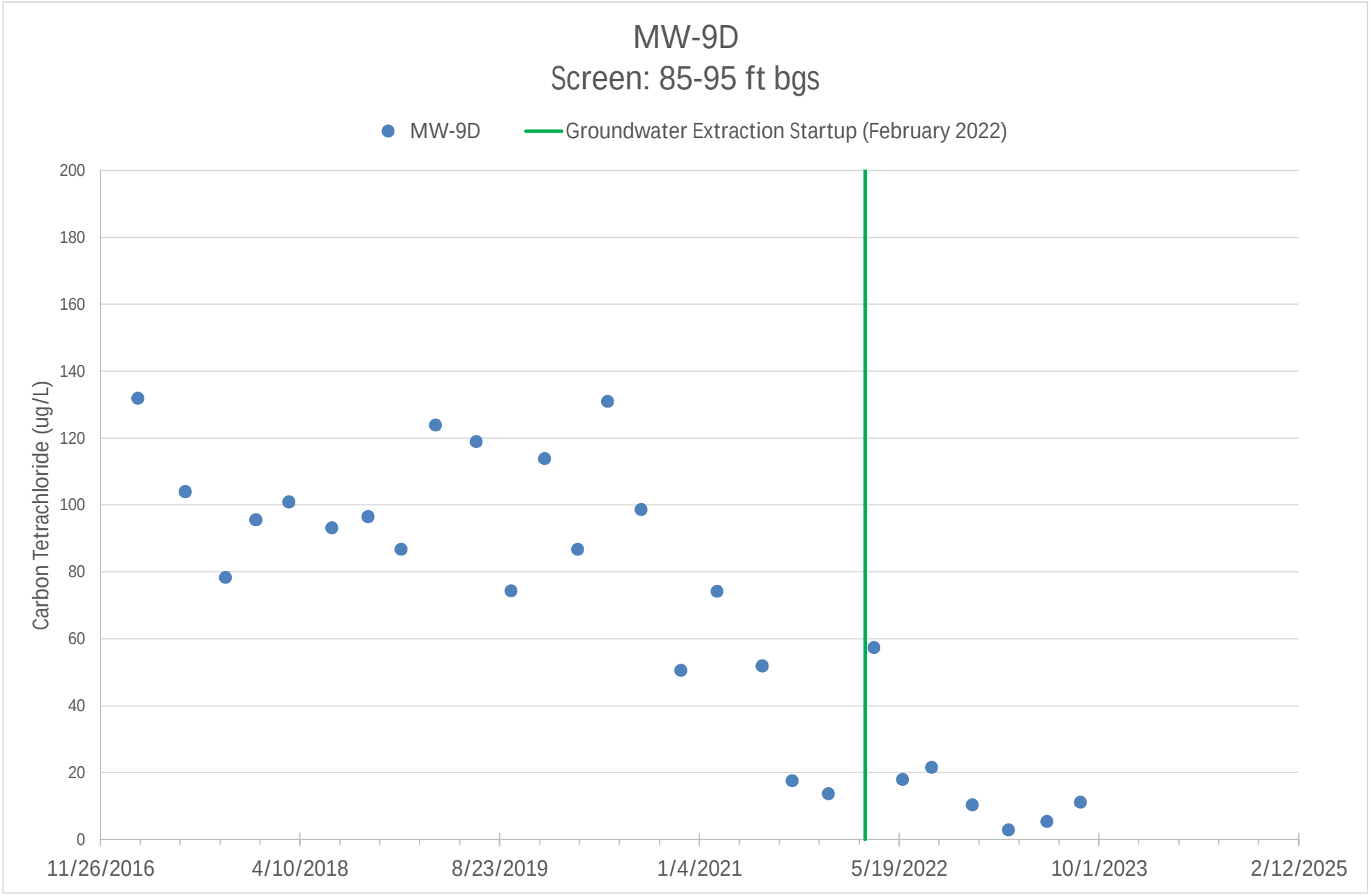

Randall Well
Screen: 71-75 ft bgs
Randall Well
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
500
450
400
350
300
250
200
150
100
50
0
5/10/2016
9/22/2017
2/4/2019
6/18/2020
10/31/2021
3/15/2023
7/27/2024

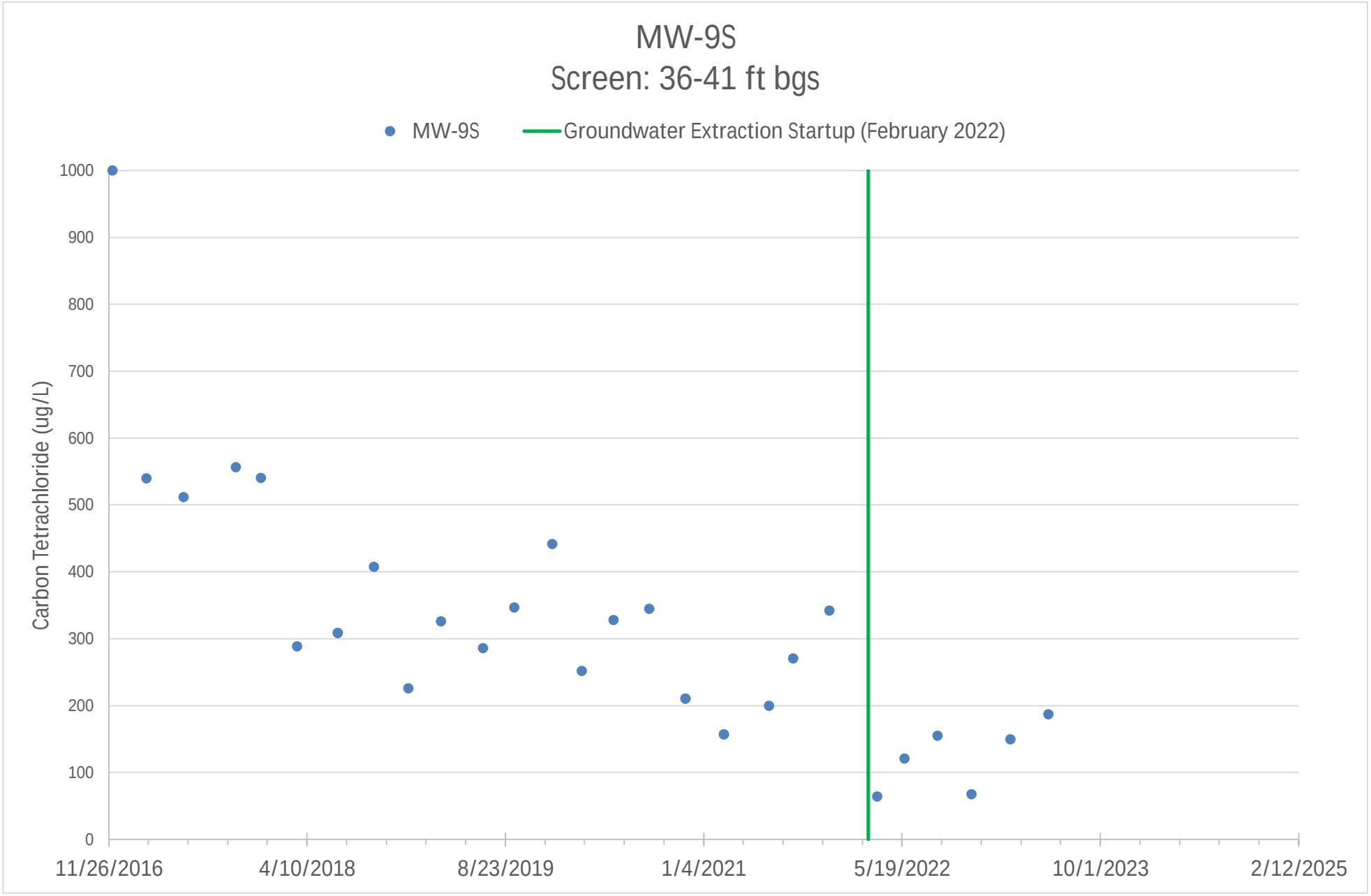

Out-of-Use Freeman School District Well (W26)
Screen: 44-140 ft bgs
Out-of-Use Freeman School District Well (W26)
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
40
35
30
25
20
15
10
5
0
12/27/2014
5/10/2016
9/22/2017
2/4/2019
6/18/2020
10/31/2021
3/15/2023
7/27/2024

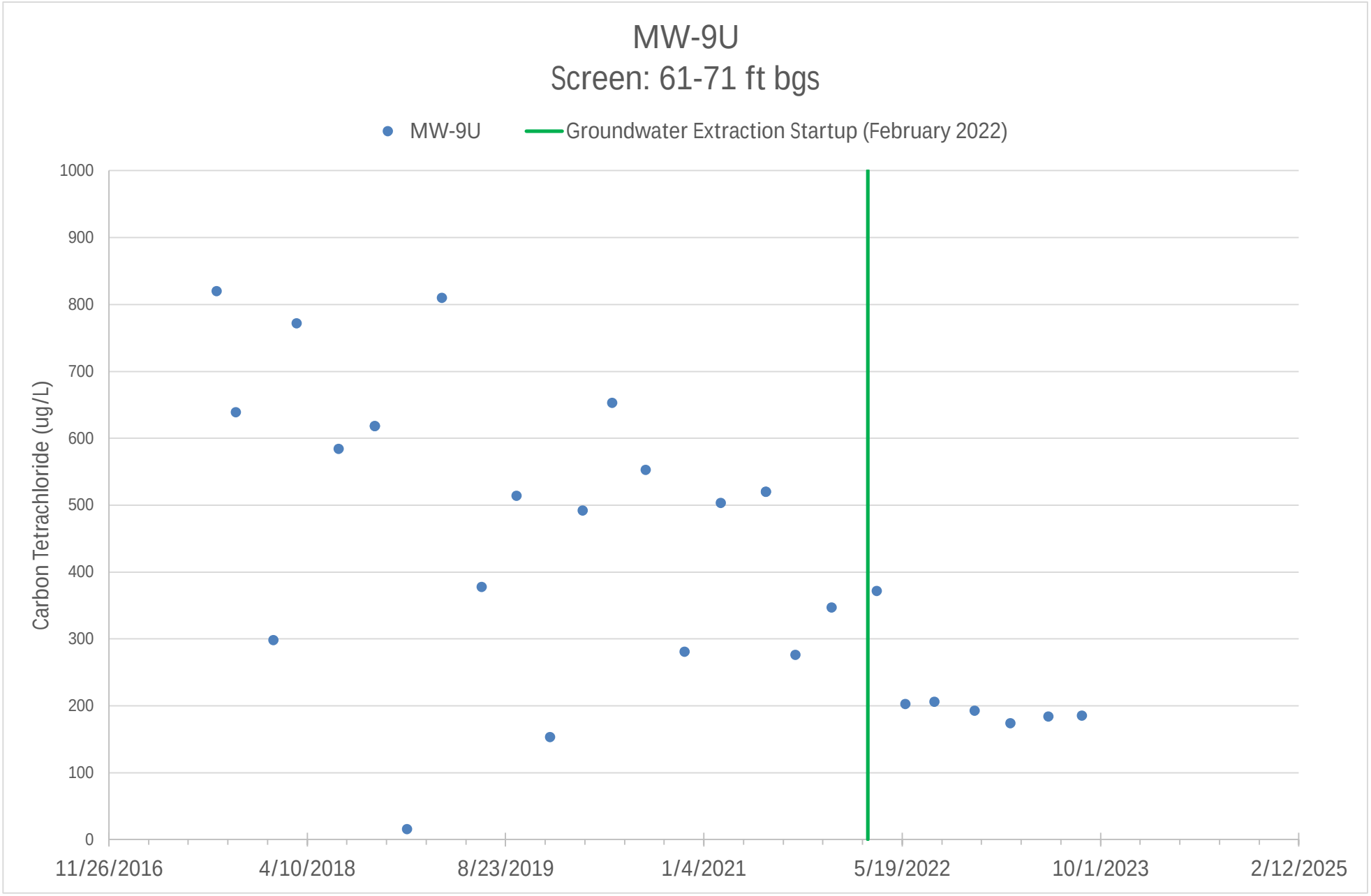

MW-4D
Screen: 82.5-187 ft bgs
MW-4D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
10
9
8
7
6
5
4
3
2
1
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

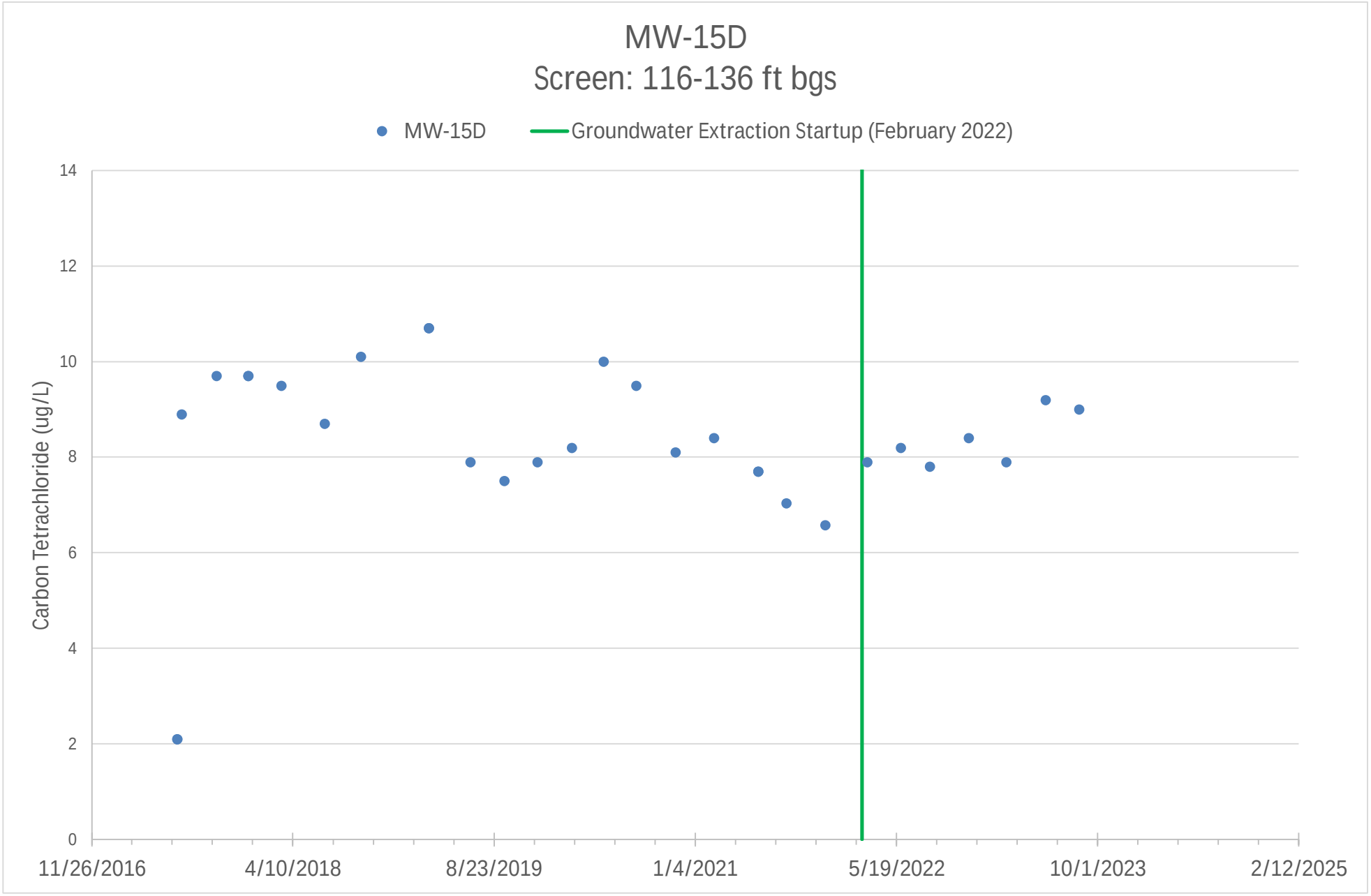

MW-6D
Screen: 212-232 ft bgs
MW-6D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
0
1
2
3
4
5
6
5/10/2016
9/22/2017
2/4/2019
6/18/2020
10/31/2021
3/15/2023
7/27/2024

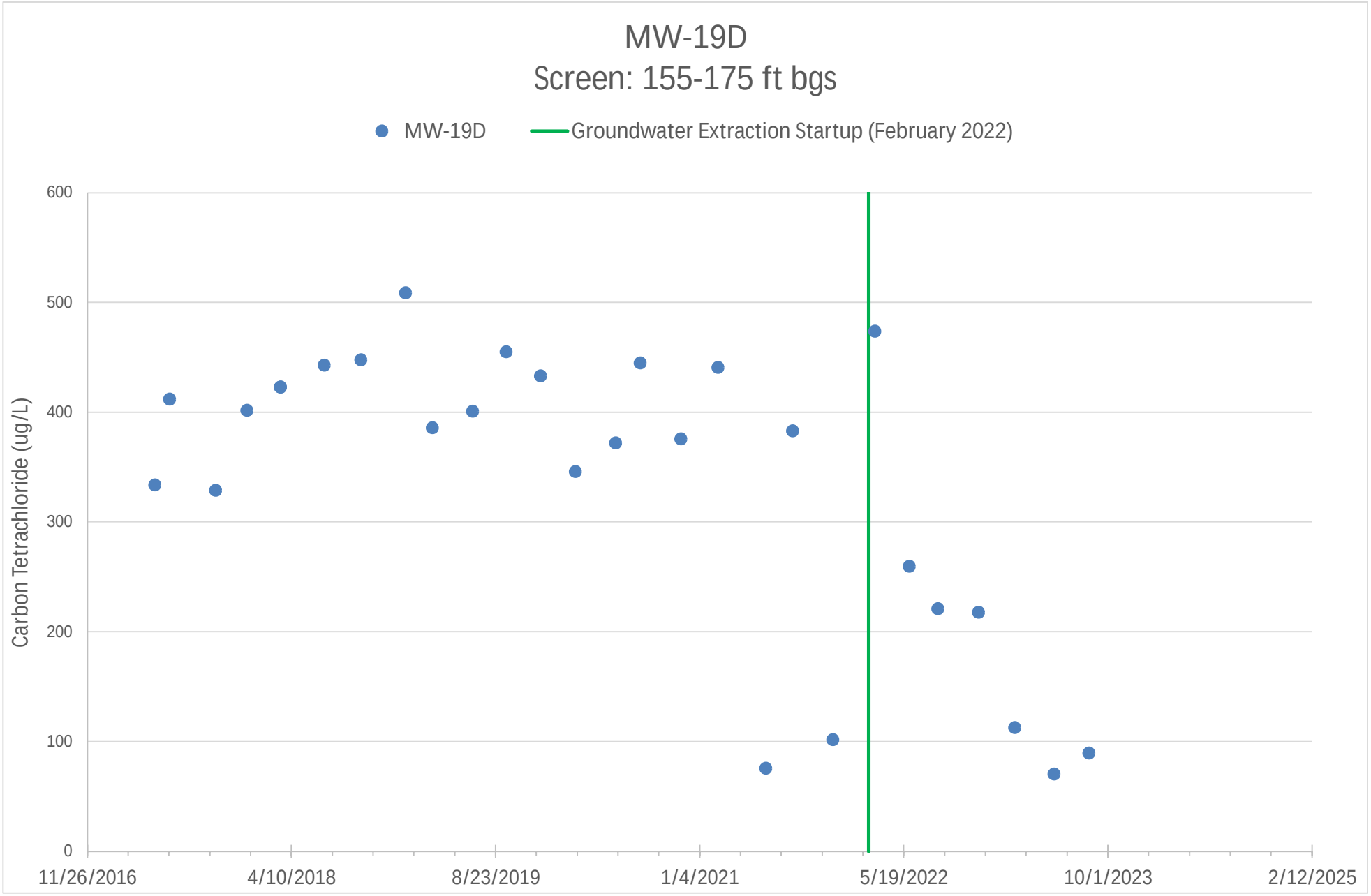

MW-8S
Screen: 47-52 ft bgs
MW-8S
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
300
250
200
150
100
50
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

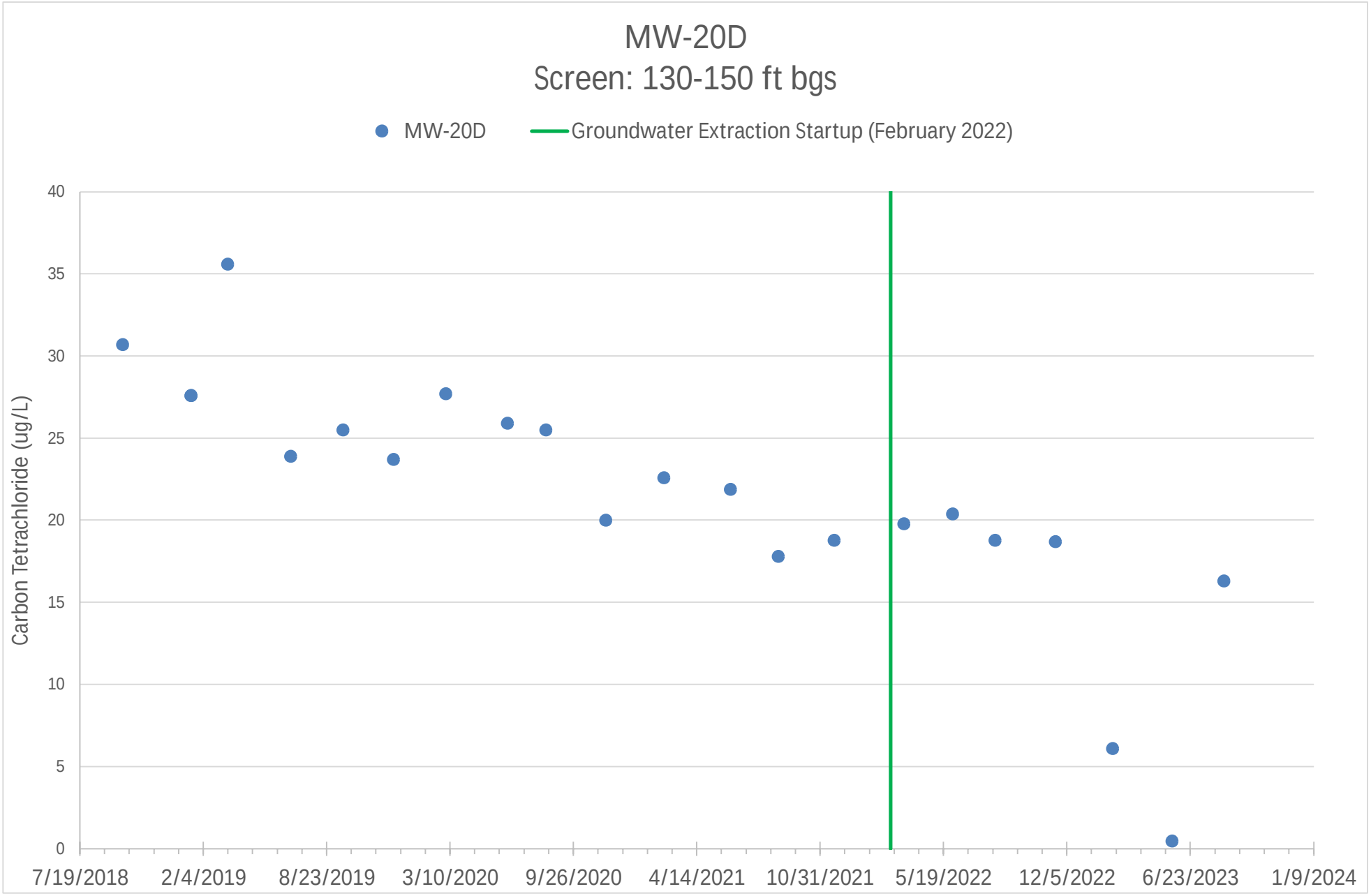

MW-9D
Screen: 85-95 ft bgs
MW-9D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
200
180
160
140
120
100
80
60
40
20
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

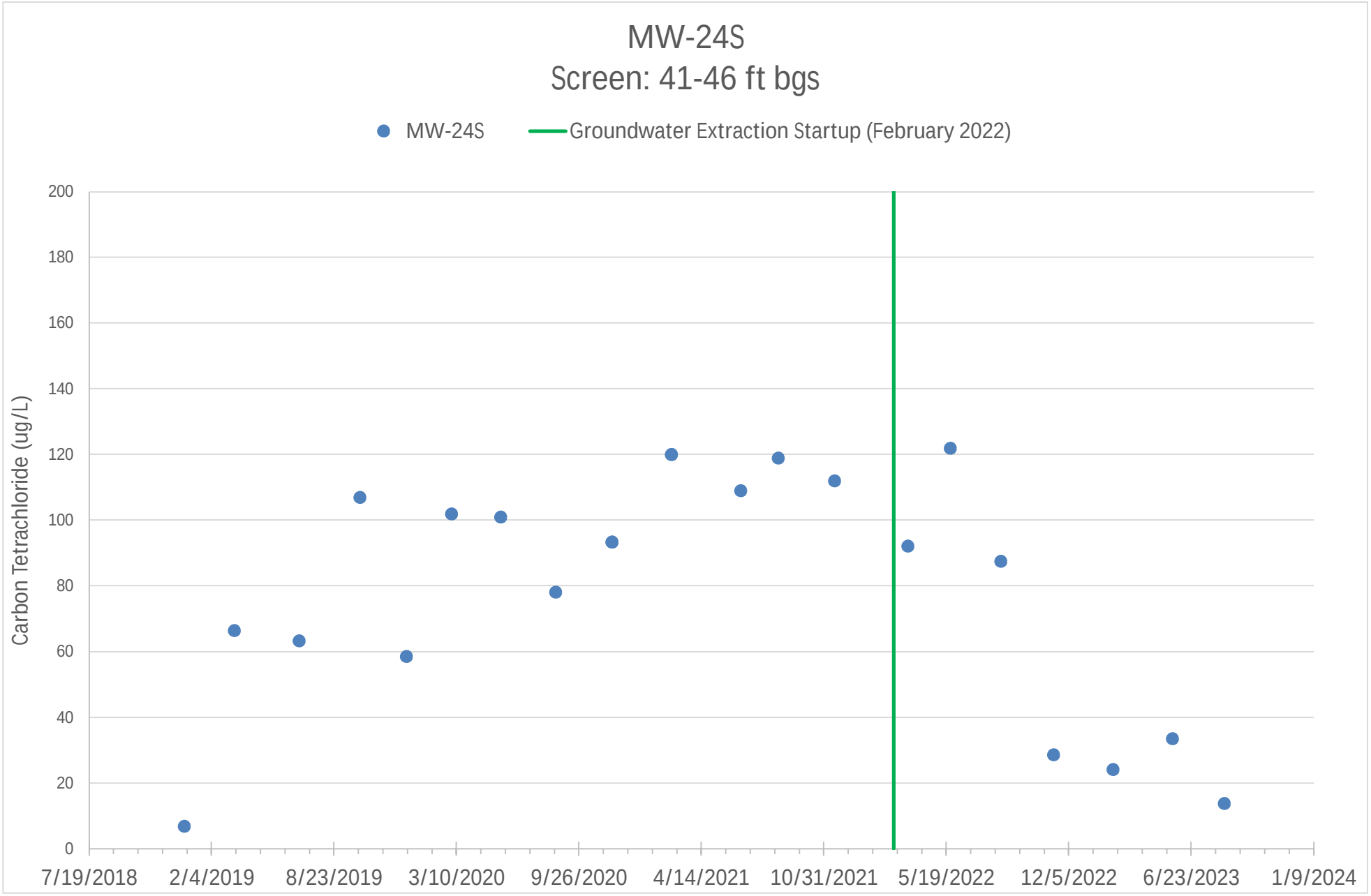

MW-9S
Screen: 36-41 ft bgs
MW-9S
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
1000
900
800
700
600
500
400
300
200
100
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

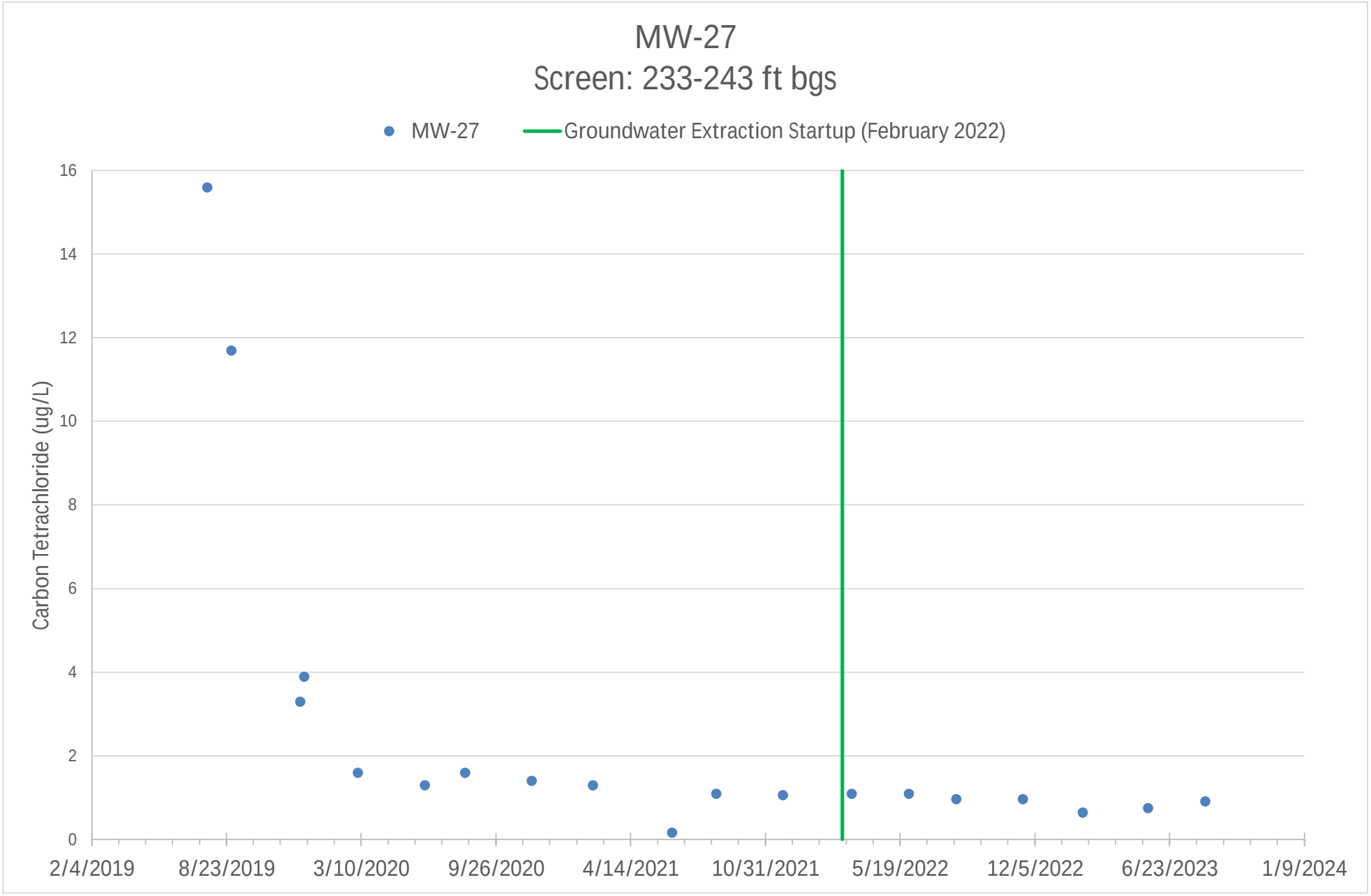

MW-9U
Screen: 61-71 ft bgs
MW-9U
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
1000
900
800
700
600
500
400
300
200
100
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

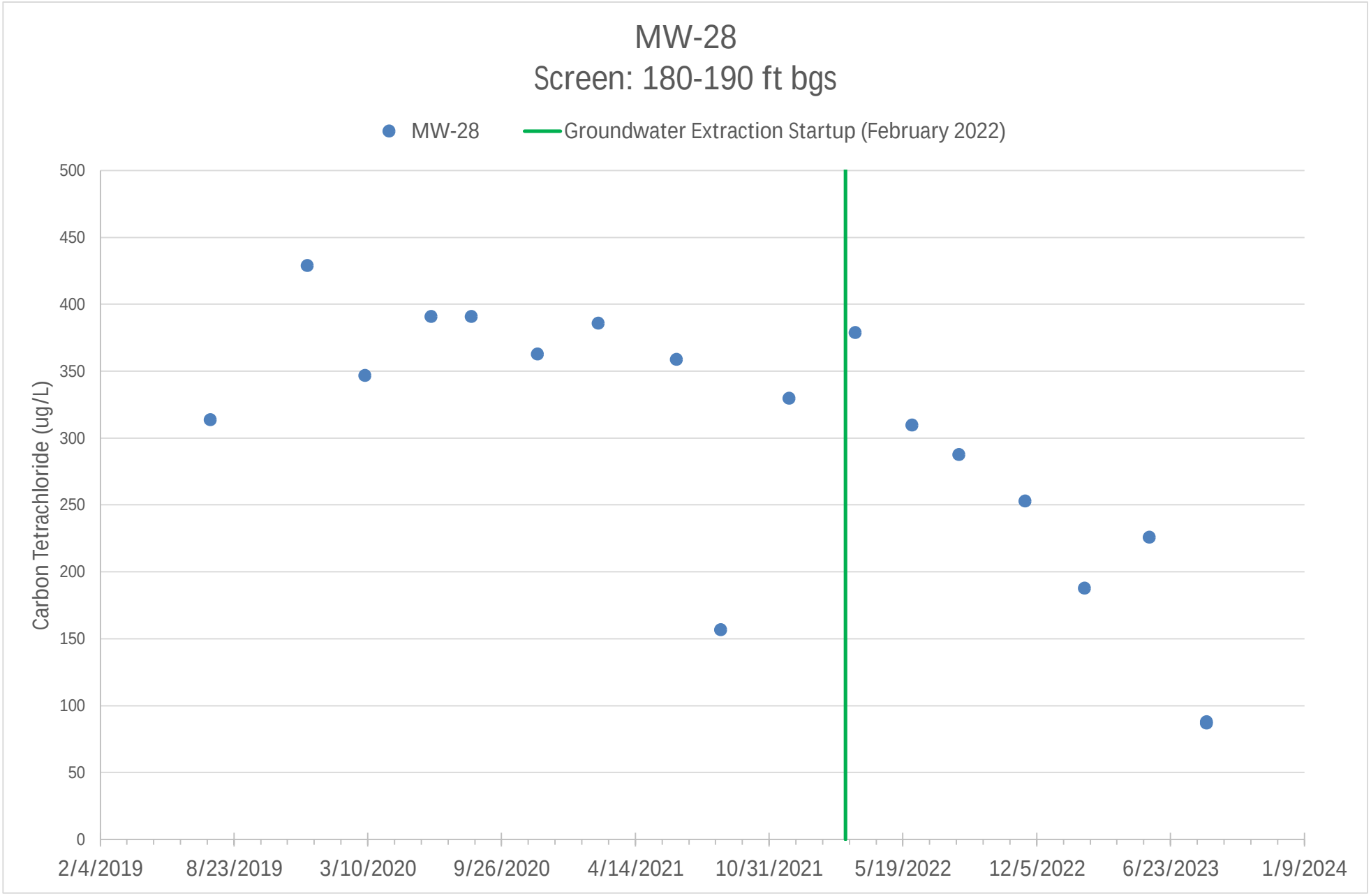

MW-15D
Screen: 116-136 ft bgs
MW-15D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
14
12
10
8
6
4
2
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

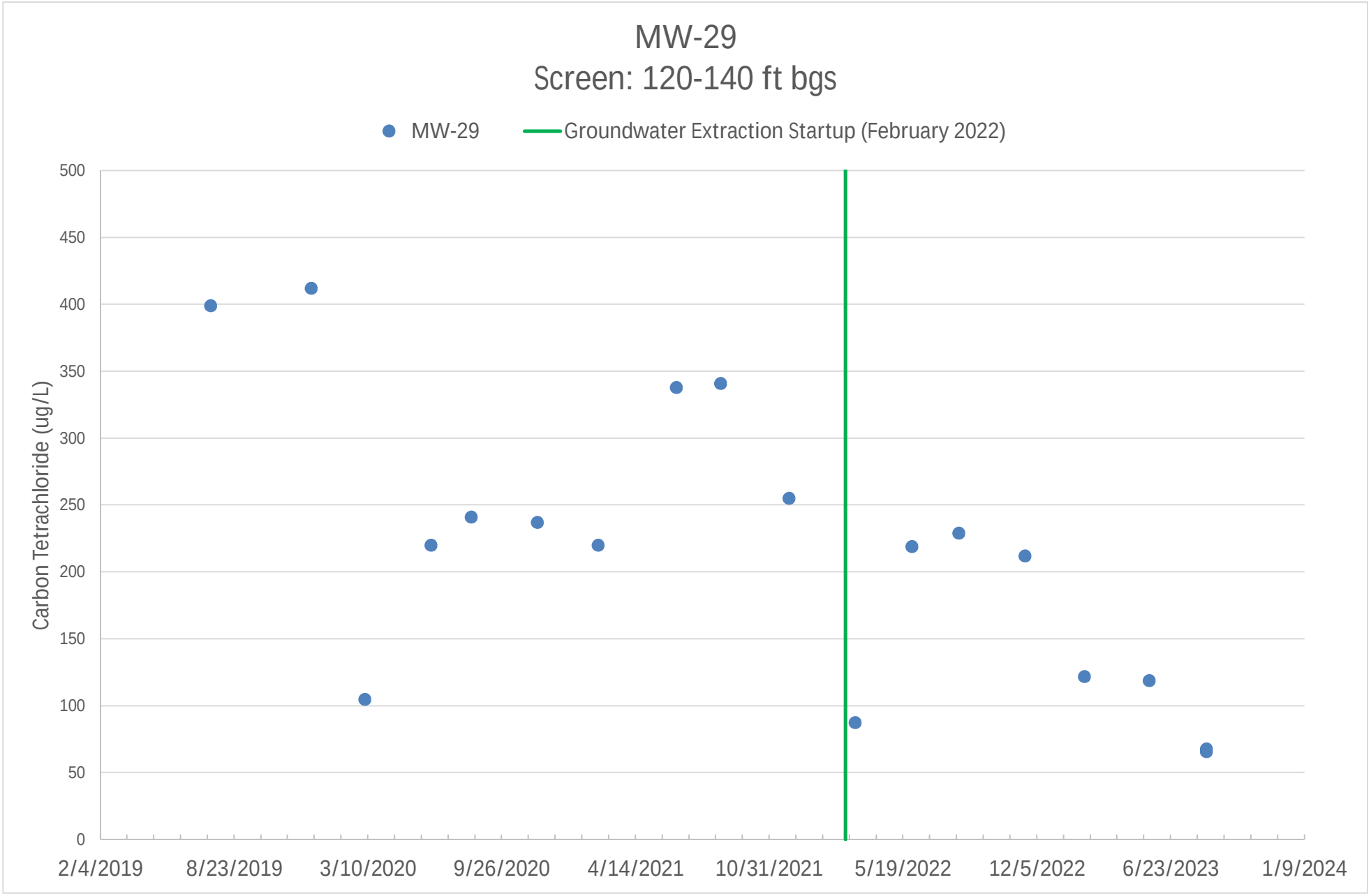

MW-19D
Screen: 155-175 ft bgs
MW-19D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
600
500
400
300
200
100
0
11/26/2016
4/10/2018
8/23/2019
1/4/2021
5/19/2022
10/1/2023
2/12/2025

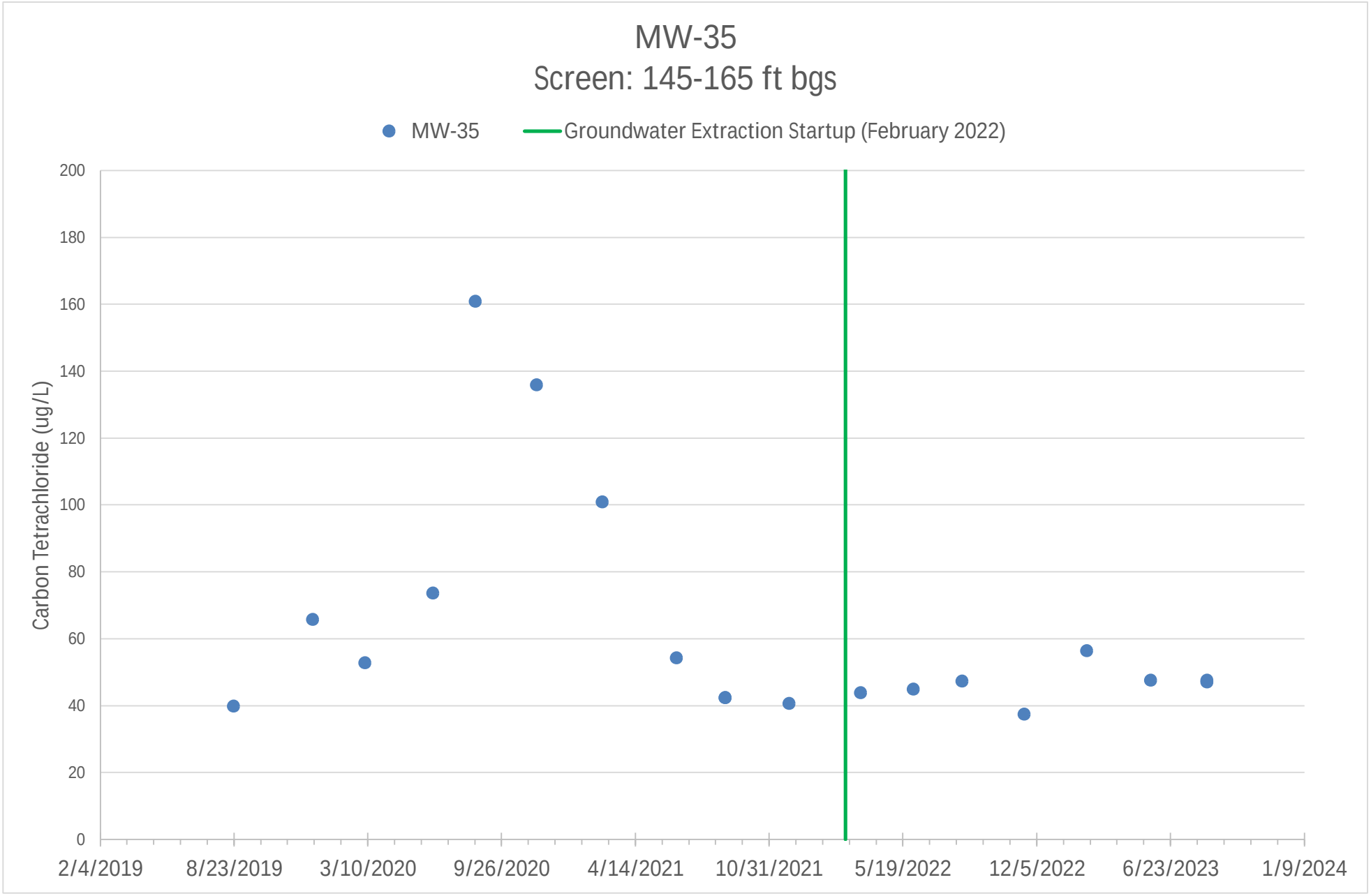

MW-20D
Screen: 130-150 ft bgs
MW-20D
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
40
35
30
25
20
15
10
5
0
7/19/2018
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024

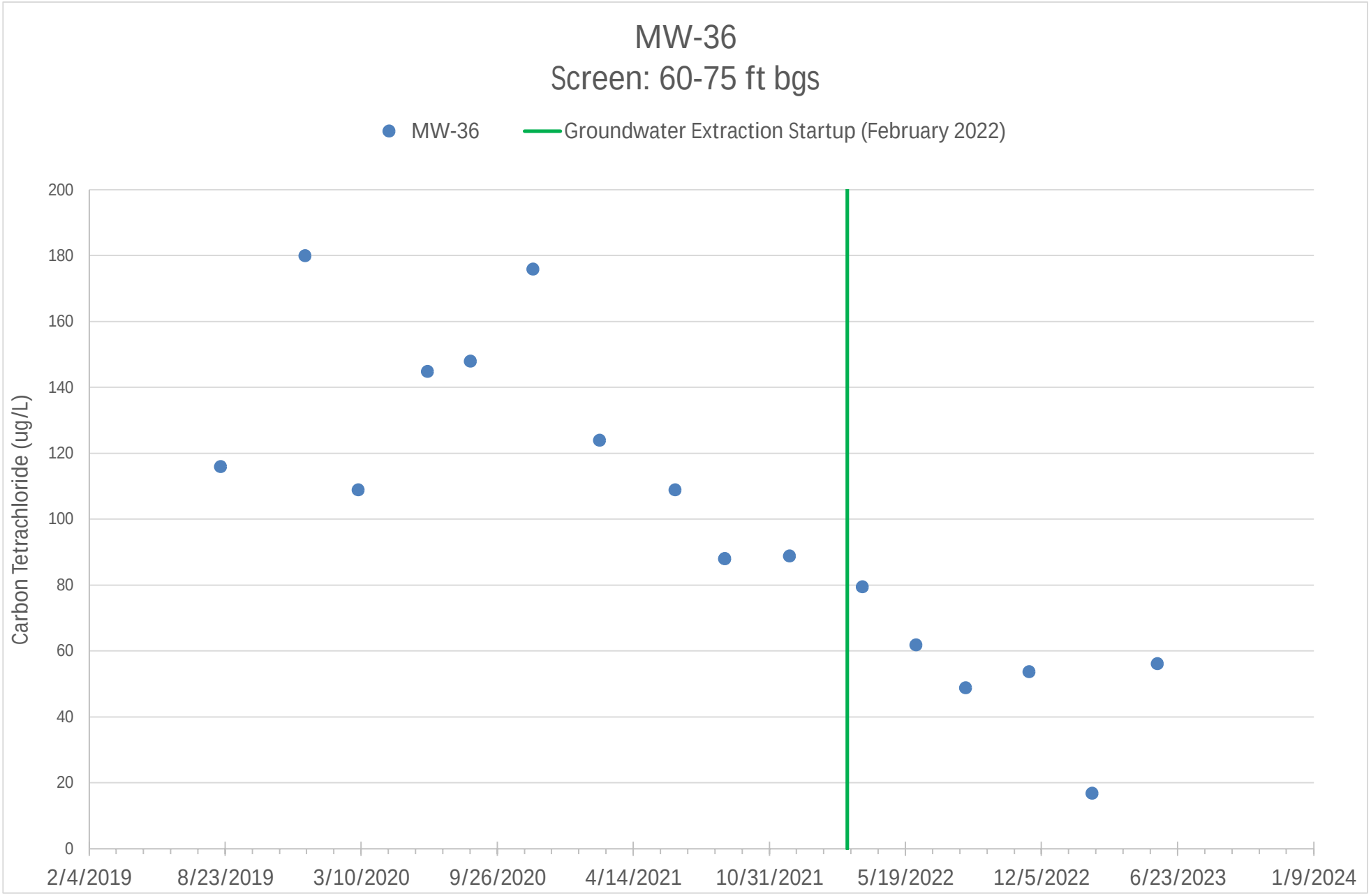

MW-24S
Screen: 41-46 ft bgs
MW-24S
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
200
180
160
140
120
100
80
60
40
20
0
7/19/2018
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


MW-27
Screen: 233-243 ft bgs
MW-27
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
16
14
12
10
8
6
4
2
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


MW-28
Screen: 180-190 ft bgs
MW-28
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
500
450
400
350
300
250
200
150
100
50
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


MW-29
Screen: 120-140 ft bgs
MW-29
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
500
450
400
350
300
250
200
150
100
50
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


MW-35
Screen: 145-165 ft bgs
MW-35
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
200
180
160
140
120
100
80
60
40
20
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024


MW-36
Screen: 60-75 ft bgs
MW-36
Groundwater Extraction Startup (February 2022)
Carbon Tetrachloride (ug/L)
200
180
160
140
120
100
80
60
40
20
0
2/4/2019
8/23/2019
3/10/2020
9/26/2020
4/14/2021
10/31/2021
5/19/2022
12/5/2022
6/23/2023
1/9/2024

Appendix C
Treatment System Flow and Mass Removal Totals

Table C-1. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 3 July 2021 to 9 July 2021)					
Saturday, July 3, 2021	0		0	0	0	0
Sunday, July 4, 2021	0		0	0	0	0
Monday, July 5, 2021	0		0	0	0	0
Tuesday, July 6, 2021	12,101	11,904	10,080	0	0	1,592
Wednesday, July 7, 2021	17,264	16,885	14,399	0	0	2,254
Thursday, July 8, 2021	17,281	16,823	14,310	0	0	2,218
Friday, July 9, 2021	17,275	16,908	14,498	0	0	2,263
Weekly Total (Gallons)	**63,922**	**62,519**	**53,287**	**0**	**0**	**8,327**
Weekly Total (Liters)	**241,944**	**236,636**	**201,692**	**0**	**0**	**31,518**

EW-01 Pumping Duration (Hours)	88.82
Average Extraction Rate (GPM)	11.99
Influent Carbon Tetrachloride (ug/L) **	189
Carbon Tetrachloride Removal (kg)	0.046
Influent Chloroform (ug/L) **	18.1
Chloroform Removal (kg)	0.004
Influent Carbon Disulfide (ug/L) **	0.124
Carbon Disulfide Removal (kg)	0.00003

Notes:
GPM = gallons per minute
kg = kilograms
ug/L = micrograms per liter
** = Results from July 7, 2021 sampling event

Table C-2. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 10 July 2021 to 16 July 2021)					
Saturday, July 10, 2021	17,287	17,056	14,397	0	0	2,252
Sunday, July 11, 2021	17,286	16,776	14,312	0	0	2,247
Monday, July 12, 2021	17,286	17,047	14,498	0	0	2,272
Tuesday, July 13, 2021	19,497	18,916	16,129	0	0	2,520
Wednesday, July 14, 2021	21,621	21,165	18,006	0	0	2,822
Thursday, July 15, 2021	21,615	21,160	18,095	0	0	2,819
Friday, July 16, 2021	21,613	21,313	17,993	0	0	2,827
Weekly Total (Gallons)	**136,204**	**133,433**	**113,430**	**0**	**0**	**17,758**
Weekly Total (Liters)	**515,532**	**505,044**	**429,334**	**0**	**0**	**67,216**

EW-01 Pumping Duration (Hours)	168.00		
Average Extraction Rate (gpm)	13.51		
Influent Carbon Tetrachloride (µg/L) **	244	**Prior Week Removal (kg)**	**Cumulative Removal (kg)**
Effluent Carbon Tetrachloride (µg/L)**	0.144 J		
Carbon Tetrachloride Removal (kg)	0.126	0.046	0.171
Influent Chloroform (µg/L) **	18.7		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.0096	0.0044	0.014
Influent Carbon Disulfide (µg/L) **	0.190 J		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0.00010	0.00003	0.00013

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from July 13, 2021 sampling event

Table C-3. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 17 July 2021 to 23 July 2021)					
Saturday, July 17, 2021	21,610	21,082	17,961	0	0	2,806
Sunday, July 18, 2021	21,607	21,076	17,994	0	0	2,819
Monday, July 19, 2021	21,606	21,342	18,072	0	0	2,811
Tuesday, July 20, 2021	22,188	21,614	18,028	0	506	2,783
Wednesday, July 21, 2021	24,754	24,305	19,705	0	988	2,993
Thursday, July 22, 2021	28,746	28,020	22,494	0	1,578	3,509
Friday, July 23, 2021	28,760	27,992	22,276	G	1,677	3,647
Weekly Total (gallons)	**169,270**	**165,430**	**136,529**	**0**	**4,750**	**21,368**
Weekly Total (liters)	**640,688**	**626,154**	**516,761**	**0**	**17,979**	**80,878**

EW-01 Pumping Duration (hours)	161.15		
Average Extraction Rate (gpm)	17.51		
Influent Carbon Tetrachloride (µg/L) **	301	**Prior Week Removal (kg)**	**Cumulative Removal (kg)**
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.193	0.126	0.364
Influent Chloroform (µg/L) **	18.6		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.012	0.0096	0.026
Influent Carbon Disulfide (µg/L) **	0.502		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0.00032	0.00010	0.00045

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from July 20, 2021 sampling event

Table C-4. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 24 July 2021 to 30 July 2021)					
Saturday, July 24, 2021	28,805	28,159	22,466	0	1,553	3,826
Sunday, July 25, 2021	28,075	27,496	21,770	0	1,509	3,681
Monday, July 26, 2021	28,849	28,073	22,337	0	1,527	3,831
Tuesday, July 27, 2021	28,829	28,209	22,413	0	1,442	3,801
Wednesday, July 28, 2021	28,726	27,946	22,368	0	1,394	3,819
Thursday, July 29, 2021	28,374	27,778	22,139	0	1,404	3,745
Friday, July 30, 2021	28,765	28,222	22,489	0	1,408	3,771
Weekly Total (gallons)	**200,422**	**195,882**	**155,982**	**0**	**10,237**	**26,473**
Weekly Total (liters)	**758,596**	**741,415**	**590,391**	**0**	**38,745**	**100,202**

EW-01 Pumping Duration (hours)	167.00		
Average Extraction Rate (gpm)	20.00		
Influent Carbon Tetrachloride (µg/L) **	259	**Prior Week Removal (kg)**	**Cumulative Removal (kg)**
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.196	0.193	0.560
Influent Chloroform (µg/L) **	17.9		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.014	0.0120	0.039
Influent Carbon Disulfide (µg/L) **	0.189		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0.00014	0.00032	0.00060

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from July 26, 2021 sampling event

Table C-5. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 31 July 2021 to 6 August 2021)					
Saturday, July 31, 2021	28,913	28,205	22,592	0	1,411	3,775
Sunday, August 1, 2021	28,859	28,288	22,569	0	1,411	3,807
Monday, August 2, 2021	28,840	28,258	22,584	0	1,397	3,759
Tuesday, August 3, 2021	28,741	27,979	22,363	0	1,383	3,757
Wednesday, August 4, 2021	28,372	27,838	22,282	0	1,278	3,792
Thursday, August 5, 2021	28,458	27,893	22,137	0	1,268	3,766
Friday, August 6, 2021	26,696	26,082	20,937	0	1,204	3,528
Weekly Total (gallons)	**198,878**	**194,542**	**155,464**	**0**	**9,352**	**26,185**
Weekly Total (liters)	**752,755**	**736,343**	**588,430**	**0**	**35,398**	**99,110**

EW-01 Pumping Duration (hours)	166.57		
Average Extraction Rate (gpm)	19.90		
Influent Carbon Tetrachloride (µg/L) **	223	**Prior Week Removal (kg)**	**Cumulative Removal (kg)**
Effluent Carbon Tetrachloride (µg/L)**	0.171 J		
Carbon Tetrachloride Removal (kg)	0.168	0.196	0.728
Influent Chloroform (µg/L) **	18.5		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.014	0.0136	0.053
Influent Carbon Disulfide (µg/L) **	ND		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00014	0.00060

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from August 3, 2021 sampling event

Table C-6. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 31 July 2021 to 6 August 2021)					
Saturday, August 7, 2021	28,272	27,613	22,178	0	1,306	3,802
Sunday, August 8, 2021	28,327	27,767	21,998	0	1,269	3,823
Monday, August 9, 2021	28,295	27,550	22,081	0	1,305	3,822
Tuesday, August 10, 2021	28,372	27,902	22,088	0	1,292	3,993
Wednesday, August 11, 2021	28,336	27,749	21,777	0	1,323	3,842
Thursday, August 12, 2021	28,255	27,516	21,848	0	1,270	3,884
Friday, August 13, 2021	27,771	27,061	21,696	0	1,151	3,764
Weekly Total (gallons)	**197,629**	**193,159**	**153,667**	**0**	**8,918**	**26,929**
Weekly Total (liters)	**748,025**	**731,105**	**581,629**	**0**	**33,754**	**101,927**

EW-01 Pumping Duration (hours)	167.73		
Average Extraction Rate (gpm)	19.64		
Influent Carbon Tetrachloride (µg/L) **	232	**Prior Week Removal (kg)**	**Cumulative Removal (kg)**
Effluent Carbon Tetrachloride (µg/L)**	0.184 J		
Carbon Tetrachloride Removal (kg)	0.173	0.168	0.901
Influent Chloroform (µg/L) **	13.7		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.010	0.0139	0.064
Influent Carbon Disulfide (µg/L) **	0.202 J		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0.00015	0.00000	0.00075

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from August 9, 2021 sampling event

Table C-7. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 31 July 2021 to 6 August 2021)					
Saturday, August 14, 2021	27,589	27,022	21,634	0	1,149	3,759
Sunday, August 15, 2021	27,551	27,215	21,573	0	1,148	3,766
Monday, August 16, 2021	26,194	25,831	20,731	0	903	3,486
Tuesday, August 17, 2021	26,269	26,103	20,748	0	1,114	3,440
Wednesday, August 18, 2021	26,556	25,975	20,802	0	1,112	3,440
Thursday, August 19, 2021	26,273	25,985	20,796	0	1,111	3,438
Friday, August 20, 2021	26,497	25,926	20,785	0	1,110	3,436
Weekly Total (gallons)	**186,929**	**184,056**	**147,071**	**0**	**7,647**	**24,765**
Weekly Total (liters)	**707,525**	**696,652**	**556,665**	**0**	**28,942**	**93,736**

EW-01 Pumping Duration (hours)	160.15
Average Extraction Rate (gpm)	19.45

		Prior Week Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	342		
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.242	0.173	1.143
Influent Chloroform (µg/L) **	15.9		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.011	0.0100	0.075
Influent Carbon Disulfide (µg/L) **	ND		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00015	0.00075

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from August 16, 2021 sampling event

Table C-8. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting week 31 July 2021 to 6 August 2021)					
Saturday, August 21, 2021	26,390	25,988	20,811	0	1,109	3,436
Sunday, August 22, 2021	26,343	26,059	20,800	0	1,108	3,436
Monday, August 23, 2021	26,363	26,016	20,771	0	1,109	3,439
Tuesday, August 24, 2021	17,590	17,364	13,812	0	742	2,341
Wednesday, August 25, 2021	5,220	4,895	3,995	0	234	779
Thursday, August 26, 2021	0	0	0	0	0	0
Friday, August 27, 2021	2,378	2,682	1,805	0	132	428
Weekly Total (gallons)	**104,285**	**103,004**	**81,993**	**0**	**4,434**	**13,859**
Weekly Total (liters)	**394,717**	**389,869**	**310,343**	**0**	**16,784**	**52,455**

EW-01 Pumping Duration (hours)	89.40
Average Extraction Rate (gpm)	19.44

		Prior Week Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	196		
Effluent Carbon Tetrachloride (µg/L)**	0.293		
Carbon Tetrachloride Removal (kg)	0.077	0.242	1.220
Influent Chloroform (µg/L) **	13.1		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.005	0.0110	0.080
Influent Carbon Disulfide (µg/L) **	ND		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00000	0.00075

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from August 23, 2021 sampling event

Table C-9. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 18 February 2022 to 28 February 2022)					
Friday, February 18, 2022	14,358	14,237	11,803	0	0	2,081
Saturday, February 19, 2022	19,443	18,889	15,723	0	0	2,879
Sunday, February 20, 2022	23,061	22,437	18,713	0	0	3,439
Monday, February 21, 2022	23,670	23,257	19,064	0	0	3,605
Tuesday, February 22, 2022	22,418	22,093	18,204	0	0	3,402
Wednesday, February 23, 2022	23,158	22,885	18,806	0	0	3,527
Thursday, February 24, 2022	23,013	22,415	18,459	0	0	3,581
Friday, February 25, 2022	23,270	22,719	18,662	0	0	3,684
Saturday, February 26, 2022	23,304	23,018	18,606	0	0	3,640
Sunday, February 27, 2022	22,956	22,718	18,546	0	0	3,605
Monday, February 28, 2022	3,364	3,553	3,234	0	0	416
Weekly Total (gallons)	**222,015**	**218,222**	**179,820**	**0**	**0**	**33,859**
Weekly Total (liters)	**840,328**	**825,969**	**680,619**	**0**	**0**	**128,157**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18.00

		Aug 21-27, 2021 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	300		
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.252	0.077	1.472
Influent Chloroform (µg/L) **	13.0		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.011	0.0050	0.091
Influent Carbon Disulfide (µg/L) **	ND		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00000	0.00075

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from February 21, 2022 sampling event

Table C-10. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 1-11 March 2022)					
Tuesday, March 1, 2022	1,335	1,327	1,459	0	0	261
Wednesday, March 2, 2022	0	0	0	0	0	0
Thursday, March 3, 2022	0	0	0	0	0	0
Friday, March 4, 2022	2,703	2,747	1,978	0	0	330
Saturday, March 5, 2022	0	0	0	0	0	0
Sunday, March 6, 2022	0	0	0	0	0	0
Monday, March 7, 2022	7,011	6,834	5,365	0	0	979
Tuesday, March 8, 2022	0	0	0	0	0	0
Wednesday, March 9, 2022	0	0	0	0	0	0
Thursday, March 10, 2022	10,997	10,564	8,853	0	0	1,565
Friday, March 11, 2022	22,805	22,264	18,447	0	0	3,395
Weekly Total (gallons)	**44,850**	**43,736**	**36,102**	**0**	**0**	**6,531**
Weekly Total (liters)	**169,757**	**165,540**	**136,648**	**0**	**0**	**24,719**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18.00

		Feb 18-28, 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	297		
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.050	0.025	1.295
Influent Chloroform (µg/L) **	11.4		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.002	0.0010	0.083
Influent Carbon Disulfide (µg/L) **	ND		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00000	0.00075

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from March 7, 2022 sampling event

Table C-11. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 12 March 2022 to 29 March 2022)					
Saturday, March 12, 2022	23,605	23,273	19,139	0	0	3,569
Sunday, March 13, 2022	22,578	22,411	18,406	0	0	3,432
Monday, March 14, 2022	22,751	22,273	18,334	0	0	3,420
Tuesday, March 15, 2022	17,565	16,990	15,553	0	0	1,032
Wednesday, March 16, 2022	15,583	15,648	12,690	0	0	2,504
Thursday, March 17, 2022	23,243	22,385	18,425	0	0	3,607
Friday, March 18, 2022	22,356	22,113	18,123	0	0	3,445
Saturday, March 19, 2022	22,686	22,066	18,237	0	0	3,499
Sunday, March 20, 2022	22,764	21,999	18,215	0	0	3,503
Monday, March 21, 2022	22,689	21,900	18,189	0	0	3,500
Tuesday, March 22, 2022	22,091	21,515	17,708	0	0	3,531
Wednesday, March 23, 2022	22,464	21,638	17,841	0	0	3,674
Thursday, March 24, 2022	7,426	7,267	5,870	0	0	1,211
Friday, March 25, 2022	12,605	12,057	10,288	0	0	1,862
Saturday, March 26, 2022	22,873	21,957	18,375	0	0	3,460
Sunday, March 27, 2022	22,746	21,915	18,251	0	0	3,462
Monday, March 28, 2022	22,438	21,724	18,206	0	0	3,465
Tuesday, March 29, 2022	22,623	21,839	18,166	0	0	3,465
Period Total (gallons)	**371,085**	**360,968**	**300,018**	**0**	**0**	**55,641**
Period Total (liters)	**1,404,557**	**1,366,263**	**1,135,567**	**0**	**0**	**210,601**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18.00

		Mar 1-11, 2021 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	237		
Effluent Carbon Tetrachloride (µg/L)**	ND		
Carbon Tetrachloride Removal (kg)	0.333	0.050	1.628
Influent Chloroform (µg/L) **	14.8		
Effluent Chloroform (µg/L) **	ND		
Chloroform Removal (kg)	0.021	0.0020	0.104
Influent Carbon Disulfide (µg/L) **	0.427		
Effluent Carbon Disulfide (µg/L) **	ND		
Carbon Disulfide Removal (kg)	0	0.00000	0.00135

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from March 28, 2022 sampling event

Table C-12. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 30 March 2022 to 30 April 2022)					
Wednesday, March 30, 2022	22,610	21,915	18,134	0	0	3,464
Thursday, March 31, 2022	22,408	21,966	18,058	0	0	3,481
Friday, April 1, 2022	22,426	21,998	17,942	0	0	3,509
Saturday, April 2, 2022	22,403	21,862	17,921	0	0	3,507
Sunday, April 3, 2022	22,397	21,798	17,928	0	0	3,510
Monday, April 4, 2022	12,448	12,121	10,032	0	0	1,910
Tuesday, April 5, 2022	15,199	15,081	12,214	0	0	2,344
Wednesday, April 6, 2022	22,607	21,945	18,096	0	0	3,496
Thursday, April 7, 2022	22,396	21,970	17,995	0	0	3,485
Friday, April 8, 2022	22,391	21,588	17,952	0	0	3,486
Saturday, April 9, 2022	22,351	21,784	17,924	0	0	3,498
Sunday, April 10, 2022	22,371	21,569	17,887	0	0	3,474
Monday, April 11, 2022	21,688	21,034	17,873	0	0	2,827
Tuesday, April 12, 2022	21,485	21,129	17,864	0	0	2,768
Wednesday, April 13, 2022	21,707	21,057	17,858	0	0	2,766
Thursday, April 14, 2022	21,129	20,423	17,579	0	0	2,692
Friday, April 15, 2022	21,468	20,951	17,784	0	0	2,713
Saturday, April 16, 2022	21,265	20,913	17,750	0	0	2,694
Sunday, April 17, 2022	2,936	2,582	2,990	0	0	451
Monday, April 18, 2022	669	945	0	0	0	0
Tuesday, April 19, 2022	12,190	11,517	10,124	0	0	1,420
Wednesday, April 20, 2022	21,692	21,377	18,212	0	0	2,612
Thursday, April 21, 2022	21,855	21,377	18,077	0	0	2,696
Friday, April 22, 2022	21,577	21,316	18,024	0	0	2,715
Saturday, April 23, 2022	21,766	21,095	17,986	0	0	2,713
Sunday, April 24, 2022	21,637	21,064	17,956	0	0	2,709
Monday, April 25, 2022	21,524	21,242	17,921	0	0	2,707
Tuesday, April 26, 2022	21,671	21,254	17,903	0	0	2,708
Wednesday, April 27, 2022	21,441	20,976	17,884	0	0	2,710
Thursday, April 28, 2022	21,585	21,023	17,867	0	0	2,709
Friday, April 29, 2022	21,629	21,288	17,860	0	0	2,723
Saturday, April 30, 2022	21,368	20,982	17,844	0	0	2,732
Period Total (gallons)	**634,286**	**619,142**	**519,441**	**0**	**0**	**87,226**
Period Total (liters)	**2,400,772**	**2,343,451**	**1,966,084**	**0**	**0**	**330,150**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18.00

System Sampling Results	Apr 11, 2022	Apr 28, 2022	Mar 12 - 29 2022 Removal (kg)	Mar 30 - Apr 15 2022 Removal (kg)	Apr 16 - 30 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	232	250				
Effluent Carbon Tetrachloride (µg/L)**	ND	ND				
Carbon Tetrachloride Removal (kg)			0.333	0.316	0.260	2.204
Influent Chloroform (µg/L) **	13.7	14.5				
Effluent Chloroform (µg/L) **	ND	ND				
Chloroform Removal (kg)			0.0210	0.0186	0.0151	0.138
Influent Carbon Disulfide (µg/L) **	0.841	0.643				
Effluent Carbon Disulfide (µg/L) **	ND	ND				
Carbon Disulfide Removal (kg)			0.0006	0.00114	0.00067	0.003

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from April 11 and 28, 2022 sampling events; used to calculate mass for periods Mar 30 - Apr 15 and Apr 16-30, respectively

Table C-13. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 30 March 2022 to 30 April 2022)					
Sunday, May 1, 2022	21,535	21,058	17,833	0	0	2,731
Monday, May 2, 2022	21,555	21,166	17,817	0	0	2,730
Tuesday, May 3, 2022	21,546	20,951	17,820	0	0	2,732
Wednesday, May 4, 2022	21,264	21,206	17,806	0	0	2,725
Thursday, May 5, 2022	21,541	21,054	17,792	0	0	2,778
Friday, May 6, 2022	21,542	20,993	17,770	0	0	2,790
Saturday, May 7, 2022	1,101	1,078	1,534	0	0	238
Sunday, May 8, 2022	0	0	0	0	0	0
Monday, May 9, 2022	0	0	0	0	0	0
Tuesday, May 10, 2022	12,059	11,996	9,449	0	0	1,345
Wednesday, May 11, 2022	21,575	21,276	18,166	0	0	2,640
Thursday, May 12, 2022	21,701	21,196	18,039	0	0	2,674
Friday, May 13, 2022	21,643	21,363	17,976	0	0	2,665
Saturday, May 14, 2022	21,523	20,859	17,938	0	0	2,665
Sunday, May 15, 2022	21,334	21,346	17,896	0	0	2,661
Monday, May 16, 2022	21,524	20,937	17,871	0	0	2,679
Tuesday, May 17, 2022	20,691	20,152	17,125	0	0	2,551
Wednesday, May 18, 2022	21,173	21,163	17,799	0	0	2,647
Thursday, May 19, 2022	21,412	20,737	17,764	0	0	2,651
Friday, May 20, 2022	21,397	21,189	17,751	0	0	2,651
Saturday, May 21, 2022	21,218	20,772	17,732	0	0	2,649
Sunday, May 22, 2022	21,265	21,017	17,727	0	0	2,647
Monday, May 23, 2022	7,498	7,248	6,220	0	0	930
Tuesday, May 24, 2022	11,113	11,188	9,334	0	0	1,379
Wednesday, May 25, 2022	21,580	20,966	17,898	0	0	2,704
Thursday, May 26, 2022	17,528	17,074	14,567	0	0	2,145
Friday, May 27, 2022	16,143	16,325	14,432	0	0	2,132
Saturday, May 28, 2022	0	0	0	0	0	0
Sunday, May 29, 2022	0	0	0	0	0	0
Monday, May 30, 2022	11,600	11,044	8,801	0	0	1,243
Tuesday, May 31, 2022	21,714	21,152	18,081	0	0	2,628
Period Total (gallons)	**505,774**	**496,505**	**420,940**	**0**	**0**	**63,011**
Period Total (liters)	**1,914,356**	**1,879,272**	**1,593,260**	**0**	**0**	**238,496**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18.00

System Sampling Results	May 4, 2022	Mar 30 - Apr 30 2022 Removal (kg)	May 1 - 31 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	232			
Effluent Carbon Tetrachloride (µg/L)**	ND			
Carbon Tetrachloride Removal (kg)		0.576	0.444	2.648
Influent Chloroform (µg/L) **	13.7			
Effluent Chloroform (µg/L) **	ND			
Chloroform Removal (kg)		0.0337	0.0262	0.164
Influent Carbon Disulfide (µg/L) **	0.841			
Effluent Carbon Disulfide (µg/L) **	ND			
Carbon Disulfide Removal (kg)		0.00181	0.00161	0.005

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from May 4, 2022 sampling event used to calculate removal mass for period May 1-31

Table C-14. Weekly Flow and Mass Removal Totals.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 1 June to 30 June 2022)					
Wednesday, June 1, 2022	21,346	20,819	17,951	0	0	2,621
Thursday, June 2, 2022	21,550	20,635	17,875	0	0	2,623
Friday, June 3, 2022	6,299	6,211	5,395	0	0	794
Saturday, June 4, 2022	0	0	0	0	0	0
Sunday, June 5, 2022	0	0	0	0	0	0
Monday, June 6, 2022	11,645	11,344	9,752	0	0	1,387
Tuesday, June 7, 2022	16,374	16,083	13,658	0	0	2,018
Wednesday, June 8, 2022	21,829	21,129	18,039	0	0	2,733
Thursday, June 9, 2022	21,520	20,917	17,943	0	0	2,757
Friday, June 10, 2022	21,700	20,942	17,875	0	0	2,772
Saturday, June 11, 2022	9,231	9,340	8,685	0	0	1,317
Sunday, June 12, 2022	13,608	13,260	11,323	0	0	1,715
Monday, June 13, 2022	4,443	4,252	3,523	0	0	495
Tuesday, June 14, 2022	12,229	11,622	9,486	0	0	1,353
Wednesday, June 15, 2022	21,661	21,114	18,114	0	0	2,617
Thursday, June 16, 2022	17,636	17,540	15,684	0	0	2,277
Friday, June 17, 2022	461	441	0	0	0	0
Saturday, June 18, 2022	0	0	0	0	0	0
Sunday, June 19, 2022	0	0	0	0	0	0
Monday, June 20, 2022	10,316	10,096	9,000	0	0	1,326
Tuesday, June 21, 2022	6,190	5,986	4,306	0	0	612
Wednesday, June 22, 2022	21,903	21,226	18,158	0	0	2,682
Thursday, June 23, 2022	21,506	21,027	17,981	0	0	2,699
Friday, June 24, 2022	15,018	14,624	12,621	0	0	1,881
Saturday, June 25, 2022	21,662	21,024	17,971	0	0	2,669
Sunday, June 26, 2022	21,482	20,913	17,824	0	0	2,681
Monday, June 27, 2022	21,466	20,860	17,773	0	0	2,713
Tuesday, June 28, 2022	21,295	20,932	17,737	0	0	2,708
Wednesday, June 29, 2022	21,476	20,877	17,719	0	0	2,706
Thursday, June 30, 2022	21,228	20,745	17,688	0	0	2,699
Period Total (gallons)	**425,076**	**413,960**	**354,081**	**0**	**0**	**52,856**
Period Total (liters)	**1,608,912**	**1,566,839**	**1,340,196**	**0**	**0**	**200,058**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18

System Sampling Results	Jun 6, 2022	Jun 20, 2022	May 1 - May 31 2022 Removal (kg)	Jun 1 - Jun 15 2022 Removal (kg)	Jun 16 - Jun 30 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	231	195				
Effluent Carbon Tetrachloride (µg/L)**	ND	ND				
Carbon Tetrachloride Removal (kg)			0.444	0.178	0.164	2.989
Influent Chloroform (µg/L) **	10.5	10.2				
Effluent Chloroform (µg/L) **	ND	ND				
Chloroform Removal (kg)			0.0262	0.0081	0.0086	0.181
Influent Carbon Disulfide (µg/L) **	0.577	1.760				
Effluent Carbon Disulfide (µg/L) **	ND	ND				
Carbon Disulfide Removal (kg)			0.00161	0.00044	0.00148	0.007

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from Jun 6 and Jun 20, 2022 sampling events used to calculate removal mass for periods Jun 1-15 and Jun 16-30, respectively

Table C-15. Monthly Flow and Mass Removal Totals - July 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 1 July to 31 July 2022)					
Friday, July 1, 2022	18,496	17,956	15,401	0	0	2,290
Saturday, July 2, 2022	21,269	20,570	17,740	0	0	2,616
Sunday, July 3, 2022	21,239	20,645	17,696	0	0	2,639
Monday, July 4, 2022	17,952	17,677	15,942	0	0	2,402
Tuesday, July 5, 2022	15,855	15,069	12,295	0	0	1,868
Wednesday, July 6, 2022	19,598	19,110	17,165	0	0	2,640
Thursday, July 7, 2022	12,043	11,399	9,166	0	0	1,358
Friday, July 8, 2022	13,086	12,845	11,307	0	0	1,679
Saturday, July 9, 2022	10,261	9,922	8,986	0	0	1,326
Sunday, July 10, 2022	31	43	0	0	0	0
Monday, July 11, 2022	1,627	1,573	999	0	0	142
Tuesday, July 12, 2022	0	0	0	0	0	0
Wednesday, July 13, 2022	8,427	8,165	7,419	0	0	1,082
Thursday, July 14, 2022	0	0	0	0	0	0
Friday, July 15, 2022	0	0	0	0	0	0
Saturday, July 16, 2022	0	0	0	0	0	0
Sunday, July 17, 2022	0	0	0	0	0	0
Monday, July 18, 2022	4,439	4,309	3,707	0	0	547
Tuesday, July 19, 2022	9,807	9,521	8,209	0	0	1,170
Wednesday, July 20, 2022	12,178	11,438	9,235	0	0	1,324
Thursday, July 21, 2022	21,502	21,410	18,041	0	0	2,663
Friday, July 22, 2022	21,623	20,794	17,878	0	0	2,691
Saturday, July 23, 2022	3,826	4,202	4,199	0	0	646
Sunday, July 24, 2022	1,488	953	0	0	0	0
Monday, July 25, 2022	7,785	8,116	7,815	0	0	1,117
Tuesday, July 26, 2022	12,399	11,850	9,396	0	0	1,378
Wednesday, July 27, 2022	21,635	20,937	17,967	0	0	2,691
Thursday, July 28, 2022	21,252	21,176	17,852	0	0	2,698
Friday, July 29, 2022	21,447	20,696	17,782	0	0	2,705
Saturday, July 30, 2022	21,365	20,677	17,740	0	0	2,705
Sunday, July 31, 2022	21,142	20,885	17,703			2,696
Period Total (gallons)	**361,773**	**351,941**	**301,640**	**0**	**0**	**45,074**
Period Total (liters)	**1,369,311**	**1,332,097**	**1,141,708**	**0**	**0**	**170,606**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18

System Sampling Results	Jul 5, 2022	Jul 22, 2022	Jun 1 - Jun 30 2022 Removal (kg)	Jul 1 - Jul 15 2022 Removal (kg)	Jul 16 - Jul 31 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	223	223				
Effluent Carbon Tetrachloride (µg/L)**	ND	ND				
Carbon Tetrachloride Removal (kg)			0.342	0.135	0.170	3.294
Influent Chloroform (µg/L) **	12.8	13.3				
Effluent Chloroform (µg/L) **	0.119	0.136				
Chloroform Removal (kg)			0.0167	0.0077	0.0101	0.199
Influent Carbon Disulfide (µg/L) **	ND	0.239				
Effluent Carbon Disulfide (µg/L) **	ND	ND				
Carbon Disulfide Removal (kg)			0.00192	0.00000	0.00018	0.007

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from Jul 5 and Jul 22, 2022 sampling events used to calculate removal mass for periods Jul 1-15 and Jul 16-31, respectively

Table C-16. Monthly Flow and Mass Removal Totals. August 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04
	(Reporting period 1 August to 31 August 2022)					
Monday, August 1, 2022	21,347	20,889	17,680	0	0	2,715
Tuesday, August 2, 2022	21,087	20,596	17,662	0	0	2,709
Wednesday, August 3, 2022	21,337	20,488	17,636	0	0	2,708
Thursday, August 4, 2022	21,311	20,624	17,619	0	0	2,707
Friday, August 5, 2022	21,045	20,712	17,604	0	0	2,704
Saturday, August 6, 2022	21,270	20,639	17,595	0	0	2,705
Sunday, August 7, 2022	20,977	20,669	17,581	0	0	2,703
Monday, August 8, 2022	21,213	20,550	17,569	0	0	2,685
Tuesday, August 9, 2022	20,922	20,425	17,561	0	0	2,672
Wednesday, August 10, 2022	21,163	20,344	17,542	0	0	2,671
Thursday, August 11, 2022	15,159	14,657	12,525	0	0	1,910
Friday, August 12, 2022	0	0	0	0	0	0
Saturday, August 13, 2022	0	0	0	0	0	0
Sunday, August 14, 2022	0	0	0	0	0	0
Monday, August 15, 2022	14,411	14,261	12,072	0	0	1,781
Tuesday, August 16, 2022	21,462	20,660	17,790	0	0	2,681
Wednesday, August 17, 2022	21,163	20,855	17,692	0	0	2,684
Thursday, August 18, 2022	21,264	20,792	17,632	0	0	2,679
Friday, August 19, 2022	21,000	20,426	17,596	0	0	2,681
Saturday, August 20, 2022	21,109	20,615	17,567	0	0	2,689
Sunday, August 21, 2022	21,157	20,728	17,541	0	0	2,682
Monday, August 22, 2022	20,941	20,348	17,518	0	0	2,677
Tuesday, August 23, 2022	21,019	20,524	17,507	0	0	2,677
Wednesday, August 24, 2022	9,254	8,834	7,583	0	0	1,155
Thursday, August 25, 2022	13,221	13,020	11,083	0	0	1,700
Friday, August 26, 2022	21,266	20,844	17,629	0	0	2,764
Saturday, August 27, 2022	21,271	20,710	17,550	0	0	2,766
Sunday, August 28, 2022	21,084	20,469	17,517	0	0	2,769
Monday, August 29, 2022	21,060	20,657	17,497	0	0	2,767
Tuesday, August 30, 2022	21,167	20,727	17,478	0	0	2,752
Wednesday, August 31, 2022	21,019	20,310	17,451			2,753
Period Total (gallons)	**559,698**	**545,370**	**465,280**	**0**	**0**	**71,545**
Period Total (liters)	**2,118,458**	**2,064,227**	**1,761,083**	**0**	**0**	**270,796**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18

System Sampling Results	Aug 2, 2022	Aug 16, 2022	Jul 1 - Jul 31 2022 Removal (kg)	Aug 1 - Aug 15 2022 Removal (kg)	Aug 16 - Aug 31 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L) **	158	179				
Effluent Carbon Tetrachloride (µg/L)**	ND	ND				
Carbon Tetrachloride Removal (kg)			0.305	0.144	0.216	3.654
Influent Chloroform (µg/L) **	9.7	9.7				
Effluent Chloroform (µg/L) **	ND	ND				
Chloroform Removal (kg)			0.0178	0.0089	0.0116	0.219
Influent Carbon Disulfide (µg/L) **	ND	ND				
Effluent Carbon Disulfide (µg/L) **	ND	ND				
Carbon Disulfide Removal (kg)			0.00018	0.00000	0.00000	0.007

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
** = results from Aug 2 and Aug 16, 2022 sampling events used to calculate removal mass for periods Aug 1-15 and Aug 16-31, respectively

Table C-17. Monthly Flow and Mass Removal Totals. September 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 September to 30 September 2022)					
Thursday, September 1, 2022	21,013	20,672	17,439	0	0	2,762
Friday, September 2, 2022	21,119	20,540	17,424	0	0	2,757
Saturday, September 3, 2022	20,957	20,318	17,418	0	0	2,760
Sunday, September 4, 2022	20,967	20,437	17,407	0	0	2,758
Monday, September 5, 2022	21,091	20,533	17,398	0	0	2,759
Tuesday, September 6, 2022	20,798	20,480	17,388	0	0	2,756
Wednesday, September 7, 2022	21,063	20,275	17,378	0	0	2,754
Thursday, September 8, 2022	20,864	20,310	17,370	0	0	2,746
Friday, September 9, 2022	21,001	20,280	17,358	0	0	2,745
Saturday, September 10, 2022	20,962	20,280	17,354	0	0	2,745
Sunday, September 11, 2022	20,841	20,363	17,341	0	0	2,740
Monday, September 12, 2022	21,009	20,378	17,329	0	0	2,738
Tuesday, September 13, 2022	18,874	18,488	17,346	0	0	861
Wednesday, September 14, 2022	18,065	17,734	17,347	0	0	0
Thursday, September 15, 2022	18,198	17,816	17,335	0	0	55
Friday, September 16, 2022 *	18,132	17,775	17,341	0	0	0
Saturday, September 17, 2022	18,110	17,576	17,312	0	0	0
Sunday, September 18, 2022	18,094	17,526	17,307	0	0	0
Monday, September 19, 2022	18,096	17,511	17,304	0	0	0
Tuesday, September 20, 2022	18,067	17,555	17,306	0	0	0
Wednesday, September 21, 2022	18,073	17,551	17,293	0	0	0
Thursday, September 22, 2022	18,085	17,524	17,290	0	0	0
Friday, September 23, 2022	18,075	17,558	17,289	0	0	0
Saturday, September 24, 2022	18,044	17,571	17,289	0	0	0
Sunday, September 25, 2022	18,057	17,592	17,286	0	0	0
Monday, September 26, 2022	18,059	17,603	17,276	0	0	0
Tuesday, September 27, 2022	6,044	6,662	6,727	0	0	0
Wednesday, September 28, 2022	0	0	0	0	0	0
Thursday, September 29, 2022	0	0	0	0	0	0
Friday, September 30, 2022	14,774	14,084	8,286	0	0	5,424
Period Total (gallons)	**526,532**	**512,990**	**465,940**	**0**	**0**	**39,358**
Period Total (liters)	**1,992,923**	**1,941,669**	**1,763,582**	**0**	**0**	**148,971**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18

System Sampling Results	Sep 8, 2022	Aug 1 - Aug 31 2022 Removal (kg)	Sep 1 - Sep 30 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	178			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.360	0.355	4.009
Influent Chloroform (µg/L)	10.2			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0205	0.0203	0.239
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.007

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
* = estimated flow is average of two previous days due to corrupted/missing treatment system daily data file

Table C-18. Monthly Flow and Mass Removal Totals. October 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 October to 31 October 2022)					
Saturday, October 1, 2022	29,093	28,830	17,505	0	0	10,739
Sunday, October 2, 2022	28,651	27,691	17,400	0	0	10,066
Monday, October 3, 2022	25,694	24,834	16,188	0	0	9,152
Tuesday, October 4, 2022	2,743	2,695	1,715	0	0	952
Wednesday, October 5, 2022	17,161	16,758	10,180	0	0	5,719
Thursday, October 6, 2022	28,543	27,806	17,539	0	0	9,987
Friday, October 7, 2022	28,730	27,480	17,437	0	0	10,166
Saturday, October 8, 2022	28,686	27,491	17,379	0	0	10,172
Sunday, October 9, 2022	28,454	27,615	17,341	0	0	10,148
Monday, October 10, 2022	28,164	27,329	17,308	0	0	9,838
Tuesday, October 11, 2022	27,810	26,891	17,295	0	0	9,443
Wednesday, October 12, 2022	24,269	23,497	15,135	0	0	8,164
Thursday, October 13, 2022	27,730	26,615	17,306	0	0	9,352
Friday, October 14, 2022	27,589	26,648	17,255	0	0	9,326
Saturday, October 15, 2022	27,516	26,564	17,236	0	0	9,354
Sunday, October 16, 2022	27,643	26,765	17,220	0	0	9,382
Monday, October 17, 2022	13,376	12,907	8,188	0	0	4,466
Tuesday, October 18, 2022	15,668	15,111	9,993	0	0	5,323
Wednesday, October 19, 2022 *	15,668	15,111	9,993	0	0	5,323
Thursday, October 20, 2022	0	0	0	0	0	0
Friday, October 21, 2022	0	0	0	0	0	0
Saturday, October 22, 2022	0	0	0	0	0	0
Sunday, October 23, 2022	0	0	0	0	0	0
Monday, October 24, 2022	0	0	0	0	0	0
Tuesday, October 25, 2022	0	0	0	0	0	0
Wednesday, October 26, 2022	0	0	0	0	0	0
Thursday, October 27, 2022	22,475	21,746	11,492	0	0	9,913
Friday, October 28, 2022	35,308	34,383	17,750	0	0	16,446
Saturday, October 29, 2022	35,185	34,316	17,632	0	0	16,492
Sunday, October 30, 2022	35,255	34,356	17,555	0	0	16,503
Monday, October 31, 2022	35,195	34,269	17,489			16,548
Period Total (gallons)	**616,606**	**597,705**	**361,529**	**0**	**0**	**232,974**
Period Total (liters)	**2,333,854**	**2,262,315**	**1,368,386**	**0**	**0**	**881,807**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	18

System Sampling Results	Oct 6, 2022	Sep 1 - Sep 30 2022 Removal (kg)	Oct 1 - Oct 31 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	174			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.355	0.406	4.415
Influent Chloroform (µg/L)	9.8			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0203	0.0230	0.262
Influent Carbon Disulfide (µg/L)	1.920			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00448	0.011

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
* = estimated flow is same as previous day based on similar partial-day operation (missing/corrupt treatment system daily data file)

Table C-19. Monthly Flow and Mass Removal Totals. November 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 October to 31 October 2022)					
Tuesday, November 01, 2022	17,087	16,583	8,916	0	0	8,326
Wednesday, November 2, 2022 *	28,620	28,620	14,108	0	0	13,105
Thursday, November 3, 2022 *	28,620	28,620	14,108	0	0	13,105
Friday, November 04, 2022	9,999	9,785	5,086	0	0	4,811
Saturday, November 5, 2022 **	0	0	0	0	0	0
Sunday, November 6, 2022 **	0	0	0	0	0	0
Monday, November 7, 2022 **	0	0	0	0	0	0
Tuesday, November 8, 2022 ***	726	359	287	0	0	242
Wednesday, November 09, 2022	18,039	17,695	9,323	0	0	8,401
Thursday, November 10, 2022	37,474	35,652	18,605	0	0	17,176
Friday, November 11, 2022	37,011	35,391	18,442	0	0	17,227
Saturday, November 12, 2022	36,548	34,995	18,350	0	0	17,219
Sunday, November 13, 2022	37,022	36,179	18,292	0	0	17,203
Monday, November 14, 2022	36,635	35,821	18,263	0	0	17,215
Tuesday, November 15, 2022	36,409	35,647	18,226	0	0	16,917
Wednesday, November 16, 2022 *	27,763	27,763	14,318	0	0	13,040
Thursday, November 17, 2022	36,608	35,831	18,164	0	0	17,239
Friday, November 18, 2022	36,340	35,694	18,131	0	0	17,240
Saturday, November 19, 2022	36,974	36,052	18,119	0	0	17,351
Sunday, November 20, 2022	36,968	36,056	18,112	0	0	17,359
Monday, November 21, 2022	36,671	35,811	18,087	0	0	17,240
Tuesday, November 22, 2022	36,392	35,695	18,074	0	0	17,203
Wednesday, November 23, 2022	36,759	35,523	18,074	0	0	17,229
Thursday, November 24, 2022	36,432	35,544	18,061	0	0	17,229
Friday, November 25, 2022	36,761	35,733	18,038	0	0	17,204
Saturday, November 26, 2022	36,403	35,741	18,020	0	0	17,208
Sunday, November 27, 2022	36,301	35,412	17,991	0	0	17,207
Monday, November 28, 2022	36,203	35,466	17,985	0	0	17,229
Tuesday, November 29, 2022	36,602	35,754	17,992	0	0	17,263
Wednesday, November 30, 2022	36,609	35,644	17,972	0	0	17,217
Period Total (gallons)	**863,977**	**843,066**	**429,144**	**0**	**0**	**405,404**
Period Total (liters)	**3,270,152**	**3,191,006**	**1,624,310**	**0**	**0**	**1,534,455**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	25

System Sampling Results	Nov 2, 2022	Oct 1 - Oct 31 2022 Removal (kg)	Nov 1 - Nov 30 2022 Removal (kg)	Cumulative [1] Removal (kg)
Influent Carbon Tetrachloride (µg/L)	161			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.406	0.526	5.168
Influent Chloroform (µg/L)	8.7			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0230	0.0283	0.300
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	0.0992J			
Carbon Disulfide Removal (kg)		0.00448	0.00000	0.011

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter
1 = November 2022 cumulative removal totals incorporate a correction for erroneous (low) March 2022 values
* = missing/corrupt treatment system daily data file; value from manually recorded plant totalizers (Feed Pump set as EW-01 total)
** = regional power failure; system off
*** = limited manual operation due to failed IW-01 vault flood sensor

Table C-20. Monthly Flow and Mass Removal Totals. December 2022.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 December to 31 December 2022)					
Thursday, December 1, 2022	34,779	33,983	17,221	0	0	16,507
Friday, December 2, 2022	35,093	34,172	17,243	0	0	16,560
Saturday, December 3, 2022	22,836	21,932	11,530	0	0	11,085
Sunday, December 4, 2022	0	0	0	0	0	0
Monday, December 5, 2022	0	0	0	0	0	0
Tuesday, December 6, 2022	15,642	15,339	7,882	0	0	7,200
Wednesday, December 7, 2022	17,948	18,029	8,929	0	0	8,184
Thursday, December 8, 2022	35,737	35,169	17,611	0	0	16,618
Friday, December 9, 2022	36,884	35,896	17,486	0	0	17,926
Saturday, December 10, 2022	38,610	38,098	17,446	0	0	20,130
Sunday, December 11, 2022	38,924	38,031	17,396	0	0	19,939
Monday, December 12, 2022	38,521	37,856	17,371	0	0	19,860
Tuesday, December 13, 2022	38,193	37,246	17,333	0	0	19,507
Wednesday, December 14, 2022	38,174	37,731	17,322	0	0	19,637
Thursday, December 15, 2022	38,167	37,265	17,309	0	0	19,532
Friday, December 16, 2022	37,682	37,344	17,287	0	0	19,445
Saturday, December 17, 2022	37,965	37,310	17,254	0	0	19,366
Sunday, December 18, 2022	37,887	36,956	17,249	0	0	19,307
Monday, December 19, 2022	37,865	37,249	17,233	0	0	19,274
Tuesday, December 20, 2022	37,808	36,931	17,234	0	0	19,226
Wednesday, December 21, 2022	37,618	36,970	17,232	0	0	19,204
Thursday, December 22, 2022	37,599	36,962	17,234	0	0	19,179
Friday, December 23, 2022	36,370	35,383	16,631	0	0	18,483
Saturday, December 24, 2022	37,413	36,831	17,205	0	0	19,087
Sunday, December 25, 2022	31,260	30,111	14,549	0	0	16,099
Monday, December 26, 2022	0	0	0	0	0	0
Tuesday, December 27, 2022	29,478	29,457	13,457	0	0	14,864
Wednesday, December 28, 2022	38,222	37,282	17,432	0	0	19,284
Thursday, December 29, 2022	25,989	25,665	11,918	0	0	13,225
Friday, December 30, 2022	37,866	37,014	17,360	0	0	19,203
Saturday, December 31, 2022	37,877	36,837	17,289	0	0	19,112
Period Total (gallons)	**968,410**	**949,048**	**448,644**	**0**	**0**	**487,044**
Period Total (liters)	**3,665,432**	**3,592,148**	**1,698,118**	**0**	**0**	**1,843,460**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	25

System Sampling Results	Dec 6, 2022	Nov 1 - Nov 30 2022 Removal (kg)	Dec 1 - Dec 31 2022 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	175			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.526	0.641	5.809
Influent Chloroform (µg/L)	8.32			
Effluent Chloroform (µg/L)	0.311 J			
Chloroform Removal (kg)		0.0283	0.0294	0.329
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	0.128 J			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.011

Notes:
gpm = gallons per minute
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-21. Monthly Flow and Mass Removal Totals. January 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 January to 31 January 2023)					
Sunday, January 1, 2023 *	37,533	36,945	17,221	0	0	19,017
Monday, January 02, 2023	37,533	36,945	17,221	0	0	19,017
Tuesday, January 03, 2023	37,476	36,871	17,201	0	0	18,982
Wednesday, January 04, 2023	27,258	26,496	17,328	0	0	8,590
Thursday, January 05, 2023	15,930	15,842	12,939	0	0	2,429
Friday, January 06, 2023	31,443	30,913	11,930	0	0	18,579
Saturday, January 07, 2023	45,869	44,807	17,290	0	0	27,335
Sunday, January 08, 2023	45,510	44,672	17,151	0	0	27,309
Monday, January 09, 2023	46,331	45,399	17,111	0	0	27,362
Tuesday, January 10, 2023	45,898	45,025	17,140	0	0	27,322
Wednesday, January 11, 2023	45,512	44,802	17,123	0	0	27,317
Thursday, January 12, 2023	45,518	44,770	17,089	0	0	27,292
Friday, January 13, 2023	45,552	44,491	17,028	0	0	27,286
Saturday, January 14, 2023	22,394	21,803	8,084	0	0	12,980
Sunday, January 15, 2023 **	0	0	0	0	0	0
Monday, January 16, 2023 **	0	0	0	0	0	0
Tuesday, January 17, 2023 **	4,684	4,593	1,768	0	0	2,680
Wednesday, January 18, 2023 **	26,175	25,130	9,979	0	0	15,492
Thursday, January 19, 2023	46,316	44,327	17,595	0	0	27,360
Friday, January 20, 2023	46,193	44,138	17,424	0	0	27,358
Saturday, January 21, 2023	46,066	44,015	17,344	0	0	27,360
Sunday, January 22, 2023	46,013	44,052	17,292	0	0	27,358
Monday, January 23, 2023	46,036	44,188	17,246	0	0	27,358
Tuesday, January 24, 2023	45,974	44,163	17,223	0	0	27,356
Wednesday, January 25, 2023	45,951	44,142	17,208	0	0	27,354
Thursday, January 26, 2023	45,918	44,109	17,190	0	0	27,352
Friday, January 27, 2023	39,794	38,554	14,926	0	0	23,602
Saturday, January 28, 2023	45,824	44,562	17,203	0	0	27,205
Sunday, January 29, 2023	45,658	44,396	17,165	0	0	27,090
Monday, January 30, 2023	45,305	44,064	17,030	0	0	26,908
Tuesday, January 31, 2023	44,700	43,464	16,722	0	0	26,632
Period Total (gallons)	**1,150,364**	**1,117,679**	**455,170**	**0**	**0**	**659,280**
Period Total (liters)	**4,354,126**	**4,230,414**	**1,722,817**	**0**	**0**	**2,495,375**

EW-01 Pumping Duration (hours)	Cycling
Extraction Rate Target (gpm)	25

System Sampling Results	Jan 4, 2023	Dec 1 - Dec 31 2022 Removal (kg)	Jan 1 - Jan 31 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	134			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.641	0.583	6.392
Influent Chloroform (µg/L)	7.28			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0294	0.0317	0.361
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.011

Notes:
* = System did not send daily report on Jan 1, but was running; values are copied from January 2, 2023
** = System down due to Feed Pump air entrainment; control logic programming on January 17-18, 2023
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-22. Monthly Flow and Mass Removal Totals. February 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 February to 28 February 2023)					
Wednesday, February 1, 2023	43,749	42,541	16,329	0	0	26,003
Thursday, February 2, 2023	45,449	44,156	17,887	0	0	26,256
Friday, February 3, 2023	48,173	46,934	17,286	0	0	29,519
Saturday, February 4, 2023	48,231	47,111	17,288	0	0	29,518
Sunday, February 5, 2023	48,229	47,172	17,285	0	0	29,519
Monday, February 6, 2023	48,251	47,214	17,287	0	0	29,520
Tuesday, February 7, 2023	42,709	41,628	15,410	0	0	26,017
Wednesday, February 8, 2023	47,537	46,094	17,304	0	0	28,699
Thursday, February 9, 2023	47,519	46,082	17,296	0	0	28,794
Friday, February 10, 2023	47,512	46,072	17,292	0	0	28,795
Saturday, February 11, 2023	47,514	46,075	17,289	0	0	28,795
Sunday, February 12, 2023	47,506	46,070	17,285	0	0	28,796
Monday, February 13, 2023	40,602	39,858	14,988	0	0	24,972
Tuesday, February 14, 2023	0	0	0	0	0	0
Wednesday, February 15, 2023	0	0	0	0	0	0
Thursday, February 16, 2023	19,347	19,005	8,574	0	0	10,111
Friday, February 17, 2023	54,825	53,945	24,485	0	0	28,795
Saturday, February 18, 2023	54,861	53,957	24,485	0	0	28,795
Sunday, February 19, 2023	54,923	53,979	24,484	0	0	28,796
Monday, February 20, 2023	54,739	53,701	24,393	0	0	28,566
Tuesday, February 21, 2023	54,901	53,634	24,488	0	0	28,798
Wednesday, February 22, 2023	54,978	53,795	24,486	0	0	28,796
Thursday, February 23, 2023	54,982	53,858	24,484	0	0	28,795
Friday, February 24, 2023	54,918	53,878	24,474	0	0	28,781
Saturday, February 25, 2023	54,894	53,875	24,461	0	0	28,769
Sunday, February 26, 2023	54,970	53,699	24,503	0	0	28,792
Monday, February 27, 2023	54,991	53,352	24,546	0	0	28,774
Tuesday, February 28, 2023	54,980	53,475	24,505	0	0	28,805
Period Total (gallons)	**1,281,290**	**1,251,162**	**522,596**	**0**	**0**	**720,572**
Period Total (liters)	**4,849,683**	**4,735,649**	**1,978,026**	**0**	**0**	**2,727,365**

EW-01 Pumping Duration (hours)	602
Extraction Rate Target (gpm)	37

System Sampling Results	Feb 1, 2023	Feb 20, 2023	Jan 1 - Jan 31 2023 Removal (kg)	Feb 1 - Feb 19 2023 Removal (kg)	Feb 20 - Feb 28 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	150	123				
Effluent Carbon Tetrachloride (µg/L)	ND	ND				
Carbon Tetrachloride Removal (kg)			0.692	0.447	0.230	7.178
Influent Chloroform (µg/L)	8.06	7.20				
Effluent Chloroform (µg/L)	ND	ND				
Chloroform Removal (kg)			0.0385	0.0240	0.0135	0.405
Influent Carbon Disulfide (µg/L)	0.0968J	ND				
Effluent Carbon Disulfide (µg/L)	ND	ND				
Carbon Disulfide Removal (kg)			0.00000	0.00029	0.00000	0.0113

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-23. Monthly Flow and Mass Removal Totals. March 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 March to 31 March 2023)					
Wednesday, March 1, 2023	54,967	53,661	24,523	0	0	28,781
Thursday, March 2, 2023	54,957	53,693	24,528	0	0	28,777
Friday, March 3, 2023	55,010	53,741	24,516	0	0	28,836
Saturday, March 4, 2023	54,949	53,645	24,523	0	0	28,775
Sunday, March 5, 2023	54,949	53,639	24,520	0	0	28,780
Monday, March 6, 2023	54,988	53,699	24,510	0	0	28,816
Tuesday, March 7, 2023	54,978	53,682	24,511	0	0	28,814
Wednesday, March 8, 2023	54,952	53,642	24,505	0	0	28,791
Thursday, March 9, 2023	54,937	53,670	24,508	0	0	28,783
Friday, March 10, 2023	54,871	53,622	24,495	0	0	28,742
Saturday, March 11, 2023	54,984	53,789	24,508	0	0	28,813
Sunday, March 12, 2023	54,957	53,771	24,501	0	0	28,799
Monday, March 13, 2023	59,034	57,899	27,667	0	0	29,559
Tuesday, March 14, 2023	61,852	60,915	30,115	0	0	29,857
Wednesday, March 15, 2023	62,553	61,572	30,318	0	0	30,243
Thursday, March 16, 2023	62,550	61,437	30,291	0	0	30,268
Friday, March 17, 2023	28,760	28,536	14,087	0	0	14,094
Saturday, March 18, 2023	0	0	0	0	0	0
Sunday, March 19, 2023	0	0	0	0	0	0
Monday, March 20, 2023	11,123	10,519	5,108	0	0	5,344
Tuesday, March 21, 2023	0	0	0	0	0	0
Wednesday, March 22, 2023	35,256	34,145	17,108	0	0	17,113
Thursday, March 23, 2023	62,325	60,289	30,210	0	0	30,229
Friday, March 24, 2023	62,335	60,266	30,213	0	0	30,231
Saturday, March 25, 2023	62,329	60,220	30,198	0	0	30,230
Sunday, March 26, 2023	62,313	60,170	30,200	0	0	30,208
Monday, March 27, 2023	62,350	60,178	30,199	0	0	30,247
Tuesday, March 28, 2023	62,265	60,059	30,173	0	0	30,191
Wednesday, March 29, 2023	62,268	60,050	30,194	0	0	30,172
Thursday, March 30, 2023	60,085	57,907	29,089	0	0	29,169
Friday, March 31, 2023	61,131	58,816	29,618	0	0	29,637
Period Total (gallons)	**1,538,026**	**1,497,235**	**718,933**	**0**	**0**	**772,299**
Period Total (liters)	**5,821,430**	**5,667,033**	**2,721,162**	**0**	**0**	**2,923,151**

EW-01 Pumping Duration (hours)	630
Extraction Rate Target (gpm)	42

System Sampling Results	Mar 14, 2023	Mar 1 - Mar 31 2023 Removal (kg)	Feb 1 - Feb 19 2023 Removal (kg)	Feb 20 - Feb 28 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	106				
Effluent Carbon Tetrachloride (µg/L)	ND				
Carbon Tetrachloride Removal (kg)		0.617	0.447	0.230	7.7951
Influent Chloroform (µg/L)	6.20				
Effluent Chloroform (µg/L)	ND				
Chloroform Removal (kg)		0.0361	0.0240	0.0135	0.44109
Influent Carbon Disulfide (µg/L)	ND				
Effluent Carbon Disulfide (µg/L)	ND				
Carbon Disulfide Removal (kg)		0.00000	0.00029	0.00000	0.01130

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-24. Monthly Flow and Mass Removal Totals. April 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 April to 30 April 2023)					
Saturday, April 1, 2023	62,309	59,977	30,194	0	0	30,204
Sunday, April 2, 2023	62,352	59,959	30,225	0	0	30,215
Monday, April 3, 2023	62,317	59,897	30,213	0	0	30,190
Tuesday, April 4, 2023	62,352	59,922	30,221	0	0	30,205
Wednesday, April 5, 2023	62,349	59,881	30,244	0	0	30,192
Thursday, April 6, 2023	62,380	59,877	30,223	0	0	30,242
Friday, April 7, 2023	62,336	59,817	30,197	0	0	30,226
Saturday, April 8, 2023	62,382	59,850	30,228	0	0	30,247
Sunday, April 9, 2023	62,398	59,863	30,239	0	0	30,253
Monday, April 10, 2023	62,323	59,790	30,203	0	0	30,213
Tuesday, April 11, 2023	44,626	43,263	21,578	0	0	21,686
Wednesday, April 12, 2023	62,265	61,007	30,150	0	0	30,227
Thursday, April 13, 2023	61,137	59,718	29,375	0	0	29,906
Friday, April 14, 2023	68,055	65,993	32,296	0	0	33,713
Saturday, April 15, 2023	68,019	66,156	32,326	0	0	33,655
Sunday, April 16, 2023	67,907	66,123	32,299	0	0	33,564
Monday, April 17, 2023	67,830	65,955	32,276	0	0	33,511
Tuesday, April 18, 2023	67,605	65,614	32,261	0	0	33,302
Wednesday, April 19, 2023	67,434	65,421	32,237	0	0	33,163
Thursday, April 20, 2023	67,402	65,378	32,219	0	0	33,148
Friday, April 21, 2023	67,347	65,312	32,196	0	0	33,125
Saturday, April 22, 2023	67,294	65,250	32,183	0	0	33,095
Sunday, April 23, 2023	48,779	47,293	23,325	0	0	24,005
Monday, April 24, 2023	22,203	21,529	10,593	0	0	10,970
Tuesday, April 25, 2023	52,257	50,896	18,548	0	0	32,244
Wednesday, April 26, 2023	56,315	54,928	21,666	0	0	33,079
Thursday, April 27, 2023	56,198	54,809	21,487	0	0	33,140
Friday, April 28, 2023	62,348	60,715	27,372	0	0	33,149
Saturday, April 29, 2023	65,232	63,436	30,186	0	0	33,109
Sunday, April 30, 2023	60,888	59,193	25,999	0	0	33,086
Period Total (gallons)	**1,824,641**	**1,766,823**	**852,760**	**0**	**0**	**917,065**
Period Total (liters)	**6,906,267**	**6,687,424**	**3,227,695**	**0**	**0**	**3,471,092**

EW-01 Pumping Duration (hours)	692
Extraction Rate Target (gpm)	45

System Sampling Results	Apr 13, 2023	Apr 1 - Apr 30 2023 Removal (kg)	Mar 1 - Mar 31 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	101			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.698	0.617	8.4926
Influent Chloroform (µg/L)	5.80			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0401	0.0361	0.48115
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.01130

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-25. Monthly Flow and Mass Removal Totals. May 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 May to 31 May 2023)					
Monday, May 1, 2023	50,417	49,078	18,616	0	0	30,352
Tuesday, May 2, 2023	34,374	33,545	13,207	0	0	20,200
Wednesday, May 3, 2023	55,311	53,978	20,689	0	0	33,084
Thursday, May 4, 2023	54,813	53,492	20,193	0	0	33,092
Friday, May 5, 2023	54,873	53,538	20,193	0	0	33,124
Saturday, May 6, 2023	54,847	53,539	20,212	0	0	33,116
Sunday, May 7, 2023	54,795	53,471	20,196	0	0	33,116
Monday, May 8, 2023	54,706	53,373	20,125	0	0	33,088
Tuesday, May 9, 2023	51,952	50,521	21,569	0	0	28,906
Wednesday, May 10, 2023	66,597	64,244	31,590	0	0	33,046
Thursday, May 11, 2023	66,641	64,352	31,615	0	0	33,065
Friday, May 12, 2023	66,683	64,450	31,629	0	0	33,096
Saturday, May 13, 2023	66,669	64,481	31,622	0	0	33,087
Sunday, May 14, 2023	66,625	64,474	31,603	0	0	33,068
Monday, May 15, 2023	64,606	62,835	30,761	0	0	31,935
Tuesday, May 16, 2023	66,812	65,896	31,732	0	0	33,055
Wednesday, May 17, 2023	66,791	65,738	31,700	0	0	33,066
Thursday, May 18, 2023	66,799	65,741	31,696	0	0	33,083
Friday, May 19, 2023	66,819	65,802	31,712	0	0	33,094
Saturday, May 20, 2023	66,829	65,867	31,731	0	0	33,099
Sunday, May 21, 2023	48,359	47,702	22,967	0	0	23,958
Monday, May 22, 2023	40,062	39,586	19,001	0	0	19,897
Tuesday, May 23, 2023	66,582	65,557	31,604	0	0	33,055
Wednesday, May 24, 2023	66,628	65,374	31,606	0	0	33,090
Thursday, May 25, 2023	49,493	48,505	23,493	0	0	24,580
Friday, May 26, 2023	39,362	38,683	18,694	0	0	19,577
Saturday, May 27, 2023	66,289	65,111	31,597	0	0	33,042
Sunday, May 28, 2023	66,241	65,097	31,632	0	0	33,465
Monday, May 29, 2023	66,244	65,045	31,631	0	0	33,413
Tuesday, May 30, 2023	66,228	65,063	31,644	0	0	33,419
Wednesday, May 31, 2023	66,231	65,081	31,649	0	0	33,432
Period Total (gallons)	**1,839,680**	**1,799,215**	**827,909**	**0**	**0**	**961,699**
Period Total (liters)	**6,963,189**	**6,810,030**	**3,133,635**	**0**	**0**	**3,640,031**

EW-01 Pumping Duration (hours)	692
Extraction Rate Target (gpm)	45

System Sampling Results	May 15, 2023	May 1 - May 31 2023 Removal (kg)	Apr 1 - Apr 30 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	83			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.579	0.698	9.0719
Influent Chloroform (µg/L)	5.40			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0376	0.0401	0.51875
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.01130

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-26. Monthly Flow and Mass Removal Totals. June 2023.

Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 Jun to 30 Jun 2023)					
Thursday, June 1, 2023	66,257	65,107	31,667	0	0	33,440
Friday, June 2, 2023	66,262	65,125	31,671	0	0	33,454
Saturday, June 3, 2023	66,266	65,137	31,681	0	0	33,456
Sunday, June 4, 2023	66,256	65,137	31,670	0	0	33,467
Monday, June 5, 2023	66,238	65,134	31,662	0	0	33,472
Tuesday, June 6, 2023	66,216	65,155	31,657	0	0	33,498
Wednesday, June 7, 2023	66,194	65,139	31,645	0	0	33,494
Thursday, June 8, 2023	66,219	65,161	31,654	0	0	33,507
Friday, June 9, 2023	66,269	65,190	31,666	0	0	33,524
Saturday, June 10, 2023	66,342	65,207	31,677	0	0	33,530
Sunday, June 11, 2023	66,209	65,066	31,606	0	0	33,460
Monday, June 12, 2023	66,261	64,699	31,619	0	0	33,080
Tuesday, June 13, 2023	41,601	40,180	24,337	0	0	15,843
Wednesday, June 14, 2023	10,471	10,161	10,068	0	0	93
Thursday, June 15, 2023	14,760	14,302	14,189	0	0	114
Friday, June 16, 2023	5,686	5,526	5,681	0	0	5
Saturday, June 17, 2023	0	0	0	0	0	0
Sunday, June 18, 2023	0	0	0	0	0	0
Monday, June 19, 2023	0	0	0	0	0	0
Tuesday, June 20, 2023	16,017	15,471	16,060	0	0	0
Wednesday, June 21, 2023	10,266	9,990	9,226	0	0	0
Thursday, June 22, 2023	33,348	31,868	31,564	0	0	0
Friday, June 23, 2023	32,802	31,801	31,554	0	0	0
Saturday, June 24, 2023	32,685	31,736	31,539	0	0	0
Sunday, June 25, 2023	32,892	31,784	31,533	0	0	0
Monday, June 26, 2023	32,821	31,791	31,533	0	0	0
Tuesday, June 27, 2023	32,786	31,792	31,539	0	0	0
Wednesday, June 28, 2023	32,951	31,782	31,543	0	0	0
Thursday, June 29, 2023	32,325	31,766	31,552	0	0	0
Friday, June 30, 2023	32,939	31,745	31,542	0	0	0
Period Total (gallons)	1,189,338	1,162,953	743,335	0	0	417,436
Period Total (liters)	4,501,643	4,401,777	2,813,522	0	0	1,579,996

EW-01 Pumping Duration (hours)	692
Extraction Rate Target (gpm)	45

System Sampling Results	Jun 12, 2023	Jun 1 - Jun 30 2023 Removal (kg)	May 1 - May 31 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	81.1			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.365	0.579	9.4370
Influent Chloroform (µg/L)	4.90			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0221	0.0376	0.54081
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.01130

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-27. Monthly Flow and Mass Removal Totals. July 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 Jul to 31 Jul 2023)					
Saturday, July 1, 2023	32,942	31,733	31,541	0	0	0
Sunday, July 2, 2023	32,912	31,721	31,536	0	0	0
Monday, July 3, 2023	32,850	31,728	31,537	0	0	0
Tuesday, July 4, 2023	32,711	31,740	31,546	0	0	0
Wednesday, July 5, 2023	32,904	31,733	31,531	0	0	0
Thursday, July 6, 2023	32,880	31,711	31,528	0	0	0
Friday, July 7, 2023	32,797	31,697	31,528	0	0	0
Saturday, July 8, 2023	32,890	31,687	31,528	0	0	0
Sunday, July 9, 2023	32,984	31,769	31,524	0	0	0
Monday, July 10, 2023	32,753	32,048	31,532	0	0	0
Tuesday, July 11, 2023	33,012	32,028	31,552	0	0	0
Wednesday, July 12, 2023	0	0	0	0	0	0
Thursday, July 13, 2023	11,116	10,614	10,469	0	0	0
Friday, July 14, 2023	0	0	0	0	0	0
Saturday, July 15, 2023	0	0	0	0	0	0
Sunday, July 16, 2023	0	0	0	0	0	0
Monday, July 17, 2023	0	0	0	0	0	0
Tuesday, July 18, 2023	0	0	0	0	0	0
Wednesday, July 19, 2023	0	0	0	0	0	0
Thursday, July 20, 2023	0	0	0	0	0	0
Friday, July 21, 2023	44,095	43,217	20,989	0	0	22,033
Saturday, July 22, 2023	66,429	64,769	31,599	0	0	33,079
Sunday, July 23, 2023	66,441	64,784	31,609	0	0	33,084
Monday, July 24, 2023	66,515	64,842	31,651	0	0	33,113
Tuesday, July 25, 2023	66,571	64,900	31,700	0	0	33,103
Wednesday, July 26, 2023	66,552	65,002	31,712	0	0	33,080
Thursday, July 27, 2023	66,578	65,121	31,715	0	0	33,093
Friday, July 28, 2023	66,608	65,176	31,741	0	0	33,095
Saturday, July 29, 2023	66,639	65,227	31,758	0	0	33,101
Sunday, July 30, 2023	66,666	65,237	31,782	0	0	33,102
Monday, July 31, 2023	66,691	65,069	31,770			33,129
Period Total (gallons)	1,082,534	1,053,552	695,377	0	0	353,012
Period Total (liters)	4,097,390	3,987,696	2,632,001	0	0	1,336,151

EW-01 Pumping Duration (hours)	515
Extraction Rate Target (gpm)	45

System Sampling Results	Aug 7, 2023	Jul 1 - Jul 31 2023 Removal (kg)	Jun 1 - Jun 30 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	75.7			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.310	0.365	9.7472
Influent Chloroform (µg/L)	4.80			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0197	0.0221	0.56048
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.01130

Notes:
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Table C-28. Monthly Flow and Mass Removal Totals. August 2023.
Grain Handling Facility at Freeman, Freeman, WA

Daily Flow (Gallons)	EW-01	Feed Pump	IW-01	IW-02	IW-03	IW-04(R)
	(Reporting period 1 Aug to 31 Aug 2023)					
Tuesday, August 1, 2023	66,656	64,991	31,765	0	0	33,102
Wednesday, August 2, 2023	66,651	64,977	31,762	0	0	33,086
Thursday, August 3, 2023	66,672	64,991	31,768	0	0	33,106
Friday, August 4, 2023	66,662	64,986	31,770	0	0	33,096
Saturday, August 5, 2023	66,660	64,970	31,761	0	0	33,082
Sunday, August 6, 2023 *	66,660	64,970	31,761	0	0	33,082
Monday, August 7, 2023	38,113	36,952	18,608	0	0	18,972
Tuesday, August 8, 2023	42,273	41,083	19,888	0	0	20,869
Wednesday, August 9, 2023	66,381	64,243	31,600	0	0	33,085
Thursday, August 10, 2023	66,417	64,340	31,633	0	0	33,093
Friday, August 11, 2023	66,477	64,623	31,652	0	0	33,137
Saturday, August 12, 2023	66,519	64,679	31,681	0	0	33,144
Sunday, August 13, 2023	66,482	65,054	31,687	0	0	33,105
Monday, August 14, 2023	66,419	65,303	31,668	0	0	33,062
Tuesday, August 15, 2023	66,438	64,609	31,666	0	0	33,088
Wednesday, August 16, 2023	66,456	64,076	31,663	0	0	33,110
Thursday, August 17, 2023	64,126	61,864	31,705	0	0	30,773
Friday, August 18, 2023	66,524	64,147	31,776	0	0	33,073
Saturday, August 19, 2023	66,557	64,169	31,767	0	0	33,107
Sunday, August 20, 2023	66,521	64,125	31,760	0	0	33,075
Monday, August 21, 2023	66,523	64,324	31,760	0	0	33,072
Tuesday, August 22, 2023	66,585	64,914	31,766	0	0	33,091
Wednesday, August 23, 2023	21,794	21,944	10,685	0	0	11,147
Thursday, August 24, 2023	29,321	28,838	13,990	0	0	14,656
Friday, August 25, 2023 *	66,399	64,934	31,608	0	0	33,063
Saturday, August 26, 2023	66,399	64,934	31,608	0	0	33,063
Sunday, August 27, 2023	66,436	64,948	31,629	0	0	33,068
Monday, August 28, 2023	66,430	64,940	31,623	0	0	33,059
Tuesday, August 29, 2023	66,436	64,899	31,621	0	0	33,071
Wednesday, August 30, 2023	66,446	64,924	31,629	0	0	33,052
Thursday, August 31, 2023	66,419	64,907	31,615	0	0	33,039
Period Total (gallons)	1,924,852	1,873,657	918,874	0	0	956,629
Period Total (liters)	7,285,565	7,091,792	3,477,940	0	0	3,620,841

EW-01 Pumping Duration (hours)	696
Extraction Rate Target (gpm)	45

System Sampling Results	Aug 7, 2023	Aug 1 - Aug 31 2023 Removal (kg)	Jul 1 - Jul 31 2023 Removal (kg)	Cumulative Removal (kg)
Influent Carbon Tetrachloride (µg/L)	75.7			
Effluent Carbon Tetrachloride (µg/L)	ND			
Carbon Tetrachloride Removal (kg)		0.552	0.310	10.2987
Influent Chloroform (µg/L)	4.80			
Effluent Chloroform (µg/L)	ND			
Chloroform Removal (kg)		0.0350	0.0197	0.59545
Influent Carbon Disulfide (µg/L)	ND			
Effluent Carbon Disulfide (µg/L)	ND			
Carbon Disulfide Removal (kg)		0.00000	0.00000	0.01130

Notes:
* = No system data file for 8/6; values shown are estimated as duplicates of previous daily values
* = No system data file for 8/25; values shown are estimated as duplicates of next daily values
J = estimated concentration
kg = kilograms
ND = not detected
µg/L = micrograms per liter

Appendix D
Mann-Kendall Analysis

Appendix D - Trend Evaluation Method

Carbon tetrachloride concentrations were evaluated for temporal trends in the data using the Mann-Kendall (MK) test (Mann 1945; Kendall 1975; Gilbert 1987). The MK test is a nonparametric procedure that compares the relative magnitudes of sample data rather than the data values themselves. As a nonparametric procedure, the MK test does not require the underlying data to follow a specific distribution. The test is based on the idea that a lack of trend should correspond to a time series plot fluctuating randomly about a constant mean level, with no visually apparent upward or downward pattern (USEPA 2009). For this analysis, a 0.05 significance level (corresponding to 95 percent confidence) was used to test the null hypothesis that there is no trend in the data with the alternative hypothesis that a monotonic (upward or downward) trend exists in the data. If the calculated probability from the test is below this significance level, a conclusion is drawn to reject the null hypothesis and instead determine that a significant trend exists.

To gauge the magnitude of the trend, the Theil-Sen slope was calculated for wells exhibiting a statistically significant trend in carbon tetrachloride concentrations. Although nonparametric, the Theil-Sen slope estimator does not use data ranks but rather the concentrations themselves. The method is nonparametric because the median pairwise slope is utilized, thus ignoring extreme values that might otherwise skew the slope estimate. Confidence bands were constructed around the Theil-Sen trend line using bootstrapping (USEPA 2009). In this method, the Theil-Sen trend was first computed using the sample data. Then a large number of bootstrap resamples were drawn from the original sample, and an alternate Theil-Sen trend was conducted on each bootstrap sample. Variability in these alternate trend estimates was then used to construct lower and upper confidence limits around the original trend. For this analysis, these limits were constructed to represent a nonparametric simultaneous confidence band around the Theil-Sen trend line with 95 percent confidence.

Where there was insufficient evidence for identifying a significant, non-zero trend at the 95 percent confidence level, concentrations were deemed stable if the coefficient of variation (CV) was less than 1. Values less than or near 1 indicate that the data form a relatively close group about the mean value; values larger than 1.0 indicate that the data show a greater degree of scatter about the mean.

Summary statistics (mean, median, standard deviation, and CV) were calculated using the Kaplan-Meier (KM) product-limit estimator (Kaplan and Meier 1958) for non-detects with the censoring limit set at the reporting limit. The USEPA (2009) recommends the use of the KM method when dealing with environmental data sets containing a mixture of detects and non-detects. Descriptive statistics were not calculated for those data sets containing greater than 50% non-detects. If a data set is a mixture of detects and non-detects, but the non-detect fraction is no more than 50%, a censored estimation method such as the KM product-limit can be used to compute adjusted estimates of the mean and standard deviation. Because parameter estimation can suffer for data sets with low detection frequencies, the USEPA (2009) recommends that these methods should not be used when more than 50% of the data are non-detects.

References

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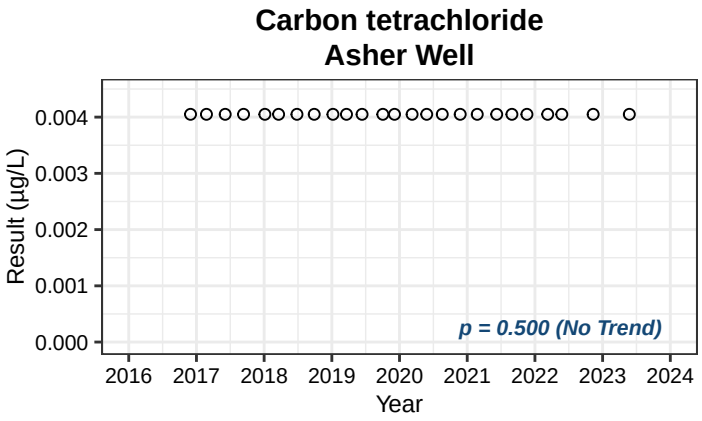
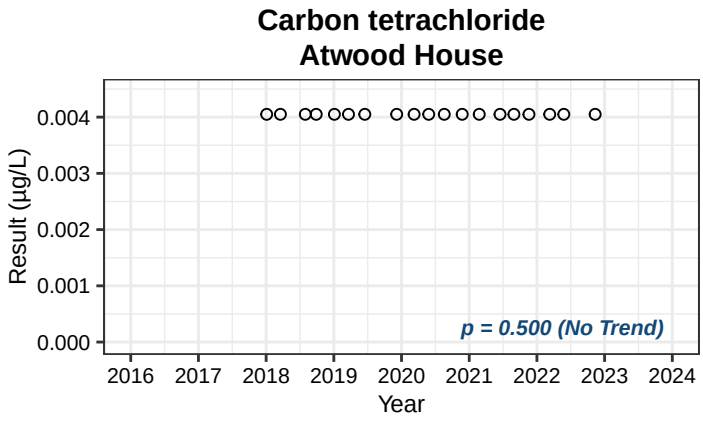
Table D-1. Mann-Kendall Trend Evaluation Results for Carbon Tetrachloride (Jan. 2016 - Aug. 2023)

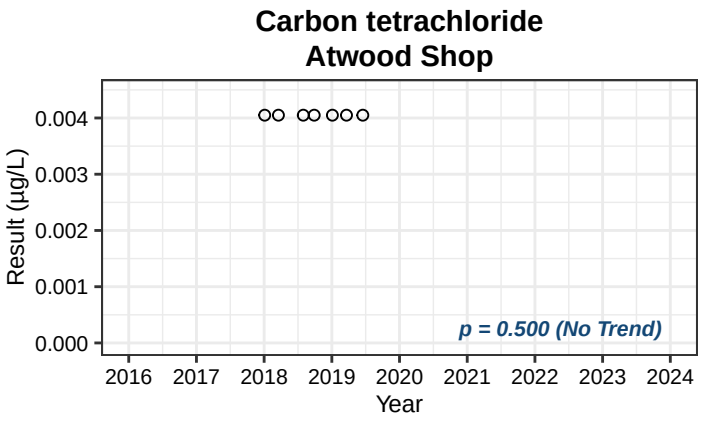
Well	Total Samples	Detect Results	Detect Freq. (%)	Min Non-Detect (µg/L)	Min Detect (µg/L)	Max Non-Detect (µg/L)	Max Detect (µg/L)	Mean (µg/L)	Median (µg/L)	Std Dev. (µg/L)	CV	Last Result (µg/L)	Last Sample Date	MK Test Value (S)	MK p-value	Sen's Slope Estimator (µg/L/yr)	Mann-Kendall Result	Trend Analysis Result	Stability Based On CV	Min Sample Spacing (days)
Asher Well	25	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	63
Atwood House	19	0	0	0.130	---	0.500	---	---	---	---	---	0.13 U	Nov-22	0	0.500	---	50% (+)	No Trend	>50% ND	59
Atwood Shop	7	0	0	0.190	---	0.200	---	---	---	---	---	0.19 U	Jun-19	0	0.500	---	50% (+)	No Trend	>50% ND	59
Davey Well (W46)	3	3	100	---	17.0	---	22.3	19.2	18.3	2.76	0.144	17.0	Feb-17	IS	IS	IS	IS	IS	IS	43
Freeman Store Well	2	0	0	0.0790	---	0.120	---	---	---	---	---	0.12 U	Aug-16	IS	IS	IS	IS	IS	IS	23
Lang Well	29	1	3.45	0.0790	0.160	0.200	0.160	---	---	---	---	0.13 U	Aug-23	-28	0.308	---	69.2% (-)	No Trend	>50% ND	40
Lashaw Well (Agricultural)	15	15	100	---	1.50	---	34.4	8.04	4.10	8.86	1.10	15.3	Aug-23	25	0.120	---	88% (+)	No Trend	Not Stable	73
Lashaw Well (Domestic)	26	26	100	---	0.220	---	1.20	0.627	0.575	0.236	0.377	0.640	Aug-23	0	0.509	---	49.1% (+)	No Trend	Stable	63
Marlow Well	31	30	96.8	0.190	1.70	0.190	167	80.4	85.5	48.3	0.601	2.20	Aug-23	-322	<0.001	-20.2	100% (sig -)	Decreasing	---	20
MW-1S	19	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	60
MW-1D	26	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	72
MW-2D	26	2	7.69	0.0790	0.290	0.200	1.20	---	---	---	---	0.13 U	May-23	-11	0.414	---	58.6% (-)	No Trend	>50% ND	59
MW-3D	26	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	58
MW-4D	27	25	92.6	0.159	0.220	0.159	12.1	4.19	4.40	3.33	0.796	2.40	Aug-23	-48	0.165	---	83.5% (-)	No Trend	Stable	63
MW-5D	26	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	60
MW-6S	25	1	4.00	0.0790	1.30	0.200	1.30	---	---	---	---	0.13 U	May-23	4	0.472	---	52.8% (+)	No Trend	>50% ND	63
MW-6D	28	23	82.1	0.140	0.340	0.190	34.7	3.16	1.90	6.26	1.98	1.60	Aug-23	35	0.253	---	74.8% (+)	No Trend	Not Stable	62
MW-6U	25	25	100	---	0.830	---	125	62.8	62.3	31.0	0.493	19.3	Aug-23	12	0.400	---	60% (+)	No Trend	Stable	48
MW-7S	29	27	93.1	0.130	0.160	0.200	3.40	1.02	1.10	0.725	0.714	1.10	Aug-23	-129	0.008	-0.139	99.2% (sig -)	Decreasing	---	61
MW-8S	29	29	100	---	42.3	---	274	152	147	52.1	0.342	67.8	Aug-23	-225	<0.001	-18.4	100% (sig -)	Decreasing	---	61
MW-9S	28	28	100	---	64.5	---	1,000	329	299	194	0.591	187	May-23	-232	<0.001	-65.2	100% (sig -)	Decreasing	---	61
MW-9D	27	27	100	---	2.90	---	135	70.2	78.4	43.7	0.623	11.2	Aug-23	-215	<0.001	-18.4	100% (sig -)	Decreasing	---	72
MW-9U	26	26	100	---	15.9	---	820	418	379	225	0.537	185	Aug-23	-165	<0.001	-87.5	100% (sig -)	Decreasing	---	48
MW-10S	28	19	67.9	0.130	0.230	0.190	34.0	4.16	0.505	9.30	2.24	0.13 U	Aug-23	-173	<0.001	-0.333	100% (sig -)	Decreasing	---	61
MW-11S	25	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	63
MW-12S	25	1	4.00	0.0790	0.970	0.200	0.970	---	---	---	---	0.13 U	May-23	-8	0.436	---	56.4% (-)	No Trend	>50% ND	63
MW-13S	24	2	8.33	0.0790	0.460	0.200	0.560	---	---	---	---	0.46 J	May-23	17	0.347	---	65.3% (+)	No Trend	>50% ND	60
MW-14D	27	2	7.41	0.0790	0.220	0.200	0.250	---	---	---	---	0.13 U	Aug-23	43	0.192	---	80.8% (+)	No Trend	>50% ND	63
MW-15D	25	25	100	---	6.58	---	10.7	8.58	8.40	1.02	0.119	9.00	Aug-23	-78	0.036	-0.215	96.4% (sig -)	Decreasing	---	70
MW-16D	25	1	4.00	0.0790	0.300	0.200	0.300	---	---	---	---	0.13 U	Aug-23	20	0.330	---	67% (+)	No Trend	>50% ND	72
MW-17D	26	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	Aug-23	0	0.500	---	50% (+)	No Trend	>50% ND	62
MW-18D	23	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	74
MW-19D	27	27	100	---	70.7	---	509	345	387	130	0.376	89.6	Aug-23	-117	0.007	-35.3	99.3% (sig -)	Decreasing	---	36
MW-20D	26	26	100	---	0.470	---	38.2	23.3	23.8	8.15	0.349	16.3	Aug-23	-253	<0.001	-3.01	100% (sig -)	Decreasing	---	59
MW-21D	20	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	73
MW-22S	1	1	100	---	2.20	---	2.20	2.20	2.20	---	---	2.20	Dec-17	IS	IS	IS	IS	IS	IS	---
MW-24S	20	20	100	---	6.90	---	122	77.0	89.9	37.8	0.491	13.9	Aug-23	-8	0.411	---	58.9% (-)	No Trend	Stable	61
MW-25S	5	5	100	---	34.0	---	225	112	119	75.2	0.674	225	Dec-19	8	0.042	169	95.8% (sig +)	Increasing	---	76
MW-26	15	0	0	0.130	---	0.190	---	---	---	---	---	0.13 U	Aug-23	0	0.500	---	50% (+)	No Trend	>50% ND	63
MW-27	17	17	100	---	0.170	---	15.6	2.11	1.10	3.56	1.69	0.910	Aug-23	-97	<0.001	-0.317	100% (sig -)	Decreasing	---	60
MW-28	17	17	100	---	88.1	---	429	310	330	98.4	0.317	88.1	Aug-23	-84	<0.001	-59.6	100% (sig -)	Decreasing	---	60
MW-29	17	17	100	---	67.9	---	412	226	220	104	0.461	67.9	Aug-23	-63	0.005	-55.8	99.6% (sig -)	Decreasing	---	60
MW-30	15	6	40.0	0.130	0.140	0.190	8.20	---	---	---	---	0.14 J	Aug-23	26	0.111	---	88.9% (+)	No Trend	>50% ND	60
MW-31	14	1	7.14	0.130	0.160	0.190	0.160	---	---	---	---	0.16 J	May-23	13	0.259	---	74.1% (+)	No Trend	>50% ND	62
MW-32	14	1	7.14	0.130	0.140	0.190	0.140	---	---	---	---	0.14 J	May-23	13	0.259	---	74.1% (+)	No Trend	>50% ND	62
MW-33	14	1	7.14	0.130	11.2	0.190	11.2	---	---	---	---	0.13 U	May-23	-13	0.259	---	74.1% (-)	No Trend	>50% ND	62
MW-34	12	0	0	0.130	---	0.190	---	---	---	---	---	0.13 U	Nov-22	0	0.500	---	50% (+)	No Trend	>50% ND	57
MW-35	16	16	100	---	37.5	---	161	65.4	50.3	36.4	0.557	47.7	Aug-23	-22	0.175	---	82.5% (-)	No Trend	Stable	63
MW-36	16	16	100	---	16.9	---	180	100	99.0	47.0	0.470	56.2	May-23	-85	<0.001	-39.7	100% (sig -)	Decreasing	---	63
Out-of-Use Freeman School District Well (V	29	25	86.2	0.130	0.300	0.130	34.9	18.5	24.3	12.9	0.699	0.13 U	Aug-23	-222	<0.001	-4.70	100% (sig -)	Decreasing	---	57
Out-of-Use Marlow Well (No. 2)	26	26	100	---	0.250	---	120	33.3	28.0	30.0	0.901	0.740	May-23	15	0.380	---	62% (+)	No Trend	Stable	38
Out-of-Use Marlow Well (W20)	26	1	3.85	0.0790	8.90	0.200	8.90	---	---	---	---	8.90	May-23	25	0.300	---	70% (+)	No Trend	>50% ND	56
Primary Freeman School District Well (WS	49	43	87.8	0.130	0.00810	0.500	61.8	10.9	7.40	11.6	1.06	0.13 U	Aug-23	-22	0.428	---	57.2% (-)	No Trend	Not Stable	11
Randall Well	28	28	100	---	74.0	---	364	198	191	74.7	0.377	74.0	Aug-23	-300	<0.001	-32.7	100% (sig -)	Decreasing	---	23
Reed Well (W30)	23	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	71
Silva Well	20	3	15.0	0.0760	0.670	0.200	1.30	---	---	---	---	0.13 U	May-22	-8	0.411	---	58.9% (-)	No Trend	>50% ND	37
Stark Well (W15)	23	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	72
Thorson Well	22	0	0	0.0790	---	0.200	---	---	---	---	---	0.13 U	May-23	0	0.500	---	50% (+)	No Trend	>50% ND	73

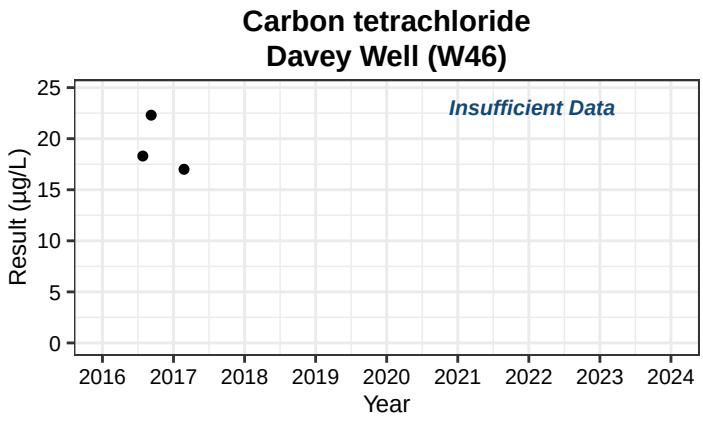
Notes:
"---" = not applicable
"<" = less than
% = percent
(-) = negative trend
(+) = positive trend
>50% ND = greater than 50 percent non-detects
µg/L = micrograms per liter
µg/L/yr = micrograms per liter per year
CV = coefficient of variation
Freq. = frequency
IS = insufficient data (less than 4 samples)
J = estimated value
Max = maximum
Min = minimum
MK = Mann-Kendall
ND = non-detect
p-value = probability value
sig = (statistically) significant.
Std Dev. = standard deviation
U = non-detect at the reporting limit
Trend analysis performed using Mann-Kendall single-tailed test at 0.05 significance level with non-detects assigned a common value less than the smallest measured value in the dataset.
Descriptive statistics were not calculated for those data sets containing greater than 50% non-detects. For data sets containing less than 50% non-detects, descriptive statistics were calculated using the Kaplan-Meier product-limit estimator.
For monitoring points exhibiting no trend at the 95 percent confidence level, concentrations are deemed stable if the coefficient of variation (CV) is equal to or less than one.

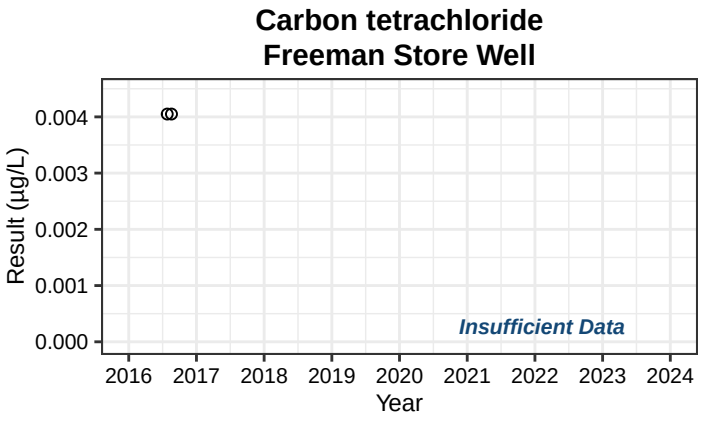
Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

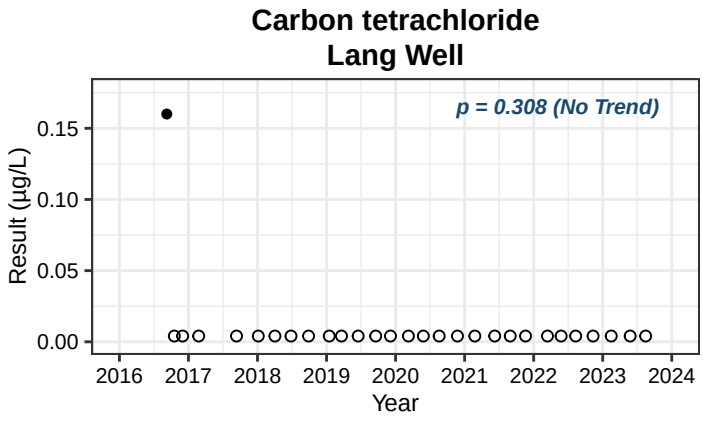


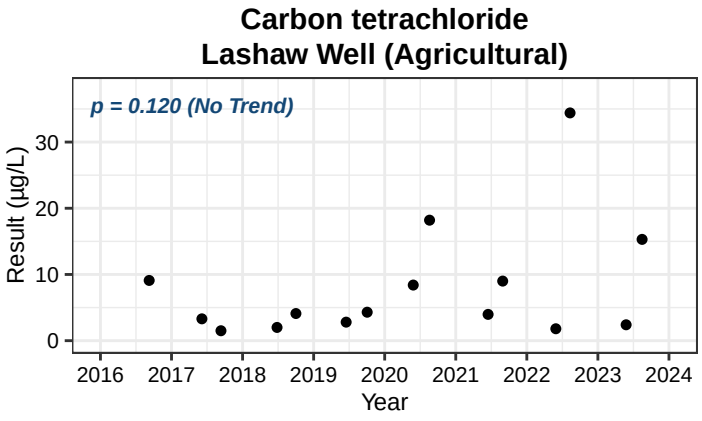


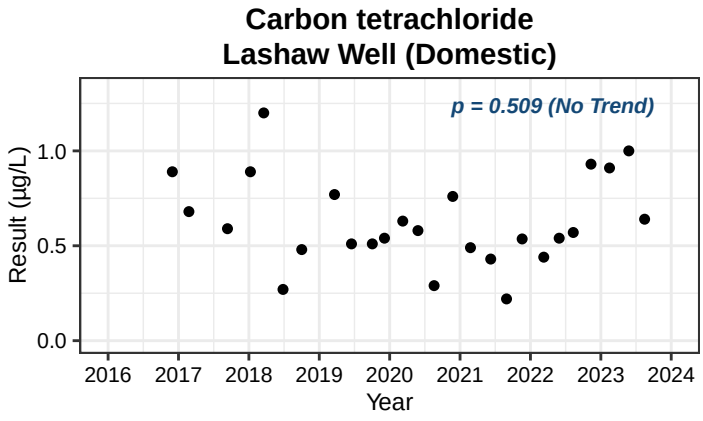






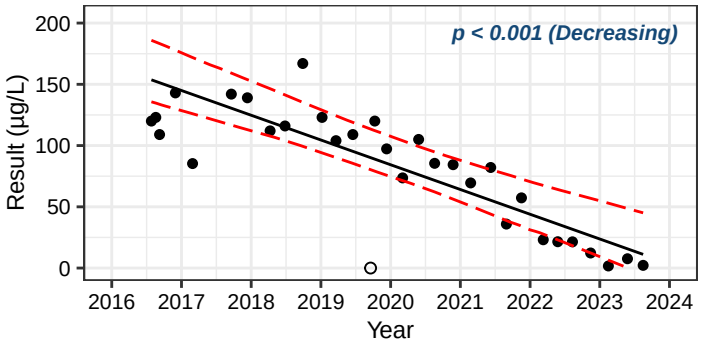




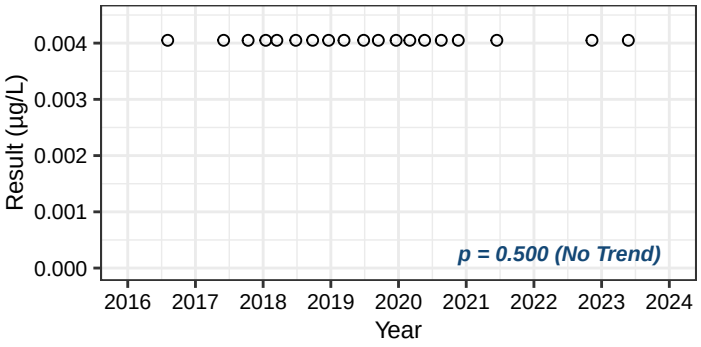


Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

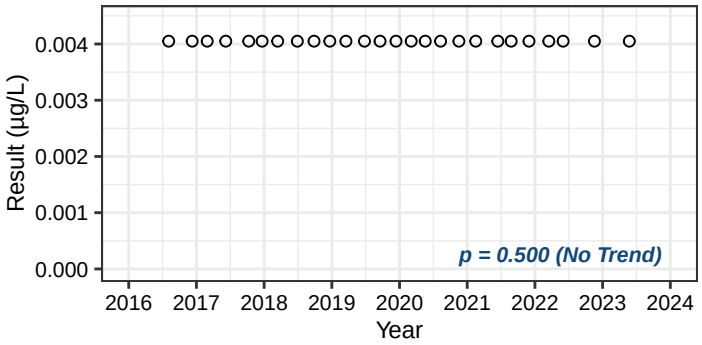
Carbon tetrachloride
Marlow Well



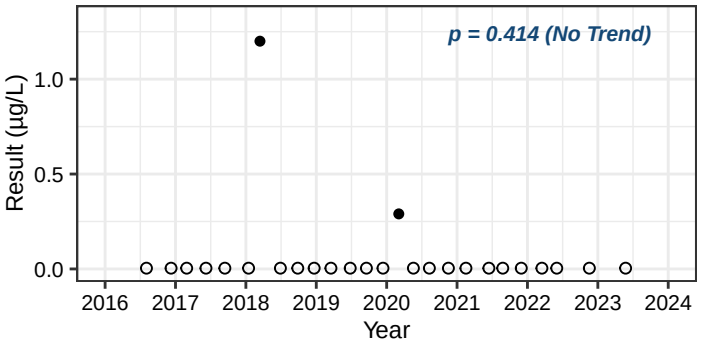
Carbon tetrachloride
MW−1S



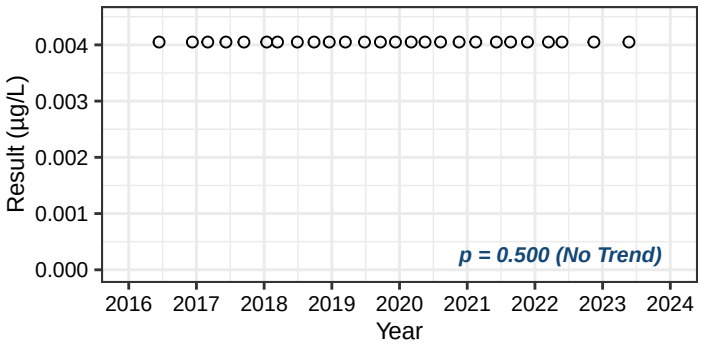
Carbon tetrachloride
MW−1D



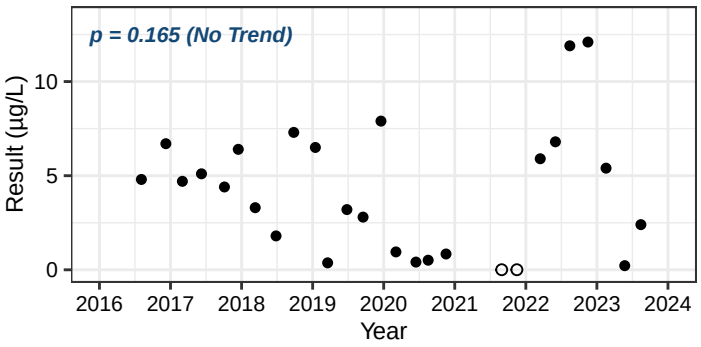
Carbon tetrachloride
MW−2D



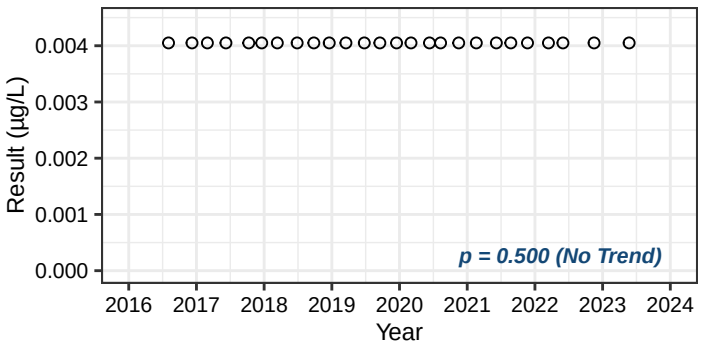
Carbon tetrachloride
MW−3D



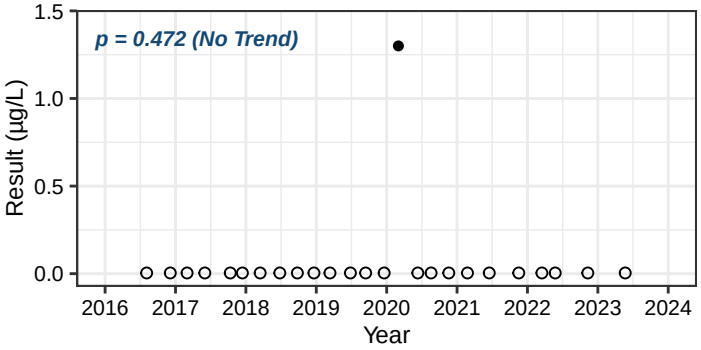
Carbon tetrachloride
MW−4D



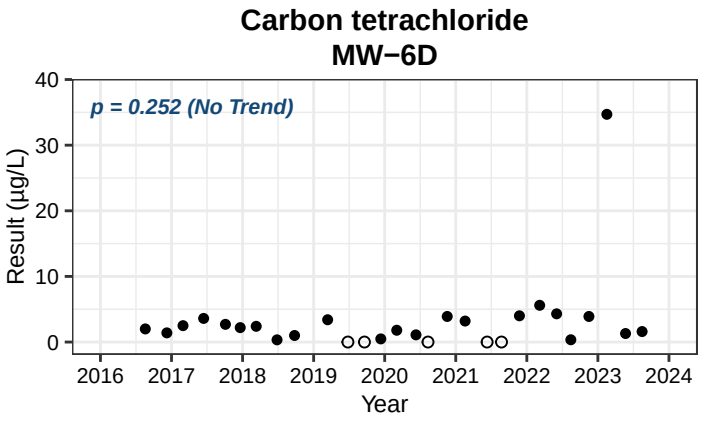
Carbon tetrachloride
MW−5D

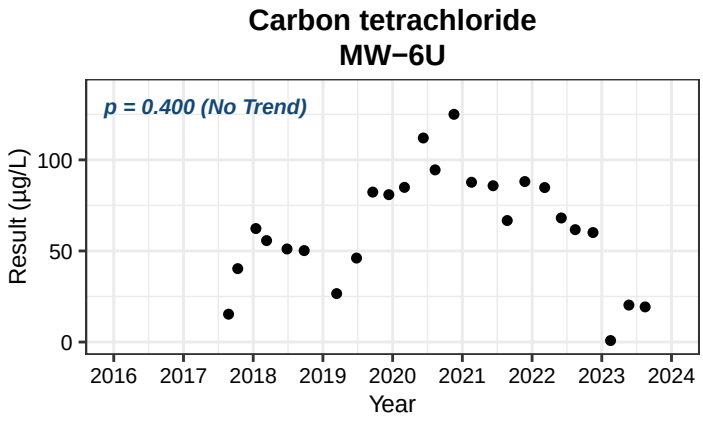


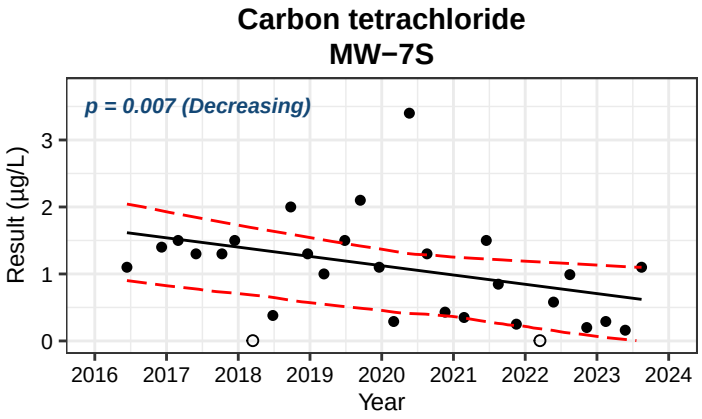
Carbon tetrachloride
MW−6S

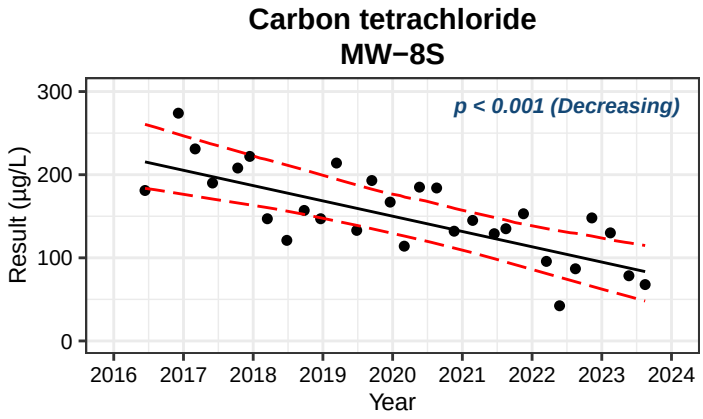


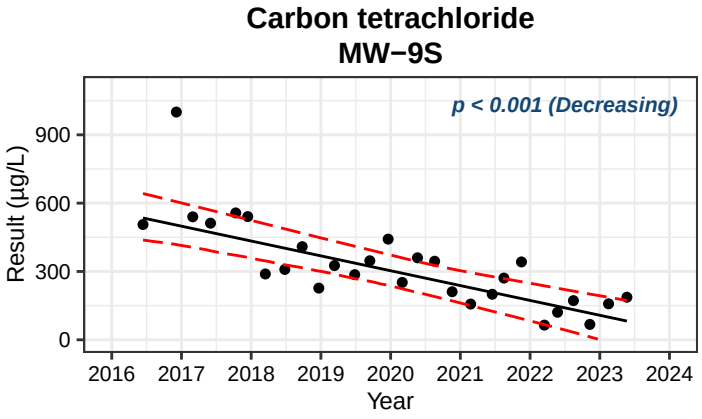
Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

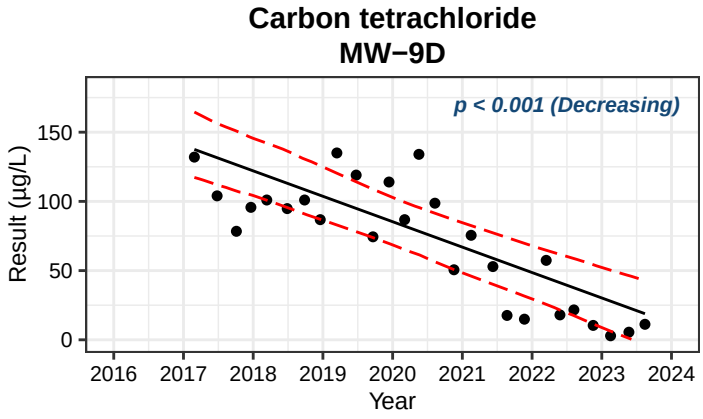


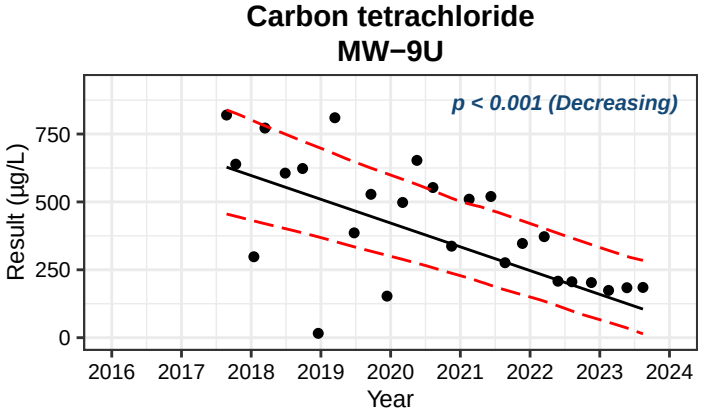


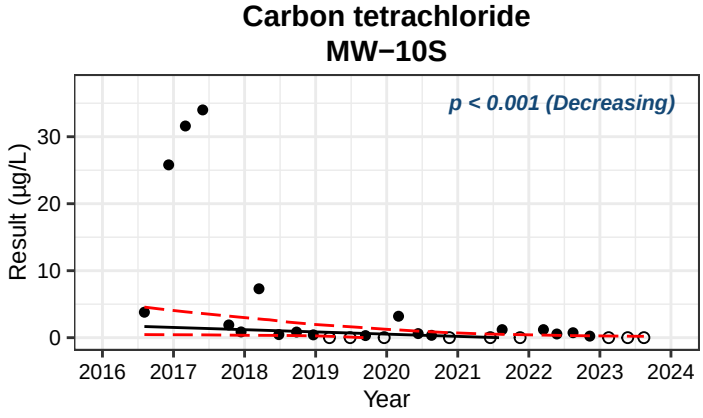






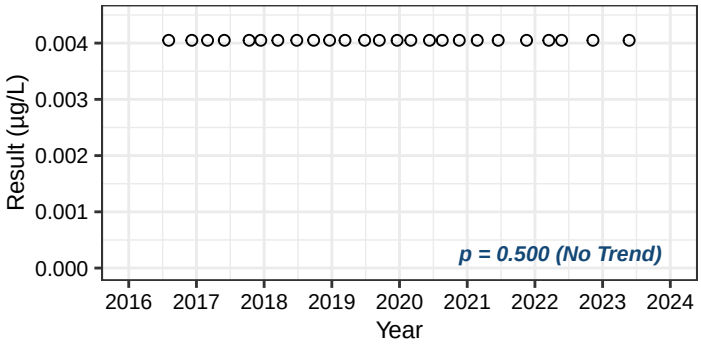




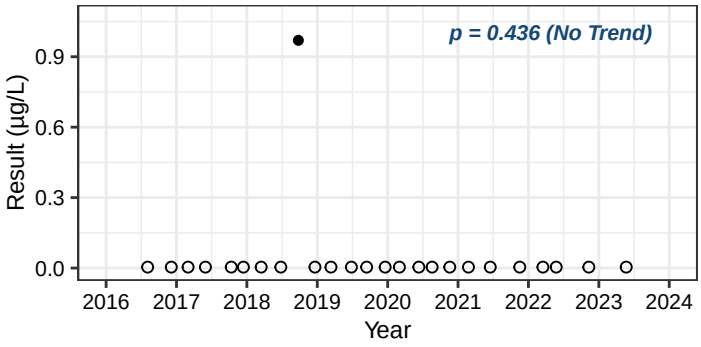


Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

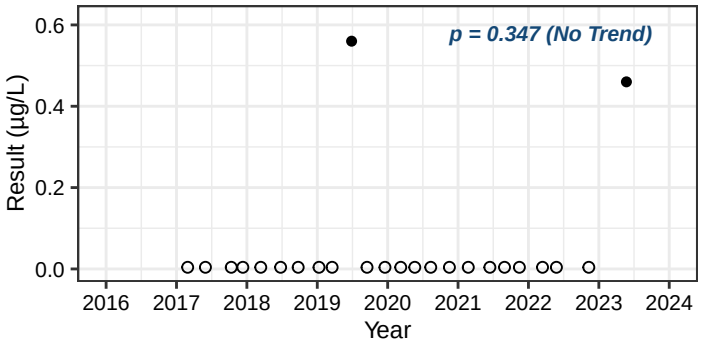
Carbon tetrachloride
MW−11S



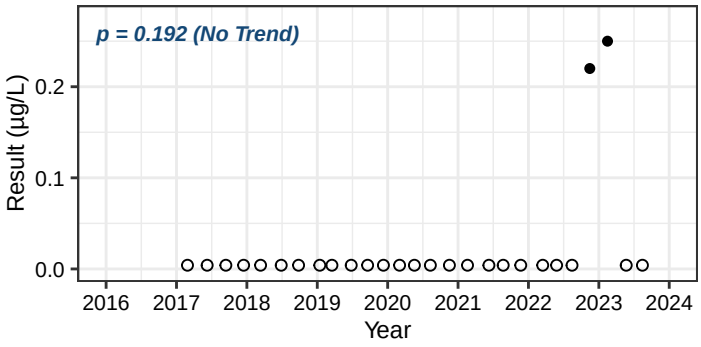
Carbon tetrachloride
MW−12S



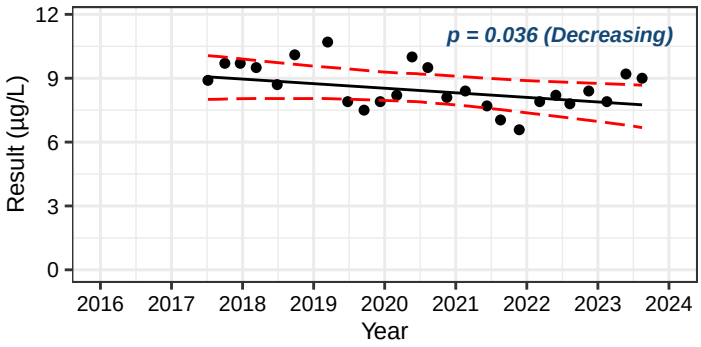
Carbon tetrachloride
MW−13S



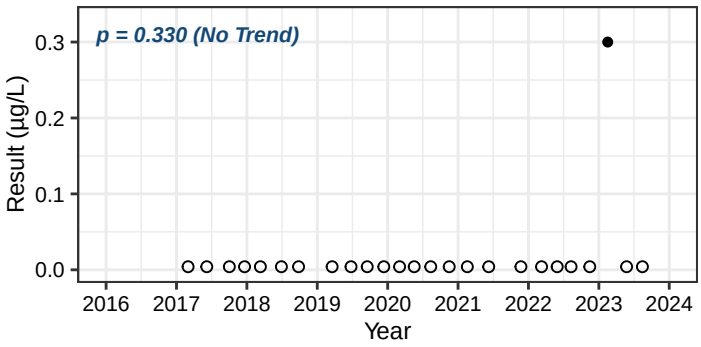
Carbon tetrachloride
MW−14D



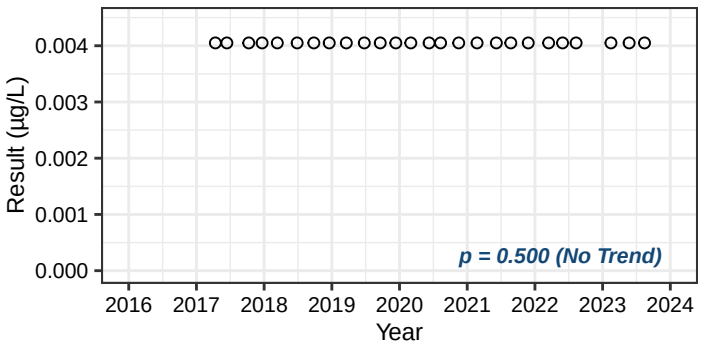
Carbon tetrachloride
MW−15D



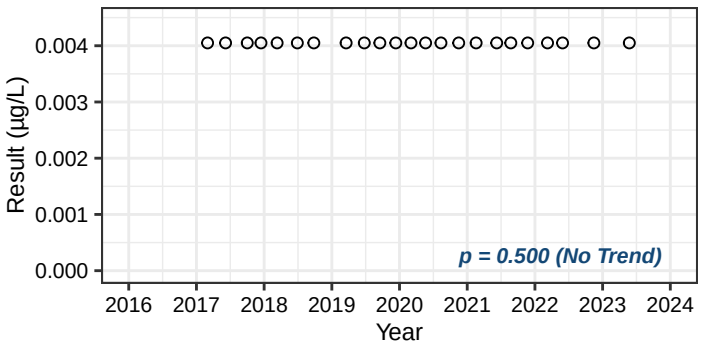
Carbon tetrachloride
MW−16D



Carbon tetrachloride
MW−17D

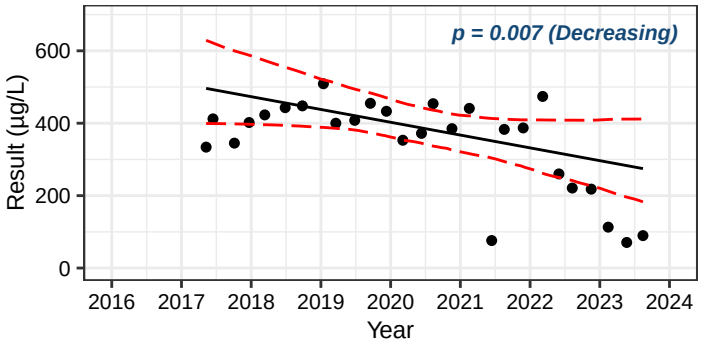


Carbon tetrachloride
MW−18D

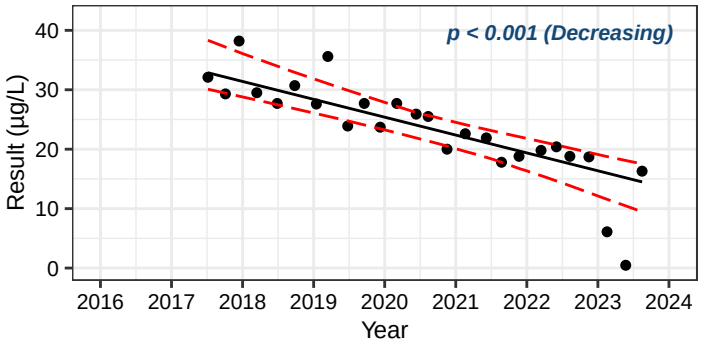


Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

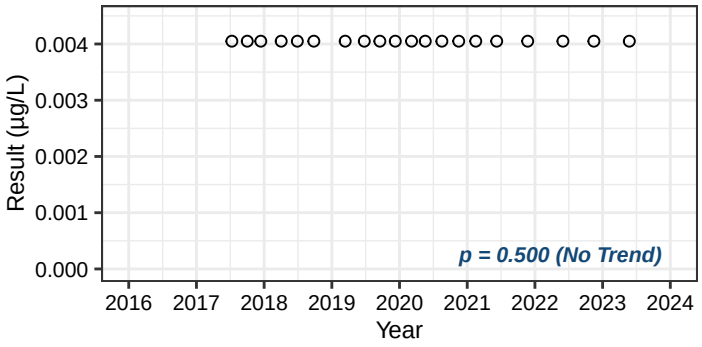
Carbon tetrachloride
MW−19D



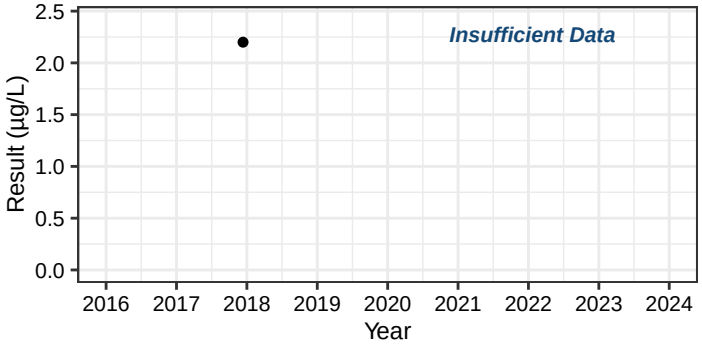
Carbon tetrachloride
MW−20D



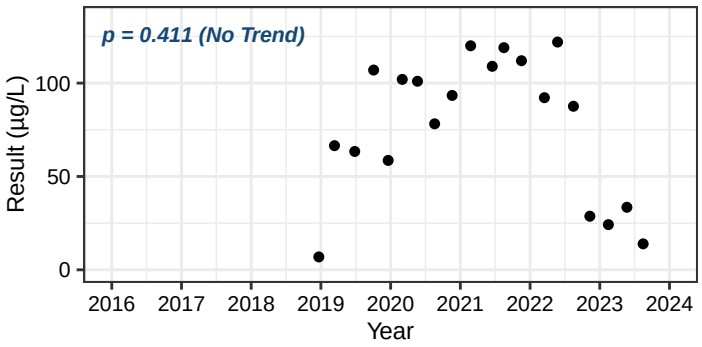
Carbon tetrachloride
MW−21D



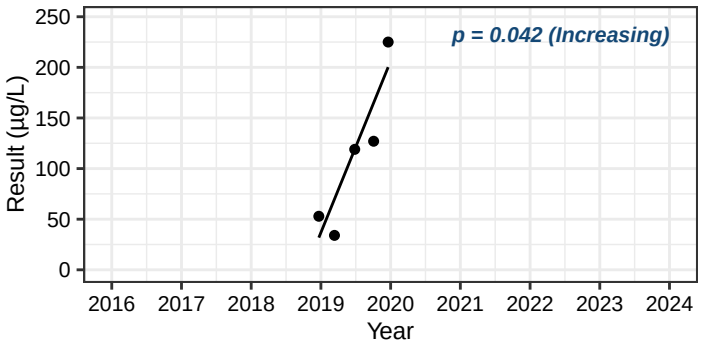
Carbon tetrachloride
MW−22S



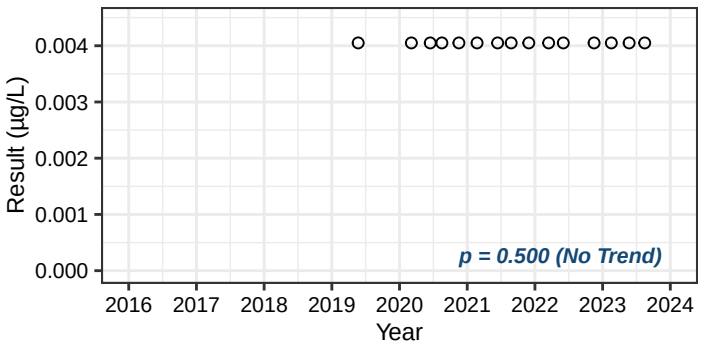
Carbon tetrachloride
MW−24S



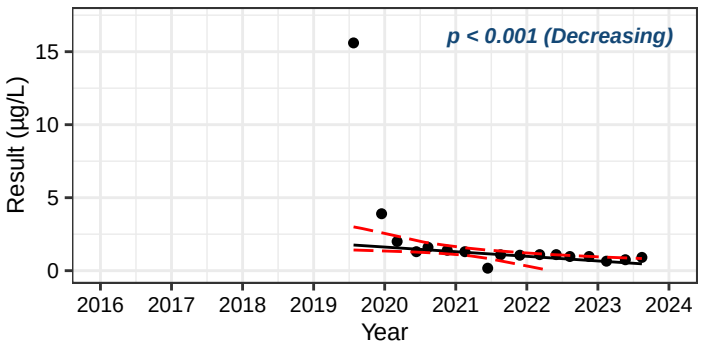
Carbon tetrachloride
MW−25S



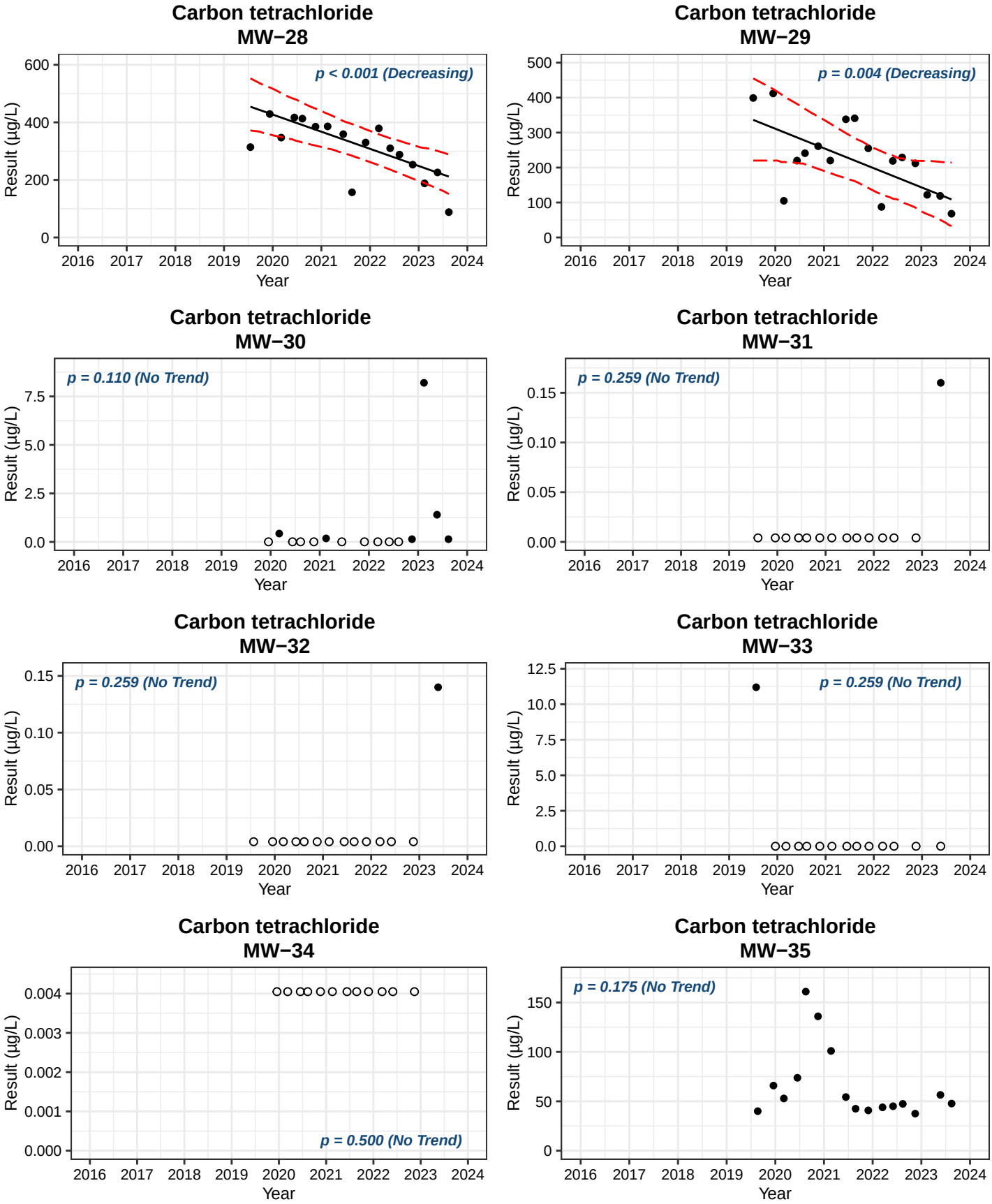
Carbon tetrachloride
MW−26



Carbon tetrachloride
MW−27

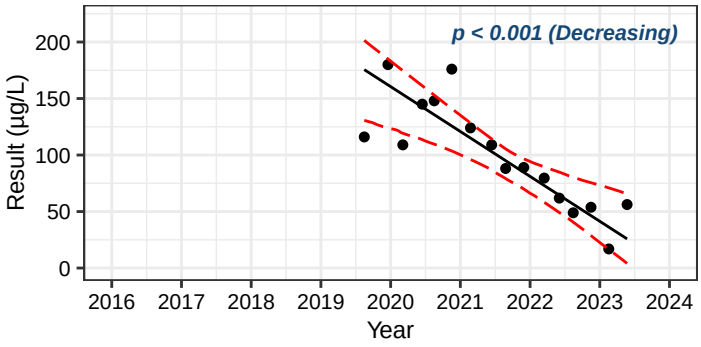


Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

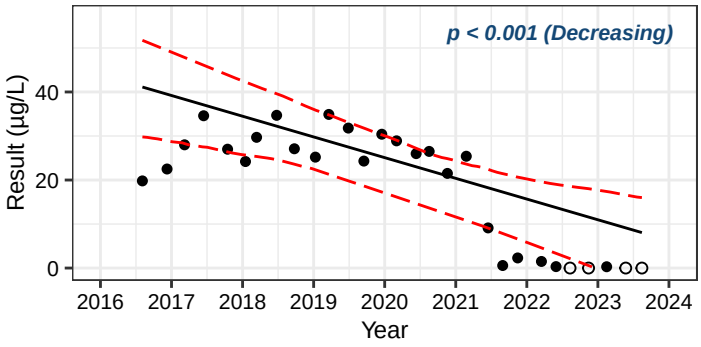


Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

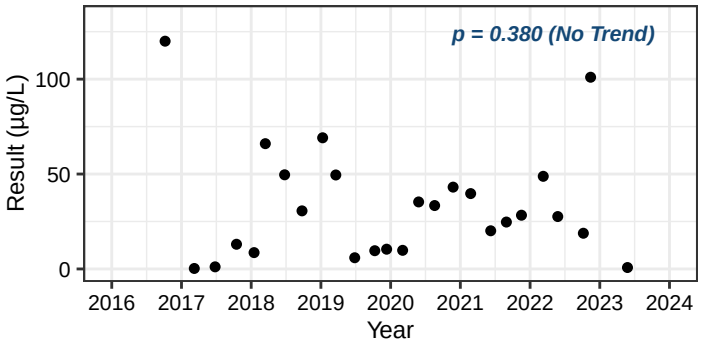
Carbon tetrachloride
MW−36



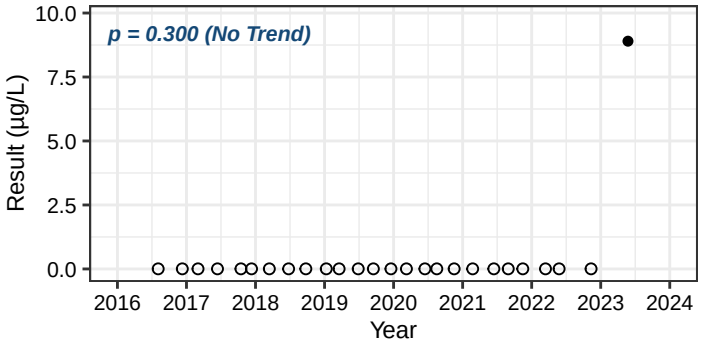
Carbon tetrachloride
Out−of−Use Freeman School District Well (W26)



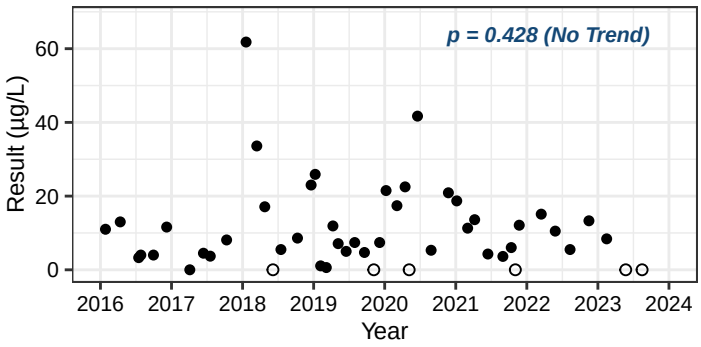
Carbon tetrachloride
Out−of−Use Marlow Well (No. 2)



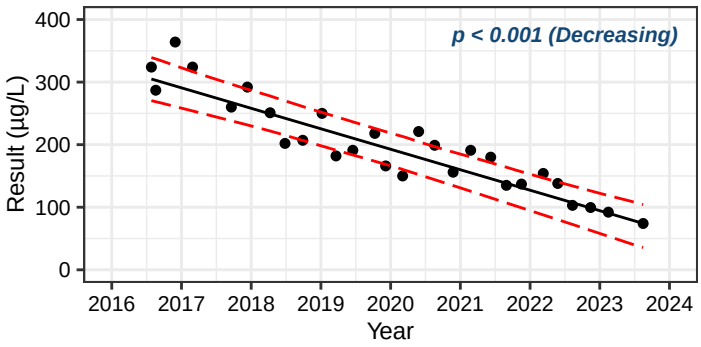
Carbon tetrachloride
Out−of−Use Marlow Well (W20)



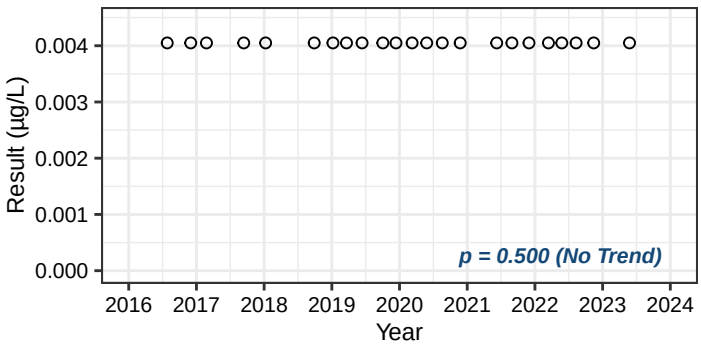
Carbon tetrachloride
Primary Freeman School District Well (WS5)



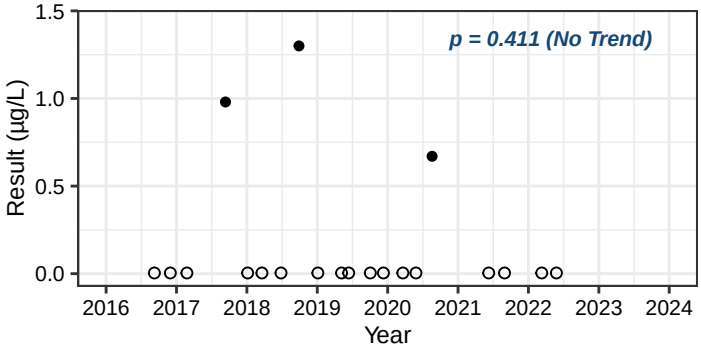
Carbon tetrachloride
Randall Well



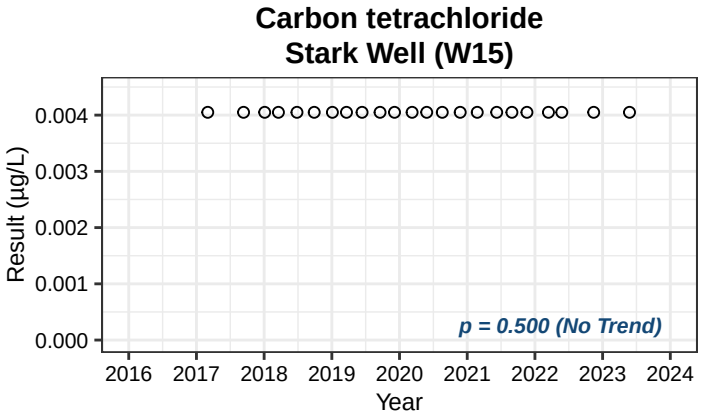
Carbon tetrachloride
Reed Well (W30)

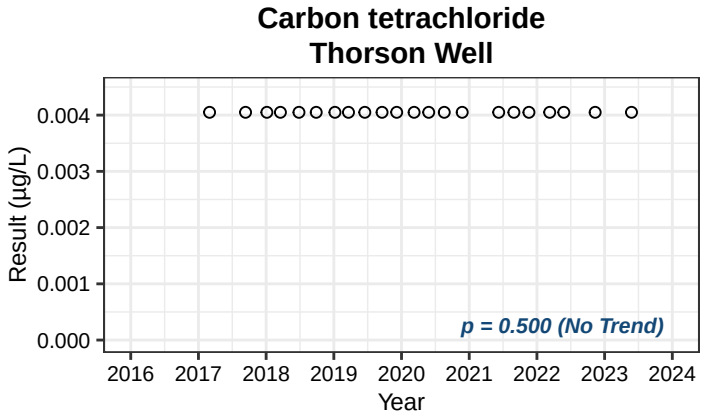


Carbon tetrachloride
Silva Well

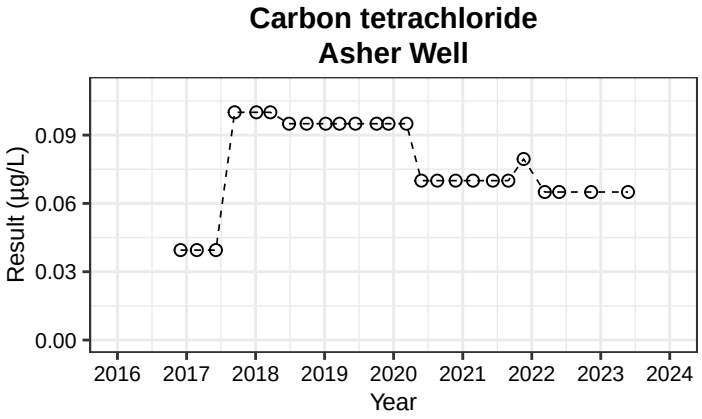


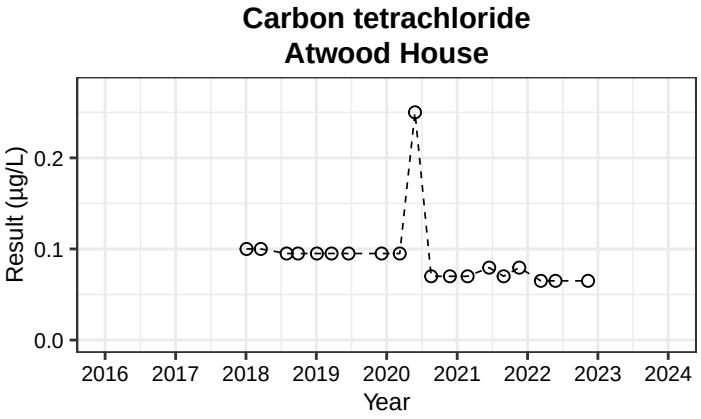
Theil−Sen Trend Plots with Bootstrapped 95% Confidence Limits
(nondetects plotted using open symbols at one−half the minimum detected value)

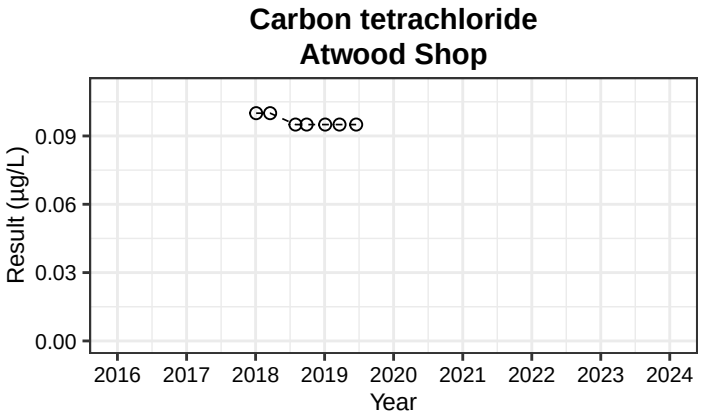


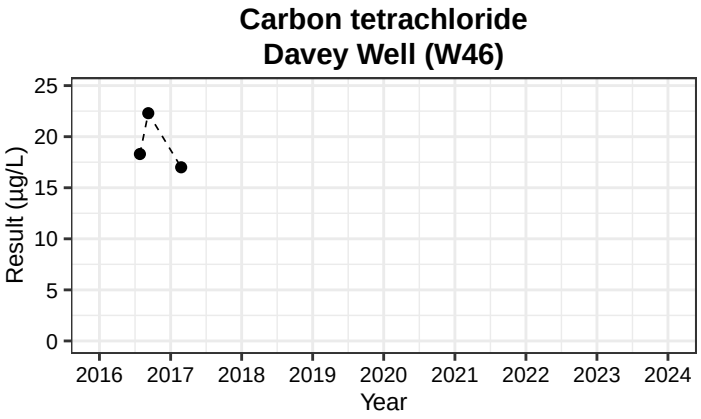


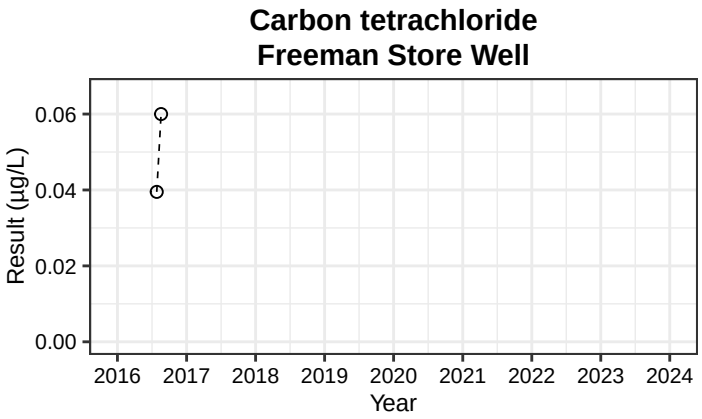
Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

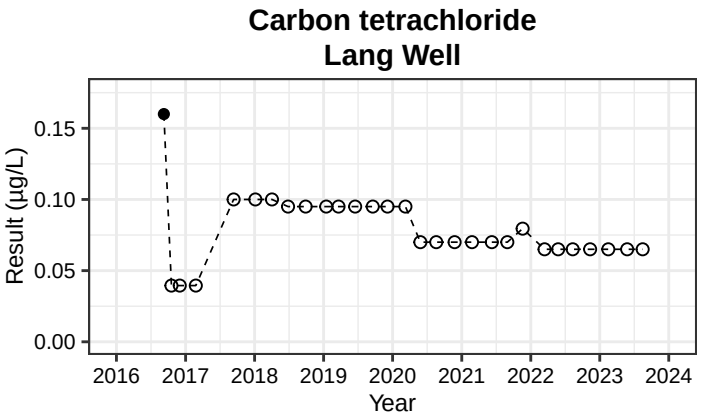


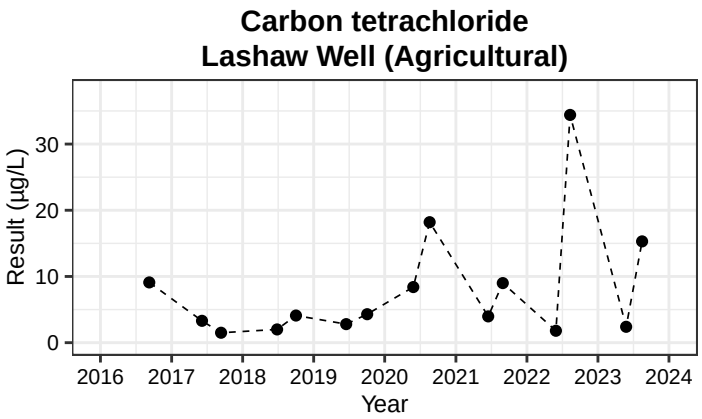


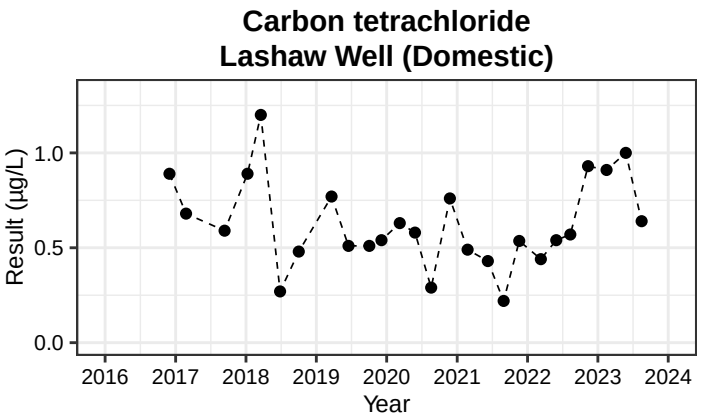




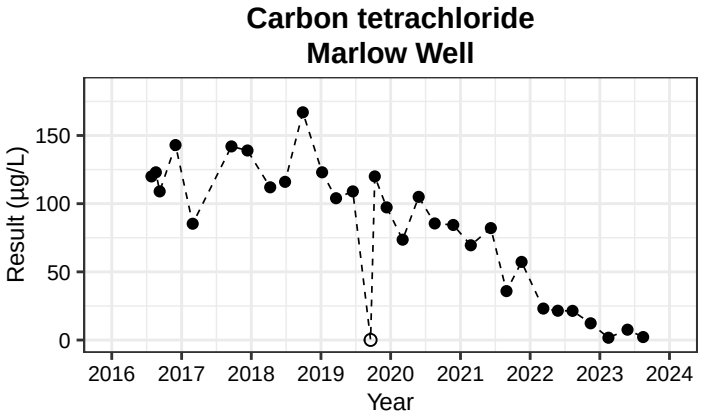


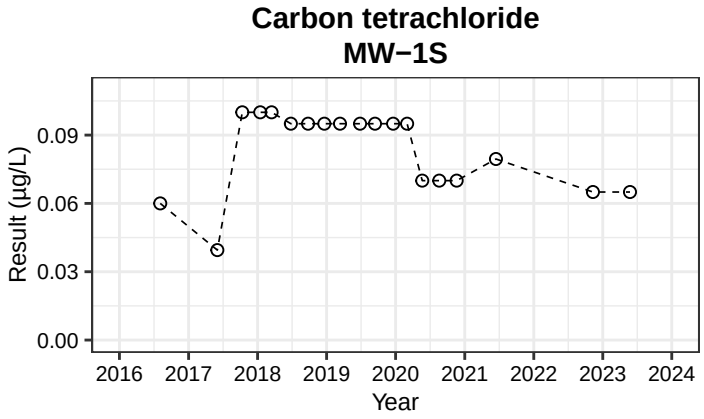


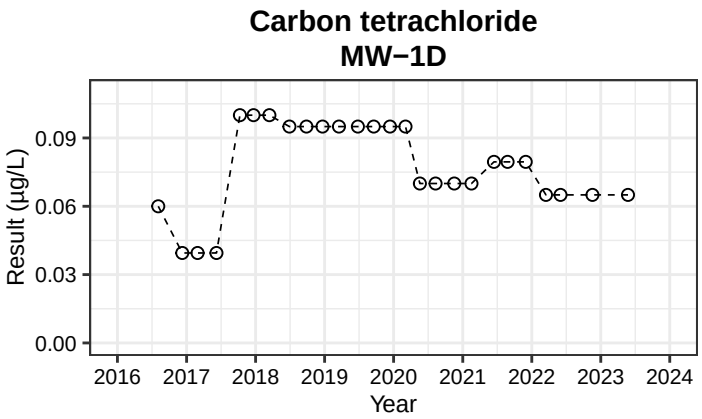


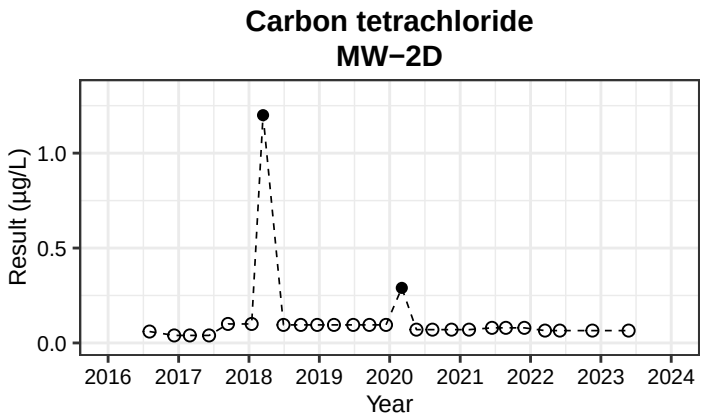


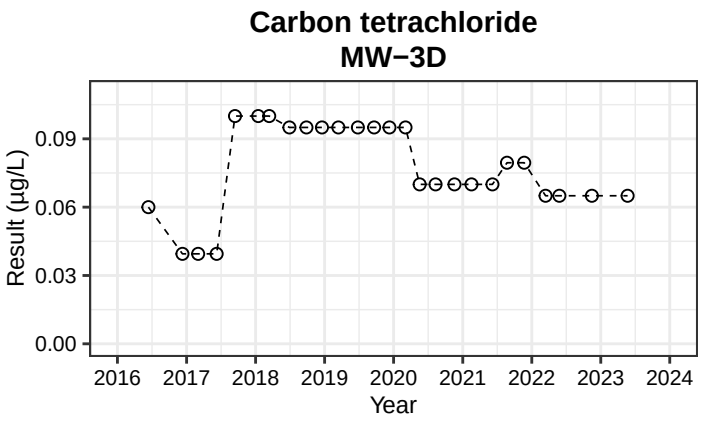
Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

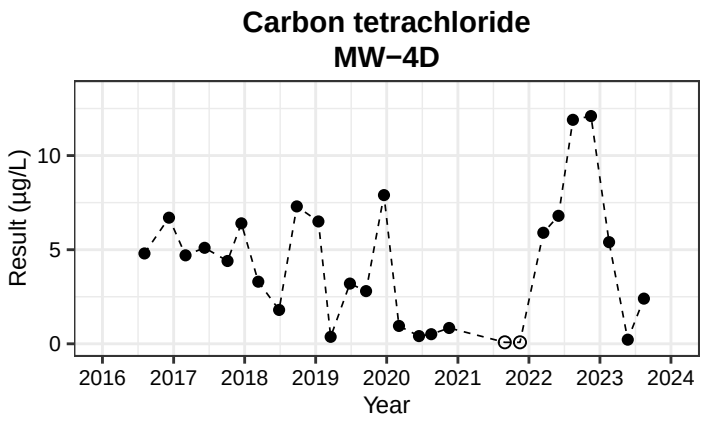


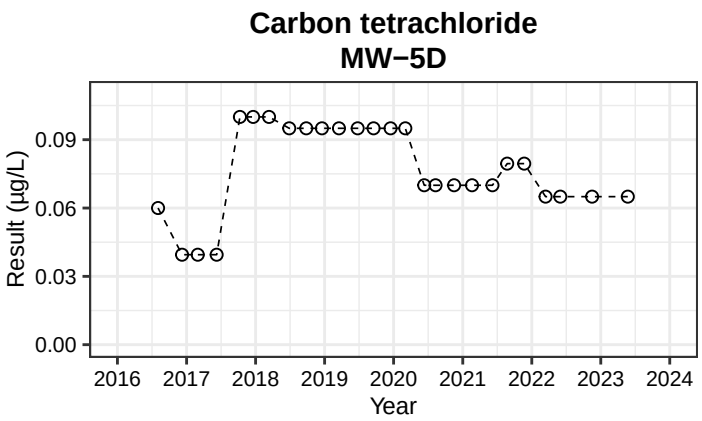


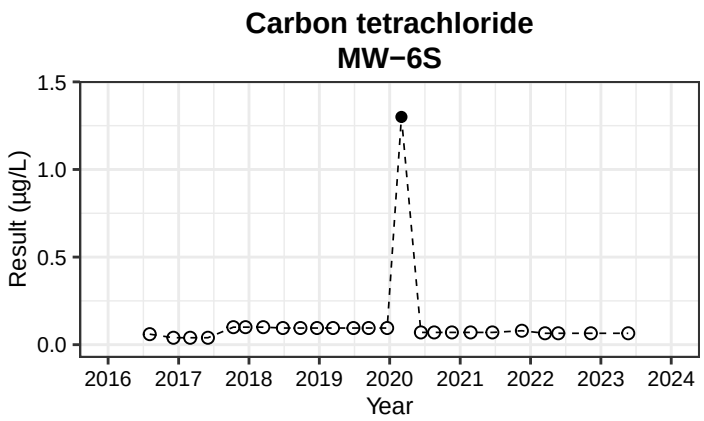




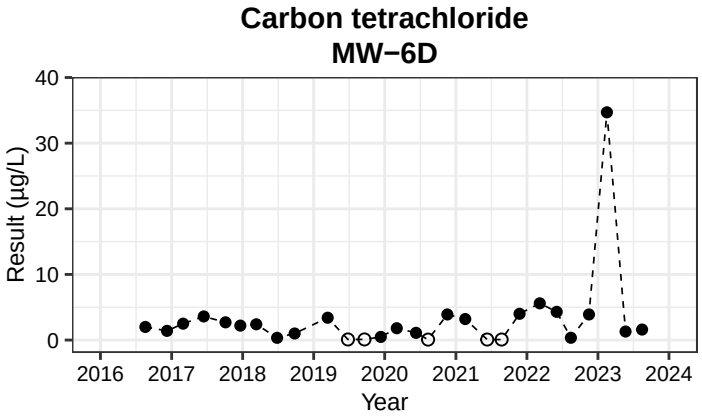


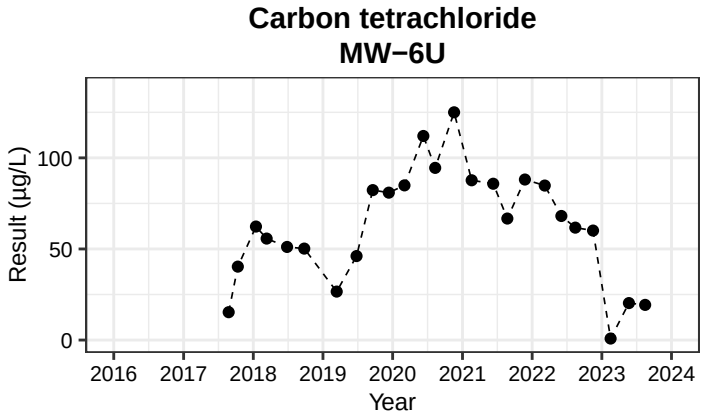


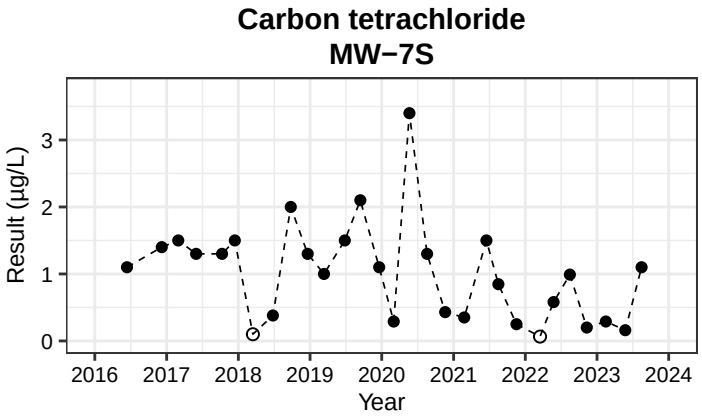


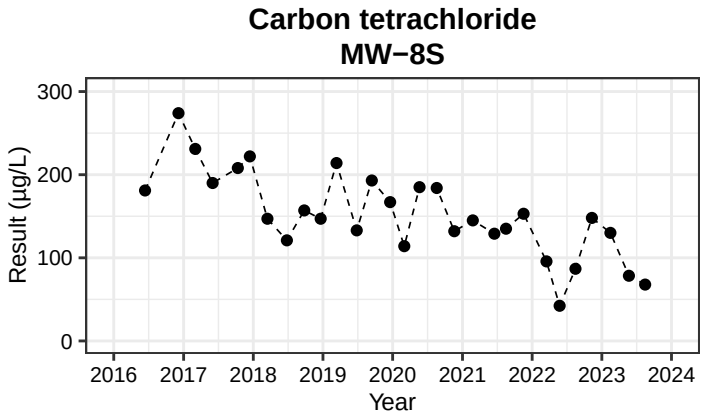


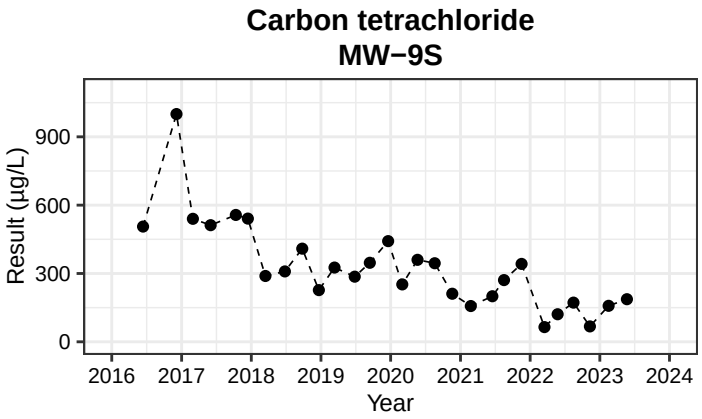
Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

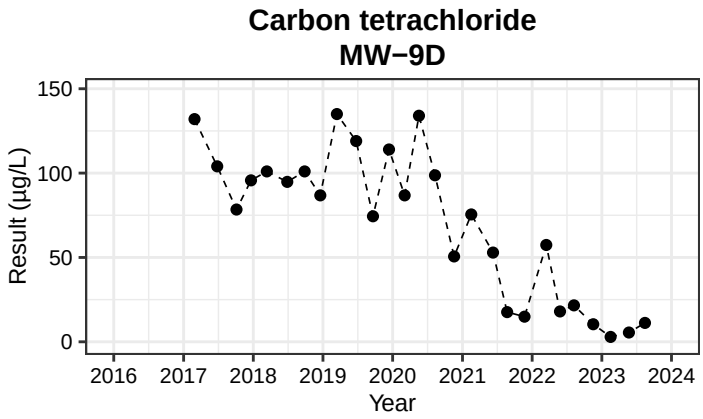


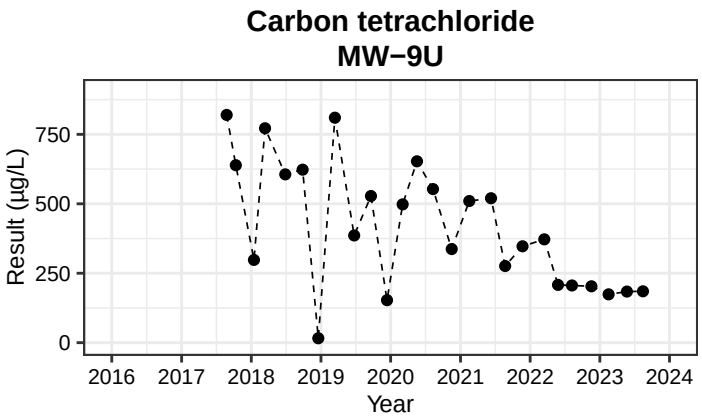


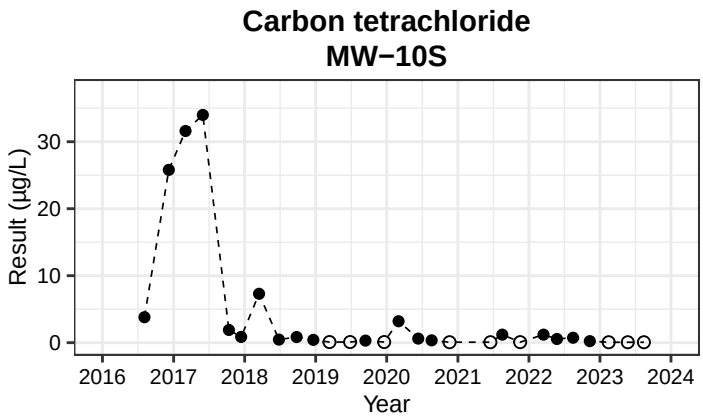






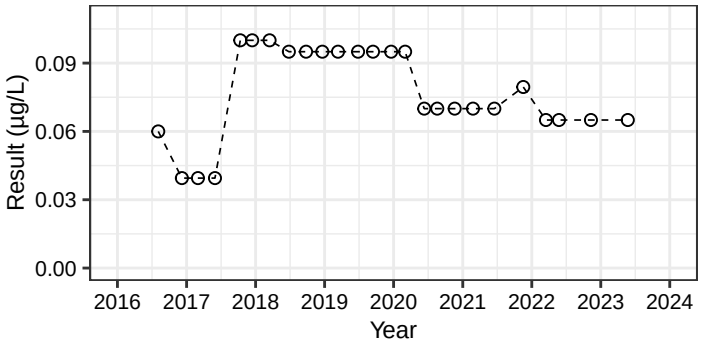




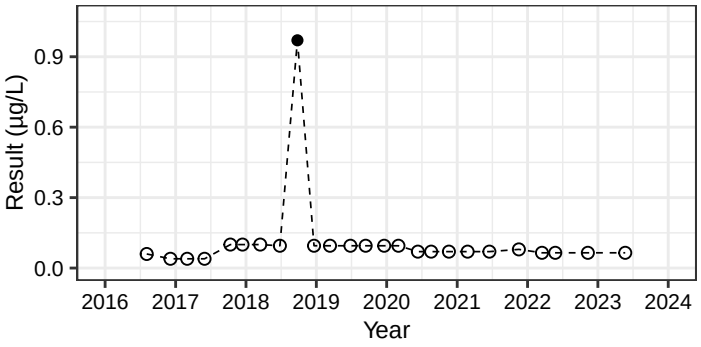


Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

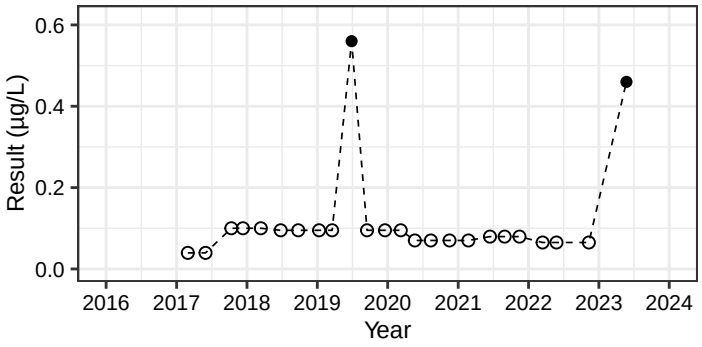
Carbon tetrachloride
MW−11S



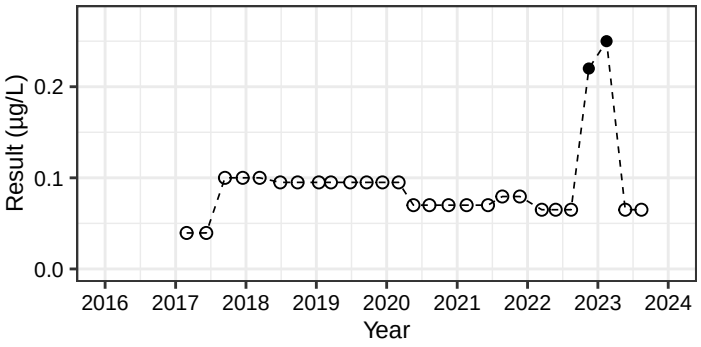
Carbon tetrachloride
MW−12S



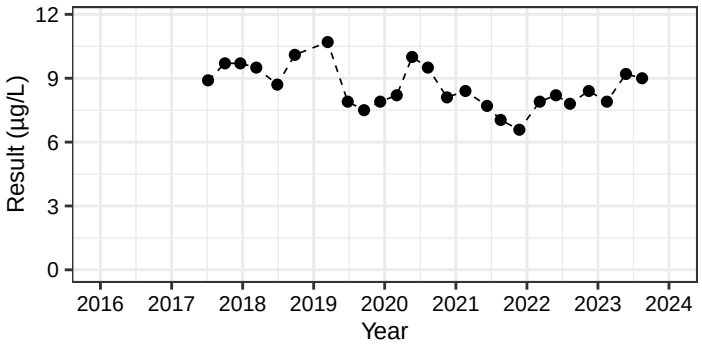
Carbon tetrachloride
MW−13S



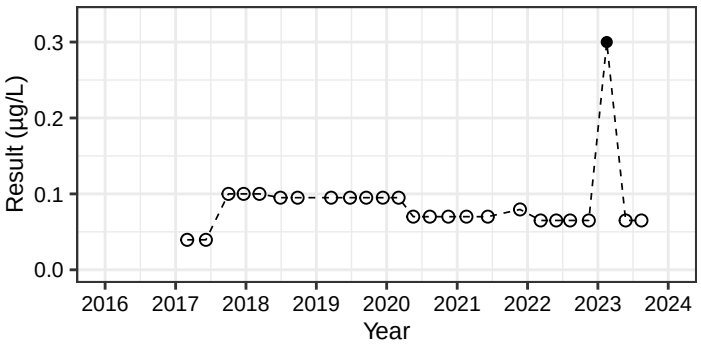
Carbon tetrachloride
MW−14D



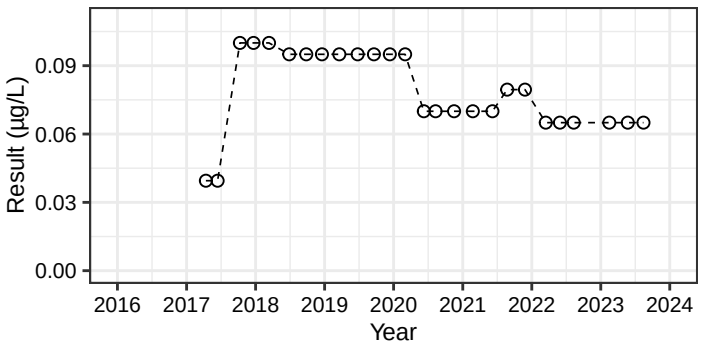
Carbon tetrachloride
MW−15D



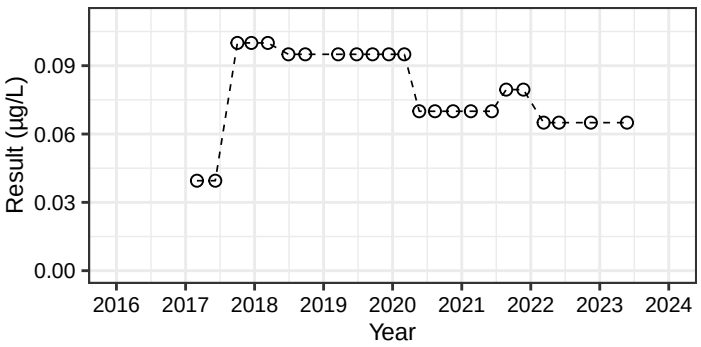
Carbon tetrachloride
MW−16D



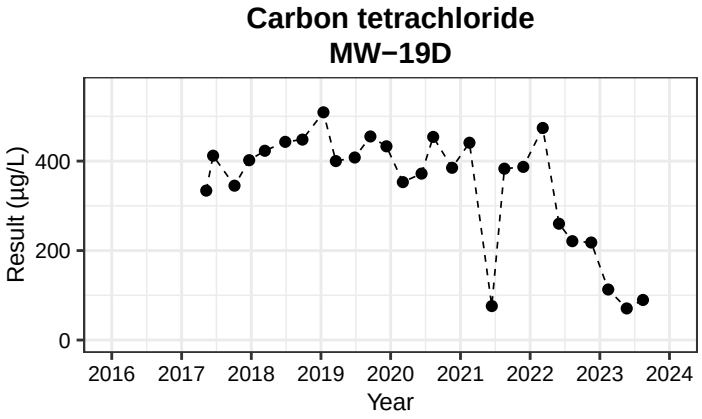
Carbon tetrachloride
MW−17D

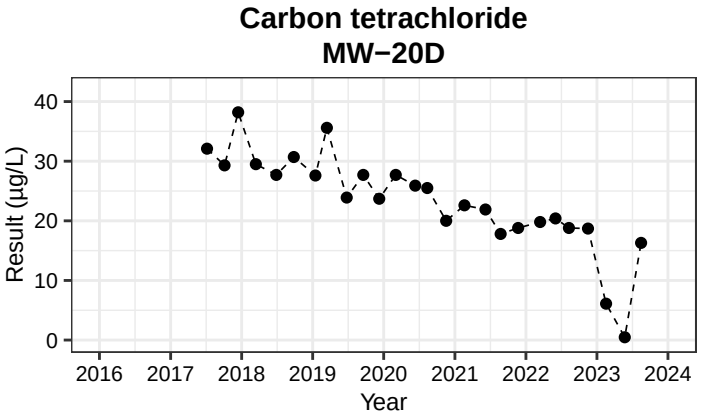


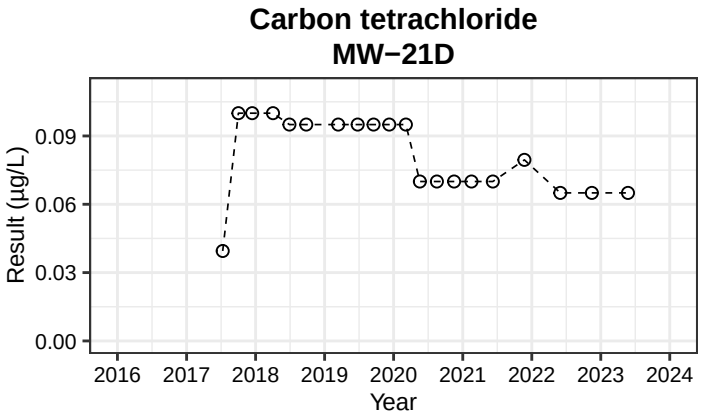
Carbon tetrachloride
MW−18D

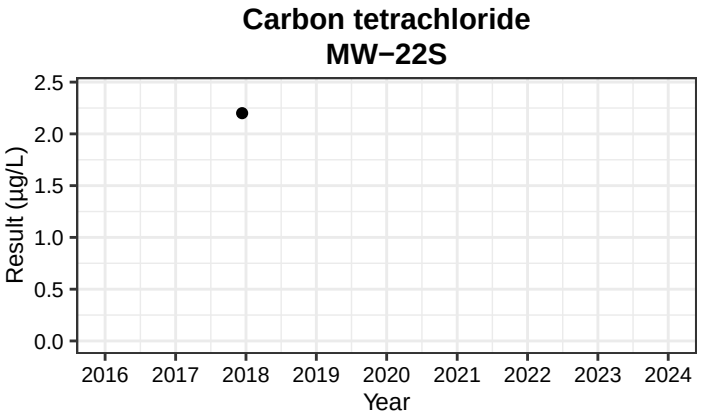


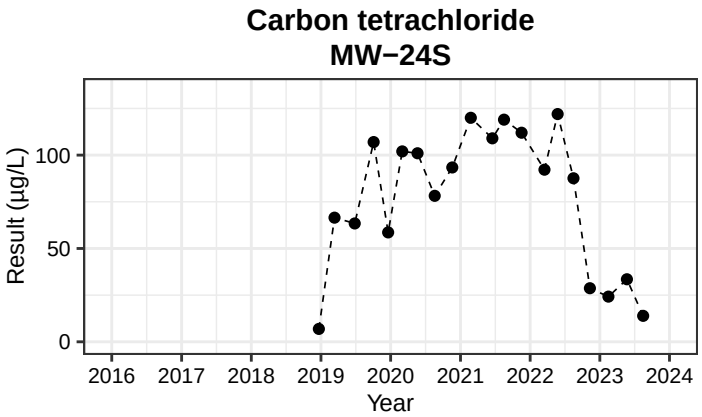
Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

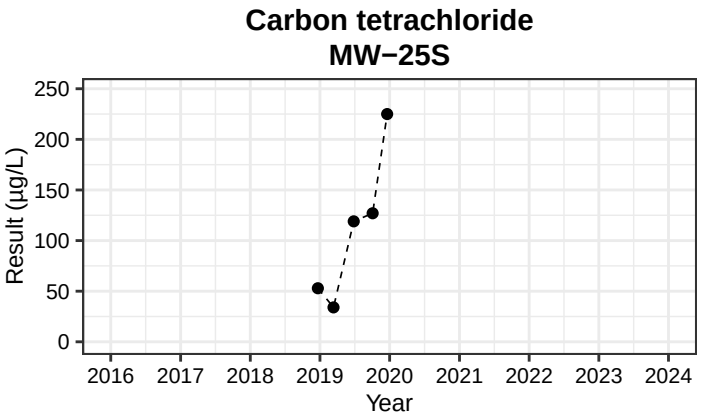


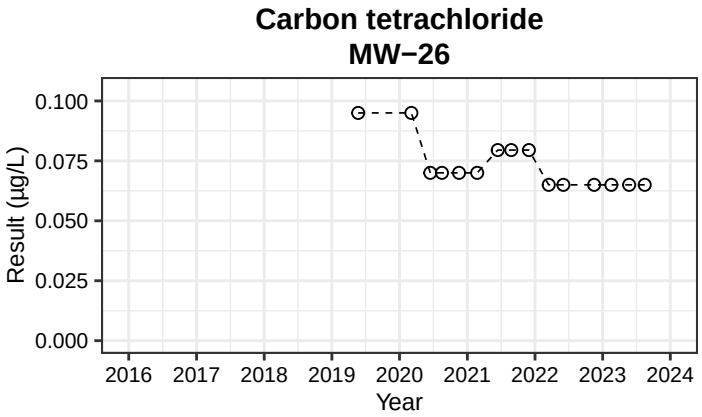


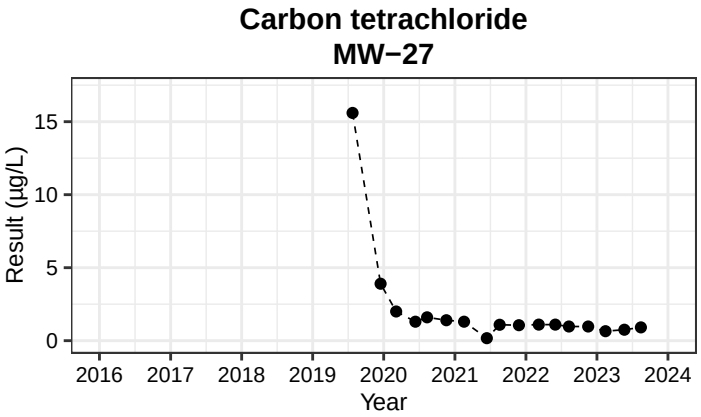




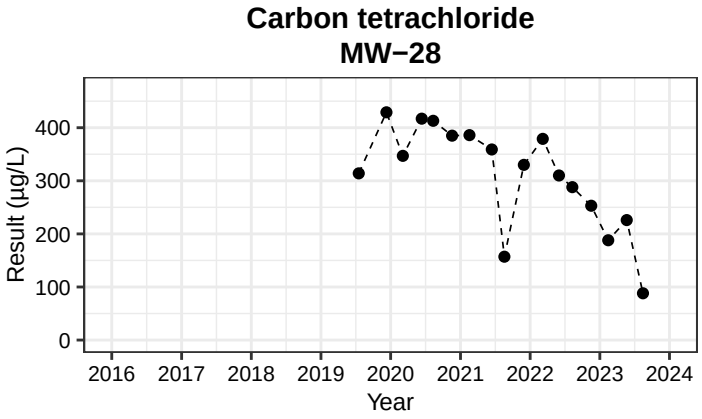


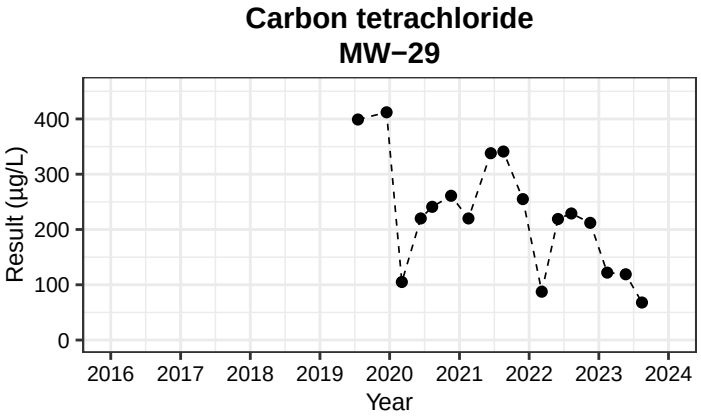


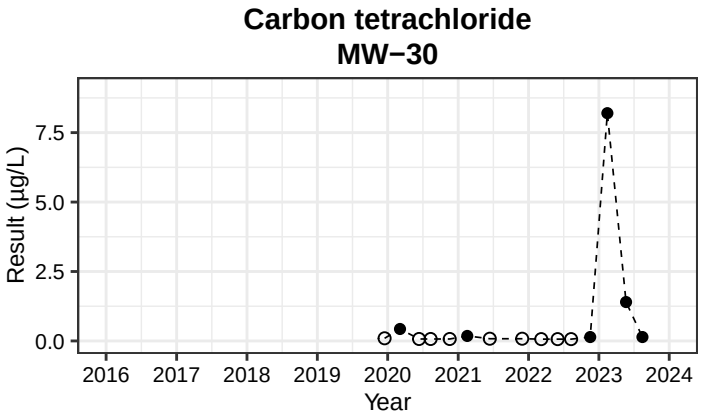


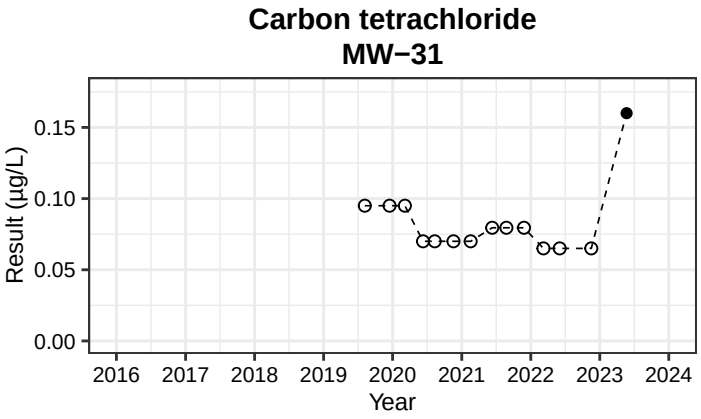


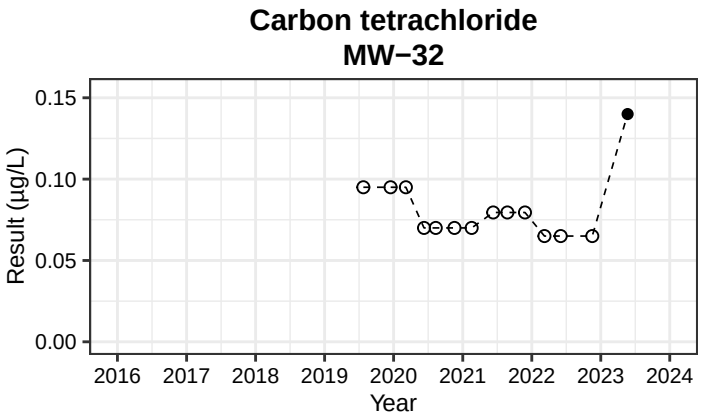
Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

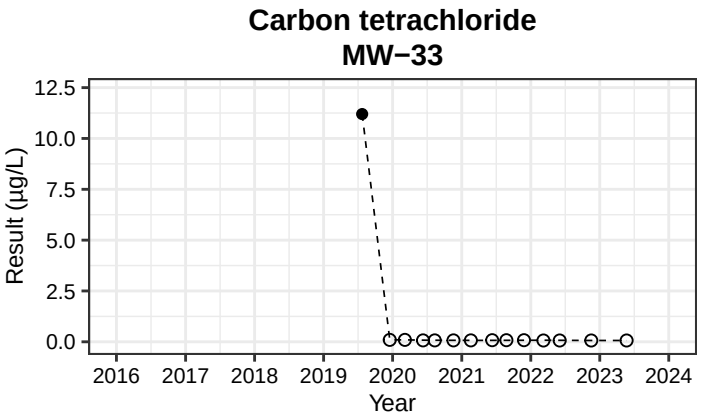


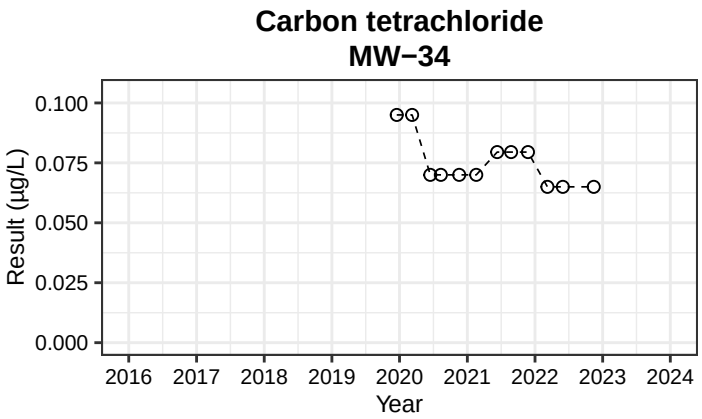


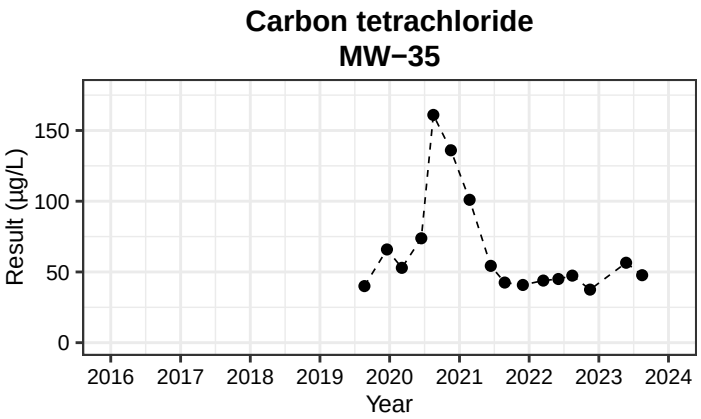






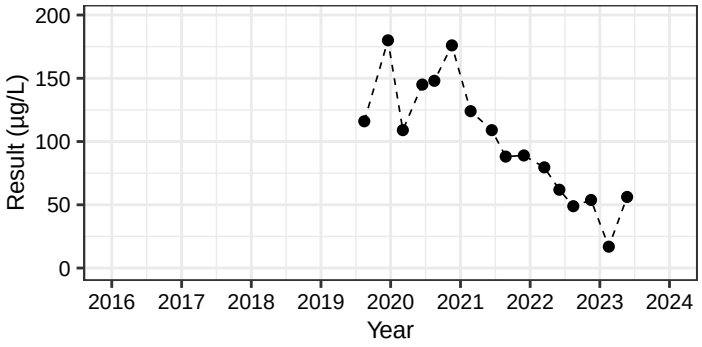




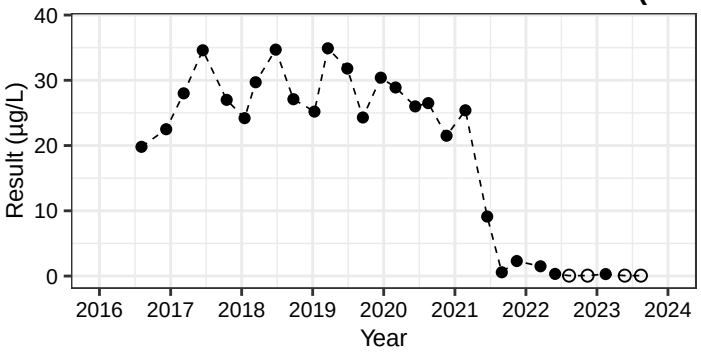


Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)

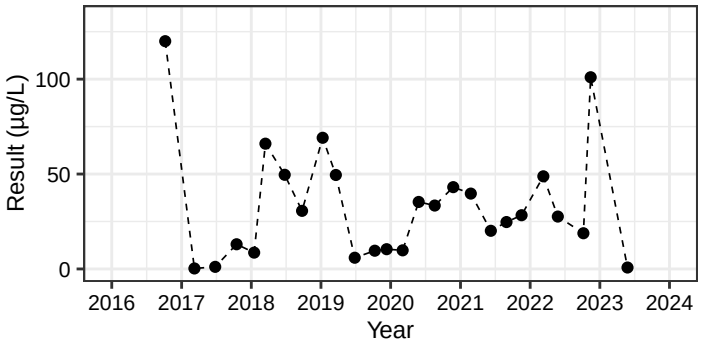
Carbon tetrachloride
MW−36



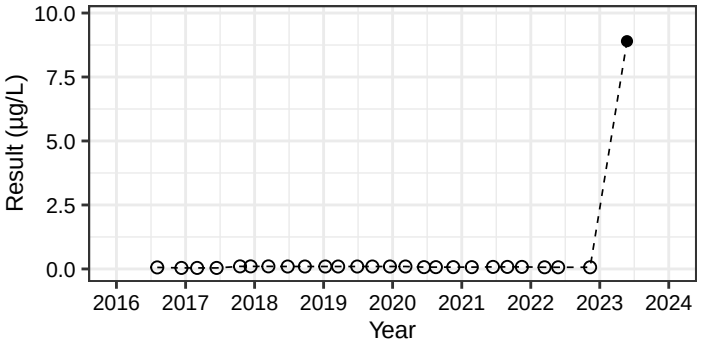
Carbon tetrachloride
Out−of−Use Freeman School District Well (W26)



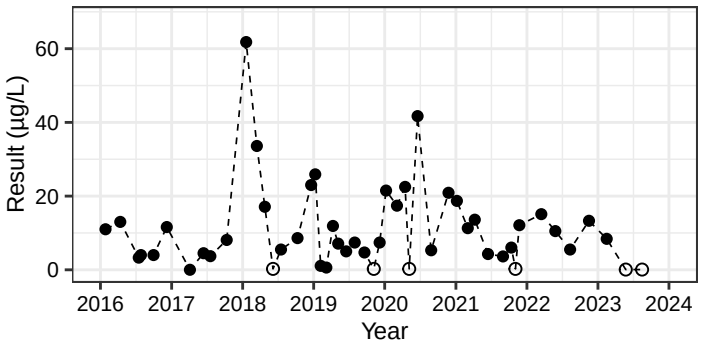
Carbon tetrachloride
Out−of−Use Marlow Well (No. 2)



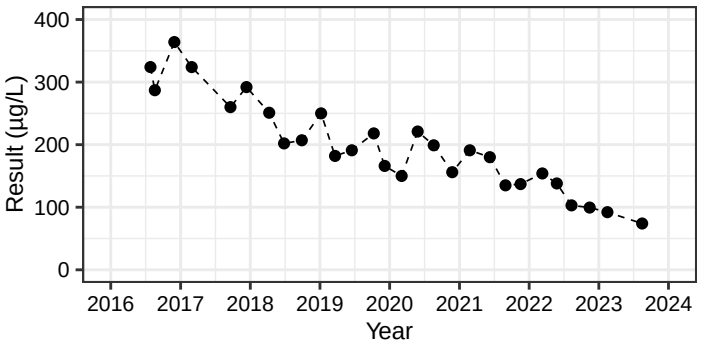
Carbon tetrachloride
Out−of−Use Marlow Well (W20)



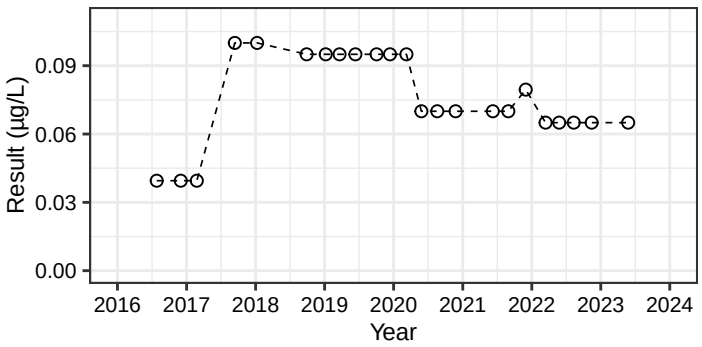
Carbon tetrachloride
Primary Freeman School District Well (WS5)



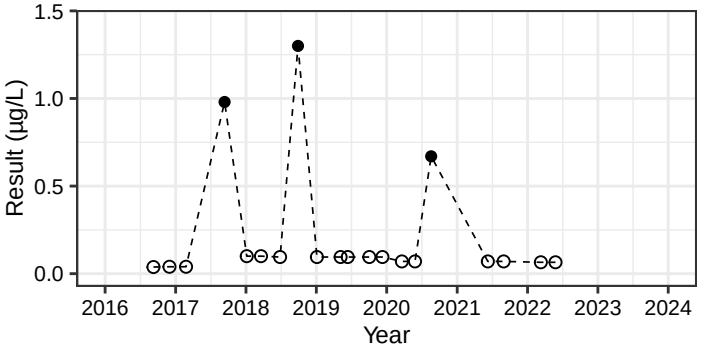
Carbon tetrachloride
Randall Well



Carbon tetrachloride
Reed Well (W30)



Carbon tetrachloride
Silva Well



Time−Series Plots
(non−detects plotted using open symbols at one−half the reporting limit)