

**4th QUARTER 2022 GROUNDWATER
ASSESSMENT MONITORING REPORT
NOVEMBER 2022 MONITORING EVENT**

**FORMER ENVIRONMENTAL WASTE SOLUTIONS (EWS)
CAMDEN CLASS II LANDFILL**

**TDSWM PERMIT NUMBER IDL 03-0212 (TERMINATED)
200 OMAR CIRCLE
CAMDEN, TN 38320**

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EXECUTIVE SUMMARY

This report documents the 4th quarter 2022 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on November 7, 2022.

The former EWS Camden Class II Landfill is located in Benton County at 200 Omar Circle, Camden, Tennessee (latitude 36°03'16" N; longitude -88°05'16" W) and was formerly registered with the Tennessee Division of Solid Waste Management (DSWM) with permit number IDL 03-0212 and previously received secondary aluminum smelter waste for disposal including aluminum dross, salt cakes, and other industrial wastes. The IDL 03-0212 permit was terminated in July 2017.

Beginning in 2008, the site entered the Groundwater Detection-Monitoring Program, and groundwater samples were collected from site monitoring wells on a semi-annual basis. EWS entered the Assessment Monitoring Program because of chloride concentrations reported above the 250 mg/l EPA secondary drinking water standard (2DWS) at monitoring well MW-3 during the November 2015 semi-annual detection-monitoring event. As a result, additional groundwater quality assessment activities were completed which included the installation of a new permanent groundwater monitoring well (MW-5), the installation of three (3) temporary monitoring wells (TMW-1, TMW-2, TMW-3), and completion of a private water-use survey. In addition, the semi-annual detection monitoring frequency was increased from semi-annual to quarterly assessment monitoring. The observed chloride concentration at MW-3 during this November 2022 event (26.2 mg/l) was well below the 2DWS.

Quarterly assessment-monitoring activities have been performed since the November 2015 monitoring event in general accordance with the site's Groundwater Quality Assessment Plan (GWQAP) dated March 14, 2016. During the second quarter 2017 assessment-monitoring event, total cadmium was detected above the maximum contaminant level (MCL) at MW-3, which was the first MCL exceedance for total cadmium concentrations at any well location on site. As a result, enhancements have been made to the sampling and analytical program for the site.

The 4th quarter 2022 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on November 7, 2022, from MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 and on August 12, 2022, from MW-3. A leachate sample was collected from the "Industrial Waste Cell (IWC)" on November 7, 2022. No leachate samples were collected from the "Aluminum Processing Waste Cell (APWC)" during this sampling event since leachate was not currently being generated from the APWC. The amount of leachate produced from the IWC and APWC has been minimal since the landfill was capped, and the leachate flows being pumped from the IWC cell have been intermittent. In addition, the amount of leachate produced from the APWC appears to have halted since the landfill was capped.

Pace Analytical (Pace) is the laboratory sub-contracted to perform the chemical analyses. Laboratory reports for the 4th quarter 2022 groundwater analyses were prepared by Pace and reported to CEC on November 23, 2022 for the groundwater samples and November 23, 2022 for the IWC leachate samples.

The reported concentrations of chemicals detected in the groundwater monitoring wells and temporary monitoring wells were reviewed and compared against their respective U.S. EPA Maximum Contaminant Levels (MCLs) and U.S. National Secondary Drinking Water Standards (2DWS). Where primary or secondary standards were not available (i.e., cobalt), concentrations were reviewed and compared against their EPA Regional Screening Levels (RSLs). Statistical analysis methods were used to identify whether there were any statistically significant increases (SSIs) in any site monitoring wells over background concentrations for the analyzed water quality parameters. The results of the analyses during this assessment-monitoring event are summarized in the following paragraphs.

During this sampling event, the turbidity values observed at MW-3 were above the recommended 10 NTU's throughout the purging and sampling procedures. Although efforts were made during this sampling event to reduce the turbidity, the turbidity value at MW-3 was 18.6 NTU at the time of sample collection. The total metals concentrations from MW-3 reported during this November 2022 event may not be representative of actual groundwater conditions. Therefore, a dissolved metals sample was collected for analysis from MW-3 in addition to total metals analysis for reporting and statistical purposes. The dissolved metals concentrations reported at MW-3 during this November 2022 event may provide a better representation of groundwater conditions at MW-3. Therefore, the total metals concentrations reported at MW-3 during this November 2022 event were removed from the statistical database and replaced with the dissolved metals concentrations reported during this event.

Dissolved cadmium was detected at MW-3 (0.00559 mg/l) and the duplicate sample collected from MW-3 (0.00575 mg/l) during this November 2022 sampling event, which were just above the respective EPA maximum contamination limit (MCL) of 0.005 mg/l. Cadmium was not detected over the laboratory PQL at MW-3 during the previous groundwater events completed in February 2022 and May 2022. However, dissolved cadmium was detected during the previous August 2022 monitoring event (0.00387 mg/l), which was above the PQL but just below the EPA MCL. The cadmium detections at MW-3 during this event were the only cadmium detections above the Practical Quantification Limit (PQL) at any of the groundwater monitoring locations. Based on the Mann-Kendall trend test, a downward trend was identified for total cadmium concentrations at MW-3, when considering data from the past 27 sampling events at MW-3 since November 2016. Since the fall of 2018, the total cadmium concentrations observed in MW-3 have shown an overall decrease in concentration. Cadmium has not been detected above the Practical Quantification Limit (PQL) at any of the other groundwater monitoring locations. Specifically, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3.

Ten SSIs were identified over background during this event. SSIs included cadmium (MW-3), chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), zinc (MW-3 and MW-5), and sulfate (MW-3). The observed SSIs during this event were indicated as SSIs during the previous August 2022 monitoring event, with the exception of the zinc SSI at MW-5. Zinc has previously been detected in MW-5 during various events, and was indicated as an SSI at MW-5 most recently during the previous 4th quarter 2020 groundwater monitoring event. The current chloride, zinc, and sulfate detections observed in the site monitoring wells were all below their associated MCLs or 2DWS. The dissolved cadmium detections at MW-3 (0.00559 mg/l) and the duplicate sample collected from MW-3 (0.00575 mg/l) were just above the respective EPA MCL during this monitoring event.

Glossary of Terms

Appendix I	Refers to the required regulatory sample list of groundwater parameters
CEC	Civil & Environmental Consultants, Inc.
Class I Landfill	Municipal Solid Waste Landfill
Class II Landfill	Industrial Waste Landfill
Class IV Landfill	Construction/Demolition Waste Landfill
Class III/IV Landfill	Landscaping and Construction/Demolition Waste Landfill
DML	Construction Demolition Landfill
US EPA	United States Environmental Protection Agency
Pace	Pace Analytical
EWS	Environmental Waste Solutions
GW	Groundwater
HDPE	High Density Polyethylene
HI	Hydrogeologic Investigation
MCL	Maximum Contaminant Level
microomhos•cm-1	micro-Siemens per centimeter
mg/l	milligrams per Liter
MW	Monitor Well
NPPL	Non-parametric prediction limit analysis
ORP	Oxidation Reduction Potential
POTW	Publically Owned Treatment Works
ppm	parts per million*
PQL	Practical Quantitation Limit
QC	Quality Control
2DWS	Secondary Drinking Water Standard (EPA)
SESD	Science and Ecosystem Support Division
SNL	Sanitary Landfill
SSI	Statistically Significant Increase
TDEC	Tennessee Department of Environment and Conservation
TDOG	Tennessee Division of Geology
TDSWM	Tennessee Division of Solid Waste Management
TOC	Top of Casing
VOC	Volatile Organic Compound

* ppm – parts per million* is equivalent to mg/l – milligrams per Liter for water samples

1.0 INTRODUCTION

1.1 SITE LOCATION

The former EWS Camden Class II landfill is located just off Highway US 70 at 200 Omar Circle, Camden, Tennessee. The site is located on the Camden, Tennessee USGS quadrangle at north latitude 36° 03' 16" and west longitude -88° 05' 16" at an average elevation of 400 feet above mean sea level datum (MSL). The location of the facility is shown in **Appendix A – Figure 1 – Site Location Map**. The landfill footprint can be viewed in **Appendix A – Figure 2 – Potentiometric Surface Map**.

1.2 CURRENT ACTIVITIES

The former EWS Camden Class II landfill is not currently operating (i.e., the permit has been terminated) and landfill cap construction and closure activities have been completed by TDEC. Continued post-closure activities at the facility are being implemented to protect the environment and human health. These activities include leachate pre-treatment, leachate hauling and disposal, stormwater management activities, and groundwater monitoring activities.

2.0 AQUIFER CHARACTERISTICS

2.1 GEOLOGIC AND AQUIFER CHARACTERISTICS

The extensive reworking of the site because of the excavation of chert for local road and fill projects has impacted the original site geology. Based upon a review of the Tennessee Division of Geology (TDOG) Geologic Map and site observations, it appears that the site is within the Camden and Harriman Formations. It is reported by the TDOG that the Camden and Harriman Formations are lithologically identical and not enough fossils are present to form a convenient basis for subdivision.

2.1.1 Camden and Harriman Formations

The Camden and Harriman Formations are described as follows: chert, gray with specks and mottling's of very light-gray and yellowish-gray (surfaces stained pale to dark yellowish-orange), bedded and blocky (beds 2 to 8 inches thick), dense, conchoidal fracture, contains pods of white to light gray tripolitic clay, locally stained yellow and brown, and fossiliferous. Locally, especially near the top, fragments of chert are cemented into large masses and beds of breccia by dark-brown to moderate-red limonite.

Groundwater potentiometric data collected from the uppermost water-bearing zone across the entire landfill site footprint during the 1999 and 2006 hydrogeological investigations indicated that groundwater flow in the uppermost aquifer is generally to the south. Comparisons of the water bearing zone elevations to static groundwater elevations indicate an unconfined aquifer.

2.2 MONITOR WELL INTEGRITY & STATIC WATER LEVELS

The groundwater-monitoring network for the former EWS Class II Landfill currently consists of monitoring wells MW-1 (up-gradient), MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. Due to insufficient groundwater recharge volumes for sampling, MW-2 has been removed from the regular sampling network and replaced by MW-4. MW-2 is still intact and is used for potentiometric surface measurements and field parameter testing. Monitoring well MW-1 serves as an up-gradient monitoring point, while monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 serve as down-gradient monitoring points. The temporary wells (TMW-1, TMW-2, and TMW-3) were installed with the purpose of delineating the areal extent of groundwater contamination and providing additional potentiometric interpretation. The installation of these temporary wells was in response to elevated chloride concentrations at MW-3, which were first detected during the November 2015 sampling event. In addition to providing potentiometric information for the site, these temporary wells yield groundwater samples for water-quality analyses.

The following table presents the wells that were used to develop this report.

Up-gradient Monitoring Points	Down-gradient Monitoring Points
MW-1	MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3

Before purging and sampling activities began, depth to water (DTW) measurements were collected at each of the above-referenced monitoring wells using an electronic water level indicator such as the Solinst® model #122 electronic water-level indicator. DTW measurements were also collected from MW-2 for potentiometric interpretation. DTW measurements were collected in the following order from first to last: MW-1, MW-5, TMW-1, TMW-2, TMW-3, MW-4, MW-2, and finally MW-3.

The integrity of each monitoring well was checked during each sampling event prior to groundwater collection. The physical condition of each wellhead was observed and noted along with the condition of all locking mechanisms for each monitoring well. Once the watertight seal was removed from the top of each monitoring well’s casing, the well was allowed to equilibrate to atmospheric conditions. The water-level indicator was decontaminated in accordance with the United States Environmental Protection Agency-Science and Ecosystem Support Division (USEPA SEDS) procedures for field water-level measurements in between wells and a new pair of clean nitrile gloves were donned at each monitoring location while collecting DTW measurements. The decontaminated electronic water-level indicator was slowly lowered into the well to establish the distance between the top of casing and the elevation of free groundwater. The electronic probe was capable of determining this distance to within one-hundredth of one foot (0.01 foot). The distance was written in the site-specific field book or field data sheet as DTW. Upon collection of these data, the electronic water-level indicator was removed from the monitoring well and decontaminated.

The following equation is used to determine the elevation of groundwater at each well:

$$\text{Established Top of Casing Elevation} - \text{Depth to Water} = \text{Groundwater Elevation}$$

Top of casing elevation has been determined by a licensed land surveyor and is referenced to the current Tennessee State Plane Coordinate System. The top of casing elevations for all site-monitoring wells (MW-1, MW-2, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) were updated by a licensed land surveyor on May 12, 2016. Groundwater elevations are listed in **Appendix A – Table 1 – Field Parameters & Potentiometric Data** and reflect the most recent survey.

2.3 GROUNDWATER FLOW DIRECTION

Groundwater at the landfill appears to generally flow in a southern direction towards Charlie Creek and Cane Creek. Groundwater flow in the vicinity of the former EWS Class II Landfill generally flows from a topographic high north of the landfill towards monitoring wells MW-2, MW-3, MW-4, and MW-5 and temporary monitoring wells TMW-1, TMW-2, and TMW-3, which are all down-gradient of the waste cells.

2.4 POTENTIOMETRIC GRADIENT

The potentiometric surface of the unconfined aquifer occurring beneath the former EWS Class II Landfill occurs at approximately 26.00 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 11.45 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on November 7, 2022 is approximately 1.07%.

The potentiometric gradient is calculated according to the following formula:

$$\frac{\text{Highest GW. Elev. (MW-1)} - \text{Lowest GW. Elev. (MW-4)}}{\text{Horizontal Distance between the Wells}} * 100 = \text{Pot. Grad.}$$

$$\frac{(390.47) - (370.02)}{1,910'} * 100 = 1.07\%$$

The above calculation assumes a perpendicular gradient between the potentiometric elevations from MW-1 and MW-4. These assumptions may provide an artificially higher potentiometric gradient than is likely occurring at the site.

2.5 HYDRAULIC CONDUCTIVITY

Hydraulic conductivity estimations within the uppermost aquifer occurring beneath the landfill have not been determined at this time.

3.0 GROUNDWATER SAMPLING PROCEDURES

3.1 INSTRUMENTATION

Before purging and sampling activities began, DTW measurements were collected at each of the monitoring wells. A YSI Professional Plus® multi-parameter instrument (YSI) was used to record pH, conductivity, temperature, dissolved oxygen (DO), and oxidation-reduction potential (ORP) during groundwater sampling events at the landfill. A Hach® model 2100Q turbidity meter was used to collect turbidity readings. Each instrument was either checked against known standards or calibrated per manufacturers' specifications prior to the commencement of sampling activities.

3.2 GROUNDWATER PURGING AND COLLECTION OF FIELD PARAMETER VALUES

On November 29, 2017, dedicated submersible bladder pumps (low-flow bladder pumps) were installed in each of the groundwater monitoring wells (MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). During the December 11, 2017 sampling event, monitoring personnel for the former EWS Class II Landfill began utilizing low-flow protocols as described within the USEPA's Issue Paper EPA/540/S-95/504: Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures, April 1996. The low-flow protocols have continued to be utilized by monitoring personnel during each quarterly groundwater assessment-monitoring event since December 11, 2017. Additionally, groundwater-sampling activities were completed during this sampling event in accordance with the USEPA SESD sampling procedure -SESDPROC-301-R4 titled "Groundwater Sampling", effective April 26, 2017.

Each dedicated submersible bladder pump is of stainless steel construction, and each is equipped with a Teflon™ bladder and dedicated Teflon™-lined bonded twin polyethylene tubing (airline and water discharge line). The low-flow bladder pumps were operated by using a special control box, which controls the pressure and frequency of the pumping action and was used to adjust the flow rate of the water. The flow rate used was adjusted to minimize stress (drawdown), prevent damage to monitoring well components, and to minimize the risk of introducing sediments into the monitoring well through the well's gravel pack. Water pumped was withdrawn directly from the formation with little mixing of casing water or disturbance to the sampling zone. The initial amount of purged groundwater was collected in a clean, high-density polyethylene (HDPE) flow-through cell while measuring temperature, pH, conductivity, DO, and ORP. A turbidity meter was used to collect turbidity readings during low-flow purging activities.

The start time of purging, the parameter measurements at intervals during purging, estimated pumped volumes, depths to water for low-flow sampling, and any notes of unusual conditions were recorded during purging activities. Field parameter measurements (temperature, pH, conductivity, DO, ORP, and turbidity) were collected periodically until proper field stabilization goals had been met, which are defined by the USEPA SESD as: "for at least three consecutive measurements, the pH remains constant within 0.1 Standard Unit (SU), conductivity varies no

more than 5 percent, and the turbidity has either stabilized or is below 10 Nephelometric Turbidity Units (NTUs)”. Other parameters such as DO were also measured as a purge-adequacy parameter. Normal goals for DO are 0.2 mg/l or 10% saturation, whichever is greater. Temperature and ORP were measured during purging to obtain measurements of record for these parameters for each sampling event.

During the November 2022 monitoring event, a peristaltic pump was utilized during purging activities in the temporary monitoring wells (TMW-1, TMW-2, and TMW-3). According to the USEPA SESD groundwater sampling procedures, peristaltic pumps can be utilized as an alternative and acceptable method for low-flow or multiple volume purging and sampling activities.

Peristaltic pumps require three separate pieces of tubing in order to function: (1) a section of Teflon[®] tubing, which is lowered into the well; (2) a small section of flexible Masterflex[®] silicone tubing, which is installed into the peristaltic pump head; and (3) a small section of Teflon[®] tubing, which connects the pump head to the flow-through cell. The first section of tubing was deployed to the approximate mid-screen within the well (approximately 4 feet above the bottom of the well casing) and cut above the ground surface. The free end of the first section of tubing was connected to the flexible Masterflex[®] silicone tubing situated in the peristaltic pump head. Finally, the third section of tubing (second section of Teflon[®] tubing) connected the Masterflex[®] silicone tubing at the pump head to the flow-through cell for collection of field chemistry parameter measurements. In order to prevent the transfer of residuals between sampling locations, all three sections of tubing were replaced between each well. After replacement of all sections of tubing, the peristaltic pump was turned on, and a suitable (slow) pumping rate was achieved to maintain a minimal and stable drawdown level. Field parameters were collected from the initial amount of water that was purged and measurements were collected periodically until the parameters had stabilized as described above.

With respect to groundwater chemistry, an adequate purge is achieved when the pH and conductivity have stabilized and the turbidity either has stabilized or is below 10 NTUs. If the field parameters were not stable, the purging procedures continued until one of the following adequate purge conditions were met:

1. Field stabilization occurred.
2. Well was purged dry. For wells with slow recovery, attempts were made to avoid purging to dryness by slowing the purge rate. In some situations, even with slow purge rates, the well may be pumped dry. This situation generally indicates that an adequate purge had been achieved and the well was sampled following sufficient recovery (enough volume to allow filling of all sample containers).
3. A minimum of three well volumes were purged.

Field chemistry parameters were collected periodically at the temporary wells until field parameter measurements had stabilized, and at least three well volumes were removed from each temporary

monitoring well. The purge water from down-gradient monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 were containerized and discarded into the on-site leachate collection system storage tank.

Low-flow purging procedures were used at MW-3 during this event. However, the turbidity values observed at MW-3 were well above the recommended 10 NTU's throughout the purging procedure. In addition, the purge rate during low-flow purging procedures was very low (approximately 0.05 gallons per minute), indicating that the rate of groundwater recharge at MW-3 was very minimal. As indicated in the field data sheets for this sampling event located in Appendix C, the turbidity values observed at MW-3 during purging began to increase from 13.7 NTU to 18.6 NTU. Since the other field parameters had stabilized and the sample turbidity during purging appeared to be increasing, a sample was collected from MW-3 for analysis when the turbidity recorded at MW-3 was 18.6 NTU. Although the turbidity value observed at MW-3 during sample collection (18.6 NTU) was lower than the turbidity observed during the previous August 2022 monitoring event (146 NTU), the turbidity remained above the recommended 10 NTU's. Therefore, a dissolved metals sample was collected for analysis from MW-3 in addition to total metals analysis for statistical analysis purposes. Dissolved metals samples collected for analysis were lab-filtered, and were collected for analysis in an unpreserved container and placed on ice.

A summary of field parameter values for each well are presented in **Table 1 – Field Parameters and Potentiometric Data in Appendix A**. A detailed account of each purge and sample procedure conducted at each monitoring well is presented in the field information logs located in **Appendix C – Laboratory Analytical Report & Field Information Logs**.

3.3 GROUNDWATER SAMPLE COLLECTION & PRESERVATION

Groundwater samples were collected from monitoring wells when field parameter data indicated that stagnant water had been purged from the well and replaced by groundwater from the adjacent formation that is representative of actual aquifer conditions. Groundwater was placed in the laboratory supplied sample vessels in the following order: Appendix I organics – three (3) forty (40) mL amber glass containers preserved with hydrochloric acid (HCl); Appendix I organics EDB and DBCP – three (3) forty (40) mL clear glass containers preserved with sodium thiosulfate ($\text{Na}_2\text{S}_2\text{O}_3$); total metals (Appendix I metals, Al, Ca, Fe, K, Mg, Mn, Na, and Boron) – one (1) two-hundred fifty (250) ml HDPE container preserved with nitric acid (HNO_3); alkalinity – one (1) one-hundred (100) ml unpreserved amber glass container; bromide, chloride, nitrate, and sulfate – one (1) two-hundred fifty (250) ml unpreserved HDPE container; COD & ammonia – one (1) two-hundred fifty (250) ml HDPE jar preserved with sulfuric acid (H_2SO_4).

As described in the previous section, a peristaltic pump was used to purge temporary monitoring wells TMW-1, TMW-2, and TMW-3. Samples for organic analysis cannot be exposed to the flexible peristaltic pump-head tubing, due to the risk of contaminant sorption and/or the risk of the dissolution of organic compounds to the sample.

3.4 LEACHATE SAMPLING PROCEDURES

The amount of leachate produced from the “Industrial Waste Cell (IWC)” and “Aluminum Processing Waste Cell (APWC)” has been minimal since the landfill was capped, and the leachate being pumped from the IWC cell has been intermittent. In addition, it appears that the leachate generation in the APWC cell has halted since the landfill was capped. During this November 2022 groundwater-sampling event, a leachate sample was collected from the IWC cell. However, no leachate was being pumped from the APWC. Therefore, no APWC leachate sample was collected for analysis during this monitoring event, which is consistent with previous quarterly groundwater monitoring events. Attempts will be made to sample the IWC leachate during each groundwater-monitoring event in the future. The approximate APWC and IWC leachate sample locations are shown on **Figure 2 – Potentiometric Surface Map located in Appendix A.**

The IWC leachate sample was collected directly from the associated leachate collection hose within the secondary containment area before the leachate entered the IWC leachate collection tank. A dedicated sample port has been installed on the IWC-leachate line, which was used for collecting the leachate sample. An air pump was utilized to pump leachate from the sump to the IWC leachate tank through associated hoses within the secondary containment area. To ensure the hoses were clear of stagnant water or leachate, the leachate was pumped for approximately 10 minutes prior to sample collection. After pumping for 10 minutes, the leachate sample was collected by opening the dedicated sample port valve and filling the sample containers appropriately.

3.5 QUALITY ASSURANCE AND QUALITY CONTROL

3.5.1 Field Quality Assurance and Quality Control

Field Quality Assurance and Quality Control (QA/QC) samples were collected as part of the groundwater-sampling program. Quality assurance (with internal laboratory quality controls) addresses the accuracy and repeatability of analytical results after analysis in the laboratory. Quality control addresses methods to preserve the integrity of samples in the field and during shipping to the laboratory. Quality control may be accomplished by incorporating trip blanks, field blanks, field duplicates, and equipment (rinsate) blanks into the analytical program.

A field blank and a duplicate sample were collected during this groundwater-monitoring event. CEC collected a field blank near monitoring well TMW-1 and a duplicate sample was collected from MW-3. The field blank was collected by pouring deionized water into a set of sample bottles provided by the laboratory, thereby allowing any airborne contaminants a chance to enter the field blank sample. The duplicate sample was collected by taking separate samples at MW-3 at the same time. In addition, a laboratory supplied trip blank for VOC analysis was prepared and placed in a cooler, which was present during groundwater sampling activities. Upon the collection of the final groundwater sample, the trip blank was placed in a sample cooler and delivered to Pace for VOC analysis. No VOCs were detected above the laboratory PQL in the trip blank sample.

Pace reported the groundwater QA/QC laboratory analytical results to CEC on November 23, 2022. Laboratory analytical testing of the field blank presented in the analytical report showed that no constituents were detected above the laboratory PQLs during this November 2022 event.

The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results. The relative percent difference (RPD) between most constituent values reported in MW-3 and the duplicate sample were within the acceptable 20% RPD control limit with the exception of total aluminum (68.31% RPD), total barium (21.66% RPD), total cadmium (22.19% RPD), total chromium (60.16% RPD), total iron (45.71% RPD), total lead (91.05% RPD), total nickel (51.25% RPD), and total zinc (92.41% RPD). However, the dissolved aluminum, dissolved chromium, dissolved iron, and dissolved lead concentrations were below their respective laboratory PQLs. Also, the dissolved barium, dissolved cadmium, dissolved nickel, and dissolved zinc concentrations reported were within the acceptable 20% RPD control limits. Therefore, the differences in the reported total and dissolved constituent concentrations are likely due to differences in the turbidity of samples at the time of sample collection, and indicates that the dissolved metals constituent concentrations reported during this monitoring event are more representative of actual groundwater conditions.

3.5.2 Laboratory Quality Assurance and Quality Control

In order to demonstrate that a laboratory is producing data of adequate precision, accuracy and sensitivity, it is necessary to assess all laboratory procedures at all stages from sampling to reporting. The laboratory completed specific control and assessment procedures designed to monitor, quantitatively, the accuracy and precision of specific assays. Laboratory Internal Quality Assurance (IQA) refers to the full range of practices employed to ensure that laboratory results are reliable. Internal Laboratory Quality Control (IQC) consists of the operational techniques used by the laboratory staff for continuous assessment of the quality of the results of individual analytical procedures. The specific quality-control procedures utilized by the analytical laboratory are summarized in the following table:

Quality Criteria Category	Quality Control Laboratory Methods
Precision	Laboratory duplicates at a frequency of one per matrix spike, one per laboratory control sample, and one per method blank.
Bias	Matrix spikes, laboratory control samples, method blanks at a frequency of one sample per standard batch.
Representative and Comparable Data	Adherence to standard analytical procedures, analytical methods, units of measurement, and detection limits.

The internal laboratory IQA and IQC results are included in the laboratory analytical reports located in **Appendix C – Laboratory Analytical Reports & Field Information Logs**. All qualifier codes and their descriptions can be found on page 63 of 66 in the laboratory report found in **Appendix C**.

3.6 SAMPLE CHAIN-OF-CUSTODY

A sample Chain-of-Custody (COC) traveled with each sample kit from Pace to the former EWS Class II Landfill site and back to Pace for analysis.

4.0 LABORATORY ANALYTICAL PROCEDURES

4.1 ANALYTICAL METHODS

All laboratory analyses for the 4th quarter 2022 groundwater assessment-monitoring event were completed by Pace Analytical. The analytical methods chosen for these monitoring events were in full compliance with the procedures required by the DSWM and the USEPA's publication SW-846, entitled Test Methods for Evaluating Solid Waste, Physical/Chemical Methods (3rd Edition).

The SW-846 methods used for the analysis of **groundwater** were as follows:

Method 6010b	Inductively Coupled Plasma (ICP) – Atomic Emission Spectrometry (Boron only)
Method 6020	ICP – Mass Spectrometry (metals)
Method 2320 B-2011	Alkalinity
Method 7470A	Mercury in Liquid Waste – Manual Cold Vapor Technique
Method 8011	1,2-dibromoethane & 1,2 dibromo-3-chloropropane by Micro-extraction and Gas Chromatography
Method 8260B	Volatile Organic Compounds by Gas Chromatograph/Mass Spectrometry
Method 9056A	Determination of Inorganic Anions by Ion Chromatography (Bromide, Chloride, Fluoride, Nitrate, and Sulfate)
Method 130.1	Hardness (colorimetric) as CaCO ₃
Method 350.1	Ammonia Nitrogen
Method 410.4	Chemical Oxygen Demand (COD)

4.2 LABORATORY ANALYTICAL RESULTS

Constituent values from all inorganic laboratory analyses for groundwater and leachate samples, along with applicable MCLs or 2DWSs, are presented in **Table 2 – Groundwater and Leachate Analytical Data in Appendix A**. Copies of the laboratory reports are located in **Appendix C – Laboratory Analytical Report & Field Information Logs**.

4.2.1 EWS Groundwater Quality Relative to the EPA Primary Drinking Water Standards

Total Arsenic was not detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.00807 mg/l) during this 4th Quarter 2022 event. Arsenic has been detected at concentrations that exceed the MCL during previous monitoring events only at up-gradient well MW-1. Arsenic was not detected above the laboratory PQL (<0.002 mg/l) in any of the down-gradient monitoring wells during this November 2022 event, which is consistent with previous sampling events. For this site, the presence of arsenic in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden since there is no immediate development up-gradient of MW-1.

Total cadmium and dissolved cadmium detections at MW-3 and the duplicate sample collected from MW-3 were just over the respective EPA MCL (<0.05 mg/l) during this November 2022 sampling event. Total cadmium was not detected over the laboratory PQLs during the previous May 2022 and February 2022 monitoring events. The cadmium detections at MW-3 during previous events since 2016 were the only cadmium detections above the Practical Quantification Limit (PQL) at any of the groundwater monitoring locations. A summary of cadmium concentrations (total cadmium and dissolved cadmium), turbidity values, and groundwater elevations observed at MW-3 during each sampling event since May 9, 2016 is referenced in the table and figure below:

MW-3				
Summary of Cadmium Concentrations, Turbidity Measurements, and Groundwater Elevations				
Date	Total Cadmium (mg/l)	Cadmium, Dissolved (mg/l)	Turbidity (NTU)	Groundwater Elevations (ft. MSL)
11/7/22	0.00686	0.00559	18.6	371.30
8/12/22	0.00555	0.00387	146	372.96
5/13/2022	<0.00100	NA	18.9	374.80
2/9/2022	<0.00100	NA	27.5	379.40
11/18/2021	0.00188	NA	18.5	374.10
8/26/21	0.00595	0.00589	28.7	373.10
5/20/2021	0.00265	NA	12.5	374.45
3/2/2021	0.00249	NA	5.38	384.27
12/8/2020	0.00906	0.00787	10.8	373.35
11/17/2020	0.00816	NA	14.0	373.24
8/26/2020	0.00242	NA	6.66	375.87
6/2/2020	0.00278	NA	5.38	374.31
2/27/2020	0.00214	NA	7.63	373.97
11/20/2019	0.00157	NA	2.11	378.22
9/6/2019	0.0088	NA	2.98	373.25
6/4/2019	0.0292	0.0297	2.98	374.29
3/5/2019	0.0117	0.0133	6.27	374.40
12/4/2018	0.144	0.139	4.77	377.73
9/27/2018	0.204	0.204	1.05	384.61
9/12/2018	0.297	0.320	1.12	375.02
6/19/2018	0.0312	0.0292	4.90	373.47
3/22/2018	0.00671	0.00637	24.3	377.25
12/14/2017	0.00659	0.00733	23.0	373.03
9/28/2017	0.00926	0.0102	18.9	373.25
8/8/2017	0.0113	NA	16.6	373.42
6/8/2017	0.0286	NA	34.8	372.92
11/10/2016	0.00177	NA	64.5	372.91
5/9/2016	<0.001	NA	8.39	379.50

NA-Not Analyzed

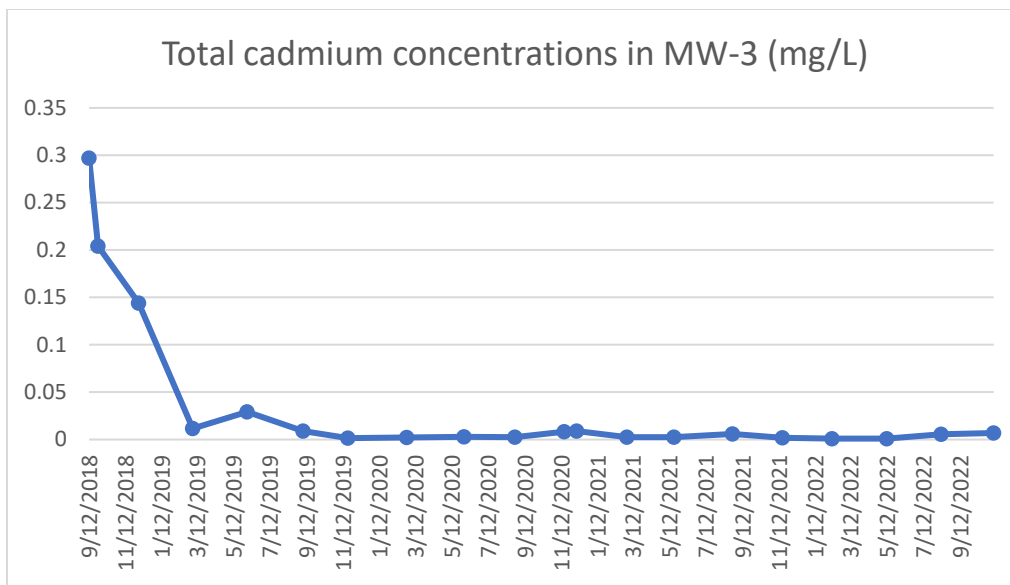


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. In addition, Mann-Kendall identified a statistically significant decreasing trend for total cadmium concentrations at MW-3 when considering data from the past 27 sampling events since November 10, 2016. During the four consecutive sampling events from November 2019 to August 2020, the cadmium concentrations at MW-3 were below the MCL. Since August 2020, the total cadmium detections at MW-3 have been intermittent during recent events at concentrations just above the MCL (November 2020, December 2020, and August 2021) and below the MCL (March 2020 and May 2021). During the previous November 2021 sample event, the total cadmium concentrations reported in MW-3 and the duplicate sample collected from MW-3 were below the MCL. Total cadmium was not detected over the laboratory PQL (<0.001 mg/l) at MW-3 or the duplicate sample collected from MW-3 during the previous May 2022 and February 2022 sampling events.

As mentioned previously, the turbidity values observed at MW-3 were well above the recommended 10 NTU’s throughout the purging and sampling procedures during the previous August 2022 sampling event, and the turbidity values observed at MW-3 during this current November 2022 event were slightly over 10 NTU’s during sampling. The purge rate during low-flow purging procedures at MW-3 was very low (approximately 0.05 gallons per minute), indicating that the rate of groundwater recharge at MW-3 was very minimal. During this event, the turbidity values observed at MW-3 during purging began to increase from 13.7 NTU to 18.6 NTU. Since the other field parameters had stabilized and the sample turbidity during purging appeared to be increasing, a sample was collected from MW-3 for analysis when the turbidity recorded at MW-3 was 18.6 NTU. Although efforts were made in the field to reduce the turbidity at MW-3 during sample collection, the turbidity remained elevated during sample collection (18.6 NTU). Therefore, dissolved metals samples were collected for analysis from MW-3 for statistical analysis. Dissolved metals samples collected for analysis were lab-filtered, and were collected for analysis in an unpreserved container and placed on ice.

It is worth noting that the observed precipitation in the area from July 2022 to October 2022 was very low compared to previous years. The lack of precipitation in the area likely contributed to the low rate of water recharge, which may have inadvertently affected the turbidity at MW-3 during this event.

Total Cobalt was detected in up-gradient well MW-1 (0.0130 mg/l) during this November 2022 event. Dissolved cobalt was also detected in MW-1 at a slightly lower concentration (0.0113 mg/l). Cobalt does not have an MCL; however, the TDEC-DSWM uses the EPA regional screening level (RSL) of 0.006 mg/l as the groundwater protection standard for this constituent. The reported cobalt detection at up-gradient well MW-1 was above the RSL for cobalt during this November 2022 event. Cobalt has historically been detected at concentrations that exceed the RSL at MW-1 prior to the disposal of waste in the landfill, and total cobalt was detected in MW-1 at similar concentrations during previous events. For this site, the presence of cobalt in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, since there is no development immediately up-gradient of MW-1. In addition, cobalt was not detected above the PQL at any of the down-gradient monitoring well locations during this monitoring event.

Total Chromium was detected in downgradient wells MW-3 (0.0120 mg/l) and MW-5 (0.00285 mg/l), which were all below the MCL of 0.1 mg/l for chromium. Also, dissolved chromium was not detected above the PQL (<0.00200 mg/l) at MW-3 or MW-5 during this event. Total chromium has been detected at similar concentrations in up-gradient well MW-1.

Total Mercury was not detected in any wells during this November 2022 sample event. Total mercury has consistently been detected above the PQL at MW-1 since January 2009. Total mercury was not detected above the laboratory PQL (0.000200 mg/l) at any of the down-gradient wells during this November 2022 event. Although total mercury has been previously detected above the PQL at up-gradient MW-1, total mercury has not been detected above the laboratory PQL in any of the down-gradient monitoring wells since monitoring began at the site in 2008. The presence of mercury in the local groundwater near up-gradient monitoring well MW-1 may be attributable to naturally occurring deposits in the soil overburden, since there is no development immediately up-gradient of MW-1.

4.2.2 EWS Groundwater Quality Relative to the National Secondary Drinking Water Standards

Laboratory analytical results for the groundwater samples collected during the November 2022 sampling event from the former EWS Class II Landfill groundwater monitoring well network indicated that three of the site-specific groundwater-monitoring lists of compounds were detected at concentrations that exceeded the National Secondary Drinking Water Standards (2DWS). Those parameters include total **aluminum** in down-gradient well MW-3; total **iron** in up-gradient well MW-1 and down-gradient wells MW-3 and MW-4; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-3 and MW-5. However, dissolved aluminum and dissolved iron were not detected above the respective laboratory PQL in MW-3 during this event. **Chloride, sulfate, nickel, and zinc** detections were below the 2DWS in all monitoring wells during this

event. The observed concentrations for the constituents given below are discussed relative to the 2DWS.

The **Total Aluminum** concentration observed in down-gradient well MW-3 (0.652 mg/l) was above the 2DWS (0.2 mg/l). However, dissolved aluminum was not detected above the PQL (<0.1 mg/l) in MW-3 during this event. During the previous August 2022 event, total aluminum was detected in up-gradient MW-1 and down-gradient MW-5 and TMW-2. However, aluminum was not detected above the PQL (<0.1 mg/l) at MW-1, MW-4, MW-5, TMW-1, TMW-2, or TMW-3 during this November 2022 event.

The **Chloride** concentrations reported at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 during this November 2022 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this November 2022 event are similar to the concentrations observed at samples collected from each well during the recent previous events. The chloride concentration at MW-3 during this event (26.2 mg/l) continues to be significantly lower in concentration compared to the previous events in December 2018 (65 mg/l), September 2018 (222 mg/l), November 2015 (458 mg/l), and the supplemental re-sampling in December 2015 (360 mg/l).

Fluoride has previously been detected above the PQL at various monitoring wells across the site. However, fluoride was not detected (<0.150 mg/l) at any of the monitoring wells during this current November 2022 sample event.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (16.8 mg/l) and down-gradient wells MW-3 (0.645 mg/l) and MW-4 (0.684 mg/l) during this November 2022 monitoring event. However, dissolved iron was below the 2DWS in MW-1 and dissolved iron was not detected above the laboratory PQL (<0.100 mg/l) in MW-3 during this event. Iron was detected above the PQL of the laboratory (0.1 mg/l), but below the 2DWS (0.3 mg/l) during this November 2022 event at well TMW-1. Total iron was not detected above the PQL in MW-5, TMW-2, and TMW-3 during this event. The reported total iron concentrations at each of the groundwater monitoring wells were less than the highest concentrations observed prior to placement of waste and do not exhibit a trend via time-series graphs. The presence of iron in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden, and iron has consistently been detected above the 2DWS in up-gradient well MW-1.

Total Manganese detections were observed above the 2DWS (0.05 mg/l) in up-gradient MW-1 (0.445 mg/l) and down-gradient wells MW-3 (0.207 mg/l) and MW-5 (0.244 mg/l) during this November 2022 monitoring event. Total Manganese has been consistently detected at concentrations above the 2DWS (0.05 mg/l) in up-gradient well MW-1. The presence of total manganese in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden. During this November 2022 event, total manganese was also detected below 2DWS (0.05 mg/l) but above the laboratory PQL (<0.005 mg/l) in wells MW-4, TMW-1, and TMW-3.

Total Nickel was detected in up-gradient well MW-1 (0.00840 mg/l) and down-gradient wells MW-3 (0.00679 mg/l) and MW-5 (0.00613 mg/l) during the November 2022 sampling event. Dissolved nickel was detected in down-gradient well MW-3 (0.00422 mg/l) during this event. All reported nickel concentrations were below the MCL value (0.10 mg/l) obtained from the Tennessee Division of Water Resources (TN DWR) Public Water Systems chapter rule 0400-45-01-.06 (0.10 mg/l). Total nickel was not detected above the PQL (<0.00200 mg/l) in MW-4, TMW-1, TMW-2, and TMW-3 during this monitoring event. Total nickel has been detected at concentrations above the TN DWR Public Water Systems MCL (0.1 mg/l) in up-gradient well MW-1 during previous events on April 9, 2009 (total nickel at MW-1= 0.2 mg/l) and May 19, 2009 (total nickel at MW-1=0.17 mg/l). Therefore, the presence of total nickel in the local groundwater is considered to be naturally occurring, originating from deposits in the soil overburden.

The **Sulfate** concentration reported at MW-3 (38.6 mg/l) during this November 2022 sampling event was below the 2DWS for sulfate (250 mg/l). In addition, the sulfate concentrations at MW-3 have been consistently decreasing each event since September 2018.

Sulfate was also detected in up-gradient well MW-1 (8.74 mg/l) and down-gradient well MW-5 (12.4 mg/l) during this November 2022 event and were below the 2DWS. Sulfate was not detected above the PQL of 5.00 mg/l in any of the other monitoring wells across the site.

Total Magnesium does not currently have an established MCL, 2DWS, EPA RSL, or an approved alternate groundwater protection standard (GWPS). The total magnesium concentration at MW-3 during this November 2022 event (6.48 mg/l) is similar to the previous August 2022 event (5.97 mg/l). In general, the total magnesium levels reported in MW-3 have been decreasing since 2018. Magnesium was also detected above the laboratory PQL (1.00 mg/l) during the November 2022 event in MW-1, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

The **total zinc** was reported at up-gradient MW-1 (0.0287 mg/l) and down-gradient wells MW-3 (0.159 mg/l), the duplicate sample collected from MW-3 (0.0585 mg/l), and MW-5 (0.0502 mg/l) during this November 2022 event. However, dissolved zinc was not reported above the PQL (<0.0250 mg/l) in MW-1 during this monitoring event. The dissolved zinc concentrations reported at MW-3 (0.0712 mg/l), the duplicate sample collected from MW-3 (0.0785 mg/l), and MW-5 (0.0341 mg/l) during this November 2022 event were lower than the total zinc concentrations reported. All zinc concentrations (total and dissolved) reported at up-gradient (MW-1) and downgradient monitoring wells (MW-3 and MW-5) were below the respective 2DWS (<5 mg/l). Similar zinc concentrations have been reported during previous events, and a downward trend in zinc concentrations was observed when considering total zinc concentrations at MW-3 since November 2016.

4.3 QUALITY CONTROL QUALIFIER CODES

The EPA Contract Laboratory Program states that sample and result qualifiers should be utilized as part of a total quality-control process. Pace complies with this directive and reports all qualifiers along with explanations of QC qualifier codes. Eight (8) QC qualifier codes (E, J, J3, J4, J5, P, P1, and V) were indicated during the laboratory analysis of groundwater samples collected during the November 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 60 of 64 in the November 23, 2022 Groundwater Laboratory Analytical Report. None of the QC qualifier codes indicated in the Groundwater Analytical Report were associated with any of the detected constituents during this monitoring event, and did not affect the usability of the data as reported. Six (6) QC qualifier codes (B, J, J5, P, P1, and V) were indicated during the laboratory analysis of the leachate samples collected during this November 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 26 of 28 in the November 23, 2022 Leachate Analytical Report. Most of the QC qualifier codes indicated in the Leachate Analytical Report were not associated with any of the detected constituents during this monitoring event, and did not affect the usability of the data as reported.

Based on the overall review of the QC qualifiers identified in the November 23, 2022 groundwater and leachate laboratory analytical reports, the data as reported appears to be usable for quantitative purposes. The groundwater and leachate laboratory analytical reports are included in **Appendix C**.

5.0 STATISTICAL ANALYSIS

5.1 APPLICABLE METHODS

The Rules of the Tennessee Department of Environment and Conservation, Division of Solid Waste Management Chapter 0400-11-01-.04(7) state, in part, that each landfill must conduct and report statistical analyses as part of the evaluation of groundwater monitoring data. Statistical analyses of the data for each constituent detected was performed on monitoring wells MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

The solid waste rules require groundwater sample results and associated statistical methods used to determine the statistical background of a groundwater detection/assessment monitoring program be “protective of human health and the environment”. Furthermore, the rules require that the results be “representative” of the background groundwater quality of the geologic formation(s) being monitored. Various influences may affect the representativeness of sample results, which include possible errors in sampling. As previously discussed, reported total metals concentrations are likely affected by elevated turbidity values and would not be representative of the natural groundwater conditions. Before statistical evaluations were completed, the turbidity values which were collected during historical groundwater sampling events were evaluated for elevated turbidity values (>150 NTU). If the turbidity value at the time of sample collection at any given location was greater than 150 NTUs, the total metals concentrations for each sample location would not be representative of natural groundwater conditions. As a result, the corresponding data were removed from the background data set.

Although efforts were made during this sampling event to reduce the turbidity, the turbidity value at MW-3 was 18.6 NTU at the time of sampling during this event, which was above the recommended 10 NTU’s. Total aluminum, chromium, copper, iron, and lead were detected in MW-3 during this event. However, the dissolved aluminum, chromium, copper, iron, and lead concentrations were below the respective laboratory PQL at MW-3 during this event. These reported total metals constituents were likely affected by the elevated turbidity observed at MW-3 at the time of sample collection. Therefore, the totals metals concentrations from MW-3 reported during this November 2022 are not representative of actual groundwater conditions. However, the dissolved metals concentrations reported at MW-3 during this November 2022 event provide a better representation of groundwater conditions at MW-3. Therefore, the total metals concentrations reported at MW-3 during this November 2022 event were removed from the statistical database and replaced with the dissolved metals concentrations reported during this event.

After the non-representative background sample data were removed accordingly, the distribution of the data in the background monitoring well (MW-1) was evaluated for normality. The tests for normality were conducted using the Shapiro-Wilks method if $N < 50$ or Shapiro-Francia method if $N > 50$. The normality test was performed for both raw and log-transformed data, with replacement of non-detects to half of the corresponding laboratory PQL. Data determined to be normally

distributed in the background well were evaluated using parametric prediction limit (PPL) analysis. Inter-well and intra-well (intra-well utilized for upgradient MW-1) statistical methods were appropriately utilized to determine statistically significant increases in constituent concentrations in compliance (down-gradient) monitoring wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

Intra-well analyses were utilized only at MW-1 to compare the concentrations observed during the current groundwater-sampling event to the established background data set for MW-1 concentrations. Intra-well PPL and non-parametric statistical methods were appropriately utilized to determine statistically significant changes in background water quality data in up-gradient monitoring well MW-1. The cobalt data at MW-1 were normally distributed using the Shapiro-Wilks test for normality when the data were log-transformed and non-detects were replaced by half of the corresponding PQL. Therefore, intra-well PPL analysis was performed for the transformed cobalt data set that passed normality testing. However, all other data sets (arsenic, barium, nickel, zinc, and sulfate data) for MW-1 were not normally distributed and were evaluated using intra-well non-parametric statistical methods.

Inter-well analyses compared the concentrations observed at the down-gradient monitoring locations (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3) to the concentrations observed at the up-gradient monitoring location (MW-1) during this monitoring event. The data distribution tests using the background data set (from MW-1) for all detected constituents in the downgradient wells (barium, cadmium, chloride, chromium, copper, nickel, zinc and sulfate data) indicated that the background data for each constituent are not normally distributed and were evaluated for SSIs using inter-well non-parametric statistical methods.

If the data are normally distributed (using normal or log-transformed data), parametric statistical procedures may be used to evaluate SSIs. If the data are normally distributed, the percentage of non-detects in background well MW-1 for each parameter determined the primary statistical method utilized for inter-well analysis. If the background data are normally distributed and < 50% non-detects exist for the given parameter, parametric inter-well prediction limit analysis may be conducted on the data. If the percentage of non-detects in the background samples was less than 50%, Shewart-CUSUM control charts may also be utilized as a secondary statistical method utilized for inter-well analysis. However, since the barium, cadmium, chloride, chromium, copper, nickel, zinc and sulfate background data are not normally distributed, non-parametric inter-well prediction limit analysis was conducted for the background data from up-gradient well MW-1 compared to down-gradient monitoring wells (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3). Additional statistical procedures performed included Mann-Kendall trend analyses. Although the Mann-Kendall trend analyses are not used to determine SSIs relative to background, they provide a non-parametric intra-well statistical procedure to identify statistical trends (increasing, decreasing, or no trend) in data at a single well over a given period. For this monitoring event, the Mann-Kendall trend analysis was completed using recent data since the November 10, 2016 sampling event.

The computer program ChemStat v.6.4 was used for all statistical computations. Worksheets for inter-well and intra-well statistical analysis and time versus concentration charts are given in **Appendix B – Statistical Evaluations and Time Series Plots.**

5.2 STATISTICAL RESULTS

One statistically significant increase (SSI) was identified in up-gradient well MW-1 during this event. The current chloride detection at MW-1 (5.98 mg/l) slightly exceeded the intrawell non-parametric prediction limit (5.68 mg/l). However, no statistically significant trend was identified for the chloride data at MW-1 using data since November 10, 2016. When considering data since the November 10, 2016 sampling event, statistically significant trends in data from MW-1 were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses for MW-1 revealed statistically significant upward trends in barium and cobalt concentrations. In addition, trend analyses for MW-1 revealed a statistically significant downward trend in chloride concentrations. There were no distinct statistically significant trends in concentrations for the detected arsenic, chloride, nickel, zinc, and sulfate concentrations at MW-1.

SSIs over background identified for the current monitoring event include cadmium at MW-3; chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3; zinc at MW-3 and MW-5; and sulfate at MW-3. However, no SSIs were identified for the barium (at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), chromium (at MW-5), copper (at MW-5), nickel (at MW-3 and MW-5), or sulfate (at MW-5) concentrations reported during this monitoring event. When considering data since the November 10, 2016 sampling event, statistically significant trends in data were observed using the Mann-Kendall trend analyses at the 95% confidence level. Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium at MW-5; copper at MW-5; zinc at MW-5 and MW-5; and sulfate at MW-5. Trend analysis revealed a downward trend in barium concentrations at MW-3; cadmium concentrations at MW-3; zinc concentrations at MW-3; and chloride concentrations at MW-3. There were no distinct statistically significant trends in concentrations for any of the other detected constituents.

The cadmium concentration observed at MW-3 indicated an SSI in reported concentrations using inter-well non-parametric prediction limits by using cadmium concentrations observed at the up-gradient monitoring location (MW-1) as background for comparison. The dissolved cadmium detection at MW-3 used for statistical analysis was just above the respective EPA MCL during this event. The Mann-Kendall method identified a statistically significant downward trend for cadmium concentrations at MW-3 when considering data from the past 27 sampling events since November 10, 2016. The cadmium results during this November 2022 sampling event are slightly higher than the previous August 2022 monitoring event, and similar to the previous sampling events prior to February 2022. During the two previous sampling events in February 2022 and May 2022, total cadmium was not detected above the laboratory PQL (<0.001 mg/l).

The chloride concentrations observed at MW-3 (26.2 mg/l), MW-4 (11.4 mg/l), MW-5 (63.5 mg/l), TMW-1 (42.6 mg/l), TMW-2 (39.6 mg/l), and TMW-3 (61.2 mg/l) produced SSIs over background during this event. The chloride detections at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 are consistent with previous data and are below the 2DWS for chloride concentrations (250 mg/l). When considering data from the monitoring events since November 2016, the data showed a downward trend in chloride concentrations at MW-3 and an upward trend in chloride concentrations at MW-4, MW-5, TMW-1, TMW-2, and TMW-3 using the Mann-Kendall trend analyses at the 95% confidence level.

The chromium concentration observed at MW-5 (0.00285 mg/l) was less than the MCL (0.1 mg/l), and did not produce SSIs in reported concentrations during this event. When considering chromium data from MW-5 since November 2016, the data did show an upward trend in chromium concentrations using the Mann-Kendall trend analysis at the 95% confidence level.

The zinc concentrations observed at MW-3 (0.0712 mg/l) and MW-5 (0.0502 mg/l) during this event exceeded the non-parametric prediction limit of 0.0287 mg/l. However, the observed zinc concentrations at MW-3 and MW-5 were well below the 2DWS for zinc (5 mg/l). When considering zinc data from MW-3 and MW-5 since November 2016, the data showed a decreasing trend in zinc concentrations at MW-3 and did not show an upward or downward trend in zinc concentrations at MW-5 using the Mann-Kendall trend analysis at the 95% confidence level. Similar zinc concentrations have been observed in MW-3 and MW-5 during previous monitoring events.

An SSI for sulfate concentrations at MW-3 was identified during this sampling event. However, when considering all data accumulated from MW-3 since November 10, 2016, the data did not show an upward or downward trend in sulfate concentrations at MW-3 using the Mann-Kendall trend analysis at the 95% confidence level. The sulfate concentration reported during this sampling event at MW-3 (38.6 mg/l) remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (12.4 mg/l) during this November 2022 event, which was well below the 2DWS of 250 mg/l. While there was an upward trend in sulfate concentrations identified in MW-5 during this event, there was no reported SSI in the sulfate concentration during this event. Sulfate was also detected in up-gradient MW-1 (8.74 mg/l) during this November 2022 monitoring event. However, sulfate was not detected above the PQL in any of the other monitoring wells across the site.

A summary of intra-well and inter-well statistical analysis is presented in **Table 3 – Intra-Well and Inter-Well Statistical Summary in Appendix A.**

6.0 CONCLUSIONS

The results of the fourth quarter assessment-monitoring event of 2022 are summarized as follows:

- SSIs during this November 2022 event included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), cadmium (MW-3), zinc (MW-3 and MW-5), and sulfate (MW-3). In addition, the chloride concentration at up-gradient MW-1 during this event was indicated as an SSI.
- The total and dissolved cadmium detections at MW-3 and the duplicate sample collected from MW-3 were just over the respective EPA MCL. However, the dissolved cadmium detections at MW-3 and the duplicate sample collected from MW-3 were slightly lower in concentration compared to the total cadmium detections. Although efforts were made during this sampling event to reduce the turbidity, the turbidity value at MW-3 was 18.6 NTU at the time of sampling during this event, which was above the recommended 10 NTU's. These reported total metals constituents were likely affected by the elevated turbidity observed at MW-3 at the time of sample collection, and the dissolved metals concentrations reported at MW-3 during this November 2022 event provide a better representation of groundwater conditions at MW-3 and are appropriate for statistical analysis. Therefore, the total metals concentrations reported at MW-3 during this November 2022 event were removed from the statistical database and replaced with the dissolved metals concentrations reported during this event. Although cadmium was indicated as an SSI during this event, the Mann-Kendall trend analysis indicated a statistically significant downward trend in total cadmium concentrations since November 2016. Also, the total cadmium non-detect value observed at MW-3 during recent monitoring events in February 2022 and May 2022 continues to show that the total cadmium levels at MW-3 have generally improved since closure activities have been completed. In addition, there have been no cadmium detections from groundwater samples obtained from temporary monitoring wells TMW-2 and TMW-3 that are immediately down-gradient of MW-3.
- Trend analyses revealed a statistically significant upward trend in barium at MW-4, MW-5, and TMW-3; chloride at MW-4, MW-5, TMW-1, TMW-2, and TMW-3; chromium concentrations in MW-5; copper concentrations at MW-5; and sulfate at MW-5. Trend analysis revealed a downward trend in barium concentrations at MW-3; cadmium concentrations at MW-3; zinc concentrations at MW-3; and chloride concentrations at MW-3. In addition, trend analyses revealed a statistically significant upward trend in barium and cobalt concentrations at up-gradient MW-1. There were no distinct statistically significant trends in concentrations for any of the other detected constituents during this event.

- An SSI was identified for the reported sulfate concentration at MW-3. However, the sulfate concentrations at MW-3 do not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 since November 10, 2016.
- The chloride concentrations at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 remain well below the 250 mg/l 2DWS.
- Although the zinc concentrations reported at MW-3 and MW-5 were indicated as SSIs using all available data since 2008, the concentrations remain well below the 2DWS of 5 mg/l. In addition, the zinc concentrations at MW-3 exhibited a statistically significant decreasing trend when considering data from MW-3 since November 10, 2016. The zinc concentration at MW-5 did not exhibit a statistically significant upward or downward trend when considering data from MW-5 since November 10, 2016.
- No VOCs were detected above their respective laboratory PQL in any of the groundwater monitoring wells during the monitoring event.

The first quarter 2023 assessment-monitoring event is tentatively scheduled for February 2023 and will consist of collecting groundwater samples from up-gradient well MW-1 and down-gradient wells MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. As mentioned previously, the amount of leachate produced from the IWC and APWC has been minimal since the landfill was capped, and the leachate being pumped from the IWC and APWC cells has been intermittent. If possible, leachate samples will also be collected from the APWC and IWC during the first quarter 2023 assessment-monitoring event.

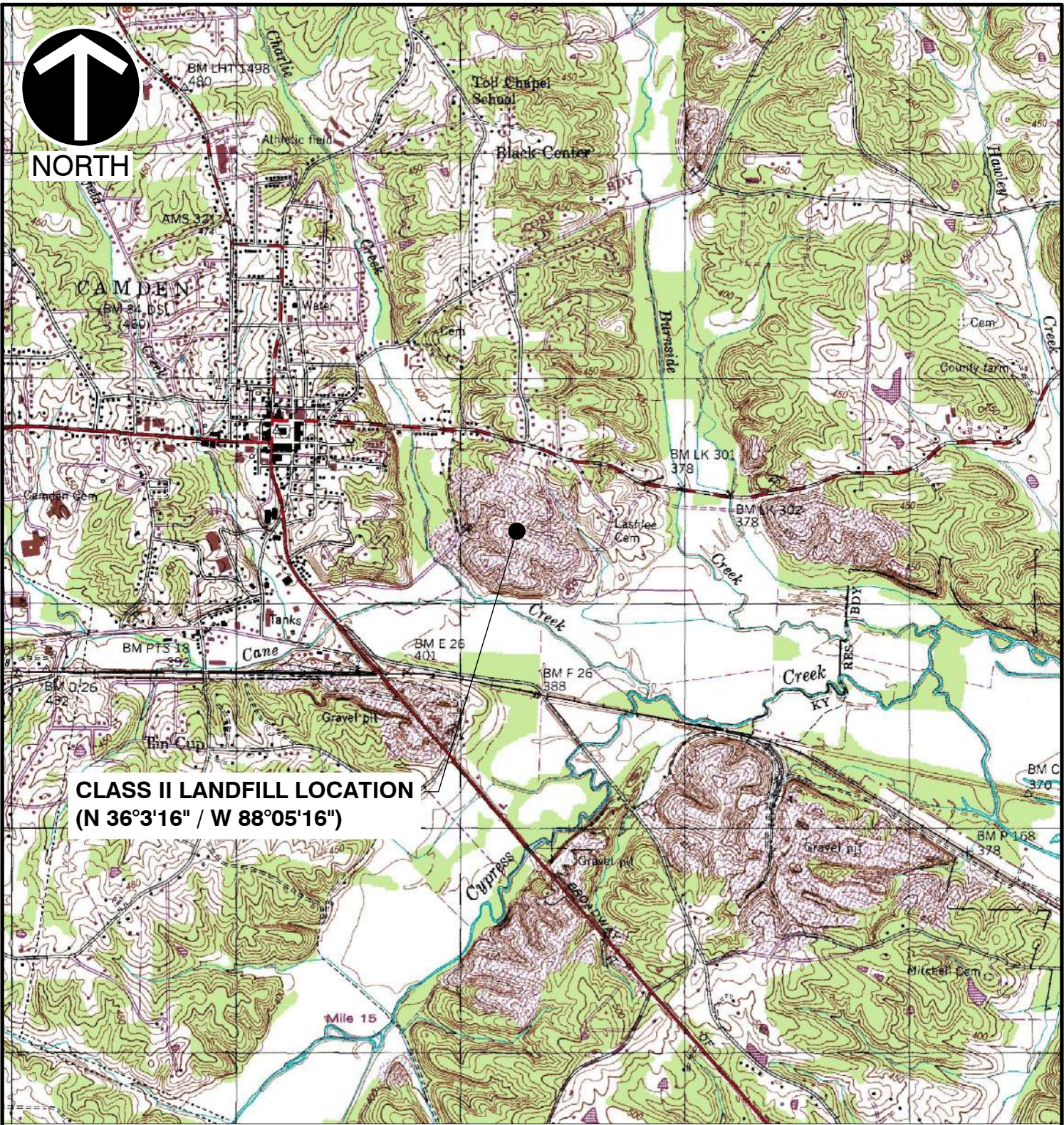
Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. An annual water use survey update for the former EWS Class II Landfill site was completed by CEC in November 2021, and no new wells or springs were identified within the required search radius for the site during the November 2021 update. The next water use survey update was performed in November 2022, and will be submitted as a separate report.

7.0 RECOMMENDATIONS

The following recommendations are presented in an effort to ensure the continuance of securing representative groundwater samples and to obtain analytical results with a high degree of accuracy and precision (i.e., repeatability).

1. It is recommended that all permanent monitoring wells on the site continue to be monitored quarterly. In addition, quarterly groundwater samples will continue to be collected from temporary monitoring wells down-gradient from MW-3. However, if the observed constituent of concern concentrations have no significant variation in the overall constituent mean, the assessment monitoring frequency may be re-evaluated. According to the DSWM guidance manual, “At minimum, eight consecutive quarters of groundwater monitoring data should be provided to demonstrate that there has been no significant variation in the overall mean value for any constituent at any sampling location.”
2. As mentioned in this report, the observed turbidity value at MW-3 during this monitoring event was above the recommended 10 NTUs, and the total metals concentrations reported at MW-3 during this sampling event do not provide representative data for statistical analysis. Therefore, the total metals concentrations reported at MW-3 during this November 2022 event were removed from the statistical database and replaced with the dissolved metals concentrations for this event. More representative samples (lower turbidity samples) should be collected at MW-3 during future monitoring events. It is recommended that the dissolved metals data reported during this November 2022 event remain in the dataset for statistical evaluations of total metals during future events.

APPENDIX A
MAPS & TABLES



CLASS II LANDFILL LOCATION
(N 36°3'16" / W 88°05'16")

REFERENCE

1. U.S.G.S. 7.5' TOPOGRAPHIC MAP, CAMDEN QUADRANGLE, TENN.
DATED: 1950, PHOTOREVISED: 1984.



* HAND SIGNATURE ON FILE



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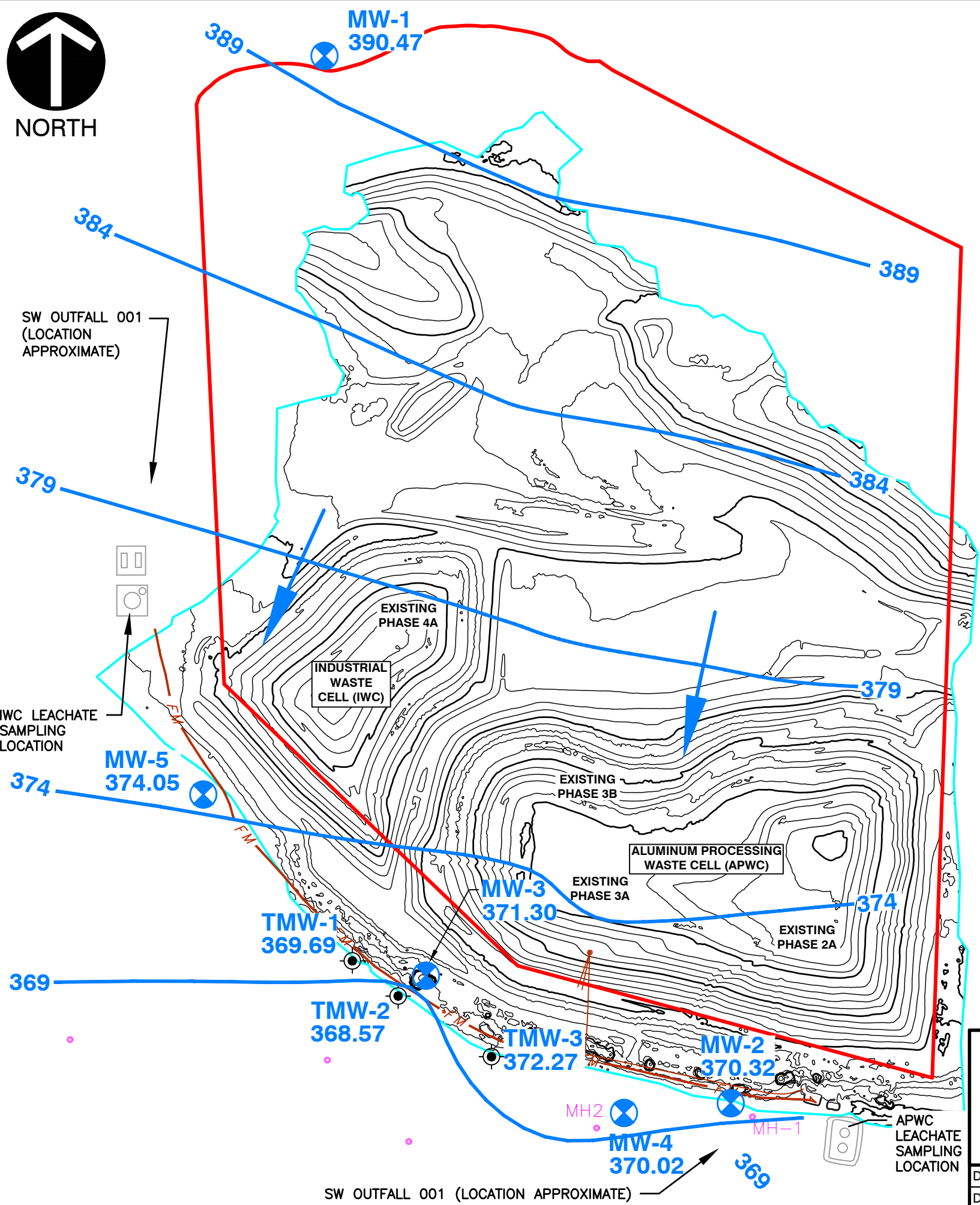
FORMER EWS SITE
 CLASS II CAMDEN LANDFILL
 CAMDEN, TENNESSEE

SITE LOCATION MAP 4Q2022

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	KBW*	FIGURE NO.:	1
DATE:	JAN 2023	DWG SCALE:	1"=2000'	PROJECT NO:	181-364		

P:\2018\181-364\CADD\DWG\181-364_FIGURE 1 - SITE LOCATION MAP.dwg[LAYOUT1] LS:(1/23/2023 - pcampbell) - LP: 1/23/2023 5:34 PM

P:\2018\181-364\CADD\DWG\181-364_GROUNDWATER MAP AUGUST 2022.DWG(FIG 2 (2))\S:\PCAMPBELL - 1/23/2023 - 5:32:12_PM



LEGEND

	MW1	GROUND WATER MONITORING WELL
	395.06	GROUND WATER ELEVATION (FMSL)
	TMW-1	TEMPORARY GROUND WATER MONITORING WELL
	374.79	GROUND WATER ELEVATION (FMSL)
	390	POTENTIOMETRIC SURFACE CONTOUR (FMSL)
		GROUND WATER FLOW DIRECTION
	MH1	MANHOLE
		APPROXIMATE FILL LIMITS
	FM	LEACHATE FORCE MAIN

NOTE:
 Hydraulic gradient calculation between MW-1 and MW-4 locations.

$$i = \frac{390.47' (MW-1) - 370.02' (MW-4)}{1,910'} = 0.0107 \text{ ft/ft}$$

GROUNDWATER CONDITIONS
 THE WATER LEVELS PRESENTED HEREIN ARE APPLICABLE TO THE LOCATION AND TIME OF MEASUREMENT. WATER LEVELS MAY FLUCTUATE THROUGH TIME.
 POTENTIOMETRIC CONTOURS GENERATED FROM THESE DATA ARE CONSTRUCTED BY INTERPOLATION BETWEEN POINTS OF KNOWN STATIC WATER LEVEL ELEVATIONS AND USING KNOWLEDGE OF SPECIFIC SITE CONDITIONS. ACTUAL STATIC WATER LEVELS AT LOCATIONS BETWEEN THE MONITORING POINTS MAY DIFFER FROM THOSE DEPICTED.



*HAND SIGNATURE ON FILE

 Civil & Environmental Consultants, Inc. 117 Seaboard Lane · Suite E-100 · Franklin, TN 37067 615-333-7797 · 800-763-2326 www.cecinc.com		FORMER ENVIRONMENTAL WASTE SOLUTIONS CAMDEN CLASS II LANDFILL CAMDEN, TENNESSEE	
		NOVEMBER 2022 POTENTIOMETRIC SURFACE MAP	
DRAWN BY: AAB DATE: JANUARY 2023	CHECKED BY: PJC DWG SCALE: 1"=200'	APPROVED BY: *KW PROJECT NO: 181-364.0005	FIGURE NO.: 2

Table 1
Former Environmental Waste Solutions Camden Class II Landfill
Field Parameters and Potentiometric Data - 4th Quarter 2022

Monitoring Well/ Sample Location	Date	Sample Time	Top of Casing Elevation ¹ (Feet MSL)	Bottom of Well Elevation (Feet)	Well Diameter (Feet)	Well Volume Gallons	Depth to Water (Feet) ²	Potentiometric Surface (Feet MSL)	Temp. (°C)	Conductivity (µS/cm)	Specific Conductivity (µS/cm)	pH (SU)	Dissolved Oxygen (mg/l)	Oxidation Reduction Potential (mV)	Turbidity (NTU)
MW-1 (up-gradient)**	11/7/2022	11:35	416.47	385.97	0.17	0.8	26.00	390.47	17.1	78.3	92.1	5.14	1.75	74.8	23.60
MW-2*	11/7/2022	9:15	380.35	367.70	0.17	0.4	10.03	370.32	19.8	183.1	203.3	5.98	5.52	282.6	NS
MW-3**	11/7/2022	14:30	392.90	365.10	0.17	1.1	21.60	371.30	19.0	214.9	239.0	5.34	0.76	261.7	18.6
MW-4	11/7/2022	13:35	381.47	358.37	0.17	2.0	11.45	370.02	17.5	74.3	88.4	5.73	4.22	294.9	3.29
MW-5**	11/7/2022	12:35	385.25	351.40	0.17	3.8	11.20	374.05	17.4	258.2	302.2	5.06	0.90	214.4	17.40
TMW-1	11/7/2022	13:04	381.19	348.99	0.085	0.9	11.50	369.69	16.8	168.0	199.3	5.49	2.19	269.9	8.38
TMW-2	11/7/2022	12:12	384.27	356.77	0.085	0.5	15.70	368.57	17.3	153.4	179.8	5.48	2.05	267.6	9.1
TMW-3	11/7/2022	10:50	381.37	353.37	0.085	0.8	9.10	372.27	17.2	254.6	299.3	5.22	4.54	216.7	7.11
Leachate (IWC-L)	11/7/2022	15:25	NA	NA	NA	NA	NA	NA	19.0	169,726	191,702	3.16	4.52	303.1	12.70
***Leachate (APWC-L)	NS	NS	NA	NA	NA	NA	NA	NA	NS	NS	NS	NS	NS	NS	NS

¹ Top of Casing Elevations from survey by Civil & Environmental Consultants, Inc. on May 12, 2016.

² Depth to water measurements collected by Civil & Environmental Consultants, Inc. on November 7, 2022.

*MW-2 has been removed from monitoring network. Only water level and field parameters collected at MW-2.

**Elevated turbidity observed at MW-5, MW-3, and MW-1 during purging on 11/7/22. Therefore, MW-5, MW-3, and MW-1 were collected for dissolved metals analysis on 11/7/22.

***APWC-L was not producing leachate and was not sampled during this event.

NS= Not Sampled

NA= Not Applicable.

Table 2
Former EWS Camden Class II Landfill IDL 03-0212 (Terminated)
Groundwater and Leachate Analytical Data - 4th Quarter 2022

Parameter	MCL/GWPS (mg/l)	(upgradient) MW-1		MW-3	Duplicate (MW-3)	MW-4		MW-5		TMW-1		TMW-2		TMW-3		IWC-Leachate*	APWC-Leachate**	Field Blank				
		11/7/2022				11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022			11/7/2022	11/7/2022	11/7/2022	11/7/2022	11/7/2022
		Value (mg/l)	Qualifier																			
Hardness	-	23.5		69.8	70.6	30.8		83.8		71.2		61.7		89.5		41,600		NS**		<2.50	J	
Alkalinity	-	21.8		<20.0	<20.0	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		NS**		<20.0		
Ammonia Nitrogen	-	<0.250		<0.250	<0.250	<0.250		<0.250		<0.250		<0.250		<0.250		1,750		NS**		<0.250		
COD	-	<20.0		48.7	<20.0	<20.0		<20.0		<20.0		<20.0		<20.0		27,200		NS**		<20.0		
Boron	-	<0.200		<0.200	<0.200	<0.200		<0.200		<0.200		<0.200		<0.200		<2.00		NS**		<0.200		
Boron, Dissolved	-	NS		<0.200	<0.200	NS		<0.200		NS		NS		NS		<1.00		NS**		NS		
Bromide	-	<1.00		<1.00	<1.00	<1.00		<1.00		<1.00		<1.00		<1.00		<100		NS**		<1.00		
Chloride	250 ²	5.98		26.2	26.0	11.4		63.5		42.6		39.6		61.2		92,400		NS**		<1.00		
Fluoride	2 ²	<0.150		<0.150	<0.150	<0.150		<0.150		<0.150		<0.150		<0.150		<15.0		NS**		<0.150		
Nitrate	10 ¹	<0.100		0.143	0.124	0.987		0.759		1.46		0.76		6.00		77.2		NS**		<0.100		
Sulfate	250 ²	8.74		38.6	38.5	<5.00		12.4		<5.00		<5.00		<5.00		1,010		NS**		<5.00		
Aluminum	0.2 ²	<0.100		0.652	0.320	<0.100		<0.100		<0.100		<0.100		<0.100		343		NS**		<0.100		
Aluminum, Dissolved	0.2 ²	<0.100		<0.100	<0.100	NS		<0.100		NS		NS		NS		305		NS**		NS		
Arsenic	0.01	0.00807		<0.00200	<0.00200	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.40		NS**		<0.00200		
Arsenic, Dissolved	0.01	<0.0020		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		0.324		NS**		NS		
Barium	2	0.0247		0.0972	0.0782	0.0102		0.0517		0.0159		0.0324		0.0498		2.88		NS**		<0.0020		
Barium, Dissolved	2	0.0224		0.0644	0.0652	NS		0.0473		NS		NS		NS		2.630		NS**		NS		
Total Cadmium	0.005	<0.00100		0.00686	0.00549	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		9.96		NS**		<0.00100		
Cadmium, Dissolved	0.005	<0.0010		0.00559	0.00575	NS		<0.0010		NS		NS		NS		10.8		NS**		NS		
Calcium	-	4.40		17.3	17.7	6.53		15.8		19.2		15.4		23.3		14,800		NS**		<1.00		
Calcium, Dissolved	-	4.01		15.6	15.3	NS		14.3		NS		NS		NS		14,100		NS**		NS		
Chromium	0.1	<0.00200		0.0120	0.00645	<0.0020		0.00285		<0.00200		<0.0020		<0.00200		<0.00200		NS**		<0.00200		
Chromium, Dissolved	0.1	<0.0020		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		<0.00200		NS**		NS		
Cobalt	0.006 ³	0.013		<0.00200	<0.00200	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.445		NS**		<0.00200		
Cobalt, Dissolved	0.006 ³	0.0113		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		0.404		NS**		NS		
Copper	1.3	<0.00500		0.00752	<0.00500	<0.00500		0.0125		<0.00500		<0.00500		<0.00500		0.905		NS**		<0.00500		
Copper, Dissolved	1.3	<0.00500		<0.00500	<0.00500	NS		0.0122		NS		NS		NS		0.966		NS**		NS		
Iron	0.3 ²	16.8		0.645	0.405	0.684		<0.100		0.122		<0.100		<0.100		463		NS**		<0.100		
Iron, Dissolved	0.3 ²	0.717		<0.100	<0.100	NS		<0.100		NS		NS		NS		393		NS**		NS		
Lead	0.015	<0.00200		0.00561	0.0021	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.977		NS**		<0.00200		
Lead, Dissolved	0.015	<0.0020		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		0.875		NS**		NS		
Magnesium	-	3.03		6.48	6.41	3.53		10.80		5.61		5.66		7.61		1,140		NS**		<1.00		
Magnesium, Dissolved	-	2.73		5.68	5.67	NS		9.54		NS		NS		NS		1,100		NS**		NS		
Manganese	0.05 ²	0.445		0.207	0.171	0.0237		0.244		0.00662		<0.0050		0.00927		27		NS**		<0.00500		
Manganese, Dissolved	0.05 ²	0.408		0.140	0.142	NS		0.209		NS		NS		NS		30		NS**		NS		
Nickel	0.10 ¹	0.0084		0.00679	0.00402	<0.00200		0.00613		<0.00200		<0.00200		<0.00200		0.584		NS**		<0.00200		
Nickel, Dissolved	0.10 ¹	0.00739		0.00422	0.00428	NS		0.00508		NS		NS		NS		0.503		NS**		NS		
Potassium	-	<2.00		6.43	6.24	<2.00		<2.00		<2.00		<2.00		2.07		15,600		NS**		<2.00		
Potassium, Dissolved	-	<2.00		5.85	5.84	NS		<2.00		NS		NS		NS		14,200		NS**		NS		
Selenium	0.05	<0.00200		<0.00200	<0.00200	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		0.361		NS**		<0.00200		
Selenium, Dissolved	0.05	<0.0020		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		0.35		NS**		NS		
Sodium	-	4.66		11.2	11.3	4.01		20.6		4.93		5.89		15.2		25,400		NS**		<2.00		
Sodium, Dissolved	-	4.16		10.8	10.7	NS		18.5		NS		NS		NS		23,200		NS**		NS		
Thallium	0.002	<0.00200		<0.00200	<0.00200	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NS**		<0.00200		
Thallium, Dissolved	0.002	<0.0020		<0.00200	<0.00200	NS		<0.0020		NS		NS		NS		<0.00200		NS**		NS		
Vanadium	-	<0.00500		<0.0050	<0.0050	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		NS**		<0.00500		
Vanadium, Dissolved	-	<0.0050		<0.00500	<0.00500	NS		<0.0050		NS		NS		NS		<0.00500		NS**		NS		
Zinc	5 ²	0.0287		0.159	0.0585	<0.0250		0.0502		<0.0250		<0.0250		<0.0250		101		NS**		<0.0250		
Zinc, Dissolved	5 ²	<0.0250		0.0712	0.0785	NS		0.0341		NS		NS		NS		110		NS**		NS		
Acetone	-	<0.0500		<0.0500	<0.0500	<0.0500		<0.0500		<0.0500		<0.0500		<0.0500		2.75		NS**		<0.0500		
Carbon Disulfide	-	<0.00100		<0.00100	<0.00100	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		0.0491		NS**		<0.00100		
2-Butanone (MEK)	-	<0.0100		<0.0100	<0.0100	<0.0100		<0.0100		<0.0100		<0.0100		<0.0100		0.368		NS**		<0.0100		

Notes:

MCL: Maximum Contaminant Level Enforceable National Primary Drinking Water Standards

GWPS: Groundwater Protection Standard

¹ - MCL value obtained from TN Division of Water Supply rule 1200-5-.06(1)(b)11

² - MCL value obtained from TN Division of Water Supply rule 1200-5-1-.12(1)(n). (EPA Secondary Drinking Water Standard)

³ - GWPS value is referenced from EPA Regional Screening Level for Cobalt

--Not Sampled for analysis.

NS** - Not Sampled for analysis. APWC Leachate levels were minimal during the groundwater sampling event and no APWC Leachate sample was collected for analysis.

Bold text indicates laboratory analytical detections above the practical quantitation level

Dark gray shaded text indicates detection above respective MCL/GWPS

Light gray shaded text indicates detection above respective Non-Enforceable National Secondary Drinking Water Standard.

Qualifiers:

Table 3
Intra-Well and Inter-Well Statistical Summary
Environmental Waste Solutions Camden Class II Landfill IDL 03-0212 (Terminated)
Inorganic Analytical Data - 4th Quarter 2022

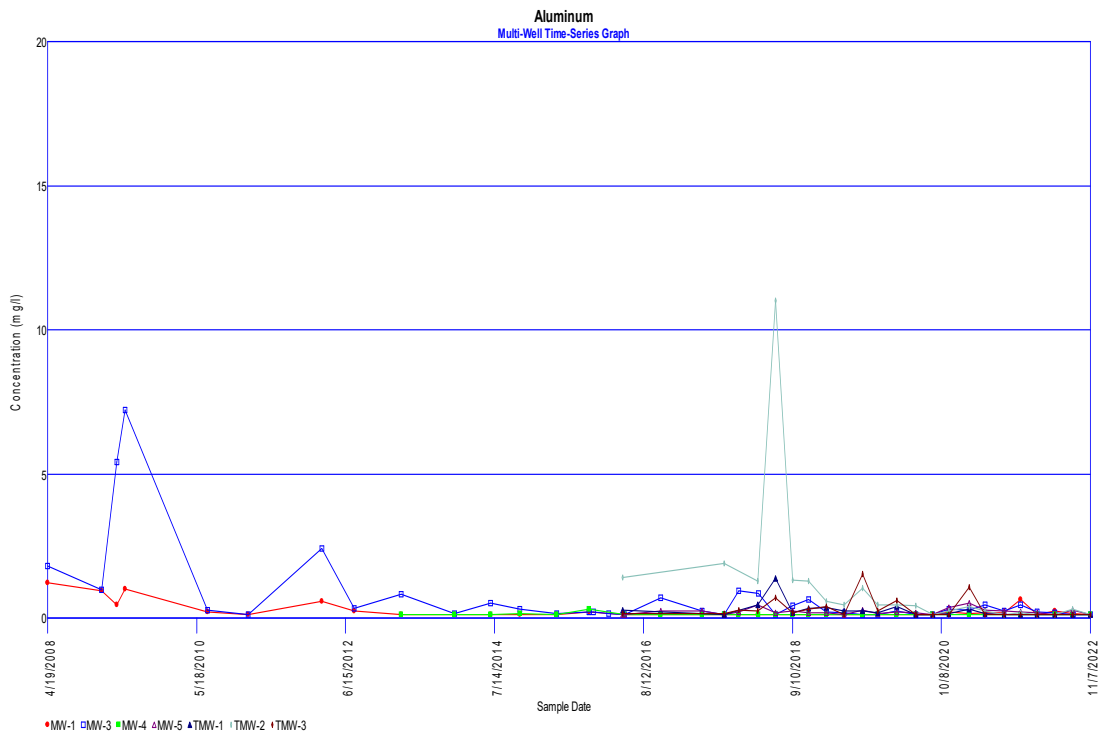
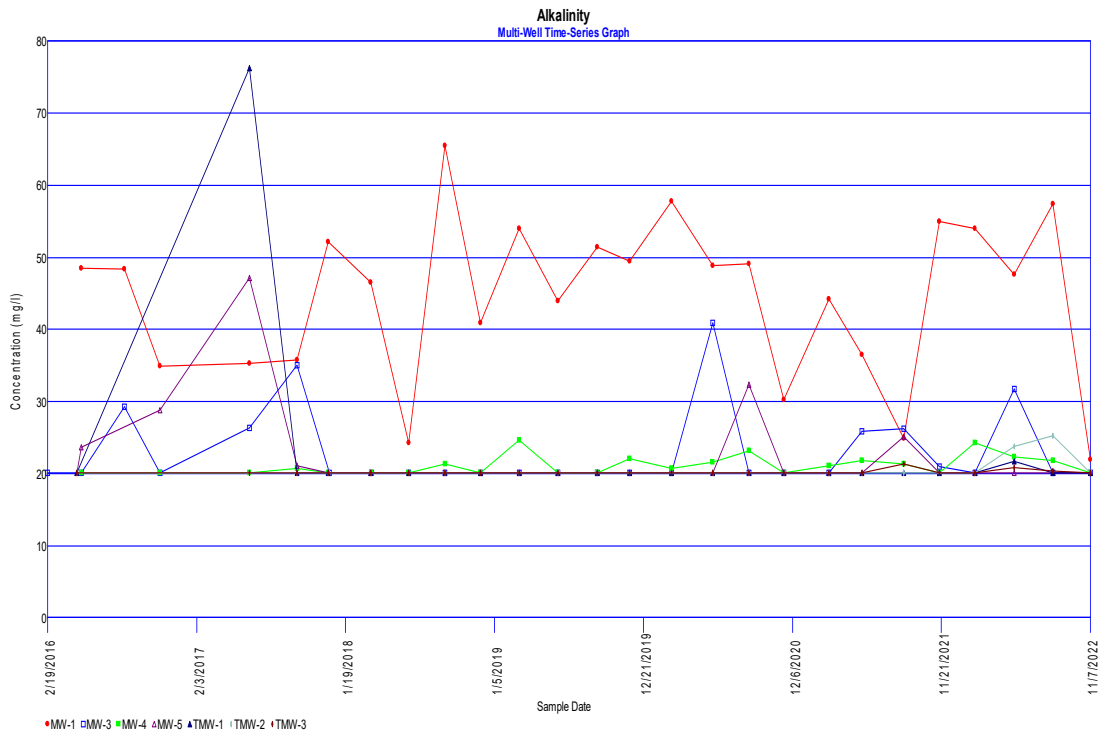
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis ¹
Arsenic	MW-1	0	non-parametric	Pass	--	No	No Trend
Barium	MW-1	7.69	non-parametric	Pass	--	No	Upward Trend
Chloride	MW-1	0.00	non-parametric	Fail	--	Yes	No Trend
Cobalt	MW-1	0.00	log-normal	--	Pass	No	Upward Trend
Nickel	MW-1	28.20	non-parametric	Pass	--	No	No Trend
Zinc	MW-1	71.79	non-parametric	Pass	--	No	No Trend
Sulfate	MW-1	56.75	non-parametric	Pass	--	No	No Trend

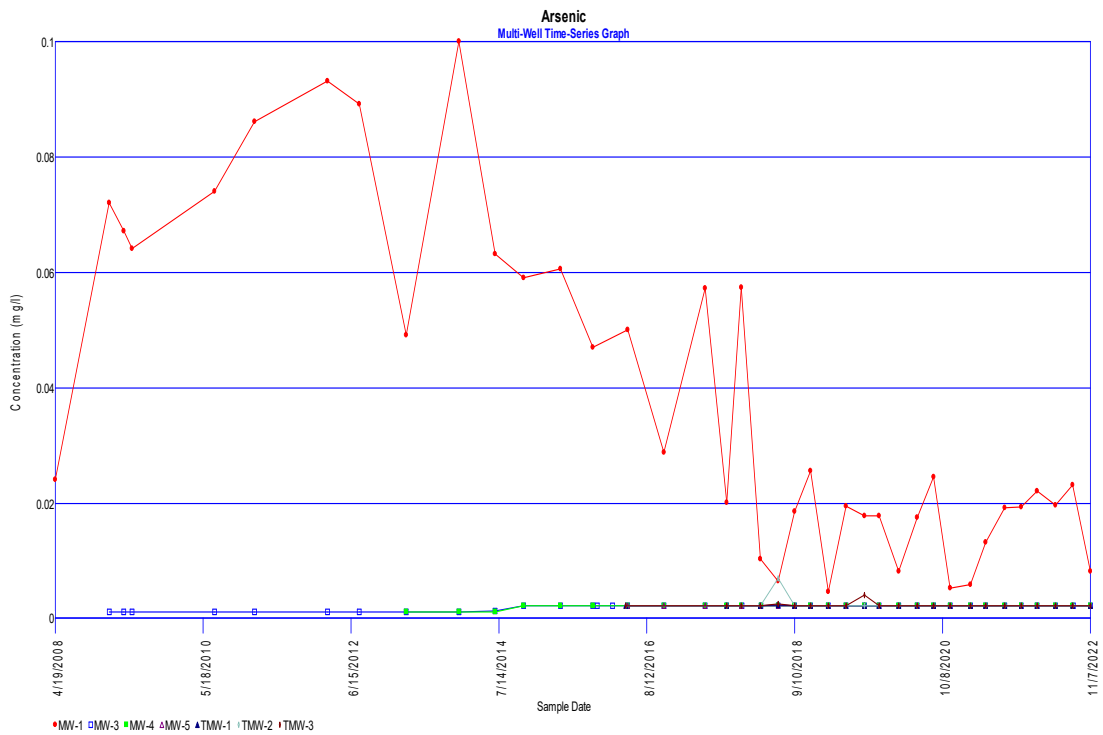
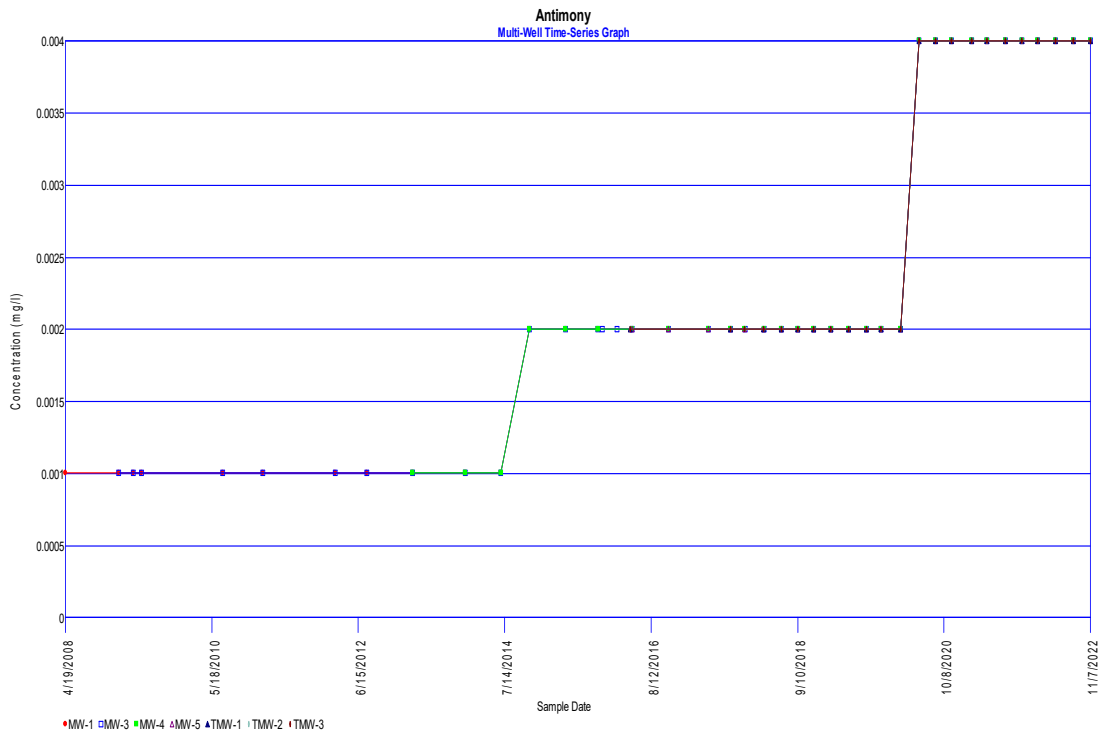
Inter-Well Statistical Summary (Downgradient Compliance Wells)							
Constituent	Well	% Non Detects in Background well MW-1	Normality (background MW-1)	Inter-well NPPL	Inter-well PPL	SSI	Mann-Kendall Trend Analysis ¹
Barium	MW-3*	7.69	non-parametric	Pass	--	No	Downward Trend
	MW-4		non-parametric	Pass	--	No	Upward Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend
	TMW-1		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	No Trend
	TMW-3		non-parametric	Pass	--	No	Upward Trend
Cadmium	MW-3*	100.00	non-parametric	Fail		Yes	Downward Trend
Chloride	MW-3	0.00	non-parametric	Fail	--	Yes	Downward Trend
	MW-4		non-parametric	Fail	--	Yes	Upward Trend
	MW-5		non-parametric	Fail	--	Yes	Upward Trend
	TMW-1		non-parametric	Fail	--	Yes	Upward Trend
	TMW-2		non-parametric	Fail	--	Yes	Upward Trend
	TMW-3		non-parametric	Fail	--	Yes	Upward Trend
Chromium	MW-5	92.30	non-parametric	Pass	--	No	Upward Trend
Copper	MW-5	84.61	non-parametric	Pass	--	No	Upward Trend
Nickel	MW-3*	28.20	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Zinc	MW-3*	71.79	non-parametric	Fail	--	Yes	Downward Trend
	MW-5		non-parametric	Fail	--	Yes	No Trend
Sulfate	MW-3	56.75	non-parametric	Fail	--	Yes	No Trend
	MW-5		non-parametric	Pass	--	No	Upward Trend

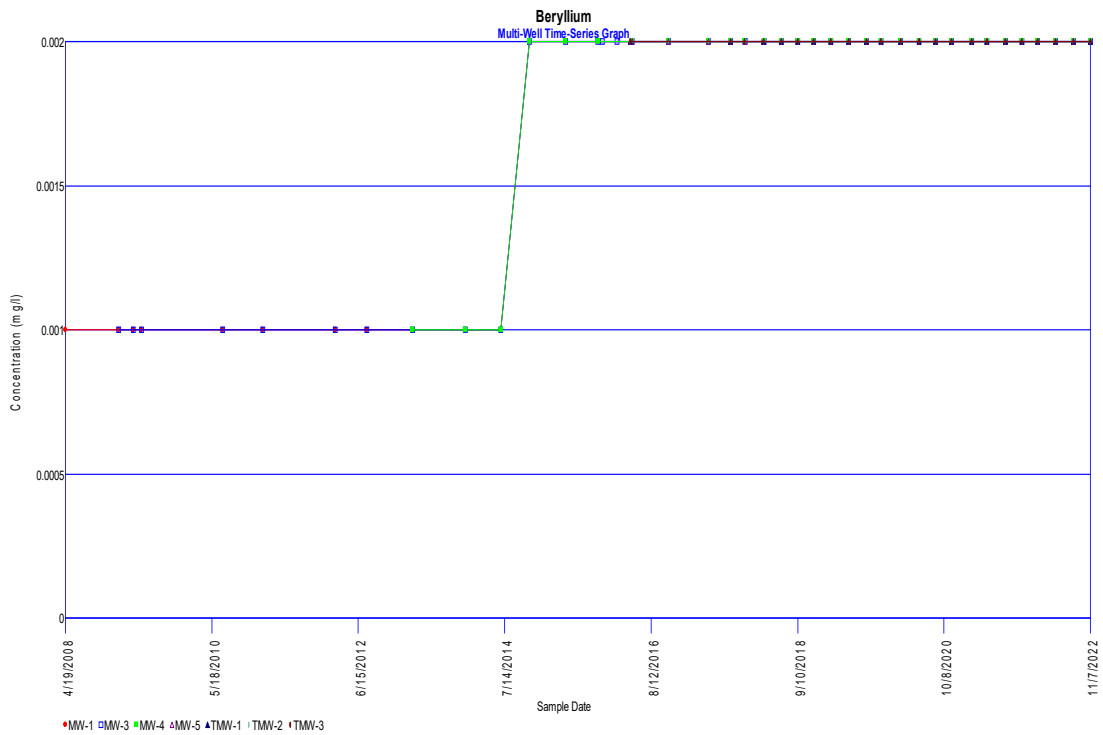
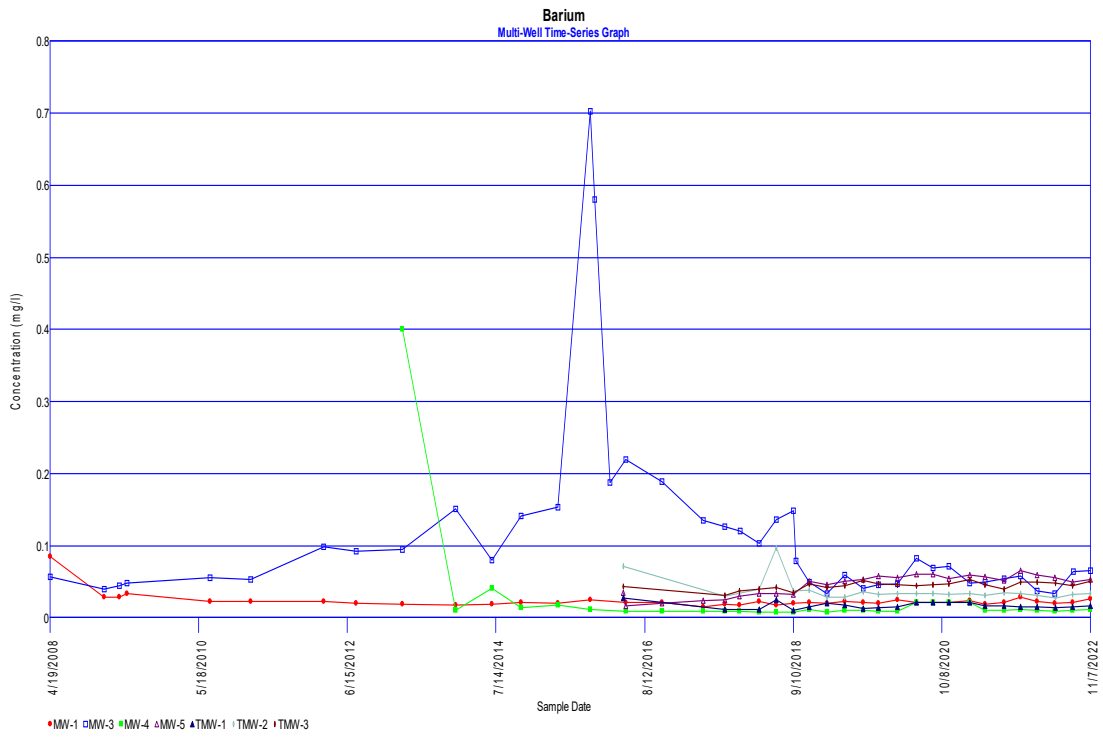
¹ Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.

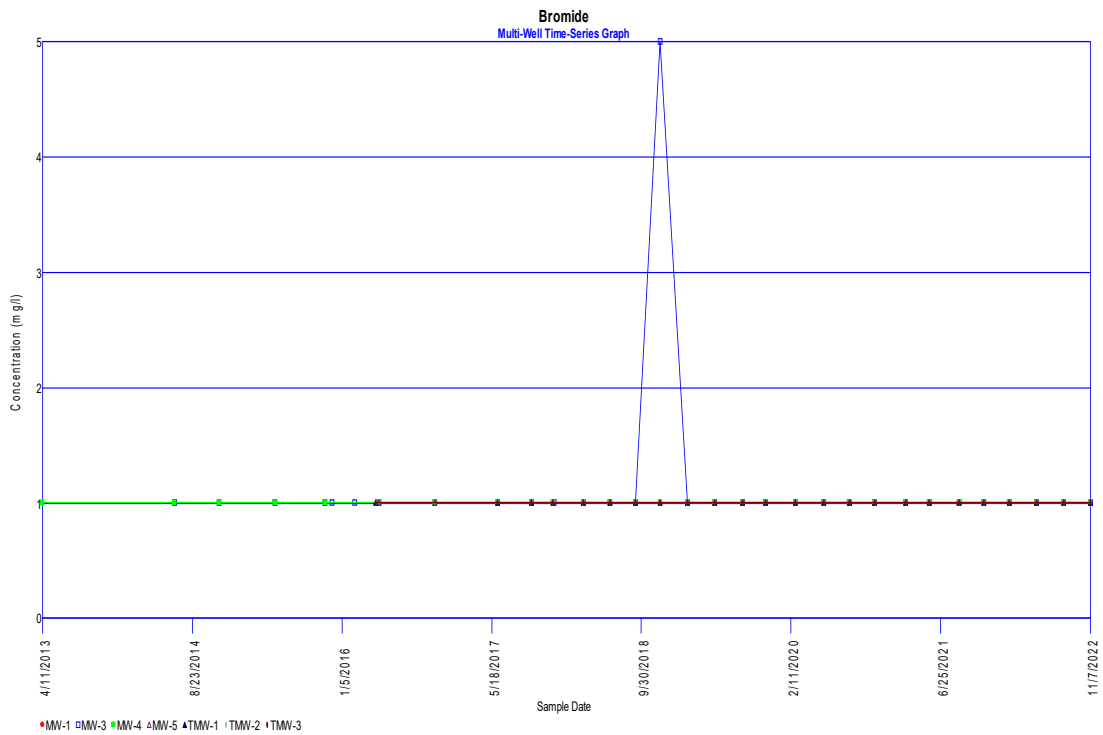
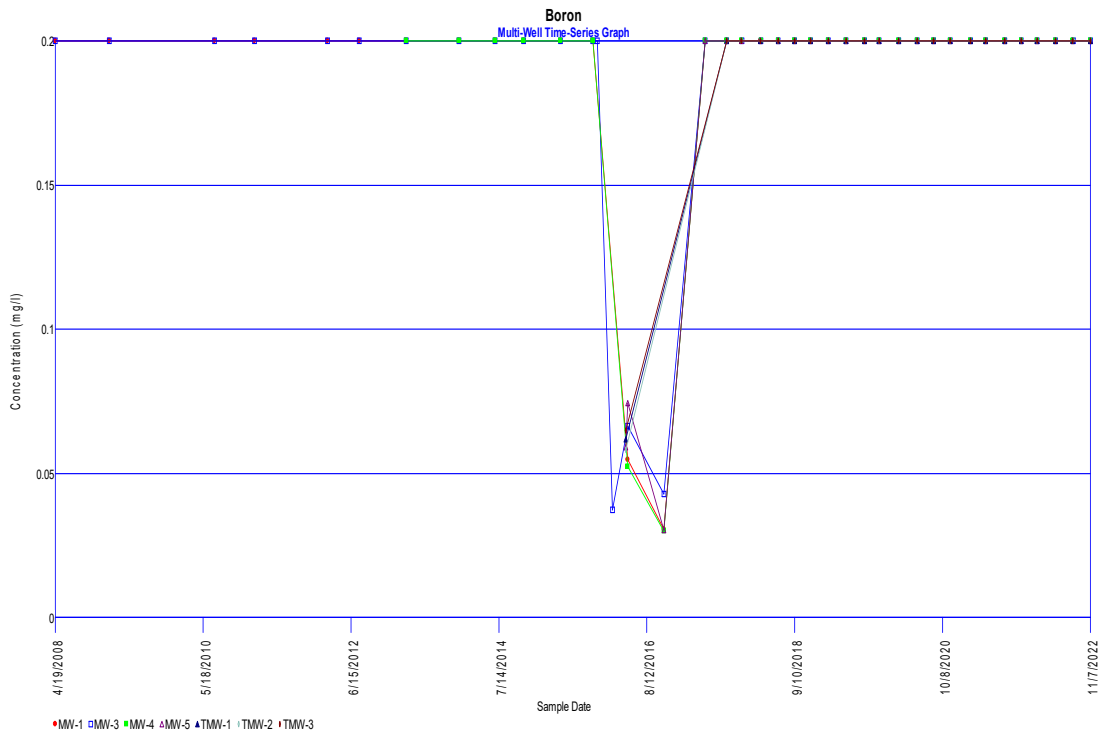
* Due to elevated turbidity at MW-3, the dissolved barium, cadmium, nickel, and zinc concentrations reported in MW-3 during the current November 2022 event were used for statistical analysis.

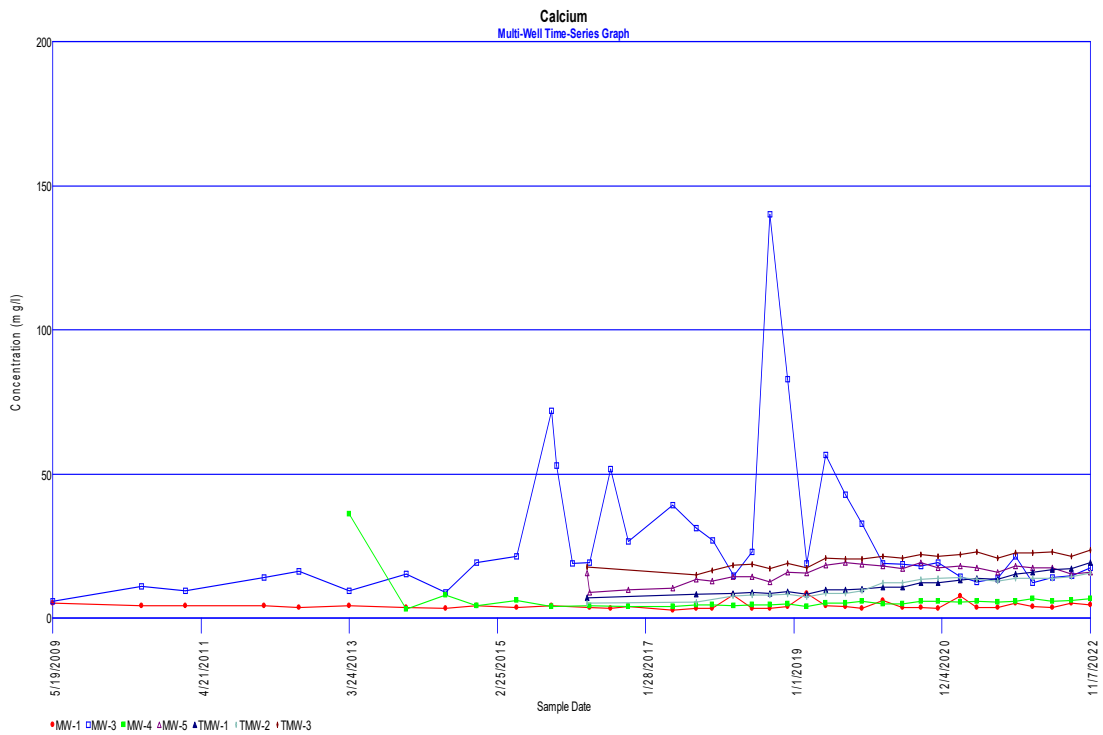
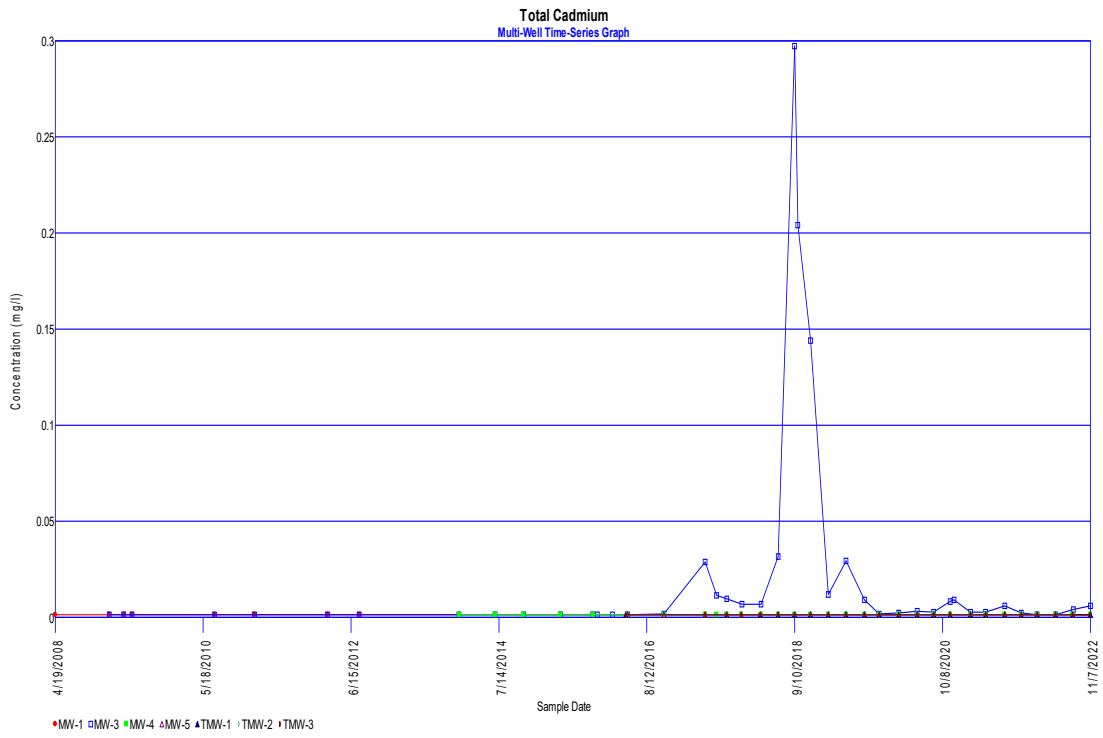
APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

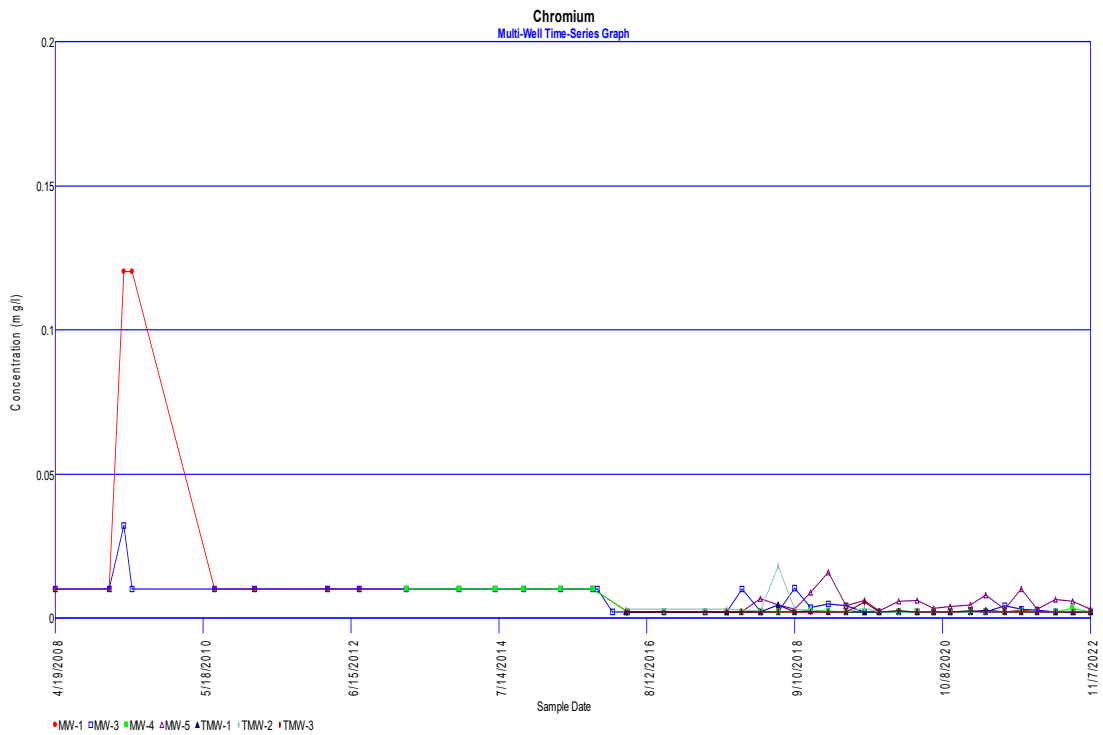
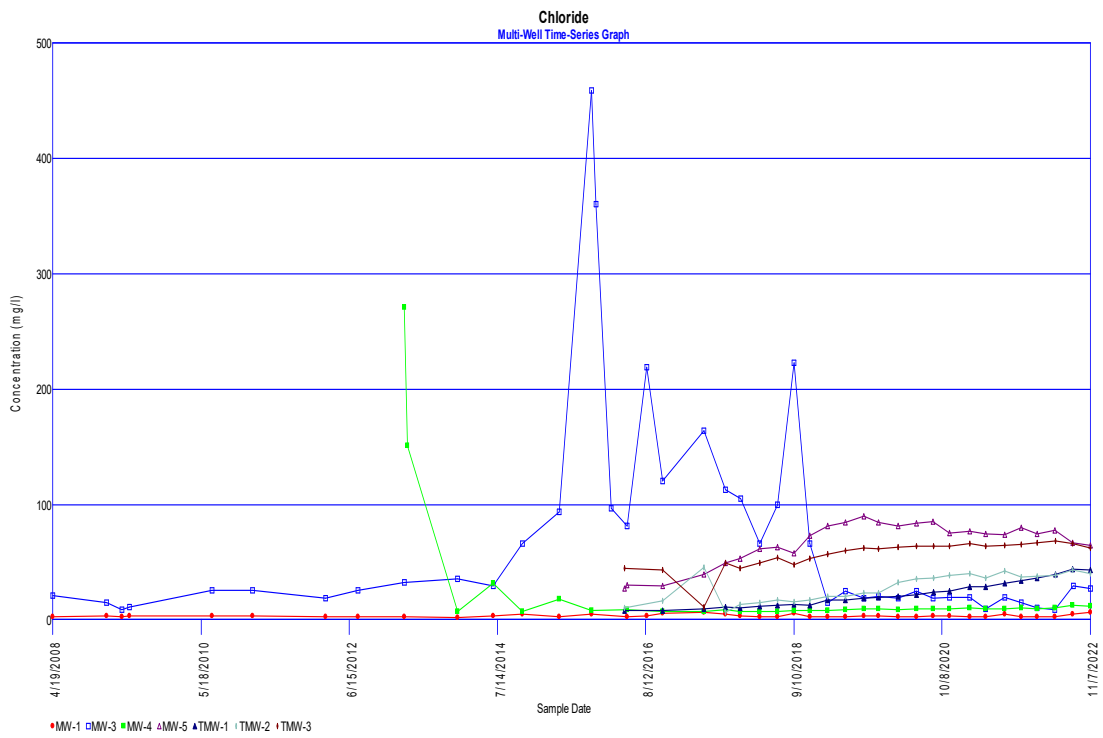


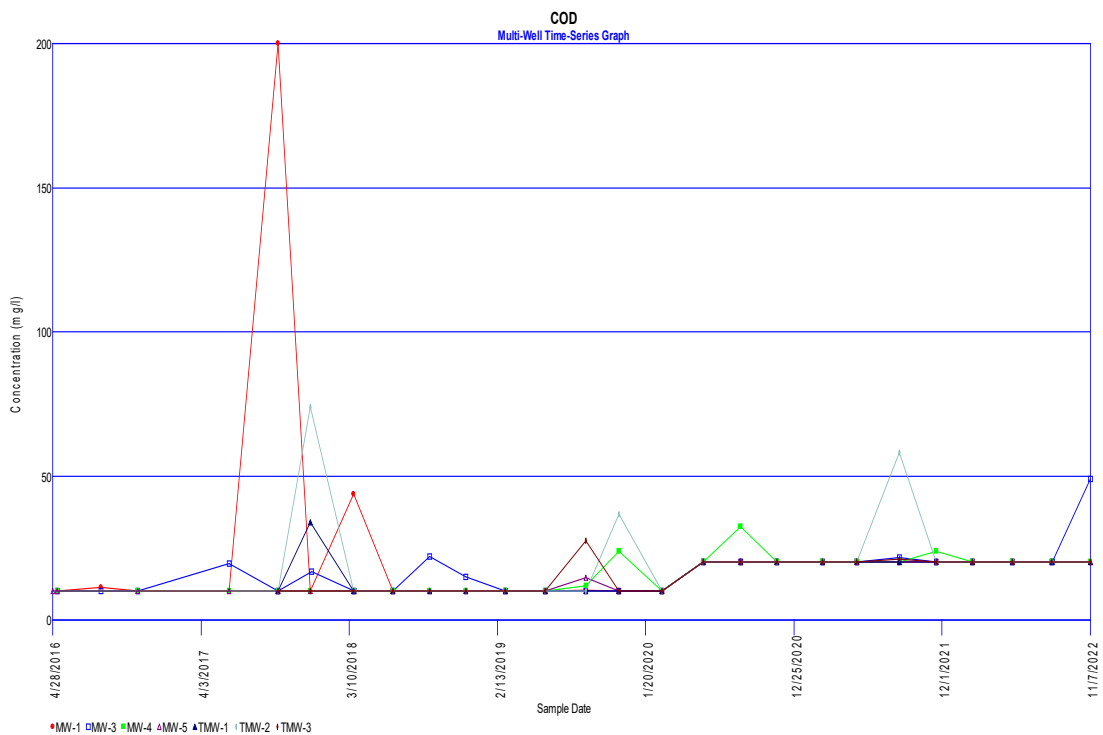
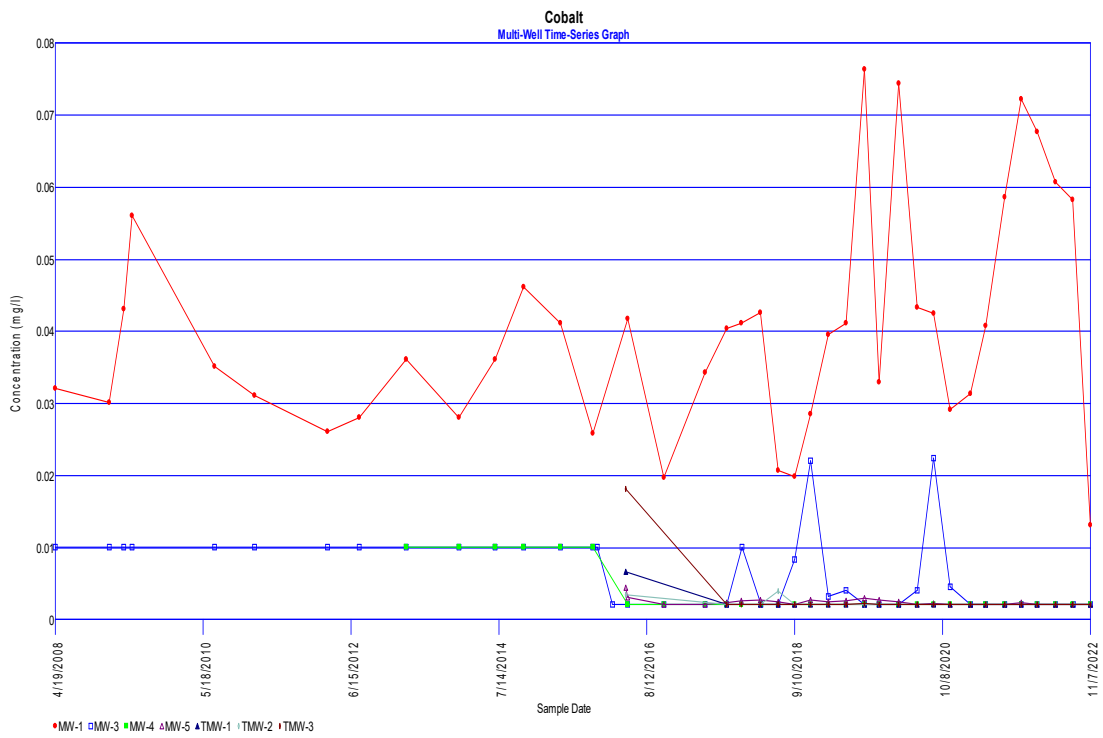


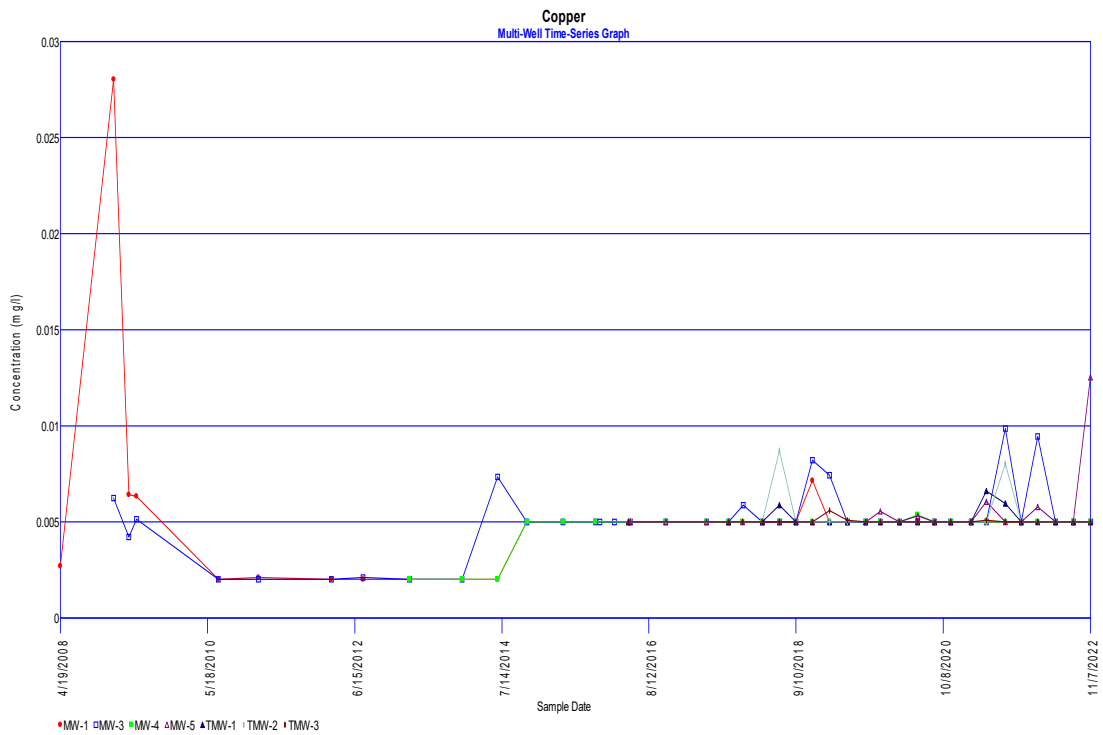
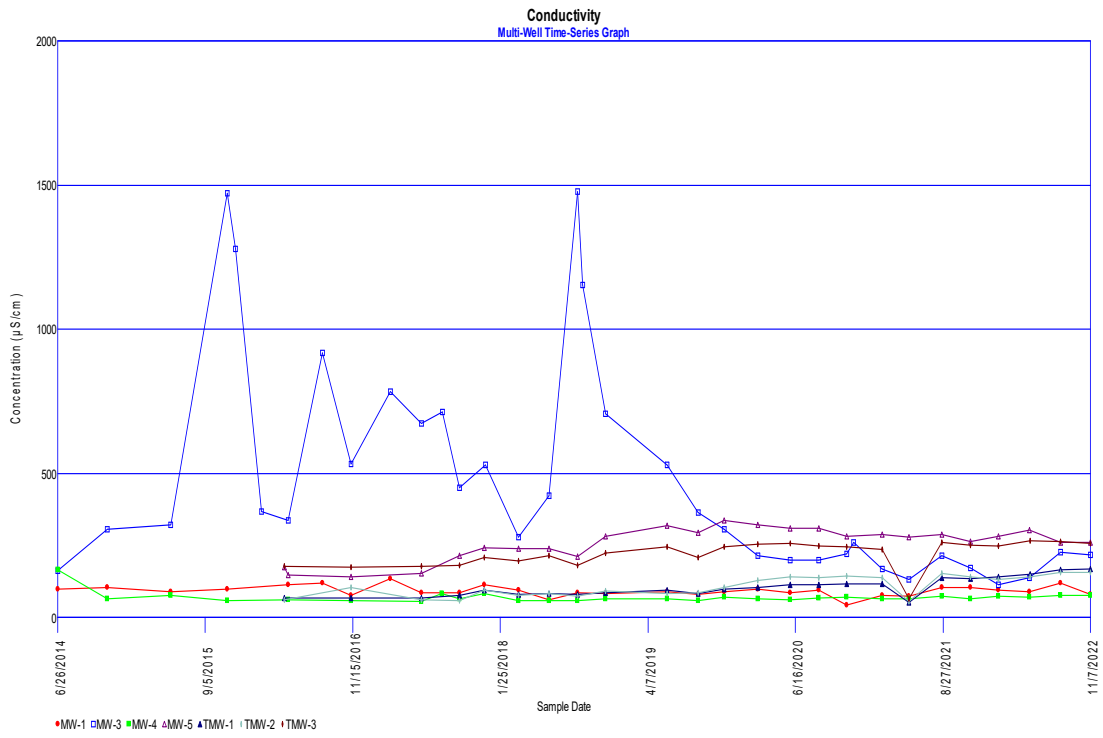


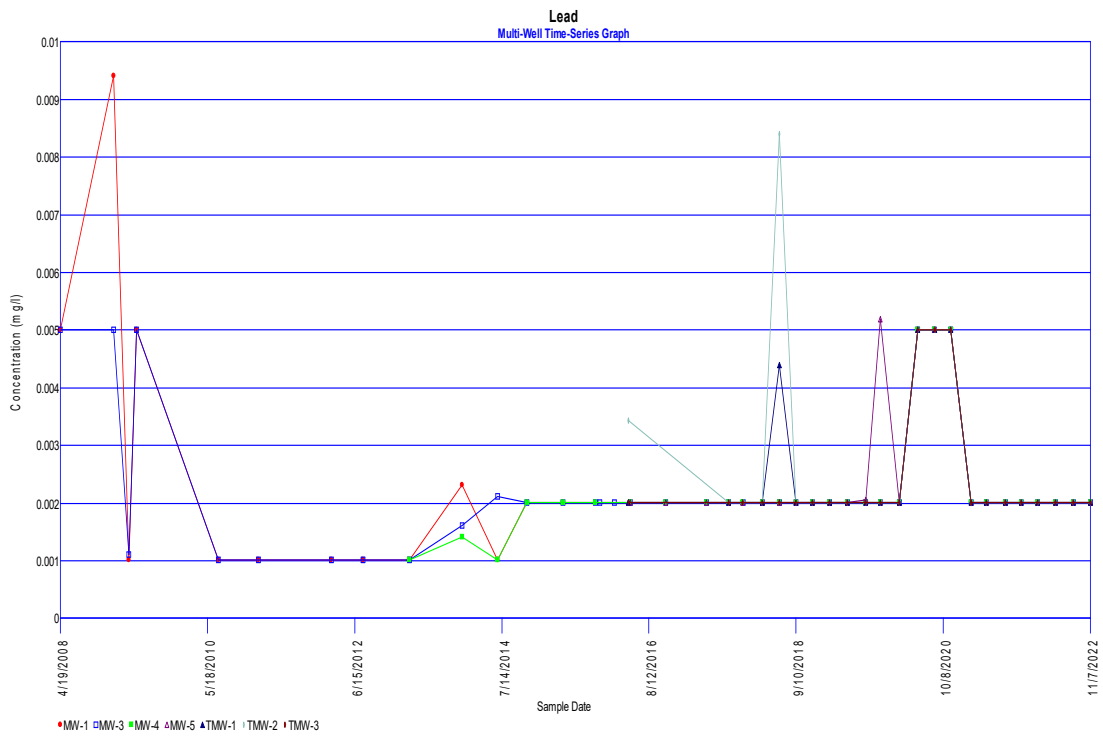
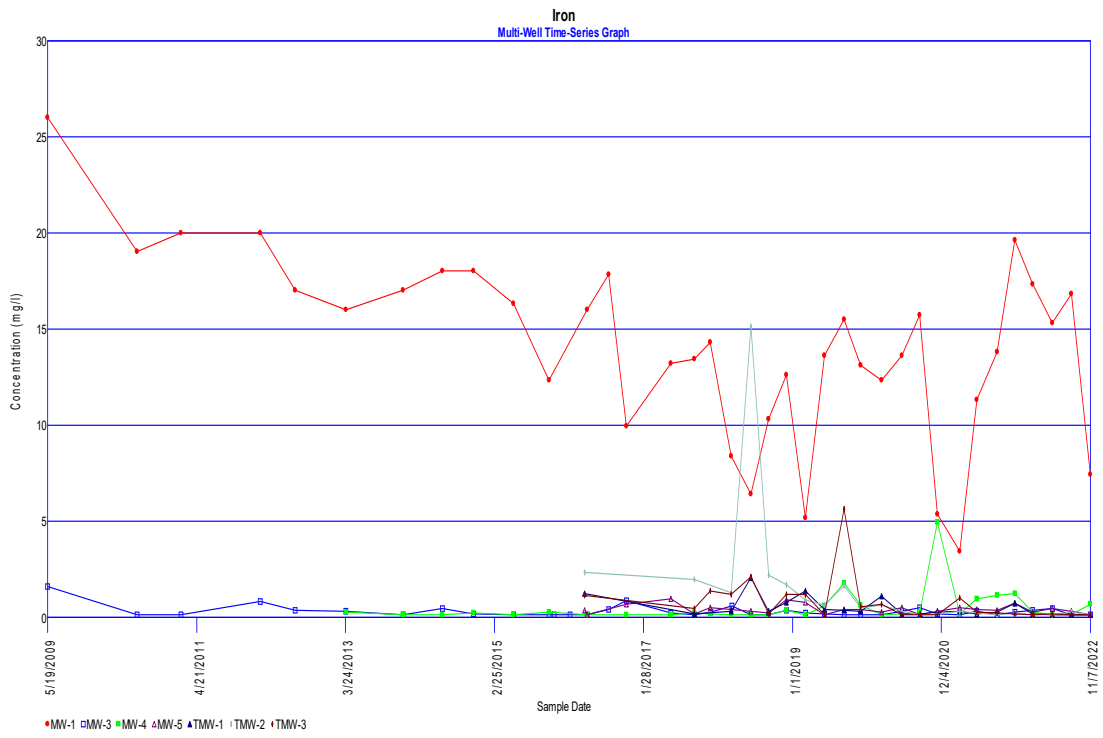


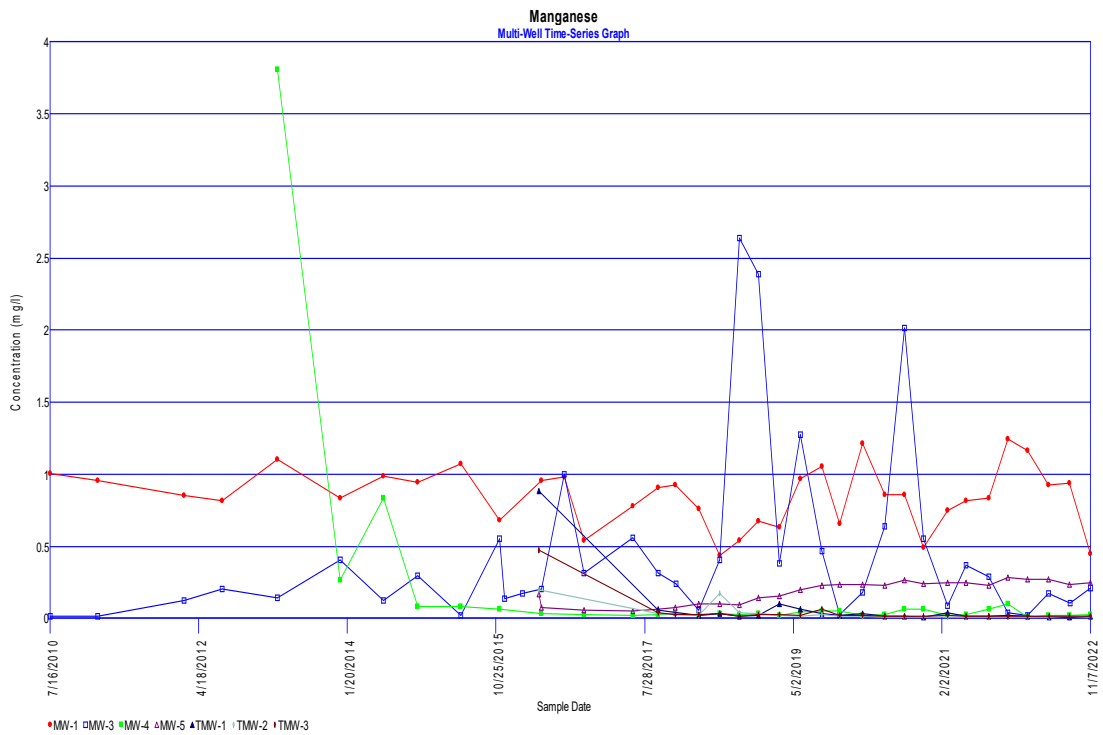
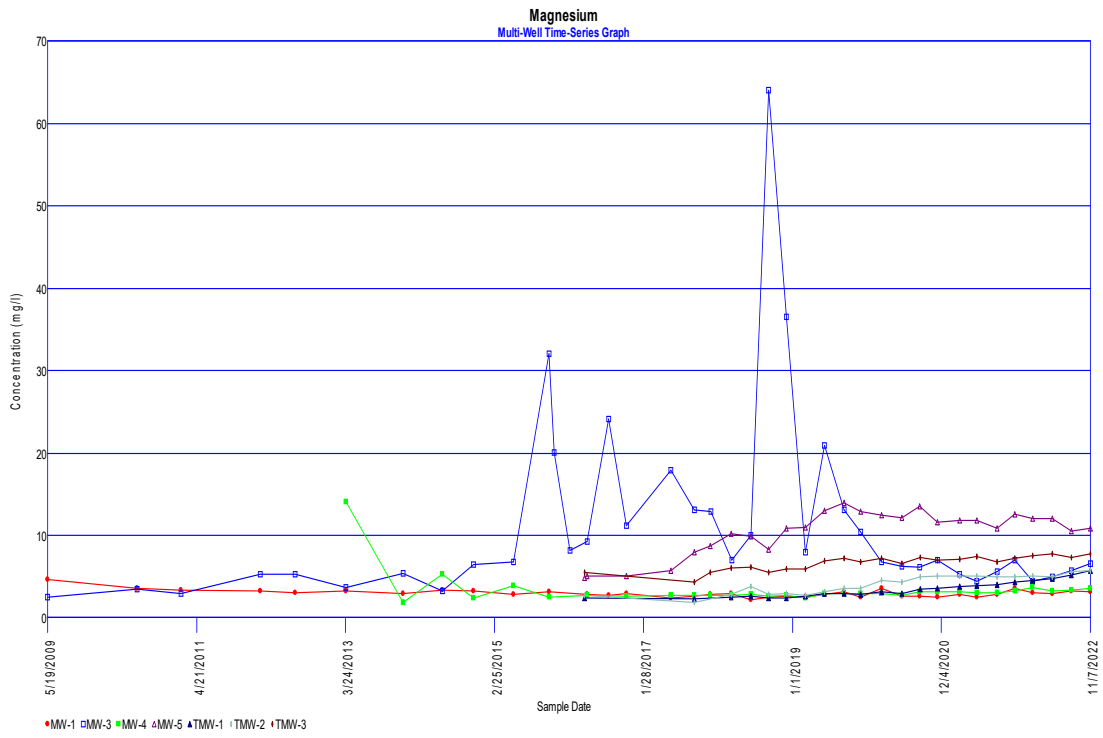


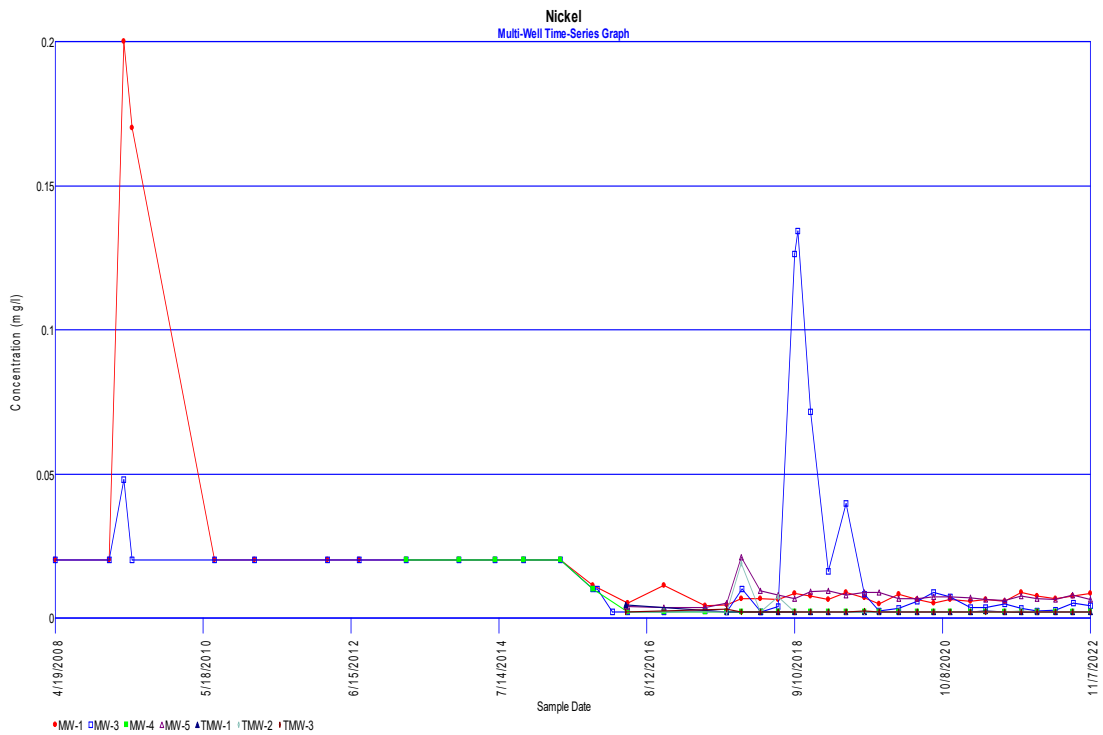
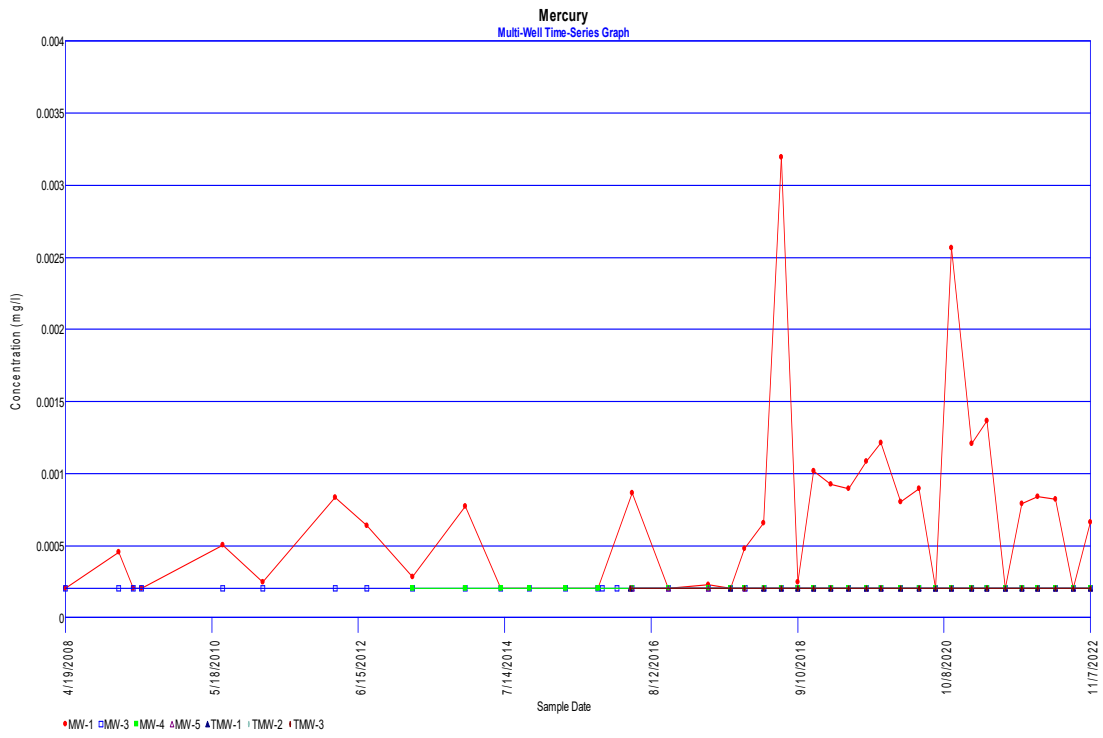


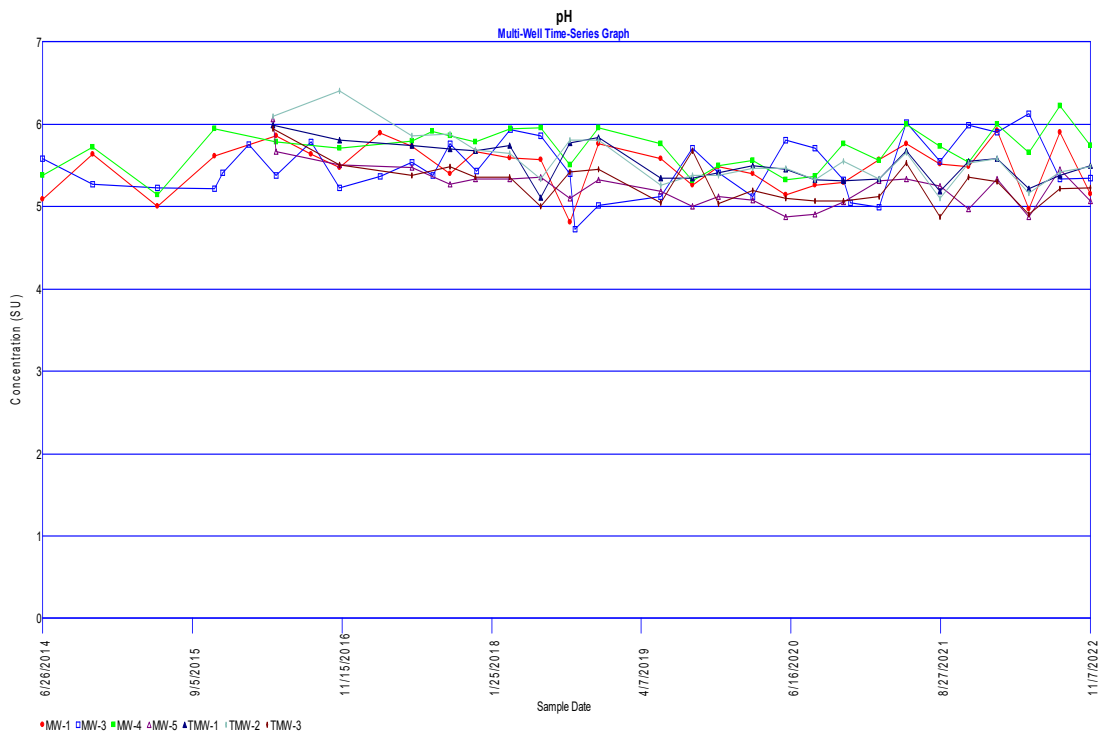
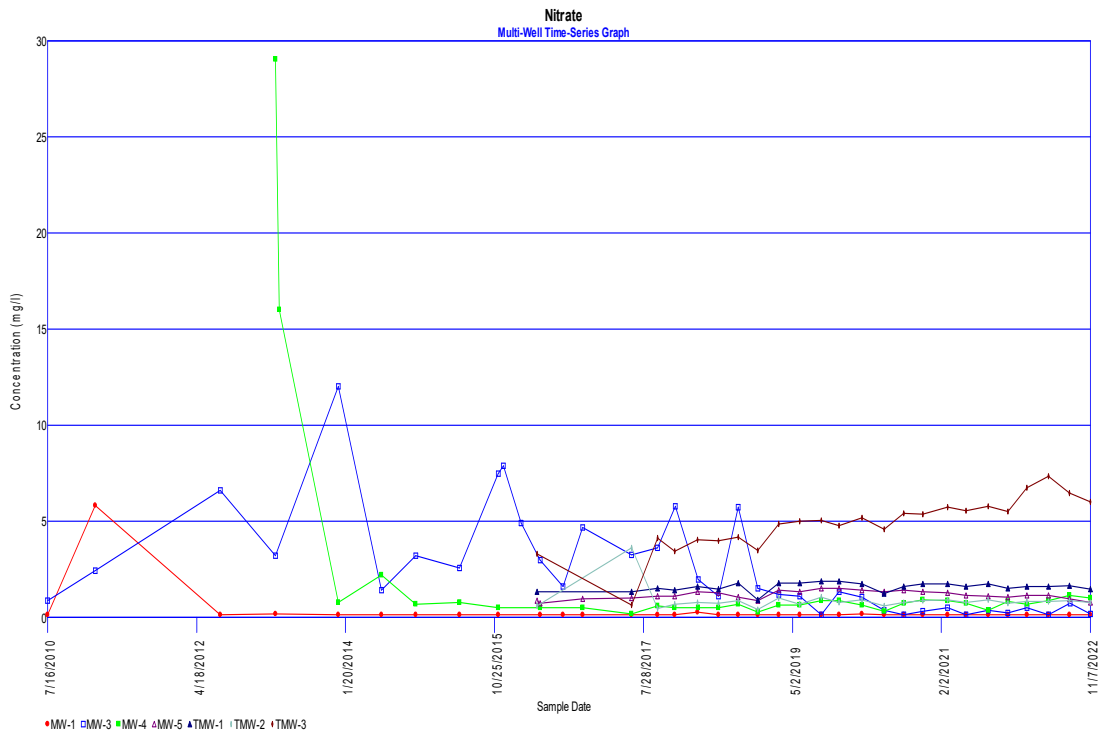


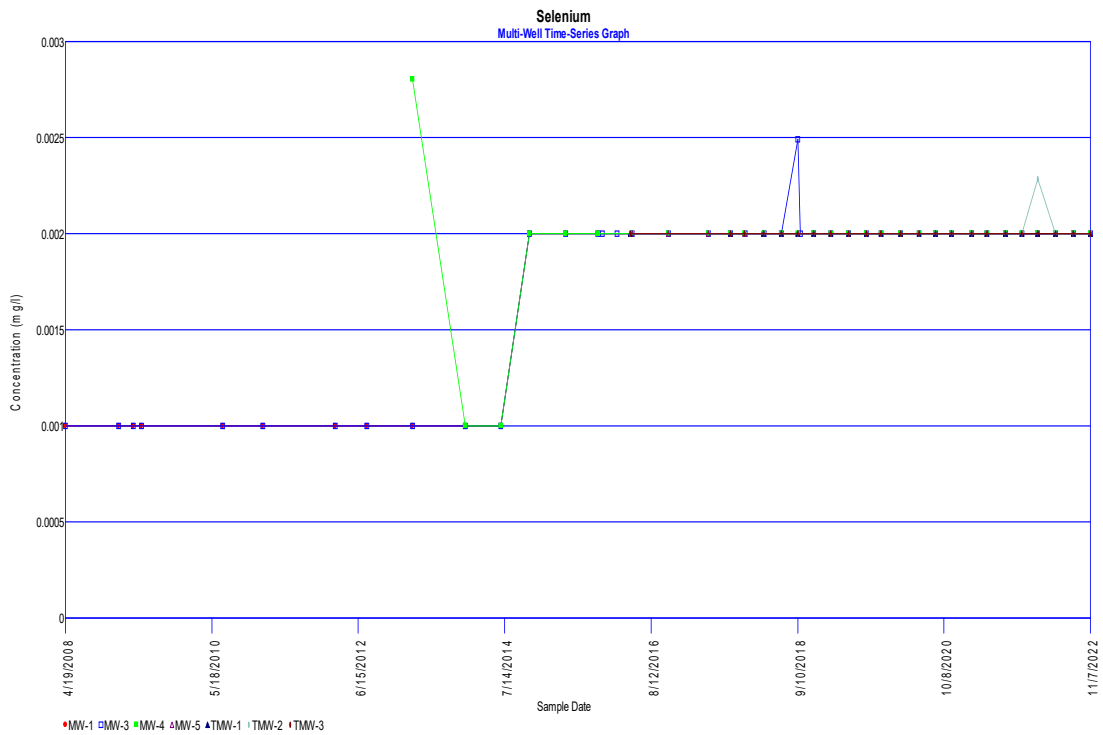
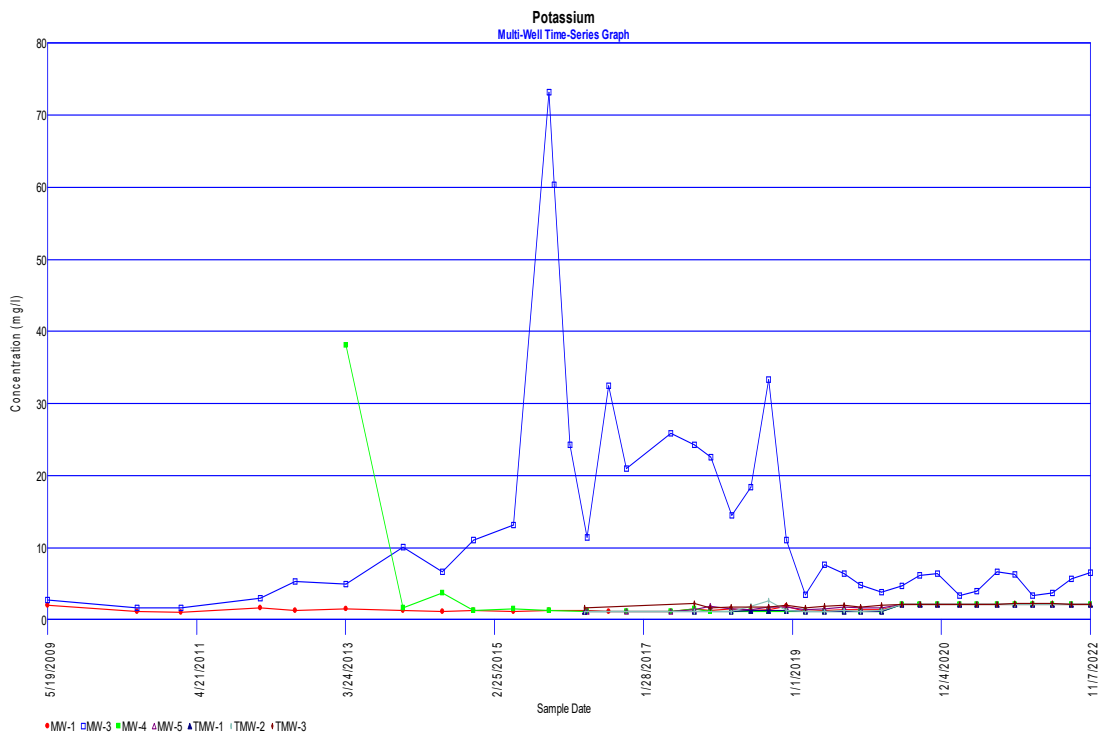


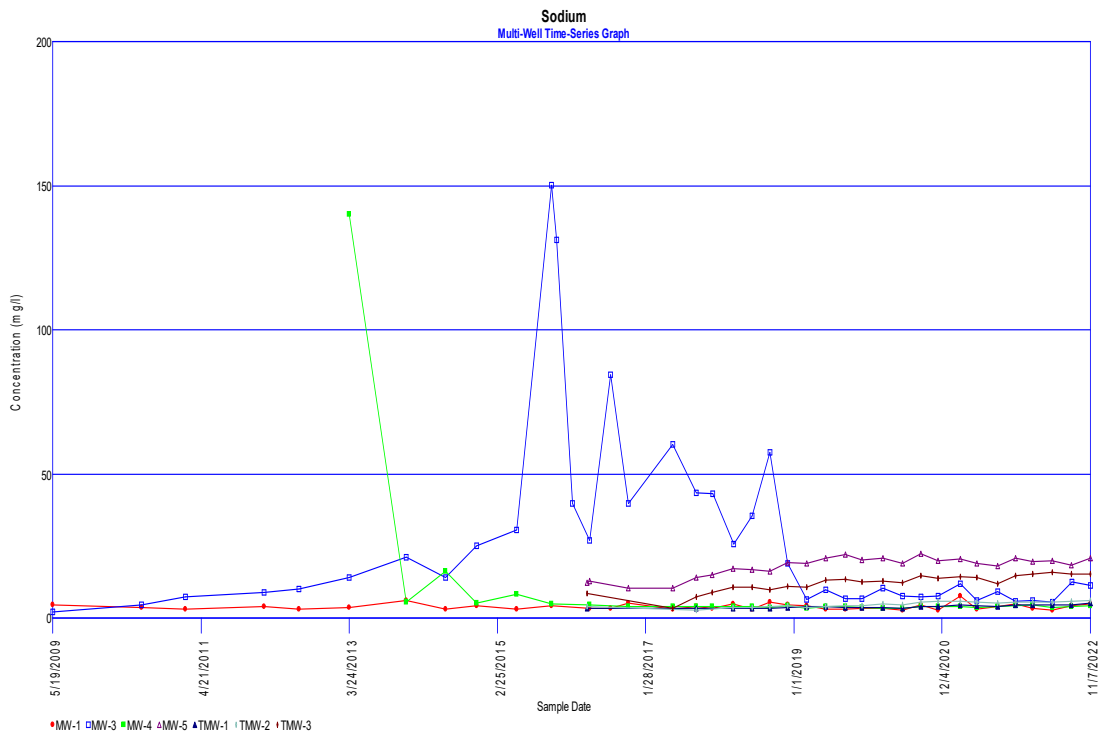
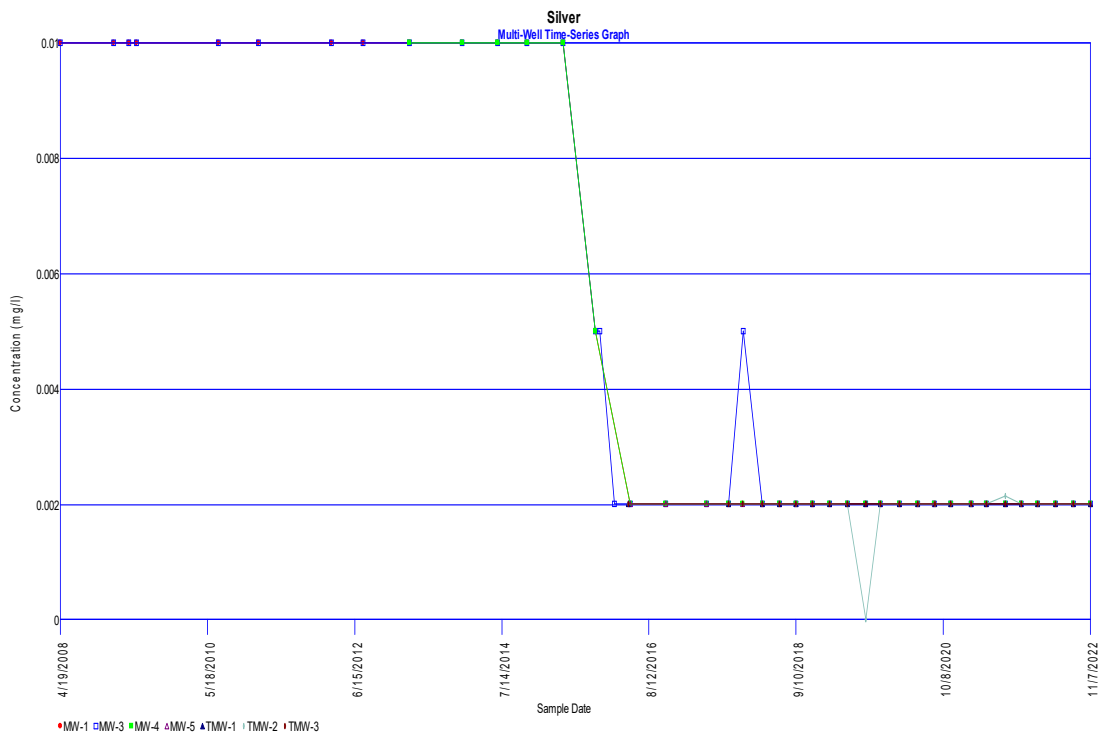


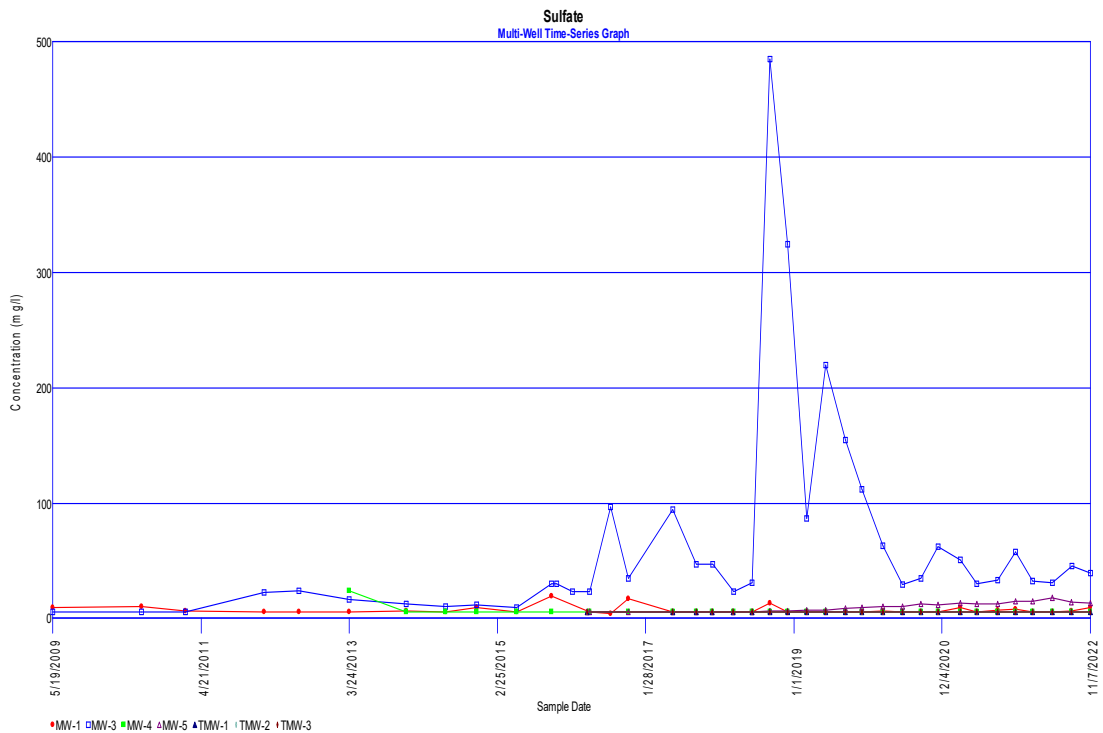
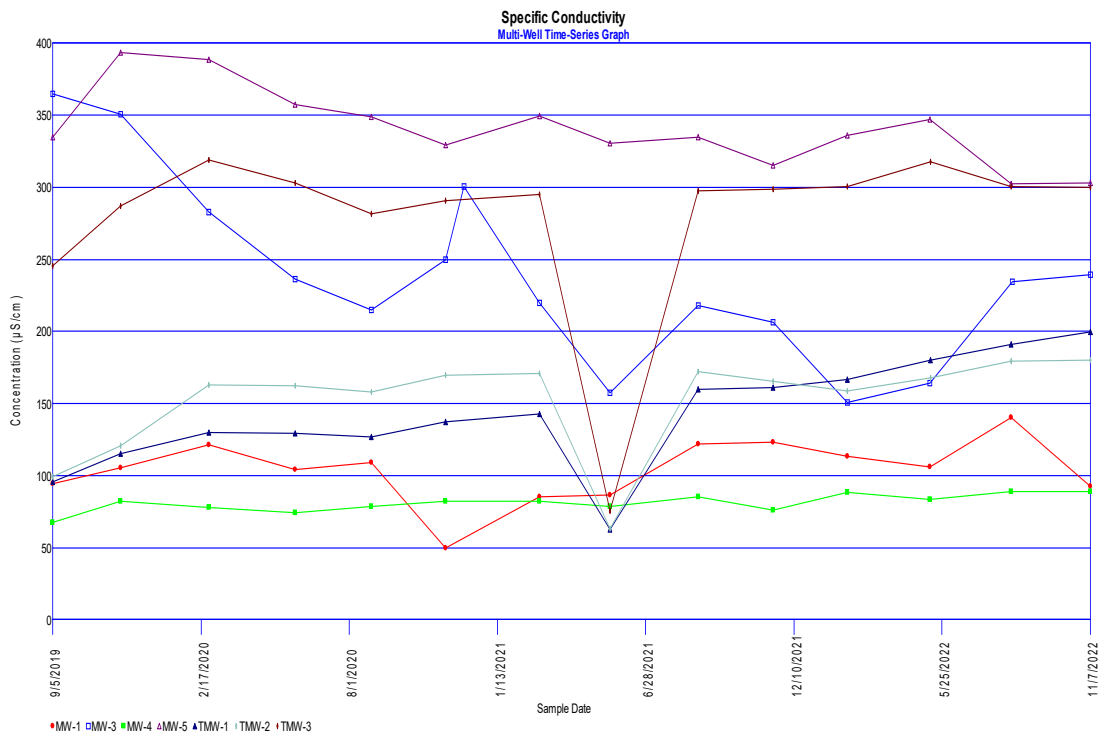


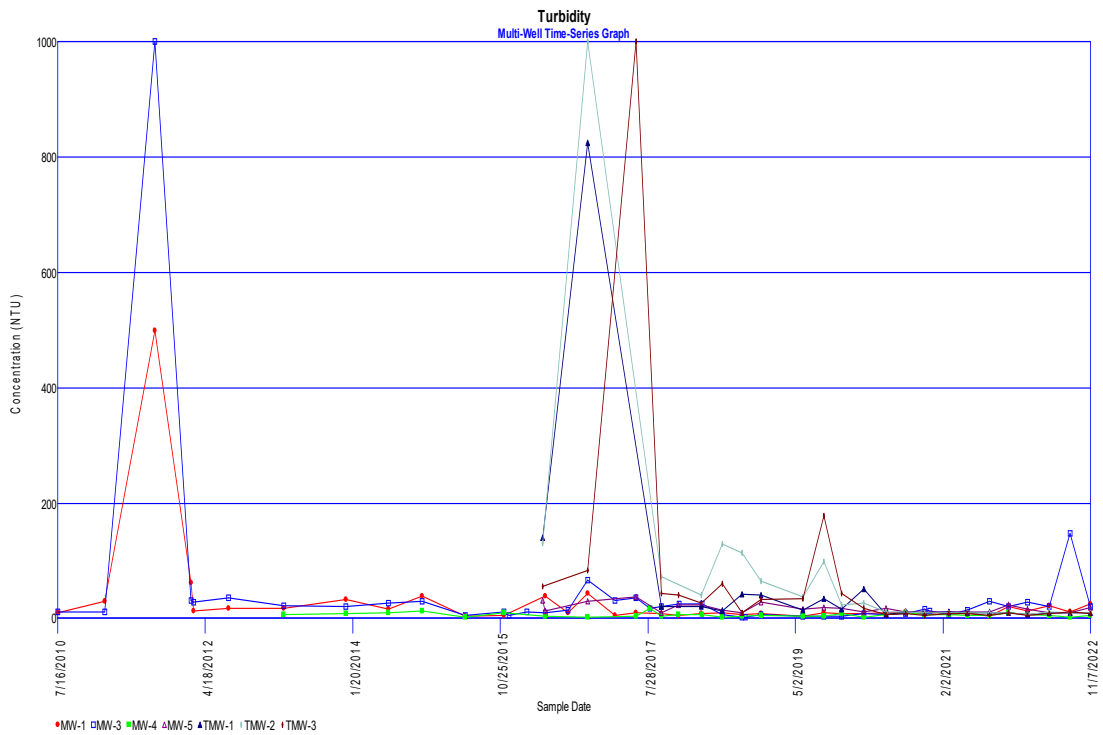
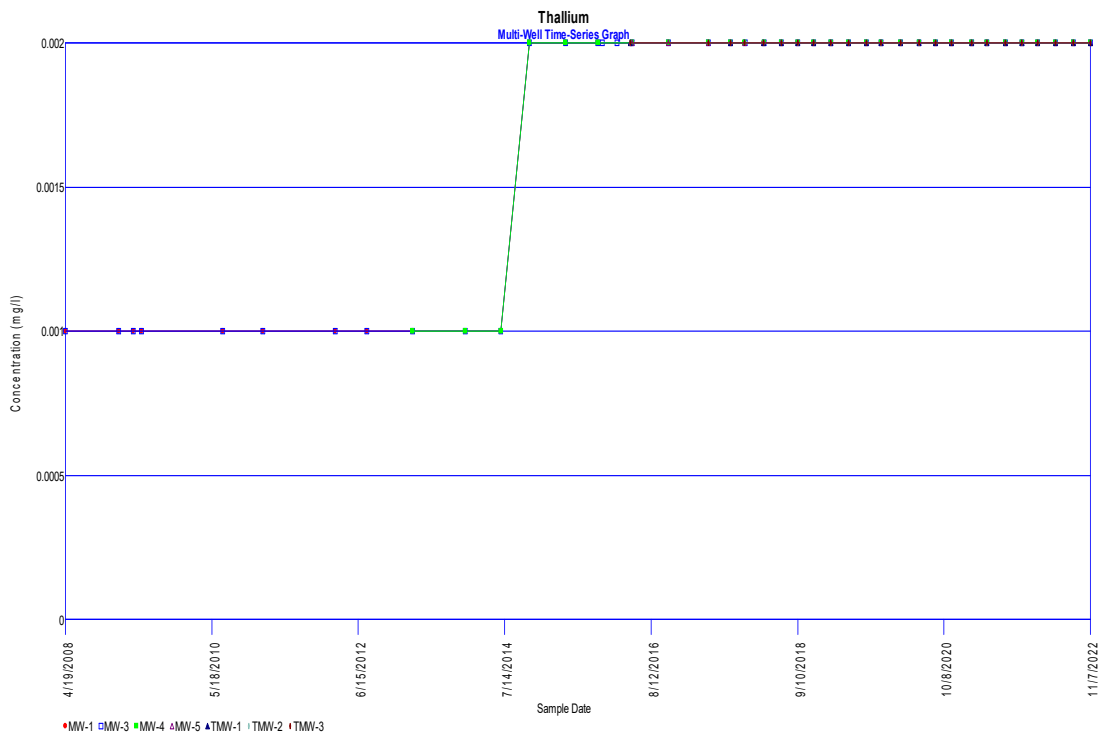


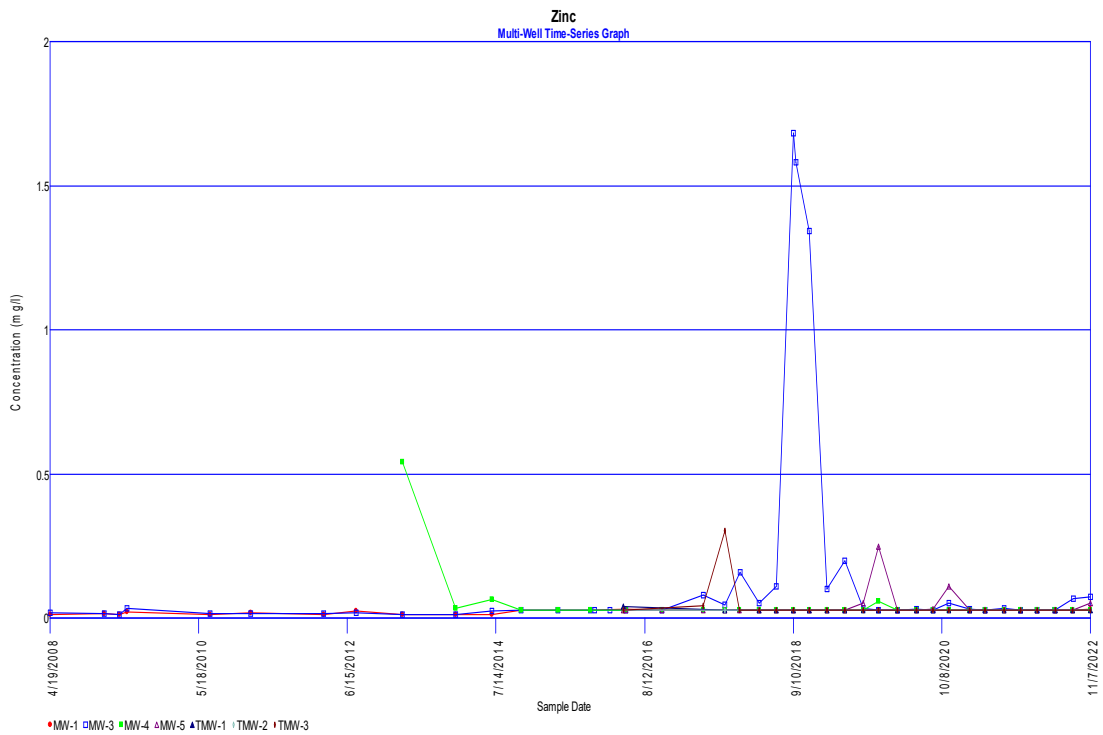
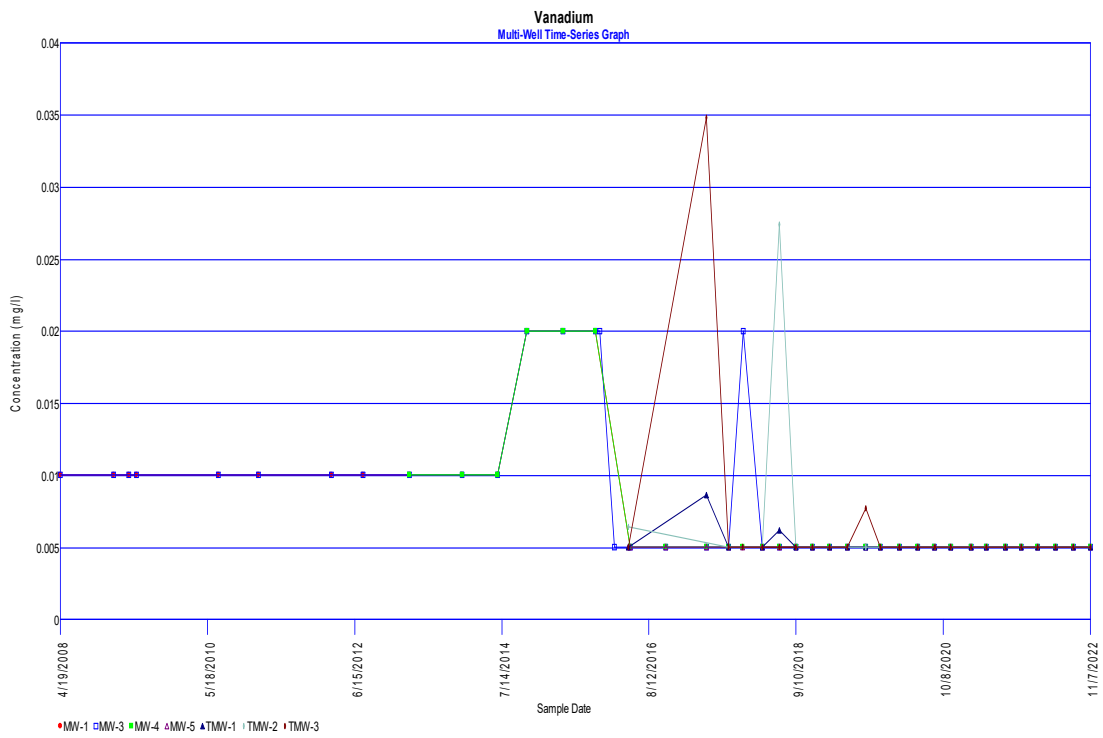












Basic Statistics

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	0 (0%)
Pooled Mean	0.037539
Pooled Std Dev	0.0282401

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.037539
Background Std Dev	0.0282401

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	0	0	1.46402

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.037539	0.0282401	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0303051

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	3 (7.69231%)
Pooled Mean	0.0223872
Pooled Std Dev	0.0107497

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.0223872
Background Std Dev	0.0107497

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	3	7.69231	0.8731

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0223872	0.0107497	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0043911

Kruskal-Wallis Statistics

Non-Detect Rank	2
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	38
Total Non-Detects	38 (100%)
Pooled Mean	0.001
Pooled Std Dev	6.59254e-019

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	38
Background Mean	0.001
Background Std Dev	6.59254e-019

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	38	38	100	0.038

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.001	6.59254e-019	0	741	19.5

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	-6.77626e-020

Kruskal-Wallis Statistics

Non-Detect Rank	19.5
Background Rank Sum	741
Background Rank Mean	19.5
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	40
Total Non-Detects	0 (0%)
Pooled Mean	2.7745
Pooled Std Dev	1.10632

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	40
Background Mean	2.7745
Background Std Dev	1.10632

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	40	0	0	110.98

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	2.7745	1.10632	0	820	20.5

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	1.13687e-013
SS Total	47.734

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	820
Background Rank Mean	20.5
H Statistic	1.42109e-014
H Adjusted for Ties	1.42109e-014

Basic Statistics

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	36 (92.3077%)
Pooled Mean	0.0105254
Pooled Std Dev	0.0260473

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.0105254
Background Std Dev	0.0260473

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	36	92.3077	0.41049

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0105254	0.0260473	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0257816

Kruskal-Wallis Statistics

Non-Detect Rank	18.5
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Cobalt

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	0 (0%)
Pooled Mean	0.0400692
Pooled Std Dev	0.0154303

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.0400692
Background Std Dev	0.0154303

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	0	0	1.5627

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0400692	0.0154303	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.00904756

Kruskal-Wallis Statistics

Non-Detect Rank	0
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	33 (84.6154%)
Pooled Mean	0.00511923
Pooled Std Dev	0.0039882

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.00511923
Background Std Dev	0.0039882

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	33	84.6154	0.19965

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.00511923	0.0039882	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.000604418

Kruskal-Wallis Statistics

Non-Detect Rank	17
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	11 (28.2051%)
Pooled Mean	0.019739
Pooled Std Dev	0.0395461

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.019739
Background Std Dev	0.0395461

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	11	28.2051	0.76982

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.019739	0.0395461	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	0.0594279

Kruskal-Wallis Statistics

Non-Detect Rank	6
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Basic Statistics

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	37
Total Non-Detects	21 (56.7568%)
Pooled Mean	6.58432
Pooled Std Dev	3.24036

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	37
Background Mean	6.58432
Background Std Dev	3.24036

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	37	21	56.7568	243.62

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	6.58432	3.24036	0	703	19

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	0
SS Total	377.997

Kruskal-Wallis Statistics

Non-Detect Rank	11
Background Rank Sum	703
Background Rank Mean	19
H Statistic	1.42109e-014
H Adjusted for Ties	1.73844e-014

Basic Statistics

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Measurements	39
Total Non-Detects	28 (71.7949%)
Pooled Mean	0.0219692
Pooled Std Dev	0.00584462

Compliance Meas.	0
Compliance Mean	0
Compliance Std Dev	0

Background Meas.	39
Background Mean	0.0219692
Background Std Dev	0.00584462

Background Locations

There is 1 background location

Location	Meas.	Non-Detects	% ND	Total
MW-1	39	28	71.7949	0.8568

Location	Mean	Std Dev	Std Err	Rank Sum	Rank Mean
MW-1	0.0219692	0.00584462	0	780	20

Compliance Locations

There are 0 compliance location

Analysis of Variance Statistics

SS Wells	6.93889e-018
SS Total	0.00129806

Kruskal-Wallis Statistics

Non-Detect Rank	14.5
Background Rank Sum	780
Background Rank Mean	20
H Statistic	0
H Adjusted for Ties	0

Shapiro-Wilks Test of Normality

Parameter: Arsenic

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.162947

Sample Standard Deviation = 0.0282401

W Statistic = 0.876153

5% Critical value of 0.939 exceeds 0.876153
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.876153
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.0438181

Sample Standard Deviation = 0.0107497

W Statistic = 0.437254

5% Critical value of 0.939 exceeds 0.437254
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.437254
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Aluminum

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 1.23212

Sample Standard Deviation = 0.270794

W Statistic = 0.544808

5% Critical value of 0.939 exceeds 0.544808
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.544808
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Total Cadmium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 38 measurements

Sum of b values = 0

Sample Standard Deviation = 6.59254e-019

W Statistic = 0

5% Critical value of 0.938 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.916 exceeds 0
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 20 for 40 measurements

Sum of b values = 6.20707

Sample Standard Deviation = 1.10632

W Statistic = 0.807134

5% Critical value of 0.94 exceeds 0.807134
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 exceeds 0.807134
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.0927452

Sample Standard Deviation = 0.0260473

W Statistic = 0.333636

5% Critical value of 0.939 exceeds 0.333636
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.333636
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.0914934

Sample Standard Deviation = 0.0154303

W Statistic = 0.925226

5% Critical value of 0.939 exceeds 0.925226
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 is less than 0.925226
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Copper

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.0155678

Sample Standard Deviation = 0.0039882

W Statistic = 0.400976

5% Critical value of 0.939 exceeds 0.400976
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.400976
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.147079

Sample Standard Deviation = 0.0395461

W Statistic = 0.364008

5% Critical value of 0.939 exceeds 0.364008
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.364008
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 18 for 37 measurements

Sum of b values = 15.324

Sample Standard Deviation = 3.24036

W Statistic = 0.621238

5% Critical value of 0.936 exceeds 0.621238
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.621238
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

K = 19 for 39 measurements

Sum of b values = 0.0290329

Sample Standard Deviation = 0.00584462

W Statistic = 0.649358

5% Critical value of 0.939 exceeds 0.649358
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.649358
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Aluminum

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 5.37075

Sample Standard Deviation = 1.01007

W Statistic = 0.744015

5% Critical value of 0.939 exceeds 0.744015
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.744015
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 5.27225

Sample Standard Deviation = 0.887707

W Statistic = 0.928259

5% Critical value of 0.939 exceeds 0.928259
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 is less than 0.928259
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 1.92905

Sample Standard Deviation = 0.344527

W Statistic = 0.825001

5% Critical value of 0.939 exceeds 0.825001
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.825001
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Total Cadmium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 38 measurements

Sum of b values = 0

Sample Standard Deviation = 2.7003e-015

W Statistic = 0

5% Critical value of 0.938 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.916 exceeds 0
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 20 for 40 measurements

Sum of b values = 2.0338

Sample Standard Deviation = 0.344466

W Statistic = 0.89384

5% Critical value of 0.94 exceeds 0.89384
Evidence of non-normality at 95% level of significance

1% Critical value of 0.919 exceeds 0.89384
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chromium

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 5.91933

Sample Standard Deviation = 1.2029

W Statistic = 0.637239

5% Critical value of 0.939 exceeds 0.637239
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.637239
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 2.36475

Sample Standard Deviation = 0.389541

W Statistic = 0.969794

5% Critical value of 0.939 is less than 0.969794
Data is normally distributed at 95% level of significance

1% Critical value of 0.917 is less than 0.969794
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Copper

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 3.0682

Sample Standard Deviation = 0.601551

W Statistic = 0.684604

5% Critical value of 0.939 exceeds 0.684604
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.684604
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 3.57743

Sample Standard Deviation = 0.764039

W Statistic = 0.576936

5% Critical value of 0.939 exceeds 0.576936
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.576936
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Sulfate

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 18 for 37 measurements

Sum of b values = 3.35029

Sample Standard Deviation = 0.642554

W Statistic = 0.755166

5% Critical value of 0.936 exceeds 0.755166
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.755166
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Zinc

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

K = 19 for 39 measurements

Sum of b values = 1.92967

Sample Standard Deviation = 0.367022

W Statistic = 0.727442

5% Critical value of 0.939 exceeds 0.727442
Evidence of non-normality at 95% level of significance

1% Critical value of 0.917 exceeds 0.727442
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Arsenic

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 0.1

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements	Date	Value
	4/19/2008	0.024
	1/21/2009	0.072
	4/9/2009	0.067
	5/19/2009	0.064
	7/16/2010	0.074
	2/8/2011	0.086
	2/17/2012	0.093
	7/31/2012	0.089
	3/27/2013	0.049
	12/23/2013	0.1
	6/26/2014	0.063
	11/21/2014	0.059
	5/28/2015	0.0604
	11/11/2015	0.0469
	5/9/2016	0.05
	11/10/2016	0.0286
	6/8/2017	0.0571
	9/28/2017	0.0199
	12/11/2017	0.0573
	3/21/2018	0.0101
	6/19/2018	0.0063
	9/12/2018	0.0184
	12/4/2018	0.0254
	3/5/2019	0.00449
	6/4/2019	0.0194
	9/5/2019	0.0176
	11/20/2019	0.0176
	2/27/2020	0.00807
	6/2/2020	0.0174
	8/26/2020	0.0244
	11/17/2020	0.00513
	3/2/2021	0.00576
	5/20/2021	0.0131
	8/26/2021	0.019
	11/18/2021	0.0192
	2/9/2022	0.0219
	5/12/2022	0.0195
	8/11/2022	0.023
	11/7/2022	0.00807

Date **Count** **Mean** **Significant**

11/7/2022 1 0.00807 FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 7.69231%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 0.084

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements	Date	Value
	4/19/2008	0.084
	1/21/2009	0.028
	4/9/2009	0.028
	5/19/2009	0.033
	7/16/2010	0.021
	2/8/2011	0.021
	2/17/2012	0.022
	7/31/2012	0.019
	3/27/2013	0.018
	12/23/2013	0.017
	6/26/2014	0.018
	11/21/2014	0.02
	5/28/2015	0.0188
	11/11/2015	0.0237
	5/9/2016	0.02
	11/10/2016	0.0207
	6/8/2017	0.0146
	9/28/2017	0.0175
	12/11/2017	0.0166
	3/21/2018	0.0212
	6/19/2018	0.0163
	9/12/2018	0.0186
	12/4/2018	0.0199
	3/5/2019	0.0184
	6/4/2019	0.0219
	9/5/2019	0.0199
	11/20/2019	0.0194
	2/27/2020	0.0241
	6/2/2020	ND<0.02
	8/26/2020	ND<0.02
	11/17/2020	ND<0.02
	3/2/2021	0.0222
	5/20/2021	0.0177
	8/26/2021	0.0198
	11/18/2021	0.0276
	2/9/2022	0.0213
	5/12/2022	0.0188
	8/11/2022	0.0204
	11/7/2022	0.0247

Date Count Mean Significant

11/7/2022 1 0.0247 FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 5.68

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements

Date	Value
4/19/2008	2
1/21/2009	2.9
4/9/2009	1.9
5/19/2009	2.8
7/16/2010	2.8
2/8/2011	2.6
2/17/2012	2.1
7/31/2012	2.2
3/27/2013	1.8
12/23/2013	1.5
6/26/2014	2.9
11/21/2014	3.9
5/28/2015	2.01
11/11/2015	3.97
5/9/2016	2.12
8/18/2016	2.4
11/10/2016	4.59
6/8/2017	5.68
9/28/2017	4.11
12/11/2017	2.31
3/21/2018	2.1
6/19/2018	2.24
9/12/2018	4.94
12/4/2018	1.67
3/5/2019	2.11
6/4/2019	2.15
9/5/2019	2.84
11/20/2019	2.52
2/27/2020	1.95
6/2/2020	2.27
8/26/2020	2.61
11/17/2020	2.48
3/2/2021	2.15
5/20/2021	2.15
8/26/2021	4.1
11/18/2021	1.95
2/9/2022	1.93
5/12/2022	2.05
8/11/2022	4.2

Date **Count** **Mean** **Significant**

11/7/2022 1 5.98 TRUE

Parametric Prediction Interval Analysis

Intra-Well Comparison for MW-1

Parameter: Cobalt

Natural Logarithm Transformation

Non-Detects Replaced with 1/2 DL

Intra-Well USEPA (1989/1992) Formula 95% Comparison

Baseline Samples	Date	Result
	4/19/2008	-3.44202
	1/21/2009	-3.50656
	4/9/2009	-3.14656
	5/19/2009	-2.8824
	7/16/2010	-3.35241
	2/8/2011	-3.47377
	2/17/2012	-3.64966
	7/31/2012	-3.57555
	3/27/2013	-3.32424
	12/23/2013	-3.57555
	6/26/2014	-3.32424
	11/21/2014	-3.07911
	5/28/2015	-3.19418
	11/11/2015	-3.66126
	5/9/2016	-3.17725
	11/10/2016	-3.93223
	6/8/2017	-3.37553
	9/28/2017	-3.2114
	12/11/2017	-3.19175
	3/21/2018	-3.15825
	6/19/2018	-3.88246
	9/12/2018	-3.92207
	12/4/2018	-3.56137
	3/5/2019	-3.23145
	6/4/2019	-3.19175
	9/5/2019	-2.57308
	11/20/2019	-3.41428
	2/27/2020	-2.59964
	6/2/2020	-3.14191
	8/26/2020	-3.16061
	11/17/2020	-3.53702
	3/2/2021	-3.46414
	5/20/2021	-3.20153
	8/26/2021	-2.83873
	11/18/2021	-2.6297
	2/9/2022	-2.69415
	5/12/2022	-2.80346
	8/11/2022	-2.84387

From 38 baseline samples
Baseline mean = -3.26119
Baseline std Dev = 0.353603

For 1 recent sampling event(s)
95% confidence t = 1.68709 at 37 degrees of freedom

Date	Samples	Mean	Interval	Significant
11/7/2022	1	-4.34281	[0, -2.65683]	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 28.2051%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 0.2

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements	Date	Value
	4/19/2008	ND<0.02
	1/21/2009	ND<0.02
	4/9/2009	0.2
	5/19/2009	0.17
	7/16/2010	ND<0.02
	2/8/2011	ND<0.02
	2/17/2012	ND<0.02
	7/31/2012	ND<0.02
	3/27/2013	ND<0.02
	12/23/2013	ND<0.02
	6/26/2014	ND<0.02
	11/21/2014	ND<0.02
	5/28/2015	ND<0.02
	11/11/2015	0.0112
	5/9/2016	0.00512
	11/10/2016	0.0112
	6/8/2017	0.00418
	9/28/2017	0.00445
	12/11/2017	0.00652
	3/21/2018	0.00658
	6/19/2018	0.00637
	9/12/2018	0.00839
	12/4/2018	0.00744
	3/5/2019	0.00638
	6/4/2019	0.0088
	9/5/2019	0.00686
	11/20/2019	0.00468
	2/27/2020	0.00803
	6/2/2020	0.0063
	8/26/2020	0.00512
	11/17/2020	0.00632
	3/2/2021	0.0057
	5/20/2021	0.0064
	8/26/2021	0.00559
	11/18/2021	0.00859
	2/9/2022	0.00739
	5/12/2022	0.00644
	8/11/2022	0.00737
	11/7/2022	0.0084

Date Count Mean Significant

11/7/2022 1 0.0084 FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 53.8462%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 18.8

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements	Date	Value
	5/19/2009	8.9
	7/16/2010	9.4
	2/8/2011	5.8
	2/17/2012	ND<5
	7/31/2012	ND<5
	3/27/2013	5.1
	12/23/2013	6.1
	6/26/2014	ND<5
	11/21/2014	9.1
	5/28/2015	ND<5
	11/11/2015	18.8
	5/9/2016	ND<5
	8/18/2016	3.51
	11/10/2016	16.5
	6/8/2017	ND<5
	9/28/2017	ND<5
	12/11/2017	ND<5
	3/21/2018	ND<5
	6/19/2018	ND<5
	9/12/2018	12.3
	12/4/2018	ND<5
	3/5/2019	ND<5
	6/4/2019	ND<5
	9/5/2019	ND<5
	11/20/2019	ND<5
	2/27/2020	5.72
	6/2/2020	ND<5
	8/26/2020	ND<5
	11/17/2020	ND<5
	3/2/2021	8.91
	5/20/2021	ND<5
	8/26/2021	6.63
	11/18/2021	7.59
	2/9/2022	ND<5
	5/12/2022	ND<5
	8/11/2022	5.52
	11/7/2022	8.74

Date	Count	Mean	Significant
11/7/2022	1	8.74	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 71.7949%

Future Samples (k) = 1

Recent Dates = 1

Baseline Measurements (n) = 39

Maximum Baseline Concentration = 0.0287

Confidence Level = 97.5%

False Positive Rate = 2.5%

Baseline Measurements	Date	Value
	4/19/2008	0.011
	1/21/2009	0.015
	4/9/2009	0.011
	5/19/2009	0.021
	7/16/2010	0.011
	2/8/2011	0.016
	2/17/2012	ND<0.01
	7/31/2012	0.023
	3/27/2013	0.012
	12/23/2013	ND<0.01
	6/26/2014	ND<0.01
	11/21/2014	ND<0.025
	5/28/2015	ND<0.025
	11/11/2015	ND<0.025
	5/9/2016	0.0281
	11/10/2016	ND<0.025
	6/8/2017	ND<0.025
	9/28/2017	ND<0.025
	12/11/2017	ND<0.025
	3/21/2018	ND<0.025
	6/19/2018	ND<0.025
	9/12/2018	ND<0.025
	12/4/2018	ND<0.025
	3/5/2019	ND<0.025
	6/4/2019	ND<0.025
	9/5/2019	ND<0.025
	11/20/2019	ND<0.025
	2/27/2020	ND<0.025
	6/2/2020	ND<0.025
	8/26/2020	ND<0.025
	11/17/2020	ND<0.025
	3/2/2021	ND<0.025
	5/20/2021	ND<0.025
	8/26/2021	ND<0.025
	11/18/2021	ND<0.025
	2/9/2022	ND<0.025
	5/12/2022	ND<0.025
	8/11/2022	0.025
	11/7/2022	0.0287

Date Count Mean Significant

11/7/2022 1 0.0287 FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 5.36585%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 39

Maximum Background Value = 0.084

Confidence Level = 86.7%

False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.0644	FALSE
MW-4	11/7/2022	1	0.0102	FALSE
MW-5	11/7/2022	1	0.0517	FALSE
TMW-1	11/7/2022	1	0.0159	FALSE
TMW-2	11/7/2022	1	0.0324	FALSE
TMW-3	11/7/2022	1	0.0498	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Total Cadmium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.7451%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 38

Maximum Background Value = 0.001

Confidence Level = 86.4%

False Positive Rate = 13.6%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.00559	TRUE
MW-4	11/7/2022	1	0.001	FALSE
MW-5	11/7/2022	1	0.001	FALSE
TMW-1	11/7/2022	1	0.001	FALSE
TMW-2	8/11/2022	1	0.001	FALSE
TMW-3	11/7/2022	1	0.001	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chloride

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 0%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 40

Maximum Background Value = 5.98

Confidence Level = 87%

False Positive Rate = 13%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	26.2	TRUE
MW-4	11/7/2022	1	11.4	TRUE
MW-5	11/7/2022	1	63.5	TRUE
TMW-1	11/7/2022	1	42.6	TRUE
TMW-2	11/7/2022	1	39.6	TRUE
TMW-3	11/7/2022	1	61.2	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 73.0392%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 39

Maximum Background Value = 0.12

Confidence Level = 86.7%

False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.002	FALSE
MW-4	11/7/2022	1	0.002	FALSE
MW-5	11/7/2022	1	0.00285	FALSE
TMW-1	11/7/2022	1	0.002	FALSE
TMW-2	11/7/2022	1	0.002	FALSE
TMW-3	11/7/2022	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Copper

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 85.2217%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 39

Maximum Background Value = 0.028

Confidence Level = 86.7%

False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.005	FALSE
MW-4	11/7/2022	1	0.005	FALSE
MW-5	11/7/2022	1	0.0125	FALSE
TMW-1	11/7/2022	1	0.005	FALSE
TMW-2	11/7/2022	1	0.005	FALSE
TMW-3	11/7/2022	1	0.005	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 57.767%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 39

Maximum Background Value = 0.2

Confidence Level = 86.7%

False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.0042	FALSE
MW-4	11/7/2022	1	0.002	FALSE
MW-5	11/7/2022	1	0.00613	FALSE
TMW-1	11/7/2022	1	0.002	FALSE
TMW-2	11/7/2022	1	0.002	FALSE
TMW-3	11/7/2022	1	0.002	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Sulfate

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 64.3902%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 37

Maximum Background Value = 18.8

Confidence Level = 86%

False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	38.6	TRUE
MW-4	11/7/2022	1	5	FALSE
MW-5	11/7/2022	1	12.4	FALSE
TMW-1	11/7/2022	1	5	FALSE
TMW-2	11/7/2022	1	5	FALSE
TMW-3	11/7/2022	1	5	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Zinc

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 73.301%

Number of comparisons = 6

Future Samples (k) = 6

Recent Dates = 1

Background Measurements (n) = 39

Maximum Background Value = 0.0287

Confidence Level = 86.7%

False Positive Rate = 13.3%

Location	Date	Count	Mean	Significant
MW-3	11/7/2022	1	0.0712	TRUE
MW-4	11/7/2022	1	0.025	FALSE
MW-5	11/7/2022	1	0.0502	TRUE
TMW-1	11/7/2022	1	0.025	FALSE
TMW-2	11/7/2022	1	0.025	FALSE
TMW-3	11/7/2022	1	0.025	FALSE

Mann-Kendall Trend Analysis

Parameter: Arsenic

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 118 - 156 = -38

Tied Group	Value	Members
1	0.0176	2
2	0.00807	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 29256

b = 109296

c = 1104

Group Variance = 1623.33

Z-Score = -0.918328

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

$|-0.918328| <= 1.97737$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 186 - 86 = 100

Tied Group	Value	Members
1	0.0199	2
2	0.02	3

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 84

B = 0

C = 6

D = 0

E = 8

F = 0

a = 29256

b = 109296

c = 1104

Group Variance = 1620.67

Z-Score = 2.45917

Comparison Level at 95% confidence level = 1.65463 (upward trend)

$2.45917 > 1.65463$ indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 92 - 208 = -116

Tied Group	Value	Members
Time Period		
Observations		
	11/10/2016	1
	6/8/2017	1
	9/28/2017	1
	12/14/2017	1
	3/22/2018	1
	6/19/2018	1
	9/12/2018	1
	9/27/2018	1
	12/4/2018	1
	3/5/2019	1
	6/4/2019	1
	9/5/2019	1
	11/20/2019	1
	2/27/2020	1
	6/2/2020	1
	8/26/2020	1
	11/17/2020	1
	3/2/2021	1
	5/20/2021	1
	8/26/2021	1
	11/18/2021	1
	2/9/2022	1
	5/12/2022	1
	8/12/2022	1
	11/7/2022	1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 33000
b = 124200
c = 1200

Group Variance = 1833.33

Z-Score = -2.68582

Comparison Level at 95% confidence level = -1.65463 (downward trend)

-2.68582 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 180 - 88 = 92

Tied Group	Value	Members
1	0.00749	2
2	0.02	4
3	0.0102	2

Time Period		Observations
	11/10/2016	1
	6/8/2017	1
	9/28/2017	1
	12/11/2017	1
	3/22/2018	1
	6/19/2018	1
	9/12/2018	1
	12/4/2018	1
	3/5/2019	1
	6/4/2019	1
	9/5/2019	1
	11/20/2019	1
	2/27/2020	1
	6/2/2020	1
	8/26/2020	1
	11/17/2020	1
	3/2/2021	1
	5/20/2021	1
	8/26/2021	1
	11/18/2021	1
	2/9/2022	1
	5/12/2022	1
	8/11/2022	1
	11/7/2022	1

There are 0 time periods with multiple data

A = 192
B = 0
C = 24
D = 0
E = 16
F = 0
a = 29256
b = 109296
c = 1104

Group Variance = 1614.67

Z-Score = 2.26464

Comparison Level at 95% confidence level = 1.65463 (upward trend)

2.26464 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 216 - 60 = 156

Tied Group	Value	Members
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/11/2022	1	
11/7/2022	1	
There are 0 time periods with multiple data		

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1625.33
Z-Score = 3.84468
Comparison Level at 95% confidence level = 1.65463 (upward trend)
3.84468 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 112 - 92 = 20

Tied Group	Value	Members
1	0.02	4
Time Period	Observations	
9/28/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/27/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/13/2022	1	
8/11/2022	1	
11/7/2022	1	
There are 0 time periods with multiple data		

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1088
Z-Score = 0.576022
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
0.576022 <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 78 - 131 = -53

Tied Group	Value	Members
1	0.033	2

Time Period	Observations
9/28/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1095.67
Z-Score = -1.57096
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.57096| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Barium

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 166 - 64 = 102

Tied Group	Value	Members
1	0.0451	2

Time Period	Observations
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/27/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/13/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1256.67
Z-Score = 2.84912
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.84912 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Total Cadmium

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 114 - 236 = -122

Tied Group	Value	Members
1	0.001	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
8/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
12/8/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18

B = 0

C = 0

D = 0

E = 2

F = 0

a = 41418

b = 157950

c = 1404

Group Variance = 2300

Z-Score = -2.52302

Comparison Level at 95% confidence level = -1.65463 (downward trend)

-2.52302 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 118 - 154 = -36

Tied Group	Value	Members
1	2.15	3
2	1.95	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 84

B = 0

C = 6

D = 0

E = 8

F = 0

a = 29256

b = 109296

c = 1104

Group Variance = 1620.67

Z-Score = -0.869403

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

$|-0.869403| <= 1.97737$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 64 - 210 = -146

Tied Group	Value	Members
1	23.9	2
2	18.4	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 36

B = 0

C = 0

D = 0

E = 4

F = 0

a = 29256

b = 109296

c = 1104

Group Variance = 1623.33

Z-Score = -3.59885

Comparison Level at 95% confidence level = -1.65463 (downward trend)

$-3.59885 < -1.65463$ indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-4

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 243 - 33 = 210

Tied Group	Value	Members
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/22/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/11/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1625.33
Z-Score = 5.18412
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.18412 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 175 - 100 = 75

Tied Group	Value	Members
1	83.5	2
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/11/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1624.33
Z-Score = 1.83609
Comparison Level at 95% confidence level = 1.65463 (upward trend)
1.83609 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 272 - 4 = 268

Tied Group	Value	Members
Time Period		Observations
11/10/2016		1
6/8/2017		1
9/28/2017		1
12/11/2017		1
3/21/2018		1
6/19/2018		1
9/12/2018		1
12/4/2018		1
3/5/2019		1
6/4/2019		1
9/5/2019		1
11/20/2019		1
2/27/2020		1
6/2/2020		1
8/27/2020		1
11/17/2020		1
3/2/2021		1
5/20/2021		1
8/26/2021		1
11/18/2021		1
2/9/2022		1
5/13/2022		1
8/11/2022		1
11/7/2022		1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1625.33
Z-Score = 6.62278
Comparison Level at 95% confidence level = 1.65463 (upward trend)
6.62278 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-2

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 235 - 41 = 194

Tied Group	Value	Members
Time Period		Observations
11/10/2016		1
6/8/2017		1
9/28/2017		1
12/11/2017		1
3/21/2018		1
6/19/2018		1
9/12/2018		1
12/4/2018		1
3/5/2019		1
6/4/2019		1
9/5/2019		1
11/20/2019		1
2/27/2020		1
6/2/2020		1
8/27/2020		1
11/17/2020		1
3/2/2021		1
5/20/2021		1
8/26/2021		1
11/18/2021		1
2/9/2022		1
5/13/2022		1
8/11/2022		1
11/7/2022		1

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1625.33
Z-Score = 4.78725
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.78725 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chloride

Location: TMW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 250 - 26 = 224

Tied Group	Value	Members
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/27/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/13/2022	1	
8/11/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1625.33
Z-Score = 5.53138
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.53138 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 165 - 105 = 60

Tied Group	Value	Members
1	0.002	4
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/11/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1616.67
Z-Score = 1.46738
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
[1.46738] <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Cobalt

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 175 - 100 = 75

Tied Group	Value	Members
1	0.0411	2

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 29256
b = 109296
c = 1104

Group Variance = 1624.33

Z-Score = 1.83609

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

[1.83609] <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 82 - 23 = 59

Tied Group	Value	Members
1	0.005	19

Time Period Observations

11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 14706
B = 0
C = 5814
D = 0
E = 342
F = 0
a = 29256
b = 109296
c = 1104

Group Variance = 808.333

Z-Score = 2.04001

Comparison Level at 95% confidence level = 1.65463 (upward trend)

2.04001 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-1

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 151 - 125 = 26

Tied Group	Value	Members
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/11/2017	1	
3/21/2018	1	
6/19/2018	1	
9/12/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/11/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0

a = 29256
b = 109296
c = 1104

Group Variance = 1625.33

Z-Score = 0.62011

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

|0.62011| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 144 - 153 = -9

Tied Group	Value	Members
1	0.002	3
Time Period	Observations	
11/10/2016	1	
6/8/2017	1	
9/28/2017	1	
12/14/2017	1	
3/22/2018	1	
6/19/2018	1	
9/12/2018	1	
9/27/2018	1	
12/4/2018	1	
3/5/2019	1	
6/4/2019	1	
9/5/2019	1	
11/20/2019	1	
2/27/2020	1	
6/2/2020	1	
8/26/2020	1	
11/17/2020	1	
3/2/2021	1	
5/20/2021	1	
8/26/2021	1	
11/18/2021	1	
2/9/2022	1	
5/12/2022	1	
8/12/2022	1	
11/7/2022	1	

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0

a = 33000
b = 124200
c = 1200

Group Variance = 1829.67

Z-Score = -0.187027

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

| -0.187027 | <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 115 - 160 = -45

Tied Group	Value	Members
1	0.00651	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 29256
b = 109296
c = 1104

Group Variance = 1624.33

Z-Score = -1.09173

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

$|-1.09173| \leq 1.97737$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 108 - 167 = -59

Tied Group	Value	Members
1	46.2	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 29256
b = 109296
c = 1104

Group Variance = 1624.33

Z-Score = -1.4391

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

$|-1.4391| \leq 1.97737$ indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Sulfate

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 252 - 14 = 238

Tied Group	Value	Members
1	5	5

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 29256
b = 109296
c = 1104
Group Variance = 1608.67
Z-Score = 5.90902
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.90902 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Zinc

Location: MW-3

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 102 - 182 = -80

Tied Group	Value	Members
1	0.025	6
2	0.159	2

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/14/2017	1
3/22/2018	1
6/19/2018	1
9/12/2018	1
9/27/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/12/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 528
B = 0
C = 120
D = 0
E = 32
F = 0
a = 33000
b = 124200
c = 1200
Group Variance = 1804
Z-Score = -1.85998
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-1.85998 < -1.65463 indicating a downward trend

Mann-Kendall Trend Analysis

Parameter: Zinc

Location: MW-5

Original Data (Not Transformed)

Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 67 - 38 = 29

Tied Group	Value	Members
1	0.025	19

Time Period	Observations
11/10/2016	1
6/8/2017	1
9/28/2017	1
12/11/2017	1
3/21/2018	1
6/19/2018	1
9/12/2018	1
12/4/2018	1
3/5/2019	1
6/4/2019	1
9/5/2019	1
11/20/2019	1
2/27/2020	1
6/2/2020	1
8/26/2020	1
11/17/2020	1
3/2/2021	1
5/20/2021	1
8/26/2021	1
11/18/2021	1
2/9/2022	1
5/12/2022	1
8/11/2022	1
11/7/2022	1

There are 0 time periods with multiple data

A = 14706

B = 0

C = 5814

D = 0

E = 342

F = 0

a = 29256

b = 109296

c = 1104

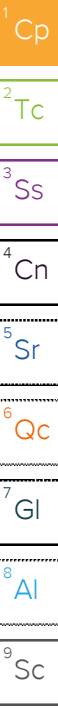
Group Variance = 808.333

Z-Score = 0.984833

Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)

[0.984833] <= 1.97737 indicating no evidence of a trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS &
FIELD INFORMATION LOGS



Civil & Environmental Consultants - TN

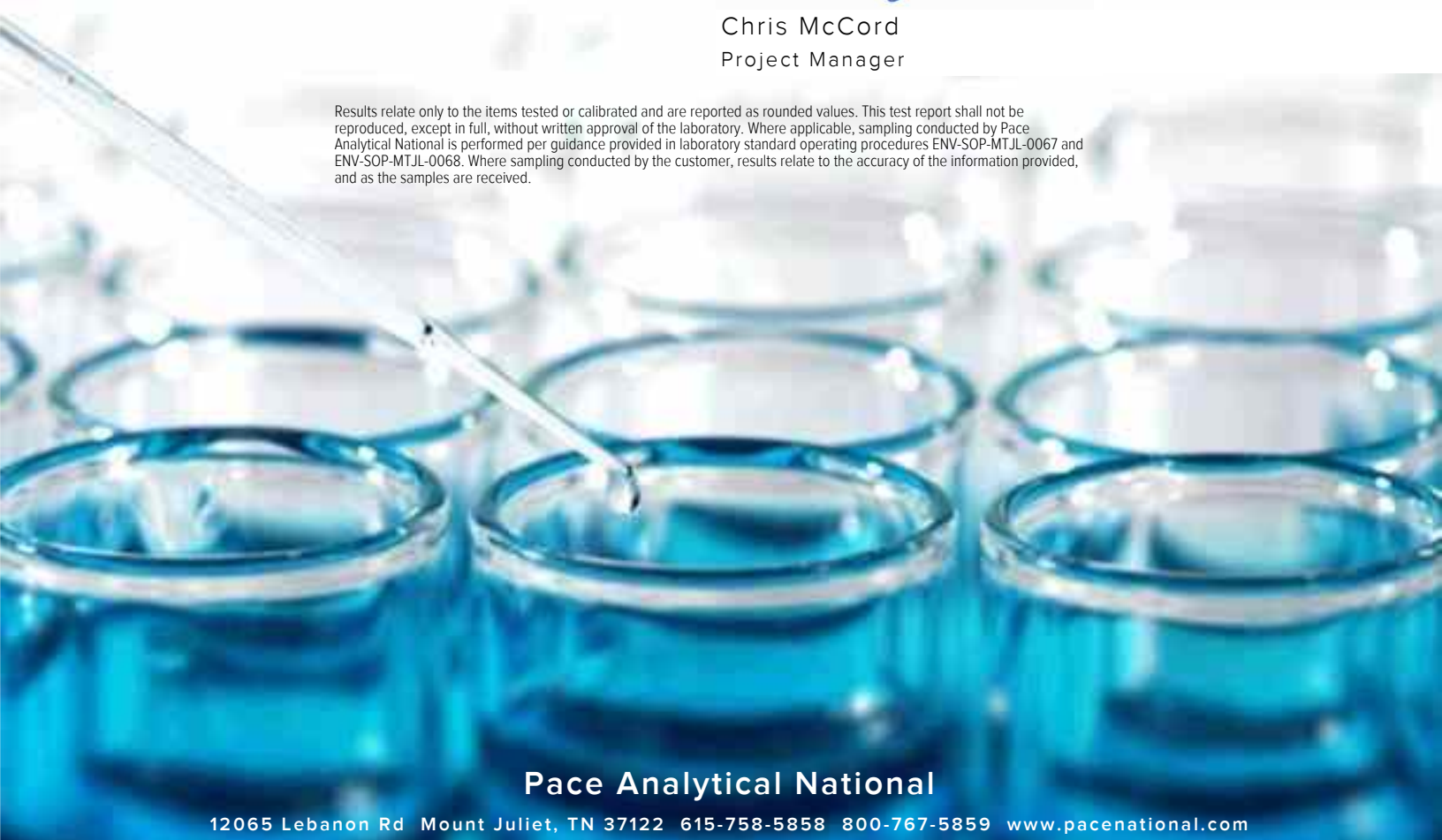
Sample Delivery Group: L1555128
Samples Received: 11/08/2022
Project Number: 181-364
Description: Former EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:



Chris McCord
Project Manager






Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.



Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

MW-1 L1555128-01 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 11:35

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:08	11/17/22 13:08	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:32	11/15/22 08:32	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:51	11/09/22 14:51	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1956412	1	11/09/22 12:03	11/09/22 16:08	RLS	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 21:58	11/08/22 21:58	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:14	SRT	Mt. Juliet, TN
Mercury by Method 7470A	WG1956586	1	11/10/22 09:47	11/11/22 12:34	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959080	1	11/16/22 18:32	11/17/22 12:38	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 08:48	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959113	1	11/20/22 22:43	11/21/22 12:34	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:08	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 02:04	11/11/22 02:04	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1.1	11/11/22 12:43	11/11/22 19:16	RDH	Mt. Juliet, TN

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

MW-3 L1555128-02 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 14:30

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:12	11/17/22 13:12	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:35	11/15/22 08:35	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:53	11/09/22 14:53	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:30	TQP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 22:11	11/08/22 22:11	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:16	SRT	Mt. Juliet, TN
Mercury by Method 7470A	WG1956586	1	11/10/22 09:47	11/11/22 12:41	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959080	1	11/16/22 18:32	11/17/22 12:46	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:05	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959113	1	11/20/22 22:43	11/21/22 12:50	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:12	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 02:23	11/11/22 02:23	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1.02	11/11/22 12:43	11/11/22 19:27	RDH	Mt. Juliet, TN

MW-4 L1555128-03 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 13:35

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:15	11/17/22 13:15	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:44	11/15/22 08:44	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:54	11/09/22 14:54	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:30	TQP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 22:25	11/08/22 22:25	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:18	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:08	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:15	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 02:42	11/11/22 02:42	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 19:39	RDH	Mt. Juliet, TN

SAMPLE SUMMARY

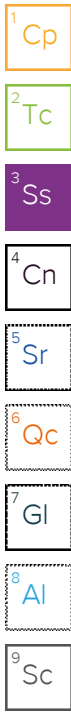
MW-5 L1555128-04 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 12:35

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:18	11/17/22 13:18	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:47	11/15/22 08:47	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:56	11/09/22 14:56	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:31	TOP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 22:39	11/08/22 22:39	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:20	SRT	Mt. Juliet, TN
Mercury by Method 7470A	WG1956586	1	11/10/22 09:47	11/11/22 12:49	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959080	1	11/16/22 18:32	11/17/22 12:49	CCE	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:17	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959113	1	11/20/22 22:43	11/21/22 12:53	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:18	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 03:01	11/11/22 03:01	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 19:51	RDH	Mt. Juliet, TN



TMW-1 L1555128-05 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 13:04

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:28	11/17/22 13:28	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:50	11/15/22 08:50	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:57	11/09/22 14:57	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:31	TOP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 23:20	11/08/22 23:20	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:37	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:20	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:28	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 03:20	11/11/22 03:20	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 20:38	RDH	Mt. Juliet, TN

TMW-2 L1555128-06 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 12:12

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:31	11/17/22 13:31	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958824	1	11/13/22 15:04	11/13/22 15:04	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 14:59	11/09/22 14:59	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:32	TOP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 23:34	11/08/22 23:34	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:39	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:23	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:31	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 03:39	11/11/22 03:39	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 20:50	RDH	Mt. Juliet, TN

TMW-3 L1555128-07 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 10:50

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:35	11/17/22 13:35	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958824	1	11/13/22 15:14	11/13/22 15:14	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 15:00	11/09/22 15:00	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:32	TOP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 21:03	11/08/22 21:03	GEB	Mt. Juliet, TN

SAMPLE SUMMARY

TMW-3 L1555128-07 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 10:50

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:41	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:25	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:35	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 03:58	11/11/22 03:58	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 21:02	RDH	Mt. Juliet, TN



DUPLICATE L1555128-08 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 00:00

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:38	11/17/22 13:38	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958824	1	11/13/22 15:16	11/13/22 15:16	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 15:02	11/09/22 15:02	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:32	TQP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 21:17	11/08/22 21:17	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:43	SRT	Mt. Juliet, TN
Mercury by Method 7470A	WG1956586	1	11/10/22 09:47	11/11/22 12:51	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959080	1	11/16/22 18:32	11/17/22 12:52	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:28	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959113	1	11/20/22 22:43	11/21/22 12:57	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:38	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	1	11/11/22 04:17	11/11/22 04:17	JHH	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1.01	11/11/22 12:43	11/11/22 21:14	RDH	Mt. Juliet, TN



FIELD BLANK L1555128-09 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 13:27

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:41	11/17/22 13:41	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958824	1	11/13/22 15:19	11/13/22 15:19	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	1	11/09/22 15:08	11/09/22 15:08	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1957841	1	11/10/22 22:00	11/11/22 01:32	TQP	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1	11/08/22 23:47	11/08/22 23:47	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	1	11/11/22 08:07	11/14/22 12:45	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	1	11/15/22 10:26	11/16/22 09:31	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	1	11/15/22 14:43	11/17/22 13:41	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1958256	1	11/12/22 00:27	11/12/22 00:27	ACG	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 21:26	RDH	Mt. Juliet, TN

TRIP BLANK L1555128-10 GW

Collected by
Adrian Baugh

Collected date/time
11/07/22 00:00

Received date/time
11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1958256	1	11/12/22 00:50	11/12/22 00:50	ACG	Mt. Juliet, TN

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	23.5		2.50	1	11/17/2022 13:08	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	21.8		20.0	1	11/15/2022 08:32	WG1958823

Sample Narrative:

L1555128-01 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:51	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/09/2022 16:08	WG1956412

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 21:58	WG1956421
Chloride	5.98		1.00	1	11/08/2022 21:58	WG1956421
Fluoride	ND		0.150	1	11/08/2022 21:58	WG1956421
Nitrate	ND		0.100	1	11/08/2022 21:58	WG1956421
Sulfate	8.74		5.00	1	11/08/2022 21:58	WG1956421

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	0.000655		0.000200	1	11/14/2022 12:14	WG1956585
Mercury,Dissolved	ND		0.000200	1	11/11/2022 12:34	WG1956586

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 08:48	WG1959140
Boron,Dissolved	ND		0.200	1	11/17/2022 12:38	WG1959080

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:08	WG1959249
Aluminum,Dissolved	ND		0.100	1	11/21/2022 12:34	WG1959113
Antimony	ND		0.00400	1	11/17/2022 13:08	WG1959249
Antimony,Dissolved	ND		0.00400	1	11/21/2022 12:34	WG1959113
Arsenic	0.00807		0.00200	1	11/17/2022 13:08	WG1959249
Arsenic,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Barium	0.0247		0.00200	1	11/17/2022 13:08	WG1959249
Barium,Dissolved	0.0224		0.00200	1	11/21/2022 12:34	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	11/17/2022 13:08	WG1959249
Beryllium,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Cadmium	ND		0.00100	1	11/17/2022 13:08	WG1959249
Cadmium,Dissolved	ND		0.00100	1	11/21/2022 12:34	WG1959113
Calcium	4.40		1.00	1	11/17/2022 13:08	WG1959249
Calcium,Dissolved	4.01		1.00	1	11/21/2022 12:34	WG1959113
Chromium	ND		0.00200	1	11/17/2022 13:08	WG1959249
Chromium,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Cobalt	0.0130		0.00200	1	11/17/2022 13:08	WG1959249
Cobalt,Dissolved	0.0113		0.00200	1	11/21/2022 12:34	WG1959113
Copper	ND		0.00500	1	11/17/2022 13:08	WG1959249
Copper,Dissolved	ND		0.00500	1	11/21/2022 12:34	WG1959113
Iron	7.41		0.100	1	11/17/2022 13:08	WG1959249
Iron,Dissolved	0.717		0.100	1	11/21/2022 12:34	WG1959113
Lead	ND		0.00200	1	11/17/2022 13:08	WG1959249
Lead,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Magnesium	3.03		1.00	1	11/17/2022 13:08	WG1959249
Magnesium,Dissolved	2.73		1.00	1	11/21/2022 12:34	WG1959113
Manganese	0.445		0.00500	1	11/17/2022 13:08	WG1959249
Manganese,Dissolved	0.408		0.00500	1	11/21/2022 12:34	WG1959113
Nickel	0.00840		0.00200	1	11/17/2022 13:08	WG1959249
Nickel,Dissolved	0.00739		0.00200	1	11/21/2022 12:34	WG1959113
Potassium	ND		2.00	1	11/17/2022 13:08	WG1959249
Potassium,Dissolved	ND		2.00	1	11/21/2022 12:34	WG1959113
Selenium	ND		0.00200	1	11/17/2022 13:08	WG1959249
Selenium,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Silver	ND		0.00200	1	11/17/2022 13:08	WG1959249
Silver,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Sodium	4.66		2.00	1	11/17/2022 13:08	WG1959249
Sodium,Dissolved	4.16		2.00	1	11/21/2022 12:34	WG1959113
Thallium	ND		0.00200	1	11/17/2022 13:08	WG1959249
Thallium,Dissolved	ND		0.00200	1	11/21/2022 12:34	WG1959113
Vanadium	ND		0.00500	1	11/17/2022 13:08	WG1959249
Vanadium,Dissolved	ND		0.00500	1	11/21/2022 12:34	WG1959113
Zinc	0.0287		0.0250	1	11/17/2022 13:08	WG1959249
Zinc,Dissolved	ND		0.0250	1	11/21/2022 12:34	WG1959113

1
Cp

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Tc

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Ss

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Cn

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Sr

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Qc

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Gl

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Al

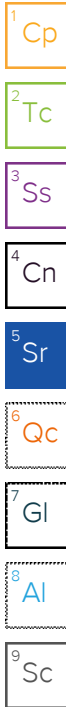
9
Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 02:04	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 02:04	WG1957865
Benzene	ND		0.00100	1	11/11/2022 02:04	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 02:04	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 02:04	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 02:04	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 02:04	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 02:04	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 02:04	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 02:04	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 02:04	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 02:04	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:04	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 02:04	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 02:04	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:04	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 02:04	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:04	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:04	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 02:04	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 02:04	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 02:04	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 02:04	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 02:04	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 02:04	WG1957865
Styrene	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 02:04	WG1957865
Toluene	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 02:04	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 02:04	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 02:04	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 02:04	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 02:04	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 02:04	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 02:04	WG1957865
(S) Toluene-d8	108		80.0-120		11/11/2022 02:04	WG1957865
(S) 4-Bromofluorobenzene	101		77.0-126		11/11/2022 02:04	WG1957865
(S) 1,2-Dichloroethane-d4	98.6		70.0-130		11/11/2022 02:04	WG1957865



EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000220	1.1	11/11/2022 19:16	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000220	1.1	11/11/2022 19:16	WG1957920

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	69.8		2.50	1	11/17/2022 13:12	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/15/2022 08:35	WG1958823

Sample Narrative:

L1555128-02 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:53	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	48.7		20.0	1	11/11/2022 01:30	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 22:11	WG1956421
Chloride	26.2		1.00	1	11/08/2022 22:11	WG1956421
Fluoride	ND		0.150	1	11/08/2022 22:11	WG1956421
Nitrate	0.143		0.100	1	11/08/2022 22:11	WG1956421
Sulfate	38.6		5.00	1	11/08/2022 22:11	WG1956421

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:16	WG1956585
Mercury,Dissolved	ND		0.000200	1	11/11/2022 12:41	WG1956586

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:05	WG1959140
Boron,Dissolved	ND		0.200	1	11/17/2022 12:46	WG1959080

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.652		0.100	1	11/17/2022 13:12	WG1959249
Aluminum,Dissolved	ND		0.100	1	11/21/2022 12:50	WG1959113
Antimony	ND		0.00400	1	11/17/2022 13:12	WG1959249
Antimony,Dissolved	ND		0.00400	1	11/21/2022 12:50	WG1959113
Arsenic	ND		0.00200	1	11/17/2022 13:12	WG1959249
Arsenic,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Barium	0.0972		0.00200	1	11/17/2022 13:12	WG1959249
Barium,Dissolved	0.0644		0.00200	1	11/21/2022 12:50	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	11/17/2022 13:12	WG1959249
Beryllium,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Cadmium	0.00686		0.00100	1	11/17/2022 13:12	WG1959249
Cadmium,Dissolved	0.00559		0.00100	1	11/21/2022 12:50	WG1959113
Calcium	17.3		1.00	1	11/17/2022 13:12	WG1959249
Calcium,Dissolved	15.6		1.00	1	11/21/2022 12:50	WG1959113
Chromium	0.0120		0.00200	1	11/17/2022 13:12	WG1959249
Chromium,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Cobalt	ND		0.00200	1	11/17/2022 13:12	WG1959249
Cobalt,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Copper	0.00752		0.00500	1	11/17/2022 13:12	WG1959249
Copper,Dissolved	ND		0.00500	1	11/21/2022 12:50	WG1959113
Iron	0.645		0.100	1	11/17/2022 13:12	WG1959249
Iron,Dissolved	ND		0.100	1	11/21/2022 12:50	WG1959113
Lead	0.00561		0.00200	1	11/17/2022 13:12	WG1959249
Lead,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Magnesium	6.48		1.00	1	11/17/2022 13:12	WG1959249
Magnesium,Dissolved	5.68		1.00	1	11/21/2022 12:50	WG1959113
Manganese	0.207		0.00500	1	11/17/2022 13:12	WG1959249
Manganese,Dissolved	0.140		0.00500	1	11/21/2022 12:50	WG1959113
Nickel	0.00679		0.00200	1	11/17/2022 13:12	WG1959249
Nickel,Dissolved	0.00422		0.00200	1	11/21/2022 12:50	WG1959113
Potassium	6.43		2.00	1	11/17/2022 13:12	WG1959249
Potassium,Dissolved	5.85		2.00	1	11/21/2022 12:50	WG1959113
Selenium	ND		0.00200	1	11/17/2022 13:12	WG1959249
Selenium,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Silver	ND		0.00200	1	11/17/2022 13:12	WG1959249
Silver,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Sodium	11.2		2.00	1	11/17/2022 13:12	WG1959249
Sodium,Dissolved	10.8		2.00	1	11/21/2022 12:50	WG1959113
Thallium	ND		0.00200	1	11/17/2022 13:12	WG1959249
Thallium,Dissolved	ND		0.00200	1	11/21/2022 12:50	WG1959113
Vanadium	ND		0.00500	1	11/17/2022 13:12	WG1959249
Vanadium,Dissolved	ND		0.00500	1	11/21/2022 12:50	WG1959113
Zinc	0.159		0.0250	1	11/17/2022 13:12	WG1959249
Zinc,Dissolved	0.0712		0.0250	1	11/21/2022 12:50	WG1959113

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 02:23	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 02:23	WG1957865
Benzene	ND		0.00100	1	11/11/2022 02:23	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 02:23	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 02:23	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 02:23	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 02:23	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 02:23	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 02:23	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 02:23	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 02:23	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 02:23	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:23	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 02:23	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 02:23	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:23	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 02:23	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:23	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:23	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 02:23	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 02:23	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 02:23	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 02:23	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 02:23	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 02:23	WG1957865
Styrene	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 02:23	WG1957865
Toluene	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 02:23	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 02:23	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 02:23	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 02:23	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 02:23	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 02:23	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 02:23	WG1957865
(S) Toluene-d8	106		80.0-120		11/11/2022 02:23	WG1957865
(S) 4-Bromofluorobenzene	102		77.0-126		11/11/2022 02:23	WG1957865
(S) 1,2-Dichloroethane-d4	98.8		70.0-130		11/11/2022 02:23	WG1957865

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000204	1.02	11/11/2022 19:27	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	11/11/2022 19:27	WG1957920

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	30.8		2.50	1	11/17/2022 13:15	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/15/2022 08:44	WG1958823

Sample Narrative:

L1555128-03 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:54	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:30	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 22:25	WG1956421
Chloride	11.4		1.00	1	11/08/2022 22:25	WG1956421
Fluoride	ND		0.150	1	11/08/2022 22:25	WG1956421
Nitrate	0.987		0.100	1	11/08/2022 22:25	WG1956421
Sulfate	ND		5.00	1	11/08/2022 22:25	WG1956421

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:18	WG1956585

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:08	WG1959140

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:15	WG1959249
Antimony	ND		0.00400	1	11/17/2022 13:15	WG1959249
Arsenic	ND		0.00200	1	11/17/2022 13:15	WG1959249
Barium	0.0102		0.00200	1	11/17/2022 13:15	WG1959249
Beryllium	ND		0.00200	1	11/17/2022 13:15	WG1959249
Cadmium	ND		0.00100	1	11/17/2022 13:15	WG1959249
Calcium	6.53		1.00	1	11/17/2022 13:15	WG1959249
Chromium	ND		0.00200	1	11/17/2022 13:15	WG1959249
Cobalt	ND		0.00200	1	11/17/2022 13:15	WG1959249
Copper	ND		0.00500	1	11/17/2022 13:15	WG1959249

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.684		0.100	1	11/17/2022 13:15	WG1959249
Lead	ND		0.00200	1	11/17/2022 13:15	WG1959249
Magnesium	3.53		1.00	1	11/17/2022 13:15	WG1959249
Manganese	0.0237		0.00500	1	11/17/2022 13:15	WG1959249
Nickel	ND		0.00200	1	11/17/2022 13:15	WG1959249
Potassium	ND		2.00	1	11/17/2022 13:15	WG1959249
Selenium	ND		0.00200	1	11/17/2022 13:15	WG1959249
Silver	ND		0.00200	1	11/17/2022 13:15	WG1959249
Sodium	4.01		2.00	1	11/17/2022 13:15	WG1959249
Thallium	ND		0.00200	1	11/17/2022 13:15	WG1959249
Vanadium	ND		0.00500	1	11/17/2022 13:15	WG1959249
Zinc	ND		0.0250	1	11/17/2022 13:15	WG1959249

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 02:42	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 02:42	WG1957865
Benzene	ND		0.00100	1	11/11/2022 02:42	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 02:42	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 02:42	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 02:42	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 02:42	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 02:42	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 02:42	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 02:42	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 02:42	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 02:42	WG1957865
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 02:42	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 02:42	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 02:42	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:42	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 02:42	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:42	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 02:42	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 02:42	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 02:42	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 02:42	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 02:42	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 02:42	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 02:42	WG1957865
Styrene	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 02:42	WG1957865
Toluene	ND		0.00100	1	11/11/2022 02:42	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 02:42	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 02:42	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 02:42	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 02:42	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 02:42	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 02:42	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 02:42	WG1957865
<i>(S) Toluene-d8</i>	111		80.0-120		11/11/2022 02:42	WG1957865
<i>(S) 4-Bromofluorobenzene</i>	103		77.0-126		11/11/2022 02:42	WG1957865
<i>(S) 1,2-Dichloroethane-d4</i>	97.4		70.0-130		11/11/2022 02:42	WG1957865

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 19:39	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 19:39	WG1957920

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	83.8		2.50	1	11/17/2022 13:18	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/15/2022 08:47	WG1958823

Sample Narrative:

L1555128-04 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:56	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:31	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 22:39	WG1956421
Chloride	63.5		1.00	1	11/08/2022 22:39	WG1956421
Fluoride	ND		0.150	1	11/08/2022 22:39	WG1956421
Nitrate	0.759		0.100	1	11/08/2022 22:39	WG1956421
Sulfate	12.4		5.00	1	11/08/2022 22:39	WG1956421

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:20	WG1956585
Mercury,Dissolved	ND		0.000200	1	11/11/2022 12:49	WG1956586

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:17	WG1959140
Boron,Dissolved	ND		0.200	1	11/17/2022 12:49	WG1959080

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:18	WG1959249
Aluminum,Dissolved	ND		0.100	1	11/21/2022 12:53	WG1959113
Antimony	ND		0.00400	1	11/17/2022 13:18	WG1959249
Antimony,Dissolved	ND		0.00400	1	11/21/2022 12:53	WG1959113
Arsenic	ND		0.00200	1	11/17/2022 13:18	WG1959249
Arsenic,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Barium	0.0517		0.00200	1	11/17/2022 13:18	WG1959249
Barium,Dissolved	0.0473		0.00200	1	11/21/2022 12:53	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	11/17/2022 13:18	WG1959249
Beryllium,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Cadmium	ND		0.00100	1	11/17/2022 13:18	WG1959249
Cadmium,Dissolved	ND		0.00100	1	11/21/2022 12:53	WG1959113
Calcium	15.8		1.00	1	11/17/2022 13:18	WG1959249
Calcium,Dissolved	14.3		1.00	1	11/21/2022 12:53	WG1959113
Chromium	0.00285		0.00200	1	11/17/2022 13:18	WG1959249
Chromium,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Cobalt	ND		0.00200	1	11/17/2022 13:18	WG1959249
Cobalt,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Copper	0.0125		0.00500	1	11/17/2022 13:18	WG1959249
Copper,Dissolved	0.0122		0.00500	1	11/21/2022 12:53	WG1959113
Iron	ND		0.100	1	11/17/2022 13:18	WG1959249
Iron,Dissolved	ND		0.100	1	11/21/2022 12:53	WG1959113
Lead	ND		0.00200	1	11/17/2022 13:18	WG1959249
Lead,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Magnesium	10.8		1.00	1	11/17/2022 13:18	WG1959249
Magnesium,Dissolved	9.54		1.00	1	11/21/2022 12:53	WG1959113
Manganese	0.244		0.00500	1	11/17/2022 13:18	WG1959249
Manganese,Dissolved	0.209		0.00500	1	11/21/2022 12:53	WG1959113
Nickel	0.00613		0.00200	1	11/17/2022 13:18	WG1959249
Nickel,Dissolved	0.00508		0.00200	1	11/21/2022 12:53	WG1959113
Potassium	ND		2.00	1	11/17/2022 13:18	WG1959249
Potassium,Dissolved	ND		2.00	1	11/21/2022 12:53	WG1959113
Selenium	ND		0.00200	1	11/17/2022 13:18	WG1959249
Selenium,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Silver	ND		0.00200	1	11/17/2022 13:18	WG1959249
Silver,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Sodium	20.6		2.00	1	11/17/2022 13:18	WG1959249
Sodium,Dissolved	18.5		2.00	1	11/21/2022 12:53	WG1959113
Thallium	ND		0.00200	1	11/17/2022 13:18	WG1959249
Thallium,Dissolved	ND		0.00200	1	11/21/2022 12:53	WG1959113
Vanadium	ND		0.00500	1	11/17/2022 13:18	WG1959249
Vanadium,Dissolved	ND		0.00500	1	11/21/2022 12:53	WG1959113
Zinc	0.0502		0.0250	1	11/17/2022 13:18	WG1959249
Zinc,Dissolved	0.0341		0.0250	1	11/21/2022 12:53	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 03:01	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 03:01	WG1957865
Benzene	ND		0.00100	1	11/11/2022 03:01	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 03:01	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 03:01	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 03:01	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 03:01	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 03:01	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 03:01	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 03:01	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 03:01	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 03:01	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:01	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 03:01	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 03:01	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:01	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 03:01	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:01	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:01	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 03:01	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 03:01	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 03:01	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 03:01	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 03:01	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 03:01	WG1957865
Styrene	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 03:01	WG1957865
Toluene	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 03:01	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 03:01	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 03:01	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 03:01	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 03:01	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 03:01	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 03:01	WG1957865
(S) Toluene-d8	107		80.0-120		11/11/2022 03:01	WG1957865
(S) 4-Bromofluorobenzene	104		77.0-126		11/11/2022 03:01	WG1957865
(S) 1,2-Dichloroethane-d4	99.4		70.0-130		11/11/2022 03:01	WG1957865

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 19:51	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 19:51	WG1957920

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	71.2		2.50	1	11/17/2022 13:28	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/15/2022 08:50	WG1958823

Sample Narrative:

L1555128-05 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:57	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:31	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 23:20	WG1956421
Chloride	42.6		1.00	1	11/08/2022 23:20	WG1956421
Fluoride	ND		0.150	1	11/08/2022 23:20	WG1956421
Nitrate	1.46		0.100	1	11/08/2022 23:20	WG1956421
Sulfate	ND		5.00	1	11/08/2022 23:20	WG1956421

Mercury by Method 7470A

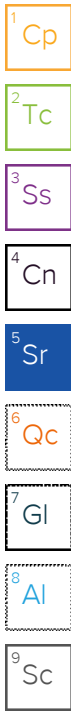
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:37	WG1956585

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:20	WG1959140

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:28	WG1959249
Antimony	ND		0.00400	1	11/17/2022 13:28	WG1959249
Arsenic	ND		0.00200	1	11/17/2022 13:28	WG1959249
Barium	0.0159		0.00200	1	11/17/2022 13:28	WG1959249
Beryllium	ND		0.00200	1	11/17/2022 13:28	WG1959249
Cadmium	ND		0.00100	1	11/17/2022 13:28	WG1959249
Calcium	19.2		1.00	1	11/17/2022 13:28	WG1959249
Chromium	ND		0.00200	1	11/17/2022 13:28	WG1959249
Cobalt	ND		0.00200	1	11/17/2022 13:28	WG1959249
Copper	ND		0.00500	1	11/17/2022 13:28	WG1959249



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.122		0.100	1	11/17/2022 13:28	WG1959249
Lead	ND		0.00200	1	11/17/2022 13:28	WG1959249
Magnesium	5.61		1.00	1	11/17/2022 13:28	WG1959249
Manganese	0.00662		0.00500	1	11/17/2022 13:28	WG1959249
Nickel	ND		0.00200	1	11/17/2022 13:28	WG1959249
Potassium	ND		2.00	1	11/17/2022 13:28	WG1959249
Selenium	ND		0.00200	1	11/17/2022 13:28	WG1959249
Silver	ND		0.00200	1	11/17/2022 13:28	WG1959249
Sodium	4.93		2.00	1	11/17/2022 13:28	WG1959249
Thallium	ND		0.00200	1	11/17/2022 13:28	WG1959249
Vanadium	ND		0.00500	1	11/17/2022 13:28	WG1959249
Zinc	ND		0.0250	1	11/17/2022 13:28	WG1959249

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 03:20	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 03:20	WG1957865
Benzene	ND		0.00100	1	11/11/2022 03:20	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 03:20	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 03:20	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 03:20	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 03:20	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 03:20	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 03:20	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 03:20	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 03:20	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 03:20	WG1957865
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:20	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 03:20	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 03:20	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:20	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 03:20	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:20	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:20	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 03:20	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 03:20	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 03:20	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 03:20	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 03:20	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 03:20	WG1957865
Styrene	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 03:20	WG1957865
Toluene	ND		0.00100	1	11/11/2022 03:20	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 03:20	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 03:20	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 03:20	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 03:20	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 03:20	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 03:20	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 03:20	WG1957865
<i>(S) Toluene-d8</i>	108		80.0-120		11/11/2022 03:20	WG1957865
<i>(S) 4-Bromofluorobenzene</i>	106		77.0-126		11/11/2022 03:20	WG1957865
<i>(S) 1,2-Dichloroethane-d4</i>	98.8		70.0-130		11/11/2022 03:20	WG1957865

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 20:38	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 20:38	WG1957920

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	61.7		2.50	1	11/17/2022 13:31	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/13/2022 15:04	WG1958824

Sample Narrative:

L1555128-06 WG1958824: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 14:59	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:32	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 23:34	WG1956421
Chloride	39.6		1.00	1	11/08/2022 23:34	WG1956421
Fluoride	ND		0.150	1	11/08/2022 23:34	WG1956421
Nitrate	0.760		0.100	1	11/08/2022 23:34	WG1956421
Sulfate	ND		5.00	1	11/08/2022 23:34	WG1956421

Mercury by Method 7470A

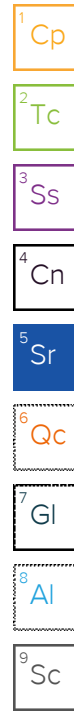
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:39	WG1956585

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:23	WG1959140

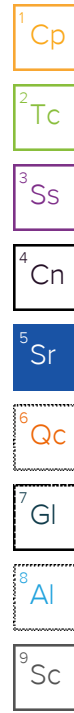
Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:31	WG1959249
Antimony	ND		0.00400	1	11/17/2022 13:31	WG1959249
Arsenic	ND		0.00200	1	11/17/2022 13:31	WG1959249
Barium	0.0324		0.00200	1	11/17/2022 13:31	WG1959249
Beryllium	ND		0.00200	1	11/17/2022 13:31	WG1959249
Cadmium	ND		0.00100	1	11/17/2022 13:31	WG1959249
Calcium	15.4		1.00	1	11/17/2022 13:31	WG1959249
Chromium	ND		0.00200	1	11/17/2022 13:31	WG1959249
Cobalt	ND		0.00200	1	11/17/2022 13:31	WG1959249
Copper	ND		0.00500	1	11/17/2022 13:31	WG1959249



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	11/17/2022 13:31	WG1959249
Lead	ND		0.00200	1	11/17/2022 13:31	WG1959249
Magnesium	5.66		1.00	1	11/17/2022 13:31	WG1959249
Manganese	ND		0.00500	1	11/17/2022 13:31	WG1959249
Nickel	ND		0.00200	1	11/17/2022 13:31	WG1959249
Potassium	ND		2.00	1	11/17/2022 13:31	WG1959249
Selenium	ND		0.00200	1	11/17/2022 13:31	WG1959249
Silver	ND		0.00200	1	11/17/2022 13:31	WG1959249
Sodium	5.89		2.00	1	11/17/2022 13:31	WG1959249
Thallium	ND		0.00200	1	11/17/2022 13:31	WG1959249
Vanadium	ND		0.00500	1	11/17/2022 13:31	WG1959249
Zinc	ND		0.0250	1	11/17/2022 13:31	WG1959249



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 03:39	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 03:39	WG1957865
Benzene	ND		0.00100	1	11/11/2022 03:39	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 03:39	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 03:39	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 03:39	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 03:39	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 03:39	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 03:39	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 03:39	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 03:39	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 03:39	WG1957865
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:39	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 03:39	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 03:39	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:39	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 03:39	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:39	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:39	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 03:39	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 03:39	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 03:39	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 03:39	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 03:39	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 03:39	WG1957865
Styrene	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 03:39	WG1957865
Toluene	ND		0.00100	1	11/11/2022 03:39	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 03:39	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 03:39	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 03:39	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 03:39	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 03:39	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 03:39	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 03:39	WG1957865
<i>(S) Toluene-d8</i>	106		80.0-120		11/11/2022 03:39	WG1957865
<i>(S) 4-Bromofluorobenzene</i>	101		77.0-126		11/11/2022 03:39	WG1957865
<i>(S) 1,2-Dichloroethane-d4</i>	99.5		70.0-130		11/11/2022 03:39	WG1957865

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 20:50	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 20:50	WG1957920

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	89.5		2.50	1	11/17/2022 13:35	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/13/2022 15:14	WG1958824

Sample Narrative:

L1555128-07 WG1958824: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 15:00	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:32	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 21:03	WG1956421
Chloride	61.2		1.00	1	11/08/2022 21:03	WG1956421
Fluoride	ND		0.150	1	11/08/2022 21:03	WG1956421
Nitrate	6.00		0.100	1	11/08/2022 21:03	WG1956421
Sulfate	ND		5.00	1	11/08/2022 21:03	WG1956421

Mercury by Method 7470A

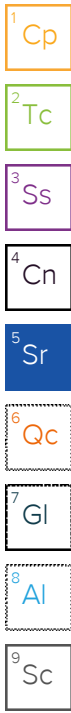
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:41	WG1956585

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:25	WG1959140

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:35	WG1959249
Antimony	ND		0.00400	1	11/17/2022 13:35	WG1959249
Arsenic	ND		0.00200	1	11/17/2022 13:35	WG1959249
Barium	0.0498		0.00200	1	11/17/2022 13:35	WG1959249
Beryllium	ND		0.00200	1	11/17/2022 13:35	WG1959249
Cadmium	ND		0.00100	1	11/17/2022 13:35	WG1959249
Calcium	23.3		1.00	1	11/17/2022 13:35	WG1959249
Chromium	ND		0.00200	1	11/17/2022 13:35	WG1959249
Cobalt	ND		0.00200	1	11/17/2022 13:35	WG1959249
Copper	ND		0.00500	1	11/17/2022 13:35	WG1959249



Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	11/17/2022 13:35	WG1959249
Lead	ND		0.00200	1	11/17/2022 13:35	WG1959249
Magnesium	7.61		1.00	1	11/17/2022 13:35	WG1959249
Manganese	0.00927		0.00500	1	11/17/2022 13:35	WG1959249
Nickel	ND		0.00200	1	11/17/2022 13:35	WG1959249
Potassium	2.07		2.00	1	11/17/2022 13:35	WG1959249
Selenium	ND		0.00200	1	11/17/2022 13:35	WG1959249
Silver	ND		0.00200	1	11/17/2022 13:35	WG1959249
Sodium	15.2		2.00	1	11/17/2022 13:35	WG1959249
Thallium	ND		0.00200	1	11/17/2022 13:35	WG1959249
Vanadium	ND		0.00500	1	11/17/2022 13:35	WG1959249
Zinc	ND		0.0250	1	11/17/2022 13:35	WG1959249



Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 03:58	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 03:58	WG1957865
Benzene	ND		0.00100	1	11/11/2022 03:58	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 03:58	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 03:58	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 03:58	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 03:58	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 03:58	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 03:58	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 03:58	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 03:58	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 03:58	WG1957865
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 03:58	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 03:58	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 03:58	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:58	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 03:58	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:58	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 03:58	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 03:58	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 03:58	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 03:58	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 03:58	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 03:58	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 03:58	WG1957865
Styrene	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 03:58	WG1957865
Toluene	ND		0.00100	1	11/11/2022 03:58	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 03:58	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 03:58	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 03:58	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 03:58	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 03:58	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 03:58	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 03:58	WG1957865
<i>(S) Toluene-d8</i>	109		80.0-120		11/11/2022 03:58	WG1957865
<i>(S) 4-Bromofluorobenzene</i>	102		77.0-126		11/11/2022 03:58	WG1957865
<i>(S) 1,2-Dichloroethane-d4</i>	97.7		70.0-130		11/11/2022 03:58	WG1957865

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

EDB / DBCP by Method 8011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 21:02	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 21:02	WG1957920

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	70.6		2.50	1	11/17/2022 13:38	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/13/2022 15:16	WG1958824

Sample Narrative:

L1555128-08 WG1958824: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 15:02	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:32	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 21:17	WG1956421
Chloride	26.0		1.00	1	11/08/2022 21:17	WG1956421
Fluoride	ND		0.150	1	11/08/2022 21:17	WG1956421
Nitrate	0.124		0.100	1	11/08/2022 21:17	WG1956421
Sulfate	38.5		5.00	1	11/08/2022 21:17	WG1956421

Mercury by Method 7470A

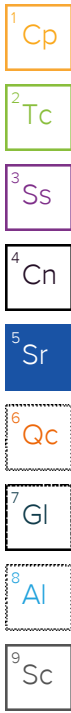
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:43	WG1956585
Mercury,Dissolved	ND		0.000200	1	11/11/2022 12:51	WG1956586

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:28	WG1959140
Boron,Dissolved	ND		0.200	1	11/17/2022 12:52	WG1959080

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	0.320		0.100	1	11/17/2022 13:38	WG1959249
Aluminum,Dissolved	ND		0.100	1	11/21/2022 12:57	WG1959113
Antimony	ND		0.00400	1	11/17/2022 13:38	WG1959249
Antimony,Dissolved	ND		0.00400	1	11/21/2022 12:57	WG1959113
Arsenic	ND		0.00200	1	11/17/2022 13:38	WG1959249
Arsenic,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Barium	0.0782		0.00200	1	11/17/2022 13:38	WG1959249
Barium,Dissolved	0.0652		0.00200	1	11/21/2022 12:57	WG1959113



DUPLICATE

SAMPLE RESULTS - 08

Collected date/time: 11/07/22 00:00

L1555128

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Beryllium	ND		0.00200	1	11/17/2022 13:38	WG1959249
Beryllium,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Cadmium	0.00549		0.00100	1	11/17/2022 13:38	WG1959249
Cadmium,Dissolved	0.00575		0.00100	1	11/21/2022 12:57	WG1959113
Calcium	17.7		1.00	1	11/17/2022 13:38	WG1959249
Calcium,Dissolved	15.3		1.00	1	11/21/2022 12:57	WG1959113
Chromium	0.00645		0.00200	1	11/17/2022 13:38	WG1959249
Chromium,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Cobalt	ND		0.00200	1	11/17/2022 13:38	WG1959249
Cobalt,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Copper	ND		0.00500	1	11/17/2022 13:38	WG1959249
Copper,Dissolved	ND		0.00500	1	11/21/2022 12:57	WG1959113
Iron	0.405		0.100	1	11/17/2022 13:38	WG1959249
Iron,Dissolved	ND		0.100	1	11/21/2022 12:57	WG1959113
Lead	0.00210		0.00200	1	11/17/2022 13:38	WG1959249
Lead,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Magnesium	6.41		1.00	1	11/17/2022 13:38	WG1959249
Magnesium,Dissolved	5.67		1.00	1	11/21/2022 12:57	WG1959113
Manganese	0.171		0.00500	1	11/17/2022 13:38	WG1959249
Manganese,Dissolved	0.142		0.00500	1	11/21/2022 12:57	WG1959113
Nickel	0.00402		0.00200	1	11/17/2022 13:38	WG1959249
Nickel,Dissolved	0.00428		0.00200	1	11/21/2022 12:57	WG1959113
Potassium	6.24		2.00	1	11/17/2022 13:38	WG1959249
Potassium,Dissolved	5.84		2.00	1	11/21/2022 12:57	WG1959113
Selenium	ND		0.00200	1	11/17/2022 13:38	WG1959249
Selenium,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Silver	ND		0.00200	1	11/17/2022 13:38	WG1959249
Silver,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Sodium	11.3		2.00	1	11/17/2022 13:38	WG1959249
Sodium,Dissolved	10.7		2.00	1	11/21/2022 12:57	WG1959113
Thallium	ND		0.00200	1	11/17/2022 13:38	WG1959249
Thallium,Dissolved	ND		0.00200	1	11/21/2022 12:57	WG1959113
Vanadium	ND		0.00500	1	11/17/2022 13:38	WG1959249
Vanadium,Dissolved	ND		0.00500	1	11/21/2022 12:57	WG1959113
Zinc	0.0585		0.0250	1	11/17/2022 13:38	WG1959249
Zinc,Dissolved	0.0785		0.0250	1	11/21/2022 12:57	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/11/2022 04:17	WG1957865
Acrylonitrile	ND		0.0100	1	11/11/2022 04:17	WG1957865
Benzene	ND		0.00100	1	11/11/2022 04:17	WG1957865
Bromochloromethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
Bromodichloromethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
Bromoform	ND		0.00100	1	11/11/2022 04:17	WG1957865
Bromomethane	ND		0.00500	1	11/11/2022 04:17	WG1957865
Carbon disulfide	ND		0.00100	1	11/11/2022 04:17	WG1957865
Carbon tetrachloride	ND		0.00100	1	11/11/2022 04:17	WG1957865
Chlorobenzene	ND		0.00100	1	11/11/2022 04:17	WG1957865
Chlorodibromomethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
Chloroethane	ND		0.00500	1	11/11/2022 04:17	WG1957865
Chloroform	ND		0.00500	1	11/11/2022 04:17	WG1957865
Chloromethane	ND		0.00250	1	11/11/2022 04:17	WG1957865
Dibromomethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/11/2022 04:17	WG1957865

DUPLICATE

SAMPLE RESULTS - 08

Collected date/time: 11/07/22 00:00

L1555128

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,2-Dibromoethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,2-Dichlorobenzene	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,4-Dichlorobenzene	ND		0.00100	1	11/11/2022 04:17	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/11/2022 04:17	WG1957865
1,1-Dichloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,2-Dichloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,1-Dichloroethene	ND		0.00100	1	11/11/2022 04:17	WG1957865
cis-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 04:17	WG1957865
trans-1,2-Dichloroethene	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,2-Dichloropropane	ND		0.00100	1	11/11/2022 04:17	WG1957865
cis-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 04:17	WG1957865
trans-1,3-Dichloropropene	ND		0.00100	1	11/11/2022 04:17	WG1957865
Ethylbenzene	ND		0.00100	1	11/11/2022 04:17	WG1957865
2-Hexanone	ND		0.0100	1	11/11/2022 04:17	WG1957865
Iodomethane	ND		0.0100	1	11/11/2022 04:17	WG1957865
2-Butanone (MEK)	ND		0.0100	1	11/11/2022 04:17	WG1957865
Methylene Chloride	ND		0.00500	1	11/11/2022 04:17	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/11/2022 04:17	WG1957865
Styrene	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
Tetrachloroethene	ND		0.00100	1	11/11/2022 04:17	WG1957865
Toluene	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,1,1-Trichloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
1,1,2-Trichloroethane	ND		0.00100	1	11/11/2022 04:17	WG1957865
Trichloroethene	ND		0.00100	1	11/11/2022 04:17	WG1957865
Trichlorofluoromethane	ND		0.00500	1	11/11/2022 04:17	WG1957865
1,2,3-Trichloropropane	ND		0.00250	1	11/11/2022 04:17	WG1957865
Vinyl acetate	ND		0.0100	1	11/11/2022 04:17	WG1957865
Vinyl chloride	ND		0.00100	1	11/11/2022 04:17	WG1957865
Xylenes, Total	ND		0.00300	1	11/11/2022 04:17	WG1957865
(S) Toluene-d8	110		80.0-120		11/11/2022 04:17	WG1957865
(S) 4-Bromofluorobenzene	103		77.0-126		11/11/2022 04:17	WG1957865
(S) 1,2-Dichloroethane-d4	96.7		70.0-130		11/11/2022 04:17	WG1957865

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000202	1.01	11/11/2022 21:14	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	11/11/2022 21:14	WG1957920

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	11/17/2022 13:41	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/13/2022 15:19	WG1958824

Sample Narrative:

L1555128-09 WG1958824: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	11/09/2022 15:08	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	11/11/2022 01:32	WG1957841

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	11/08/2022 23:47	WG1956421
Chloride	ND		1.00	1	11/08/2022 23:47	WG1956421
Fluoride	ND		0.150	1	11/08/2022 23:47	WG1956421
Nitrate	ND		0.100	1	11/08/2022 23:47	WG1956421
Sulfate	ND		5.00	1	11/08/2022 23:47	WG1956421

Mercury by Method 7470A

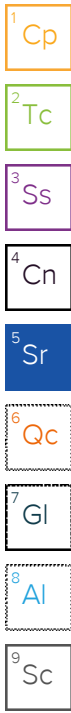
Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	11/14/2022 12:45	WG1956585

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	11/16/2022 09:31	WG1959140

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	11/17/2022 13:41	WG1959249
Antimony	ND		0.00400	1	11/17/2022 13:41	WG1959249
Arsenic	ND		0.00200	1	11/17/2022 13:41	WG1959249
Barium	ND		0.00200	1	11/17/2022 13:41	WG1959249
Beryllium	ND		0.00200	1	11/17/2022 13:41	WG1959249
Cadmium	ND		0.00100	1	11/17/2022 13:41	WG1959249
Calcium	ND		1.00	1	11/17/2022 13:41	WG1959249
Chromium	ND		0.00200	1	11/17/2022 13:41	WG1959249
Cobalt	ND		0.00200	1	11/17/2022 13:41	WG1959249
Copper	ND		0.00500	1	11/17/2022 13:41	WG1959249



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SAMPLE RESULTS - 09

Collected date/time: 11/07/22 13:27

L1555128

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	11/17/2022 13:41	WG1959249
Lead	ND		0.00200	1	11/17/2022 13:41	WG1959249
Magnesium	ND		1.00	1	11/17/2022 13:41	WG1959249
Manganese	ND		0.00500	1	11/17/2022 13:41	WG1959249
Nickel	ND		0.00200	1	11/17/2022 13:41	WG1959249
Potassium	ND		2.00	1	11/17/2022 13:41	WG1959249
Selenium	ND		0.00200	1	11/17/2022 13:41	WG1959249
Silver	ND		0.00200	1	11/17/2022 13:41	WG1959249
Sodium	ND		2.00	1	11/17/2022 13:41	WG1959249
Thallium	ND		0.00200	1	11/17/2022 13:41	WG1959249
Vanadium	ND		0.00500	1	11/17/2022 13:41	WG1959249
Zinc	ND		0.0250	1	11/17/2022 13:41	WG1959249

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	ND		0.0500	1	11/12/2022 00:27	WG1958256
Acrylonitrile	ND		0.0100	1	11/12/2022 00:27	WG1958256
Benzene	ND		0.00100	1	11/12/2022 00:27	WG1958256
Bromochloromethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
Bromodichloromethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
Bromoform	ND		0.00100	1	11/12/2022 00:27	WG1958256
Bromomethane	ND		0.00500	1	11/12/2022 00:27	WG1958256
Carbon disulfide	ND		0.00100	1	11/12/2022 00:27	WG1958256
Carbon tetrachloride	ND		0.00100	1	11/12/2022 00:27	WG1958256
Chlorobenzene	ND		0.00100	1	11/12/2022 00:27	WG1958256
Chlorodibromomethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
Chloroethane	ND		0.00500	1	11/12/2022 00:27	WG1958256
Chloroform	ND		0.00500	1	11/12/2022 00:27	WG1958256
Chloromethane	ND		0.00250	1	11/12/2022 00:27	WG1958256
Dibromomethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/12/2022 00:27	WG1958256
1,2-Dibromoethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,2-Dichlorobenzene	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,4-Dichlorobenzene	ND		0.00100	1	11/12/2022 00:27	WG1958256
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/12/2022 00:27	WG1958256
1,1-Dichloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,2-Dichloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,1-Dichloroethene	ND		0.00100	1	11/12/2022 00:27	WG1958256
cis-1,2-Dichloroethene	ND		0.00100	1	11/12/2022 00:27	WG1958256
trans-1,2-Dichloroethene	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,2-Dichloropropane	ND		0.00100	1	11/12/2022 00:27	WG1958256
cis-1,3-Dichloropropene	ND	J4	0.00100	1	11/12/2022 00:27	WG1958256
trans-1,3-Dichloropropene	ND		0.00100	1	11/12/2022 00:27	WG1958256
Ethylbenzene	ND		0.00100	1	11/12/2022 00:27	WG1958256
2-Hexanone	ND		0.0100	1	11/12/2022 00:27	WG1958256
Iodomethane	ND		0.0100	1	11/12/2022 00:27	WG1958256
2-Butanone (MEK)	ND		0.0100	1	11/12/2022 00:27	WG1958256
Methylene Chloride	ND		0.00500	1	11/12/2022 00:27	WG1958256
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/12/2022 00:27	WG1958256
Styrene	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
Tetrachloroethene	ND		0.00100	1	11/12/2022 00:27	WG1958256
Toluene	ND		0.00100	1	11/12/2022 00:27	WG1958256
1,1,1-Trichloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
1,1,2-Trichloroethane	ND		0.00100	1	11/12/2022 00:27	WG1958256
Trichloroethene	ND		0.00100	1	11/12/2022 00:27	WG1958256
Trichlorofluoromethane	ND		0.00500	1	11/12/2022 00:27	WG1958256
1,2,3-Trichloropropane	ND		0.00250	1	11/12/2022 00:27	WG1958256
Vinyl acetate	ND		0.0100	1	11/12/2022 00:27	WG1958256
Vinyl chloride	ND	J3 J4	0.00100	1	11/12/2022 00:27	WG1958256
Xylenes, Total	ND		0.00300	1	11/12/2022 00:27	WG1958256
<i>(S) Toluene-d8</i>	111		80.0-120		11/12/2022 00:27	WG1958256
<i>(S) 4-Bromofluorobenzene</i>	88.1		77.0-126		11/12/2022 00:27	WG1958256
<i>(S) 1,2-Dichloroethane-d4</i>	108		70.0-130		11/12/2022 00:27	WG1958256

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	11/11/2022 21:26	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 21:26	WG1957920

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result	Qualifier	RDL	Dilution	Analysis	Batch
	mg/l		mg/l		date / time	
Acetone	ND		0.0500	1	11/12/2022 00:50	WG1958256
Acrylonitrile	ND		0.0100	1	11/12/2022 00:50	WG1958256
Benzene	ND		0.00100	1	11/12/2022 00:50	WG1958256
Bromochloromethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
Bromodichloromethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
Bromoform	ND		0.00100	1	11/12/2022 00:50	WG1958256
Bromomethane	ND		0.00500	1	11/12/2022 00:50	WG1958256
Carbon disulfide	ND		0.00100	1	11/12/2022 00:50	WG1958256
Carbon tetrachloride	ND		0.00100	1	11/12/2022 00:50	WG1958256
Chlorobenzene	ND		0.00100	1	11/12/2022 00:50	WG1958256
Chlorodibromomethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
Chloroethane	ND		0.00500	1	11/12/2022 00:50	WG1958256
Chloroform	ND		0.00500	1	11/12/2022 00:50	WG1958256
Chloromethane	ND		0.00250	1	11/12/2022 00:50	WG1958256
Dibromomethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	11/12/2022 00:50	WG1958256
1,2-Dibromoethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,2-Dichlorobenzene	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,4-Dichlorobenzene	ND		0.00100	1	11/12/2022 00:50	WG1958256
trans-1,4-Dichloro-2-butene	ND		0.00250	1	11/12/2022 00:50	WG1958256
1,1-Dichloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,2-Dichloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,1-Dichloroethene	ND		0.00100	1	11/12/2022 00:50	WG1958256
cis-1,2-Dichloroethene	ND		0.00100	1	11/12/2022 00:50	WG1958256
trans-1,2-Dichloroethene	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,2-Dichloropropane	ND		0.00100	1	11/12/2022 00:50	WG1958256
cis-1,3-Dichloropropene	ND	J4	0.00100	1	11/12/2022 00:50	WG1958256
trans-1,3-Dichloropropene	ND		0.00100	1	11/12/2022 00:50	WG1958256
Ethylbenzene	ND		0.00100	1	11/12/2022 00:50	WG1958256
2-Hexanone	ND		0.0100	1	11/12/2022 00:50	WG1958256
Iodomethane	ND		0.0100	1	11/12/2022 00:50	WG1958256
2-Butanone (MEK)	ND		0.0100	1	11/12/2022 00:50	WG1958256
Methylene Chloride	ND		0.00500	1	11/12/2022 00:50	WG1958256
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	11/12/2022 00:50	WG1958256
Styrene	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,1,1,2-Tetrachloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,1,2,2-Tetrachloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
Tetrachloroethene	ND		0.00100	1	11/12/2022 00:50	WG1958256
Toluene	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,1,1-Trichloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
1,1,2-Trichloroethane	ND		0.00100	1	11/12/2022 00:50	WG1958256
Trichloroethene	ND		0.00100	1	11/12/2022 00:50	WG1958256
Trichlorofluoromethane	ND		0.00500	1	11/12/2022 00:50	WG1958256
1,2,3-Trichloropropane	ND		0.00250	1	11/12/2022 00:50	WG1958256
Vinyl acetate	ND		0.0100	1	11/12/2022 00:50	WG1958256
Vinyl chloride	ND	J3 J4	0.00100	1	11/12/2022 00:50	WG1958256
Xylenes, Total	ND		0.00300	1	11/12/2022 00:50	WG1958256
(S) Toluene-d8	111		80.0-120		11/12/2022 00:50	WG1958256
(S) 4-Bromofluorobenzene	89.0		77.0-126		11/12/2022 00:50	WG1958256
(S) 1,2-Dichloroethane-d4	109		70.0-130		11/12/2022 00:50	WG1958256

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3860990-1 11/15/22 07:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1552737-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1552737-01 11/15/22 07:11 • (DUP) R3860990-3 11/15/22 07:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	238	239	1	0.362		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1555227-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555227-01 11/15/22 08:53 • (DUP) R3860990-4 11/15/22 08:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	420	396	1	5.81		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3860990-2 11/15/22 07:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	99.1	99.1	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3860440-2 11/13/22 13:31

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1553680-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1553680-01 11/13/22 13:37 • (DUP) R3860440-3 11/13/22 13:42

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	1510	1510	1	0.153		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1555227-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1555227-02 11/13/22 15:23 • (DUP) R3860440-4 11/13/22 15:27

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	467	470	1	0.479		20

Sample Narrative:

OS: Endpoint pH 4.5 headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3860440-1 11/13/22 13:27

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	99.9	99.9	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3859078-1 11/09/22 14:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		0.117	0.250

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1555074-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1555074-07 11/09/22 14:36 • (DUP) R3859078-5 11/09/22 14:38

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	1.83	1.81	1	1.37		10

L1555136-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555136-01 11/09/22 15:12 • (DUP) R3859078-7 11/09/22 15:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	3.42	3.40	1	0.411		10

Laboratory Control Sample (LCS)

(LCS) R3859078-2 11/09/22 14:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.11	94.8	90.0-110	

L1555074-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555074-06 11/09/22 14:32 • (MS) R3859078-3 11/09/22 14:33 • (MSD) R3859078-4 11/09/22 14:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5.00	0.403	5.10	5.07	93.8	93.4	1	90.0-110			0.472	10

L1555131-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555131-01 11/09/22 15:09 • (MS) R3859078-6 11/09/22 15:11

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00	ND	4.71	94.3	1	90.0-110	

Method Blank (MB)

(MB) R3858974-1 11/09/22 16:01

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11.7	20.0

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1555046-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555046-01 11/09/22 16:03 • (DUP) R3858974-3 11/09/22 16:04

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	0.000		20

L1555128-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555128-01 11/09/22 16:08 • (DUP) R3858974-6 11/09/22 16:10

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3858974-2 11/09/22 16:01

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	506	101	90.0-110	

L1555046-07 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555046-07 11/09/22 16:05 • (MS) R3858974-4 11/09/22 16:06 • (MSD) R3858974-5 11/09/22 16:06

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
COD	500	ND	522	503	104	101	1	80.0-120			3.57	20

Method Blank (MB)

(MB) R3859768-1 11/11/22 01:28

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11.7	20.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1551326-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1551326-01 11/11/22 01:29 • (DUP) R3859768-3 11/11/22 01:29

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	64.9	65.5	1	0.923		20

L1551426-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1551426-01 11/11/22 01:30 • (DUP) R3859768-4 11/11/22 01:30

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	682	667	1	2.13		20

L1555188-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555188-01 11/11/22 01:35 • (DUP) R3859768-7 11/11/22 01:35

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	1100	1170	2	6.99		20

Laboratory Control Sample (LCS)

(LCS) R3859768-2 11/11/22 01:29

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	508	102	90.0-110	

L1555128-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555128-03 11/11/22 01:30 • (MS) R3859768-5 11/11/22 01:31 • (MSD) R3859768-6 11/11/22 01:31

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
COD	500	ND	483	495	96.7	98.9	1	80.0-120			2.27	20

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

Method Blank (MB)

(MB) R3859054-1 11/08/22 20:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1555128-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1555128-09 11/08/22 23:47 • (DUP) R3859054-3 11/09/22 00:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	ND	ND	1	0.000		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

L1554622-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1554622-05 11/09/22 02:18 • (DUP) R3859054-5 11/09/22 02:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	3.51	3.46	1	1.48		15
Fluoride	ND	ND	1	52.4	P1	15
Nitrate	0.238	0.235	1	0.888		15
Sulfate	ND	ND	1	2.27		15

Laboratory Control Sample (LCS)

(LCS) R3859054-2 11/08/22 20:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.8	102	80.0-120	
Chloride	40.0	38.9	97.4	80.0-120	
Fluoride	8.00	7.80	97.5	80.0-120	
Nitrate	8.00	7.53	94.1	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3859054-2 11/08/22 20:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	38.1	95.3	80.0-120	

L1555128-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555128-09 11/08/22 23:47 • (MS) R3859054-4 11/09/22 00:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	54.0	108	1	80.0-120	
Chloride	50.0	ND	52.0	104	1	80.0-120	
Fluoride	5.00	ND	5.22	104	1	80.0-120	
Nitrate	5.00	ND	5.19	104	1	80.0-120	
Sulfate	50.0	ND	50.8	102	1	80.0-120	

L1554622-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554622-05 11/09/22 02:18 • (MS) R3859054-6 11/09/22 02:45 • (MSD) R3859054-7 11/09/22 02:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	53.5	54.0	107	108	1	80.0-120			0.918	15
Chloride	50.0	3.51	56.8	57.2	107	107	1	80.0-120			0.710	15
Fluoride	5.00	ND	5.47	5.51	108	109	1	80.0-120			0.709	15
Nitrate	5.00	0.238	5.32	5.92	102	114	1	80.0-120			10.7	15
Sulfate	50.0	ND	52.9	53.9	102	104	1	80.0-120			1.91	15

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860676-1 11/14/22 11:49

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury	U		0.000100	0.000200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3860676-4 11/14/22 13:28

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury	0.00300	0.00281	93.6	80.0-120	

4 Cn

5 Sr

L1555074-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555074-08 11/14/22 11:53 • (MS) R3860676-2 11/14/22 12:02 • (MSD) R3860676-3 11/14/22 12:04

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury	0.00300	ND	0.00305	0.00277	102	92.3	1	75.0-125			9.67	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860013-1 11/11/22 12:30

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Mercury,Dissolved	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3860013-2 11/11/22 12:32

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Mercury,Dissolved	0.00300	0.00315	105	80.0-120	

L1555128-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555128-01 11/11/22 12:34 • (MS) R3860013-4 11/11/22 12:58 • (MSD) R3860013-3 11/11/22 12:37

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Mercury,Dissolved	0.00300	ND	0.00284	0.00291	94.8	96.9	1	75.0-125			2.25	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3862266-1 11/17/22 12:12

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Boron,Dissolved	U		0.0200	0.200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3862266-2 11/17/22 12:15

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Boron,Dissolved	1.00	0.960	96.0	80.0-120	

4 Cn

5 Sr

L1555604-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555604-03 11/17/22 12:18 • (MS) R3862266-4 11/17/22 12:23 • (MSD) R3862266-5 11/17/22 12:26

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Boron,Dissolved	1.00	ND	1.02	1.03	93.6	94.4	1	75.0-125			0.730	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3861655-1 11/16/22 08:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R3861655-2 11/16/22 08:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.973	97.3	80.0-120	

L1555128-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555128-01 11/16/22 08:48 • (MS) R3861655-4 11/16/22 08:53 • (MSD) R3861655-5 11/16/22 08:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.958	0.955	95.8	95.5	1	75.0-125			0.302	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3863419-1 11/21/22 12:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum,Dissolved	U		0.0185	0.100
Antimony,Dissolved	U		0.00103	0.00400
Arsenic,Dissolved	U		0.000180	0.00200
Barium,Dissolved	0.000588	U	0.000381	0.00200
Beryllium,Dissolved	U		0.000190	0.00200
Cadmium,Dissolved	U		0.000150	0.00100
Calcium,Dissolved	U		0.0936	1.00
Chromium,Dissolved	U		0.00124	0.00200
Cobalt,Dissolved	U		0.0000596	0.00200
Copper,Dissolved	U		0.00151	0.00500
Iron,Dissolved	U		0.0281	0.100
Lead,Dissolved	U		0.000849	0.00200
Magnesium,Dissolved	U		0.0735	1.00
Manganese,Dissolved	U		0.000704	0.00500
Nickel,Dissolved	U		0.000816	0.00200
Potassium,Dissolved	U		0.108	2.00
Selenium,Dissolved	U		0.000300	0.00200
Silver,Dissolved	U		0.0000700	0.00200
Sodium,Dissolved	U		0.376	2.00
Thallium,Dissolved	U		0.000121	0.00200
Vanadium,Dissolved	U		0.000664	0.00500
Zinc,Dissolved	U		0.00302	0.0250

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3863419-2 11/21/22 12:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum,Dissolved	5.00	4.71	94.2	80.0-120	
Antimony,Dissolved	0.0500	0.0455	91.0	80.0-120	
Arsenic,Dissolved	0.0500	0.0469	93.7	80.0-120	
Barium,Dissolved	0.0500	0.0485	97.1	80.0-120	
Beryllium,Dissolved	0.0500	0.0457	91.3	80.0-120	
Cadmium,Dissolved	0.0500	0.0487	97.4	80.0-120	
Calcium,Dissolved	5.00	4.78	95.6	80.0-120	
Chromium,Dissolved	0.0500	0.0472	94.5	80.0-120	
Cobalt,Dissolved	0.0500	0.0478	95.5	80.0-120	
Copper,Dissolved	0.0500	0.0483	96.5	80.0-120	
Iron,Dissolved	5.00	4.93	98.6	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3863419-2 11/21/22 12:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Lead,Dissolved	0.0500	0.0468	93.7	80.0-120	
Magnesium,Dissolved	5.00	4.80	96.0	80.0-120	
Manganese,Dissolved	0.0500	0.0482	96.4	80.0-120	
Nickel,Dissolved	0.0500	0.0477	95.5	80.0-120	
Potassium,Dissolved	5.00	4.73	94.7	80.0-120	
Selenium,Dissolved	0.0500	0.0516	103	80.0-120	
Silver,Dissolved	0.0500	0.0467	93.4	80.0-120	
Sodium,Dissolved	5.00	4.79	95.8	80.0-120	
Thallium,Dissolved	0.0500	0.0481	96.3	80.0-120	
Vanadium,Dissolved	0.0500	0.0467	93.3	80.0-120	
Zinc,Dissolved	0.500	0.456	91.1	80.0-120	

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1556160-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556160-06 11/21/22 12:18 • (MS) R3863419-4 11/21/22 12:24 • (MSD) R3863419-5 11/21/22 12:27

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Aluminum,Dissolved	5.00		4.58	4.63	91.6	92.5	1	75.0-125			0.991	20
Antimony,Dissolved	0.0500		0.0466	0.0471	93.2	94.3	1	75.0-125			1.20	20
Arsenic,Dissolved	0.0500		0.0465	0.0477	91.1	93.7	1	75.0-125			2.69	20
Barium,Dissolved	0.0500		0.0621	0.0670	95.1	105	1	75.0-125			7.57	20
Beryllium,Dissolved	0.0500		0.0453	0.0441	90.7	88.2	1	75.0-125			2.82	20
Cadmium,Dissolved	0.0500		0.0476	0.0487	95.2	97.4	1	75.0-125			2.30	20
Calcium,Dissolved	5.00		272	274	0.000	30.4	1	75.0-125	V	V	0.824	20
Chromium,Dissolved	0.0500	ND	0.0459	0.0468	91.8	93.6	1	75.0-125			1.92	20
Cobalt,Dissolved	0.0500		0.0451	0.0453	89.8	90.3	1	75.0-125			0.489	20
Copper,Dissolved	0.0500		0.0475	0.0468	95.0	93.7	1	75.0-125			1.41	20
Iron,Dissolved	5.00		7.89	7.90	91.2	91.4	1	75.0-125			0.104	20
Lead,Dissolved	0.0500	ND	0.0486	0.0474	97.2	94.7	1	75.0-125			2.60	20
Magnesium,Dissolved	5.00		76.0	77.1	86.6	108	1	75.0-125			1.40	20
Manganese,Dissolved	0.0500		0.342	0.347	66.6	76.7	1	75.0-125	V		1.46	20
Nickel,Dissolved	0.0500		0.0449	0.0448	89.9	89.7	1	75.0-125			0.231	20
Potassium,Dissolved	5.00		6.18	6.64	92.6	102	1	75.0-125			7.15	20
Selenium,Dissolved	0.0500	ND	0.0499	0.0508	99.8	102	1	75.0-125			1.84	20
Silver,Dissolved	0.0500		0.0463	0.0467	92.6	93.4	1	75.0-125			0.928	20
Sodium,Dissolved	5.00		6.95	7.23	88.4	94.1	1	75.0-125			4.05	20
Thallium,Dissolved	0.0500		0.0502	0.0483	100	96.5	1	75.0-125			3.93	20
Vanadium,Dissolved	0.0500		0.0455	0.0464	91.0	92.9	1	75.0-125			1.98	20
Zinc,Dissolved	0.500	ND	0.443	0.448	85.5	86.5	1	75.0-125			1.20	20

Method Blank (MB)

(MB) R3862225-1 11/17/22 12:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	U		0.00124	0.00200
Cobalt	U		0.0000596	0.00200
Copper	U		0.00151	0.00500
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Selenium	0.000607	U	0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3862225-2 11/17/22 12:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	5.21	104	80.0-120	
Antimony	0.0500	0.0515	103	80.0-120	
Arsenic	0.0500	0.0543	109	80.0-120	
Barium	0.0500	0.0523	105	80.0-120	
Beryllium	0.0500	0.0541	108	80.0-120	
Cadmium	0.0500	0.0554	111	80.0-120	
Calcium	5.00	5.35	107	80.0-120	
Chromium	0.0500	0.0550	110	80.0-120	
Cobalt	0.0500	0.0557	111	80.0-120	
Copper	0.0500	0.0549	110	80.0-120	
Iron	5.00	5.63	113	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3862225-2 11/17/22 12:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0521	104	80.0-120	
Magnesium	5.00	5.49	110	80.0-120	
Manganese	0.0500	0.0543	109	80.0-120	
Nickel	0.0500	0.0554	111	80.0-120	
Potassium	5.00	5.26	105	80.0-120	
Selenium	0.0500	0.0558	112	80.0-120	
Silver	0.0500	0.0551	110	80.0-120	
Sodium	5.00	5.26	105	80.0-120	
Thallium	0.0500	0.0533	107	80.0-120	
Vanadium	0.0500	0.0547	109	80.0-120	
Zinc	0.500	0.535	107	80.0-120	

L1554000-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554000-01 11/17/22 12:16 • (MS) R3862225-4 11/17/22 12:23 • (MSD) R3862225-5 11/17/22 12:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	5.00	ND	5.32	5.22	106	104	1	75.0-125			2.02	20
Antimony	0.0500	ND	0.0525	0.0526	105	105	1	75.0-125			0.241	20
Arsenic	0.0500	ND	0.0537	0.0520	107	104	1	75.0-125			3.26	20
Barium	0.0500	0.00529	0.0568	0.0565	103	102	1	75.0-125			0.553	20
Beryllium	0.0500	ND	0.0544	0.0539	109	108	1	75.0-125			0.914	20
Cadmium	0.0500	ND	0.0562	0.0567	112	113	1	75.0-125			0.927	20
Calcium	5.00	71.6	78.2	76.9	131	104	1	75.0-125	V		1.68	20
Chromium	0.0500	ND	0.0531	0.0531	106	106	1	75.0-125			0.0655	20
Cobalt	0.0500	ND	0.0533	0.0529	107	106	1	75.0-125			0.826	20
Copper	0.0500	ND	0.0542	0.0528	108	106	1	75.0-125			2.74	20
Iron	5.00	ND	5.52	5.49	110	109	1	75.0-125			0.502	20
Lead	0.0500	ND	0.0539	0.0536	108	107	1	75.0-125			0.413	20
Magnesium	5.00	41.1	46.6	46.4	109	107	1	75.0-125			0.272	20
Manganese	0.0500	ND	0.0552	0.0541	106	104	1	75.0-125			1.91	20
Nickel	0.0500	ND	0.0526	0.0524	105	105	1	75.0-125			0.377	20
Potassium	5.00	ND	6.16	5.98	109	105	1	75.0-125			2.92	20
Selenium	0.0500	ND	0.0566	0.0549	112	109	1	75.0-125			3.13	20
Silver	0.0500	ND	0.0558	0.0551	112	110	1	75.0-125			1.20	20
Sodium	5.00	9.42	15.0	14.7	111	106	1	75.0-125			1.63	20
Thallium	0.0500	ND	0.0551	0.0547	110	109	1	75.0-125			0.741	20
Vanadium	0.0500	ND	0.0540	0.0526	108	105	1	75.0-125			2.50	20
Zinc	0.500	ND	0.514	0.512	102	102	1	75.0-125			0.364	20

1 Cp
2 Tc
3 Ss
4 Cn
5 Sr
6 Qc
7 Gl
8 Al
9 Sc

Method Blank (MB)

(MB) R3860552-3 11/10/22 21:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
Acrylonitrile	U		0.000671	0.0100
Benzene	U		0.0000941	0.00100
Bromochloromethane	U		0.000128	0.00100
Bromodichloromethane	U		0.000136	0.00100
Bromoform	U		0.000129	0.00100
Bromomethane	U		0.000605	0.00500
Carbon disulfide	U		0.0000962	0.00100
Carbon tetrachloride	U		0.000128	0.00100
Chlorobenzene	U		0.000116	0.00100
Chlorodibromomethane	U		0.000140	0.00100
Chloroethane	U		0.000192	0.00500
Chloroform	U		0.000111	0.00500
Chloromethane	U		0.000960	0.00250
Dibromomethane	U		0.000122	0.00100
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	0.00100
1,2-Dichlorobenzene	U		0.000107	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
1,1-Dichloroethane	U		0.000100	0.00100
1,2-Dichloroethane	U		0.0000819	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
cis-1,2-Dichloroethene	U		0.000126	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
trans-1,3-Dichloropropene	U		0.000118	0.00100
Ethylbenzene	U		0.000137	0.00100
2-Hexanone	U		0.000787	0.0100
Iodomethane	U		0.00600	0.0100
2-Butanone (MEK)	U		0.00119	0.0100
Methylene Chloride	U		0.000430	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
Styrene	U		0.000118	0.00100
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860552-3 11/10/22 21:03

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
1,1,2-Trichloroethane	U		0.000158	0.00100
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	112			80.0-120
(S) 4-Bromofluorobenzene	99.1			77.0-126
(S) 1,2-Dichloroethane-d4	94.9			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860552-1 11/10/22 19:27 • (LCSD) R3860552-2 11/10/22 19:46

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Acetone	0.0250	0.0217	0.0185	86.8	74.0	19.0-160			15.9	27
Acrylonitrile	0.0250	0.0252	0.0242	101	96.8	55.0-149			4.05	20
Benzene	0.00500	0.00490	0.00464	98.0	92.8	70.0-123			5.45	20
Bromochloromethane	0.00500	0.00526	0.00511	105	102	76.0-122			2.89	20
Bromodichloromethane	0.00500	0.00516	0.00496	103	99.2	75.0-120			3.95	20
Bromoform	0.00500	0.00590	0.00582	118	116	68.0-132			1.37	20
Bromomethane	0.00500	0.00466	0.00468	93.2	93.6	10.0-160			0.428	25
Carbon disulfide	0.00500	0.00516	0.00501	103	100	61.0-128			2.95	20
Carbon tetrachloride	0.00500	0.00543	0.00516	109	103	68.0-126			5.10	20
Chlorobenzene	0.00500	0.00582	0.00577	116	115	80.0-121			0.863	20
Chlorodibromomethane	0.00500	0.00574	0.00582	115	116	77.0-125			1.38	20
Chloroethane	0.00500	0.00516	0.00502	103	100	47.0-150			2.75	20
Chloroform	0.00500	0.00477	0.00456	95.4	91.2	73.0-120			4.50	20
Chloromethane	0.00500	0.00493	0.00486	98.6	97.2	41.0-142			1.43	20
Dibromomethane	0.00500	0.00476	0.00483	95.2	96.6	80.0-120			1.46	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00540	0.00550	108	110	58.0-134			1.83	20
1,2-Dibromoethane	0.00500	0.00579	0.00575	116	115	80.0-122			0.693	20
1,2-Dichlorobenzene	0.00500	0.00559	0.00568	112	114	79.0-121			1.60	20
1,4-Dichlorobenzene	0.00500	0.00544	0.00550	109	110	79.0-120			1.10	20
trans-1,4-Dichloro-2-butene	0.00500	0.00637	0.00624	127	125	33.0-144			2.06	20
1,1-Dichloroethane	0.00500	0.00550	0.00527	110	105	70.0-126			4.27	20
1,2-Dichloroethane	0.00500	0.00445	0.00470	89.0	94.0	70.0-128			5.46	20
1,1-Dichloroethene	0.00500	0.00532	0.00510	106	102	71.0-124			4.22	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860552-1 11/10/22 19:27 • (LCSD) R3860552-2 11/10/22 19:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
cis-1,2-Dichloroethene	0.00500	0.00499	0.00502	99.8	100	73.0-120			0.599	20
trans-1,2-Dichloroethene	0.00500	0.00516	0.00497	103	99.4	73.0-120			3.75	20
1,2-Dichloropropane	0.00500	0.00535	0.00530	107	106	77.0-125			0.939	20
cis-1,3-Dichloropropene	0.00500	0.00505	0.00505	101	101	80.0-123			0.000	20
trans-1,3-Dichloropropene	0.00500	0.00576	0.00589	115	118	78.0-124			2.23	20
Ethylbenzene	0.00500	0.00571	0.00563	114	113	79.0-123			1.41	20
2-Hexanone	0.0250	0.0319	0.0323	128	129	67.0-149			1.25	20
Iodomethane	0.0250	0.0240	0.0234	96.0	93.6	33.0-147			2.53	26
2-Butanone (MEK)	0.0250	0.0286	0.0266	114	106	44.0-160			7.25	20
Methylene Chloride	0.00500	0.00524	0.00510	105	102	67.0-120			2.71	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0298	0.0298	119	119	68.0-142			0.000	20
Styrene	0.00500	0.00572	0.00583	114	117	73.0-130			1.90	20
1,1,1,2-Tetrachloroethane	0.00500	0.00600	0.00611	120	122	75.0-125			1.82	20
1,1,2,2-Tetrachloroethane	0.00500	0.00603	0.00609	121	122	65.0-130			0.990	20
Tetrachloroethene	0.00500	0.00654	0.00641	131	128	72.0-132			2.01	20
Toluene	0.00500	0.00571	0.00556	114	111	79.0-120			2.66	20
1,1,1-Trichloroethane	0.00500	0.00534	0.00510	107	102	73.0-124			4.60	20
1,1,2-Trichloroethane	0.00500	0.00560	0.00577	112	115	80.0-120			2.99	20
Trichloroethene	0.00500	0.00510	0.00451	102	90.2	78.0-124			12.3	20
Trichlorofluoromethane	0.00500	0.00521	0.00517	104	103	59.0-147			0.771	20
1,2,3-Trichloropropane	0.00500	0.00585	0.00564	117	113	73.0-130			3.66	20
Vinyl acetate	0.0250	0.0269	0.0299	108	120	11.0-160			10.6	20
Vinyl chloride	0.00500	0.00567	0.00547	113	109	67.0-131			3.59	20
Xylenes, Total	0.0150	0.0183	0.0180	122	120	79.0-123			1.65	20
(S) Toluene-d8				114	114	80.0-120				
(S) 4-Bromofluorobenzene				101	101	77.0-126				
(S) 1,2-Dichloroethane-d4				93.8	91.5	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3861251-4 11/11/22 23:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
Acrylonitrile	U		0.000671	0.0100
Benzene	U		0.0000941	0.00100
Bromochloromethane	U		0.000128	0.00100
Bromodichloromethane	U		0.000136	0.00100
Bromoform	U		0.000129	0.00100
Bromomethane	U		0.000605	0.00500
Carbon disulfide	U		0.0000962	0.00100
Carbon tetrachloride	U		0.000128	0.00100
Chlorobenzene	U		0.000116	0.00100
Chlorodibromomethane	U		0.000140	0.00100
Chloroethane	U		0.000192	0.00500
Chloroform	U		0.000111	0.00500
Chloromethane	U		0.000960	0.00250
Dibromomethane	U		0.000122	0.00100
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	0.00100
1,2-Dichlorobenzene	U		0.000107	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
1,1-Dichloroethane	U		0.000100	0.00100
1,2-Dichloroethane	U		0.0000819	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
cis-1,2-Dichloroethene	U		0.000126	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
trans-1,3-Dichloropropene	U		0.000118	0.00100
Ethylbenzene	U		0.000137	0.00100
2-Hexanone	U		0.000787	0.0100
Iodomethane	U		0.00600	0.0100
2-Butanone (MEK)	U		0.00119	0.0100
Methylene Chloride	U		0.000430	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
Styrene	U		0.000118	0.00100
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3861251-4 11/11/22 23:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,1,2-Trichloroethane	U		0.000158	0.00100
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	114			80.0-120
(S) 4-Bromofluorobenzene	90.7			77.0-126
(S) 1,2-Dichloroethane-d4	110			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3861251-1 11/11/22 22:08 • (LCSD) R3861251-2 11/11/22 22:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0311	0.0304	124	122	19.0-160			2.28	27
Acrylonitrile	0.0250	0.0308	0.0294	123	118	55.0-149			4.65	20
Benzene	0.00500	0.00445	0.00403	89.0	80.6	70.0-123			9.91	20
Bromochloromethane	0.00500	0.00455	0.00397	91.0	79.4	76.0-122			13.6	20
Bromodichloromethane	0.00500	0.00432	0.00400	86.4	80.0	75.0-120			7.69	20
Bromoform	0.00500	0.00475	0.00456	95.0	91.2	68.0-132			4.08	20
Bromomethane	0.00500	0.00185	0.00174	37.0	34.8	10.0-160			6.13	25
Carbon disulfide	0.00500	0.00391	0.00330	78.2	66.0	61.0-128			16.9	20
Carbon tetrachloride	0.00500	0.00412	0.00386	82.4	77.2	68.0-126			6.52	20
Chlorobenzene	0.00500	0.00519	0.00492	104	98.4	80.0-121			5.34	20
Chlorodibromomethane	0.00500	0.00459	0.00464	91.8	92.8	77.0-125			1.08	20
Chloroethane	0.00500	0.00315	0.00290	63.0	58.0	47.0-150			8.26	20
Chloroform	0.00500	0.00430	0.00410	86.0	82.0	73.0-120			4.76	20
Chloromethane	0.00500	0.00489	0.00404	97.8	80.8	41.0-142			19.0	20
Dibromomethane	0.00500	0.00404	0.00413	80.8	82.6	80.0-120			2.20	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00459	0.00420	91.8	84.0	58.0-134			8.87	20
1,2-Dibromoethane	0.00500	0.00495	0.00473	99.0	94.6	80.0-122			4.55	20
1,2-Dichlorobenzene	0.00500	0.00502	0.00470	100	94.0	79.0-121			6.58	20
1,4-Dichlorobenzene	0.00500	0.00507	0.00464	101	92.8	79.0-120			8.86	20
trans-1,4-Dichloro-2-butene	0.00500	0.00552	0.00526	110	105	33.0-144			4.82	20
1,1-Dichloroethane	0.00500	0.00487	0.00453	97.4	90.6	70.0-126			7.23	20
1,2-Dichloroethane	0.00500	0.00438	0.00435	87.6	87.0	70.0-128			0.687	20
1,1-Dichloroethene	0.00500	0.00418	0.00377	83.6	75.4	71.0-124			10.3	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3861251-1 11/11/22 22:08 • (LCSD) R3861251-2 11/11/22 22:30

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
cis-1,2-Dichloroethene	0.00500	0.00416	0.00378	83.2	75.6	73.0-120			9.57	20
trans-1,2-Dichloroethene	0.00500	0.00397	0.00374	79.4	74.8	73.0-120			5.97	20
1,2-Dichloropropane	0.00500	0.00491	0.00472	98.2	94.4	77.0-125			3.95	20
cis-1,3-Dichloropropene	0.00500	0.00432	0.00394	86.4	78.8	80.0-123		J4	9.20	20
trans-1,3-Dichloropropene	0.00500	0.00507	0.00476	101	95.2	78.0-124			6.31	20
Ethylbenzene	0.00500	0.00491	0.00466	98.2	93.2	79.0-123			5.22	20
2-Hexanone	0.0250	0.0309	0.0307	124	123	67.0-149			0.649	20
Iodomethane	0.0250	0.0164	0.0167	65.6	66.8	33.0-147			1.81	26
2-Butanone (MEK)	0.0250	0.0286	0.0285	114	114	44.0-160			0.350	20
Methylene Chloride	0.00500	0.00469	0.00436	93.8	87.2	67.0-120			7.29	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0349	0.0349	140	140	68.0-142			0.000	20
Styrene	0.00500	0.00456	0.00436	91.2	87.2	73.0-130			4.48	20
1,1,1,2-Tetrachloroethane	0.00500	0.00525	0.00498	105	99.6	75.0-125			5.28	20
1,1,2,2-Tetrachloroethane	0.00500	0.00516	0.00520	103	104	65.0-130			0.772	20
Tetrachloroethene	0.00500	0.00542	0.00483	108	96.6	72.0-132			11.5	20
Toluene	0.00500	0.00516	0.00478	103	95.6	79.0-120			7.65	20
1,1,1-Trichloroethane	0.00500	0.00432	0.00418	86.4	83.6	73.0-124			3.29	20
1,1,2-Trichloroethane	0.00500	0.00493	0.00482	98.6	96.4	80.0-120			2.26	20
Trichloroethene	0.00500	0.00454	0.00431	90.8	86.2	78.0-124			5.20	20
Trichlorofluoromethane	0.00500	0.00398	0.00343	79.6	68.6	59.0-147			14.8	20
1,2,3-Trichloropropane	0.00500	0.00513	0.00501	103	100	73.0-130			2.37	20
Vinyl acetate	0.0250	0.0260	0.0223	104	89.2	11.0-160			15.3	20
Vinyl chloride	0.00500	0.00409	0.00324	81.8	64.8	67.0-131		J3 J4	23.2	20
Xylenes, Total	0.0150	0.0146	0.0136	97.3	90.7	79.0-123			7.09	20
(S) Toluene-d8				112	112	80.0-120				
(S) 4-Bromofluorobenzene				91.4	90.6	77.0-126				
(S) 1,2-Dichloroethane-d4				107	108	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1554553-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554553-09 11/12/22 06:02 • (MS) R3861251-5 11/12/22 07:31 • (MSD) R3861251-6 11/12/22 07:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Acetone	2.50	427	436	428	360	40.0	100	10.0-160	E V	E	1.85	35
Acrylonitrile	2.50	ND	3.11	3.13	124	125	100	21.0-160			0.641	32
Benzene	0.500	ND	0.427	0.463	85.4	92.6	100	17.0-158			8.09	27
Bromochloromethane	0.500	ND	0.362	0.371	72.4	74.2	100	38.0-142			2.46	26
Bromodichloromethane	0.500	ND	0.423	0.448	84.6	89.6	100	31.0-150			5.74	27
Bromoform	0.500	ND	0.467	0.502	93.4	100	100	29.0-150			7.22	29

L1554553-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554553-09 11/12/22 06:02 • (MS) R3861251-5 11/12/22 07:31 • (MSD) R3861251-6 11/12/22 07:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Bromomethane	0.500	ND	ND	ND	29.2	38.0	100	10.0-160			26.2	38
Carbon disulfide	0.500	ND	0.359	0.386	71.8	77.2	100	10.0-156			7.25	28
Carbon tetrachloride	0.500	ND	0.397	0.428	79.4	85.6	100	23.0-159			7.52	28
Chlorobenzene	0.500	ND	0.478	0.558	95.6	112	100	33.0-152			15.4	27
Chlorodibromomethane	0.500	ND	0.463	0.510	92.6	102	100	37.0-149			9.66	27
Chloroethane	0.500	ND	ND	ND	64.2	62.0	100	10.0-160			3.49	30
Chloroform	0.500	ND	ND	ND	85.2	87.0	100	29.0-154			2.09	28
Chloromethane	0.500	ND	0.432	0.463	86.4	92.6	100	10.0-160			6.93	29
Dibromomethane	0.500	ND	0.407	0.432	81.4	86.4	100	30.0-151			5.96	27
1,2-Dibromo-3-Chloropropane	0.500	ND	ND	0.530	93.4	106	100	22.0-151			12.6	34
1,2-Dibromoethane	0.500	ND	0.482	0.523	96.4	105	100	34.0-147			8.16	27
1,2-Dichlorobenzene	0.500	ND	0.483	0.536	96.6	107	100	34.0-149			10.4	28
1,4-Dichlorobenzene	0.500	ND	0.474	0.517	94.8	103	100	35.0-142			8.68	27
trans-1,4-Dichloro-2-butene	0.500	ND	0.531	0.584	106	117	100	10.0-157			9.51	37
1,1-Dichloroethane	0.500	ND	0.469	0.506	93.8	101	100	25.0-158			7.59	27
1,2-Dichloroethane	0.500	ND	0.457	0.454	91.4	90.8	100	29.0-151			0.659	27
1,1-Dichloroethene	0.500	ND	0.417	0.463	83.4	92.6	100	11.0-160			10.5	29
cis-1,2-Dichloroethene	0.500	ND	0.405	0.431	81.0	86.2	100	10.0-160			6.22	27
trans-1,2-Dichloroethene	0.500	ND	0.378	0.404	75.6	80.8	100	17.0-153			6.65	27
1,2-Dichloropropane	0.500	ND	0.505	0.538	101	108	100	30.0-156			6.33	27
cis-1,3-Dichloropropene	0.500	ND	0.401	0.435	80.2	87.0	100	34.0-149			8.13	28
trans-1,3-Dichloropropene	0.500	ND	0.465	0.515	93.0	103	100	32.0-149			10.2	28
Ethylbenzene	0.500	ND	0.482	0.542	96.4	108	100	30.0-155			11.7	27
2-Hexanone	2.50	ND	3.13	3.29	125	132	100	21.0-160			4.98	29
Iodomethane	2.50	ND	1.09	1.43	32.7	46.3	100	10.0-160			27.0	40
2-Butanone (MEK)	2.50	ND	3.67	3.51	135	128	100	10.0-160			4.46	32
Methylene Chloride	0.500	ND	ND	ND	76.6	81.8	100	23.0-144			6.57	28
4-Methyl-2-pentanone (MIBK)	2.50	ND	3.51	3.75	140	150	100	29.0-160			6.61	29
Styrene	0.500	ND	0.455	0.501	91.0	100	100	33.0-155			9.62	28
1,1,1,2-Tetrachloroethane	0.500	ND	0.484	0.548	96.8	110	100	36.0-151			12.4	29
1,1,2,2-Tetrachloroethane	0.500	ND	0.574	0.572	115	114	100	33.0-150			0.349	28
Tetrachloroethene	0.500	ND	0.498	0.588	99.6	118	100	10.0-160			16.6	27
Toluene	0.500	ND	0.494	0.546	98.8	109	100	26.0-154			10.0	28
1,1,1-Trichloroethane	0.500	ND	0.415	0.465	83.0	93.0	100	23.0-160			11.4	28
1,1,2-Trichloroethane	0.500	ND	0.502	0.561	100	112	100	35.0-147			11.1	27
Trichloroethene	0.500	ND	0.425	0.457	85.0	91.4	100	10.0-160			7.26	25
Trichlorofluoromethane	0.500	ND	ND	ND	77.4	83.4	100	17.0-160			7.46	31
1,2,3-Trichloropropane	0.500	ND	0.524	0.563	105	113	100	34.0-151			7.18	29
Vinyl acetate	2.50	ND	3.55	3.66	142	146	100	12.0-160			3.05	31
Vinyl chloride	0.500	ND	0.369	0.402	73.8	80.4	100	10.0-160			8.56	27

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

L1554553-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554553-09 11/12/22 06:02 • (MS) R3861251-5 11/12/22 07:31 • (MSD) R3861251-6 11/12/22 07:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Xylenes, Total	1.50	ND	1.37	1.59	91.3	106	100	29.0-154			14.9	28
<i>(S) Toluene-d8</i>					108	112		80.0-120				
<i>(S) 4-Bromofluorobenzene</i>					89.8	92.9		77.0-126				
<i>(S) 1,2-Dichloroethane-d4</i>					109	106		70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860499-1 11/11/22 17:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Ethylene Dibromide	U		0.0000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.0000748	0.0000200

L1554414-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1554414-02 11/11/22 18:16 • (DUP) R3860499-3 11/11/22 18:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Ethylene Dibromide	ND	ND	1.01	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.01	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860499-4 11/11/22 20:15 • (LCSD) R3860499-5 11/11/22 22:48

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Ethylene Dibromide	0.000250	0.000292	0.000291	117	116	60.0-140			0.343	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000221	0.000222	88.4	88.8	60.0-140			0.451	20

L1555112-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555112-01 11/11/22 17:53 • (MS) R3860499-2 11/11/22 17:41

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Ethylene Dibromide	0.0000921	ND	0.000216	235	1	64.0-159	J5
1,2-Dibromo-3-Chloropropane	0.0000921	ND	0.000128	139	1	72.0-148	P



GLOSSARY OF TERMS

Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.

Qualifier	Description
E	The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL).
J	The identification of the analyte is acceptable; the reported value is an estimate.
J3	The associated batch QC was outside the established quality control range for precision.
J4	The associated batch QC was outside the established quality control range for accuracy.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P	RPD between the primary and confirmatory analysis exceeded 40%.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

ACCREDITATIONS & LOCATIONS

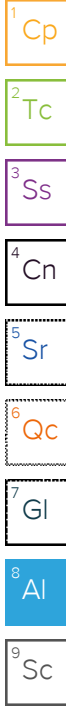
Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey-NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio-VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA-Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.



Company Name/Address:

Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Report to:
Philip Campbell

Project Description:
Former EWS Camden Class 2 Landfill

Phone: **615-333-7797**

Collected by (print):
Adrian Baugh

Collected by (signature):
Adrian Baugh

Immediately Packed on Ice N Y

Billing Information:

Accounts Payable
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Email To: pcampbell@cecinc.com

City/State Collected: **Camden, TN**

Please Circle:
PT MT CT ET

Client Project #
181-364

Site/Facility ID #
CAMDEN, TN

Rush? (Lab MUST Be Notified)
 Same Day Five Day
 Next Day 5 Day (Rad Only)
 Two Day 10 Day (Rad Only)
 Three Day

Lab Project #
CEC-EWS CAMDEN LF

P.O. #

Quote #

Date Results Needed

Pres
Chk

Analysis / Container / Preservative

Chain of Custody Page of



MT JULIET, TN

12065 Lebanon Rd Mount Juliet, TN 37122
Submitting a sample via this chain of custody constitutes acknowledgment and acceptance of the Pace Terms and Conditions found at: <https://info.pacelabs.com/hubfs/pas-standard-terms.pdf>

SDG #

J027

Acctnum: **CEC**

Template: **T133579**

Prelogin: **P960879**

PM: **526 - Chris McCord**

PB: **Bf 11/1/22**

Shipped Via: **Courier**

Sample ID	Comp/Grab	Matrix *	Depth	Date	Time	No. of Cntrs	**WetChem** 250mlHDPE-NoPres	ALK 100ml Amb-NoPres	COD,NH3 250mlHDPE-H2SO4	Diss. Metals-FF 250mlHDPE-HNO3	SV8011 40mlCr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Bik	Remarks	Sample # (lab only)
MW-1	Grab	GW		11/7/22	1135	11	X	X	X	X	X	X	X			-01
MW-3		GW			1430	11	X	X	X	X	X	X	X			-02
MW-4		GW			1335	10	X	X	X	X	X	X	X			-03
MW-5		GW			1235	11	X	X	X	X	X	X	X			-04
TMW-1		GW			1304	10	X	X	X	X	X	X	X			-05
TMW-2		GW			1212	10	X	X	X	X	X	X	X			-06
TMW-3		GW			1050	10	X	X	X	X	X	X	X			-07
DUPLICATE		GW			←	11	X	X	X	X	X	X	X			-08
FIELD BLANK		GW			1327	10	X	X	X		X	X	X			-09
EQUIPMENT BLANK		GW				10	X	X	X		X	X	X			

* Matrix:
 SS - Soil AIR - Air F - Filter
 GW - Groundwater B - Bioassay
 WW - WasteWater
 DW - Drinking Water
 OT - Other

Remarks:**WetChem** = *NITRATE*(48hr hold),CHLORIDE,BROMIDE,SULFATE,FLUORIDE
 Tot/Diss Metals=M6020AP1+Al,Ca,Fe,K,Mg,Mn,Na(6020/7470),and B(6010).

pH _____ Temp _____
 Flow _____ Other _____

Samples returned via:
 UPS FedEx Courier

Tracking #

COC Seal Present/Intact:	NP	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
COC Signed/Accurate:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Bottles arrive intact:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Correct bottles used:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Sufficient volume sent:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
If Applicable		
VOA Zero Headpace:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Preservation Correct/Checked:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
RAD Screen <0.5 mR/hr:		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

Relinquished by: (Signature) <i>Adrian Baugh</i>	Date: 11-8-22	Time: 9:06	Received by: (Signature) <i>Tracy Kibbe</i>	Trip Blank Received: Yes/No 4 = 2 HCL (No) / 2 NaThio (No)	Temp: °C 94	Hold:	Condition: NCF (OK)
Relinquished by: (Signature) <i>Tracy Kibbe</i>	Date: 11-8-22	Time: 1530	Received by: (Signature) <i>Tracy Kibbe</i>				
Relinquished by: (Signature) <i>Tracy Kibbe</i>	Date: 11/08/22	Time: 1530	Received for lab by: (Signature) <i>Tracy Kibbe</i>				

11555128

Tracking Numbers		Temperature
		1.0+0=1.0 NSM
		.6+0=.6 NSM

Civil & Environmental Consultants - TN

Sample Delivery Group: L1555112
Samples Received: 11/08/2022
Project Number: 181-364
Description: EWS Camden Class 2 Landfill
Site: CAMDEN, TN
Report To: Philip Campbell
117 Seaboard Ln.
Suite E100
Franklin, TN 37067

Entire Report Reviewed By:



Chris McCord
Project Manager

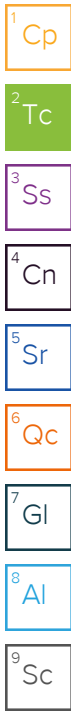
Results relate only to the items tested or calibrated and are reported as rounded values. This test report shall not be reproduced, except in full, without written approval of the laboratory. Where applicable, sampling conducted by Pace Analytical National is performed per guidance provided in laboratory standard operating procedures ENV-SOP-MTJL-0067 and ENV-SOP-MTJL-0068. Where sampling conducted by the customer, results relate to the accuracy of the information provided, and as the samples are received.

Pace Analytical National

12065 Lebanon Rd Mount Juliet, TN 37122 615-758-5858 800-767-5859 www.pacenational.com

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SAMPLE SUMMARY

IWC-L L1555112-01 GW

Collected by: Adrian Baugh
 Collected date/time: 11/07/22 15:25
 Received date/time: 11/08/22 15:30

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1959249	1	11/17/22 13:05	11/17/22 13:05	JPD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1958823	1	11/15/22 08:26	11/15/22 08:26	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1956601	200	11/09/22 14:50	11/09/22 14:50	BMD	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1960260	50	11/15/22 21:30	11/16/22 01:15	CRB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	100	11/09/22 03:27	11/09/22 03:27	GEB	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1956421	1000	11/09/22 03:40	11/09/22 03:40	GEB	Mt. Juliet, TN
Mercury by Method 7470A	WG1956585	10	11/11/22 08:07	11/14/22 12:12	SRT	Mt. Juliet, TN
Mercury by Method 7470A	WG1956586	10	11/10/22 09:47	11/11/22 12:39	SRT	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959080	5	11/16/22 18:32	11/17/22 16:25	ABL	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1959140	10	11/15/22 10:26	11/16/22 14:18	CCE	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959113	100	11/20/22 22:43	11/21/22 12:31	JPD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1959249	100	11/15/22 14:43	11/17/22 13:05	JPD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1957865	25	11/11/22 04:36	11/11/22 04:36	JHH	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1959276	50	11/15/22 13:22	11/15/22 13:22	ADM	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1957920	1	11/11/22 12:43	11/11/22 17:53	RDH	Mt. Juliet, TN

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

CASE NARRATIVE

All sample aliquots were received at the correct temperature, in the proper containers, with the appropriate preservatives, and within method specified holding times, unless qualified or notated within the report. Where applicable, all MDL (LOD) and RDL (LOQ) values reported for environmental samples have been corrected for the dilution factor used in the analysis. All Method and Batch Quality Control are within established criteria except where addressed in this case narrative, a non-conformance form or properly qualified within the sample results. By my digital signature below, I affirm to the best of my knowledge, all problems/anomalies observed by the laboratory as having the potential to affect the quality of the data have been identified by the laboratory, and no information or data have been knowingly withheld that would affect the quality of the data.



Chris McCord
Project Manager

¹ Cp

² Tc

³ Ss

⁴ Cn

⁵ Sr

⁶ Qc

⁷ Gl

⁸ Al

⁹ Sc

Calculated Results

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	41600		250	1	11/17/2022 13:05	WG1959249

Wet Chemistry by Method 2320 B-2011

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	11/15/2022 08:26	WG1958823

Sample Narrative:

L1555112-01 WG1958823: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	1750		50.0	200	11/09/2022 14:50	WG1956601

Wet Chemistry by Method 410.4

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
COD	27200		1000	50	11/16/2022 01:15	WG1960260

Wet Chemistry by Method 9056A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Bromide	ND		100	100	11/09/2022 03:27	WG1956421
Chloride	92400		1000	1000	11/09/2022 03:40	WG1956421
Fluoride	ND		15.0	100	11/09/2022 03:27	WG1956421
Nitrate	77.2		10.0	100	11/09/2022 03:27	WG1956421
Sulfate	1010		500	100	11/09/2022 03:27	WG1956421

Sample Narrative:

L1555112-01 WG1956421: Dilution due to matrix impact on instrumentation at lower dilution

Mercury by Method 7470A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Mercury	ND		0.00200	10	11/14/2022 12:12	WG1956585
Mercury,Dissolved	ND		0.00200	10	11/11/2022 12:39	WG1956586

Metals (ICP) by Method 6010B

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Boron	ND		2.00	10	11/16/2022 14:18	WG1959140
Boron,Dissolved	ND		1.00	5	11/17/2022 16:25	WG1959080

Metals (ICPMS) by Method 6020A

Analyte	Result	Qualifier	RDL	Dilution	Analysis date / time	Batch
Aluminum	343		10.0	100	11/17/2022 13:05	WG1959249
Aluminum,Dissolved	305		10.0	100	11/21/2022 12:31	WG1959113
Antimony	ND		0.400	100	11/17/2022 13:05	WG1959249
Antimony,Dissolved	ND		0.400	100	11/21/2022 12:31	WG1959113
Arsenic	0.400		0.200	100	11/17/2022 13:05	WG1959249

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Arsenic,Dissolved	0.324		0.200	100	11/21/2022 12:31	WG1959113
Barium	2.88		0.200	100	11/17/2022 13:05	WG1959249
Barium,Dissolved	2.63		0.200	100	11/21/2022 12:31	WG1959113
Beryllium	ND		0.200	100	11/17/2022 13:05	WG1959249
Beryllium,Dissolved	ND		0.200	100	11/21/2022 12:31	WG1959113
Cadmium	9.96		0.100	100	11/17/2022 13:05	WG1959249
Cadmium,Dissolved	10.8		0.100	100	11/21/2022 12:31	WG1959113
Calcium	14800		100	100	11/17/2022 13:05	WG1959249
Calcium,Dissolved	14100		100	100	11/21/2022 12:31	WG1959113
Chromium	ND		0.200	100	11/17/2022 13:05	WG1959249
Chromium,Dissolved	ND		0.200	100	11/21/2022 12:31	WG1959113
Cobalt	0.445		0.200	100	11/17/2022 13:05	WG1959249
Cobalt,Dissolved	0.404		0.200	100	11/21/2022 12:31	WG1959113
Copper	0.905		0.500	100	11/17/2022 13:05	WG1959249
Copper,Dissolved	0.966		0.500	100	11/21/2022 12:31	WG1959113
Iron	463		10.0	100	11/17/2022 13:05	WG1959249
Iron,Dissolved	393		10.0	100	11/21/2022 12:31	WG1959113
Lead	0.977		0.200	100	11/17/2022 13:05	WG1959249
Lead,Dissolved	0.875		0.200	100	11/21/2022 12:31	WG1959113
Magnesium	1140		100	100	11/17/2022 13:05	WG1959249
Magnesium,Dissolved	1100		100	100	11/21/2022 12:31	WG1959113
Manganese	26.9		0.500	100	11/17/2022 13:05	WG1959249
Manganese,Dissolved	30.0		0.500	100	11/21/2022 12:31	WG1959113
Nickel	0.584		0.200	100	11/17/2022 13:05	WG1959249
Nickel,Dissolved	0.503		0.200	100	11/21/2022 12:31	WG1959113
Potassium	15600		200	100	11/17/2022 13:05	WG1959249
Potassium,Dissolved	14200		200	100	11/21/2022 12:31	WG1959113
Selenium	0.361	B	0.200	100	11/17/2022 13:05	WG1959249
Selenium,Dissolved	0.350		0.200	100	11/21/2022 12:31	WG1959113
Silver	ND		0.200	100	11/17/2022 13:05	WG1959249
Silver,Dissolved	ND		0.200	100	11/21/2022 12:31	WG1959113
Sodium	25400		200	100	11/17/2022 13:05	WG1959249
Sodium,Dissolved	23200		200	100	11/21/2022 12:31	WG1959113
Thallium	ND		0.200	100	11/17/2022 13:05	WG1959249
Thallium,Dissolved	ND		0.200	100	11/21/2022 12:31	WG1959113
Vanadium	ND		0.500	100	11/17/2022 13:05	WG1959249
Vanadium,Dissolved	ND		0.500	100	11/21/2022 12:31	WG1959113
Zinc	101		2.50	100	11/17/2022 13:05	WG1959249
Zinc,Dissolved	110		2.50	100	11/21/2022 12:31	WG1959113

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Acetone	2.75		2.50	50	11/15/2022 13:22	WG1959276
Acrylonitrile	ND		0.250	25	11/11/2022 04:36	WG1957865
Benzene	ND		0.0250	25	11/11/2022 04:36	WG1957865
Bromochloromethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
Bromodichloromethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
Bromoform	ND		0.0250	25	11/11/2022 04:36	WG1957865
Bromomethane	ND		0.125	25	11/11/2022 04:36	WG1957865
Carbon disulfide	ND		0.0250	25	11/11/2022 04:36	WG1957865
Carbon tetrachloride	ND		0.0250	25	11/11/2022 04:36	WG1957865
Chlorobenzene	ND		0.0250	25	11/11/2022 04:36	WG1957865
Chlorodibromomethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
Chloroethane	ND		0.125	25	11/11/2022 04:36	WG1957865
Chloroform	ND		0.125	25	11/11/2022 04:36	WG1957865

Volatile Organic Compounds (GC/MS) by Method 8260B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Chloromethane	ND		0.0625	25	11/11/2022 04:36	WG1957865
Dibromomethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,2-Dibromo-3-Chloropropane	ND		0.125	25	11/11/2022 04:36	WG1957865
1,2-Dibromoethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,2-Dichlorobenzene	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,4-Dichlorobenzene	ND		0.0250	25	11/11/2022 04:36	WG1957865
trans-1,4-Dichloro-2-butene	ND		0.0625	25	11/11/2022 04:36	WG1957865
1,1-Dichloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,2-Dichloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,1-Dichloroethene	ND		0.0250	25	11/11/2022 04:36	WG1957865
cis-1,2-Dichloroethene	ND		0.0250	25	11/11/2022 04:36	WG1957865
trans-1,2-Dichloroethene	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,2-Dichloropropane	ND		0.0250	25	11/11/2022 04:36	WG1957865
cis-1,3-Dichloropropene	ND		0.0250	25	11/11/2022 04:36	WG1957865
trans-1,3-Dichloropropene	ND		0.0250	25	11/11/2022 04:36	WG1957865
Ethylbenzene	ND		0.0250	25	11/11/2022 04:36	WG1957865
2-Hexanone	ND		0.250	25	11/11/2022 04:36	WG1957865
Iodomethane	ND		0.250	25	11/11/2022 04:36	WG1957865
2-Butanone (MEK)	0.368		0.250	25	11/11/2022 04:36	WG1957865
Methylene Chloride	ND		0.125	25	11/11/2022 04:36	WG1957865
4-Methyl-2-pentanone (MIBK)	ND		0.250	25	11/11/2022 04:36	WG1957865
Styrene	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,1,1,2-Tetrachloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,1,2,2-Tetrachloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
Tetrachloroethene	ND		0.0250	25	11/11/2022 04:36	WG1957865
Toluene	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,1,1-Trichloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
1,1,2-Trichloroethane	ND		0.0250	25	11/11/2022 04:36	WG1957865
Trichloroethene	ND		0.0250	25	11/11/2022 04:36	WG1957865
Trichlorofluoromethane	ND		0.125	25	11/11/2022 04:36	WG1957865
1,2,3-Trichloropropane	ND		0.0625	25	11/11/2022 04:36	WG1957865
Vinyl acetate	ND		0.250	25	11/11/2022 04:36	WG1957865
Vinyl chloride	ND		0.0250	25	11/11/2022 04:36	WG1957865
Xylenes, Total	ND		0.0750	25	11/11/2022 04:36	WG1957865
(S) Toluene-d8	111		80.0-120		11/11/2022 04:36	WG1957865
(S) Toluene-d8	101		80.0-120		11/15/2022 13:22	WG1959276
(S) 4-Bromofluorobenzene	103		77.0-126		11/11/2022 04:36	WG1957865
(S) 4-Bromofluorobenzene	98.9		77.0-126		11/15/2022 13:22	WG1959276
(S) 1,2-Dichloroethane-d4	97.2		70.0-130		11/11/2022 04:36	WG1957865
(S) 1,2-Dichloroethane-d4	88.4		70.0-130		11/15/2022 13:22	WG1959276

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND	<u>J5</u>	0.0000200	1	11/11/2022 17:53	WG1957920
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	11/11/2022 17:53	WG1957920

Method Blank (MB)

(MB) R3860990-1 11/15/22 07:02

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1552737-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1552737-01 11/15/22 07:11 • (DUP) R3860990-3 11/15/22 07:17

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	238	239	1	0.362		20

Sample Narrative:

OS: Endpoint pH 4.5

DUP: Endpoint pH 4.5

L1555227-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555227-01 11/15/22 08:53 • (DUP) R3860990-4 11/15/22 08:57

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Alkalinity	420	396	1	5.81		20

Sample Narrative:

OS: Endpoint pH 4.5 Headspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3860990-2 11/15/22 07:07

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Alkalinity	100	99.1	99.1	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5



Method Blank (MB)

(MB) R3859078-1 11/09/22 14:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
Ammonia Nitrogen	U		0.117	0.250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1555074-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1555074-07 11/09/22 14:36 • (DUP) R3859078-5 11/09/22 14:38

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	1.83	1.81	1	1.37		10

L1555136-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1555136-01 11/09/22 15:12 • (DUP) R3859078-7 11/09/22 15:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
Ammonia Nitrogen	3.42	3.40	1	0.411		10

Laboratory Control Sample (LCS)

(LCS) R3859078-2 11/09/22 14:30

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
Ammonia Nitrogen	7.50	7.11	94.8	90.0-110	

L1555074-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555074-06 11/09/22 14:32 • (MS) R3859078-3 11/09/22 14:33 • (MSD) R3859078-4 11/09/22 14:35

Analyte	Spike Amount	Original Result	MS Result	MSD Result	MS Rec.	MSD Rec.	Dilution	Rec. Limits	MS Qualifier	MSD Qualifier	RPD	RPD Limits
Ammonia Nitrogen	5.00	0.403	5.10	5.07	93.8	93.4	1	90.0-110			0.472	10

L1555131-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555131-01 11/09/22 15:09 • (MS) R3859078-6 11/09/22 15:11

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
Ammonia Nitrogen	5.00	ND	4.71	94.3	1	90.0-110	

Method Blank (MB)

(MB) R3861420-1 11/16/22 01:13

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
COD	U		11.7	20.0

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1555681-07 Original Sample (OS) • Duplicate (DUP)

(OS) L1555681-07 11/16/22 01:21 • (DUP) R3861420-6 11/16/22 01:21

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	200	P1	20

L1554835-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1554835-01 11/16/22 01:14 • (DUP) R3861420-3 11/16/22 01:14

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
COD	ND	ND	1	0.000		20

Laboratory Control Sample (LCS)

(LCS) R3861420-2 11/16/22 01:13

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
COD	500	506	101	90.0-110	

Method Blank (MB)

(MB) R3859054-1 11/08/22 20:36

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Bromide	U		0.353	1.00
Chloride	U		0.379	1.00
Fluoride	U		0.0640	0.150
Nitrate	U		0.0480	0.100
Sulfate	U		0.594	5.00

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1555128-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1555128-09 11/08/22 23:47 • (DUP) R3859054-3 11/09/22 00:01

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	ND	ND	1	0.000		15
Fluoride	ND	ND	1	0.000		15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	0.000		15

L1554622-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1554622-05 11/09/22 02:18 • (DUP) R3859054-5 11/09/22 02:32

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Bromide	ND	ND	1	0.000		15
Chloride	3.51	3.46	1	1.48		15
Fluoride	ND	ND	1	52.4	P1	15
Nitrate	0.238	0.235	1	0.888		15
Sulfate	ND	ND	1	2.27		15

Laboratory Control Sample (LCS)

(LCS) R3859054-2 11/08/22 20:49

Analyte	Spike Amount	LCS Result	LCS Rec.	Rec. Limits	LCS Qualifier
	mg/l	mg/l	%	%	
Bromide	40.0	40.8	102	80.0-120	
Chloride	40.0	38.9	97.4	80.0-120	
Fluoride	8.00	7.80	97.5	80.0-120	
Nitrate	8.00	7.53	94.1	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3859054-2 11/08/22 20:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Sulfate	40.0	38.1	95.3	80.0-120	

L1555128-09 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555128-09 11/08/22 23:47 • (MS) R3859054-4 11/09/22 00:15

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>
Bromide	50.0	ND	54.0	108	1	80.0-120	
Chloride	50.0	ND	52.0	104	1	80.0-120	
Fluoride	5.00	ND	5.22	104	1	80.0-120	
Nitrate	5.00	ND	5.19	104	1	80.0-120	
Sulfate	50.0	ND	50.8	102	1	80.0-120	

L1554622-05 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554622-05 11/09/22 02:18 • (MS) R3859054-6 11/09/22 02:45 • (MSD) R3859054-7 11/09/22 02:59

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Bromide	50.0	ND	53.5	54.0	107	108	1	80.0-120			0.918	15
Chloride	50.0	3.51	56.8	57.2	107	107	1	80.0-120			0.710	15
Fluoride	5.00	ND	5.47	5.51	108	109	1	80.0-120			0.709	15
Nitrate	5.00	0.238	5.32	5.92	102	114	1	80.0-120			10.7	15
Sulfate	50.0	ND	52.9	53.9	102	104	1	80.0-120			1.91	15

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860676-1 11/14/22 11:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury	U		0.000100	0.000200

Laboratory Control Sample (LCS)

(LCS) R3860676-4 11/14/22 13:28

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury	0.00300	0.00281	93.6	80.0-120	

L1555074-08 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555074-08 11/14/22 11:53 • (MS) R3860676-2 11/14/22 12:02 • (MSD) R3860676-3 11/14/22 12:04

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury	0.00300	ND	0.00305	0.00277	102	92.3	1	75.0-125			9.67	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860013-1 11/11/22 12:30

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Mercury,Dissolved	U		0.000100	0.000200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3860013-2 11/11/22 12:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Mercury,Dissolved	0.00300	0.00315	105	80.0-120	

4 Cn

5 Sr

6 Qc

L1555128-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555128-01 11/11/22 12:34 • (MS) R3860013-4 11/11/22 12:58 • (MSD) R3860013-3 11/11/22 12:37

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Mercury,Dissolved	0.00300	ND	0.00284	0.00291	94.8	96.9	1	75.0-125			2.25	20

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3862266-1 11/17/22 12:12

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron,Dissolved	U		0.0200	0.200

1 Cp

2 Tc

3 Ss

Laboratory Control Sample (LCS)

(LCS) R3862266-2 11/17/22 12:15

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron,Dissolved	1.00	0.960	96.0	80.0-120	

4 Cn

5 Sr

L1555604-03 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555604-03 11/17/22 12:18 • (MS) R3862266-4 11/17/22 12:23 • (MSD) R3862266-5 11/17/22 12:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron,Dissolved	1.00	ND	1.02	1.03	93.6	94.4	1	75.0-125			0.730	20

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3861655-1 11/16/22 08:42

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Boron	U		0.0200	0.200

Laboratory Control Sample (LCS)

(LCS) R3861655-2 11/16/22 08:45

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.973	97.3	80.0-120	

L1555128-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1555128-01 11/16/22 08:48 • (MS) R3861655-4 11/16/22 08:53 • (MSD) R3861655-5 11/16/22 08:56

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	MS Qualifier	MSD Qualifier	RPD %	RPD Limits %
Boron	1.00	ND	0.958	0.955	95.8	95.5	1	75.0-125			0.302	20

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3863419-1 11/21/22 12:11

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum,Dissolved	U		0.0185	0.100
Antimony,Dissolved	U		0.00103	0.00400
Arsenic,Dissolved	U		0.000180	0.00200
Barium,Dissolved	0.000588	U	0.000381	0.00200
Beryllium,Dissolved	U		0.000190	0.00200
Cadmium,Dissolved	U		0.000150	0.00100
Calcium,Dissolved	U		0.0936	1.00
Chromium,Dissolved	U		0.00124	0.00200
Cobalt,Dissolved	U		0.0000596	0.00200
Copper,Dissolved	U		0.00151	0.00500
Iron,Dissolved	U		0.0281	0.100
Lead,Dissolved	U		0.000849	0.00200
Magnesium,Dissolved	U		0.0735	1.00
Manganese,Dissolved	U		0.000704	0.00500
Nickel,Dissolved	U		0.000816	0.00200
Potassium,Dissolved	U		0.108	2.00
Selenium,Dissolved	U		0.000300	0.00200
Silver,Dissolved	U		0.0000700	0.00200
Sodium,Dissolved	U		0.376	2.00
Thallium,Dissolved	U		0.000121	0.00200
Vanadium,Dissolved	U		0.000664	0.00500
Zinc,Dissolved	U		0.00302	0.0250

1
Cp

2
Tc

3
Ss

4
Cn

5
Sr

6
Qc

7
Gl

8
Al

9
Sc

Laboratory Control Sample (LCS)

(LCS) R3863419-2 11/21/22 12:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum,Dissolved	5.00	4.71	94.2	80.0-120	
Antimony,Dissolved	0.0500	0.0455	91.0	80.0-120	
Arsenic,Dissolved	0.0500	0.0469	93.7	80.0-120	
Barium,Dissolved	0.0500	0.0485	97.1	80.0-120	
Beryllium,Dissolved	0.0500	0.0457	91.3	80.0-120	
Cadmium,Dissolved	0.0500	0.0487	97.4	80.0-120	
Calcium,Dissolved	5.00	4.78	95.6	80.0-120	
Chromium,Dissolved	0.0500	0.0472	94.5	80.0-120	
Cobalt,Dissolved	0.0500	0.0478	95.5	80.0-120	
Copper,Dissolved	0.0500	0.0483	96.5	80.0-120	
Iron,Dissolved	5.00	4.93	98.6	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3863419-2 11/21/22 12:14

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead,Dissolved	0.0500	0.0468	93.7	80.0-120	
Magnesium,Dissolved	5.00	4.80	96.0	80.0-120	
Manganese,Dissolved	0.0500	0.0482	96.4	80.0-120	
Nickel,Dissolved	0.0500	0.0477	95.5	80.0-120	
Potassium,Dissolved	5.00	4.73	94.7	80.0-120	
Selenium,Dissolved	0.0500	0.0516	103	80.0-120	
Silver,Dissolved	0.0500	0.0467	93.4	80.0-120	
Sodium,Dissolved	5.00	4.79	95.8	80.0-120	
Thallium,Dissolved	0.0500	0.0481	96.3	80.0-120	
Vanadium,Dissolved	0.0500	0.0467	93.3	80.0-120	
Zinc,Dissolved	0.500	0.456	91.1	80.0-120	

- 1 Cp
- 2 Tc
- 3 Ss
- 4 Cn
- 5 Sr
- 6 Qc
- 7 Gl
- 8 Al
- 9 Sc

L1556160-06 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1556160-06 11/21/22 12:18 • (MS) R3863419-4 11/21/22 12:24 • (MSD) R3863419-5 11/21/22 12:27

Analyte	Spike Amount mg/l	Original Result	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum,Dissolved	5.00		4.58	4.63	91.6	92.5	1	75.0-125			0.991	20
Antimony,Dissolved	0.0500		0.0466	0.0471	93.2	94.3	1	75.0-125			1.20	20
Arsenic,Dissolved	0.0500		0.0465	0.0477	91.1	93.7	1	75.0-125			2.69	20
Barium,Dissolved	0.0500		0.0621	0.0670	95.1	105	1	75.0-125			7.57	20
Beryllium,Dissolved	0.0500		0.0453	0.0441	90.7	88.2	1	75.0-125			2.82	20
Cadmium,Dissolved	0.0500		0.0476	0.0487	95.2	97.4	1	75.0-125			2.30	20
Calcium,Dissolved	5.00		272	274	0.000	30.4	1	75.0-125	V	V	0.824	20
Chromium,Dissolved	0.0500	ND	0.0459	0.0468	91.8	93.6	1	75.0-125			1.92	20
Cobalt,Dissolved	0.0500		0.0451	0.0453	89.8	90.3	1	75.0-125			0.489	20
Copper,Dissolved	0.0500		0.0475	0.0468	95.0	93.7	1	75.0-125			1.41	20
Iron,Dissolved	5.00		7.89	7.90	91.2	91.4	1	75.0-125			0.104	20
Lead,Dissolved	0.0500	ND	0.0486	0.0474	97.2	94.7	1	75.0-125			2.60	20
Magnesium,Dissolved	5.00		76.0	77.1	86.6	108	1	75.0-125			1.40	20
Manganese,Dissolved	0.0500		0.342	0.347	66.6	76.7	1	75.0-125	V		1.46	20
Nickel,Dissolved	0.0500		0.0449	0.0448	89.9	89.7	1	75.0-125			0.231	20
Potassium,Dissolved	5.00		6.18	6.64	92.6	102	1	75.0-125			7.15	20
Selenium,Dissolved	0.0500	ND	0.0499	0.0508	99.8	102	1	75.0-125			1.84	20
Silver,Dissolved	0.0500		0.0463	0.0467	92.6	93.4	1	75.0-125			0.928	20
Sodium,Dissolved	5.00		6.95	7.23	88.4	94.1	1	75.0-125			4.05	20
Thallium,Dissolved	0.0500		0.0502	0.0483	100	96.5	1	75.0-125			3.93	20
Vanadium,Dissolved	0.0500		0.0455	0.0464	91.0	92.9	1	75.0-125			1.98	20
Zinc,Dissolved	0.500	ND	0.443	0.448	85.5	86.5	1	75.0-125			1.20	20

Method Blank (MB)

(MB) R3862225-1 11/17/22 12:10

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Aluminum	U		0.0185	0.100
Antimony	U		0.00103	0.00400
Arsenic	U		0.000180	0.00200
Barium	U		0.000381	0.00200
Beryllium	U		0.000190	0.00200
Cadmium	U		0.000150	0.00100
Calcium	U		0.0936	1.00
Chromium	U		0.00124	0.00200
Cobalt	U		0.0000596	0.00200
Copper	U		0.00151	0.00500
Iron	U		0.0281	0.100
Lead	U		0.000849	0.00200
Magnesium	U		0.0735	1.00
Manganese	U		0.000704	0.00500
Nickel	U		0.000816	0.00200
Potassium	U		0.108	2.00
Selenium	0.000607	U	0.000300	0.00200
Silver	U		0.0000700	0.00200
Sodium	U		0.376	2.00
Thallium	U		0.000121	0.00200
Vanadium	U		0.000664	0.00500
Zinc	U		0.00302	0.0250

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Laboratory Control Sample (LCS)

(LCS) R3862225-2 11/17/22 12:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	5.21	104	80.0-120	
Antimony	0.0500	0.0515	103	80.0-120	
Arsenic	0.0500	0.0543	109	80.0-120	
Barium	0.0500	0.0523	105	80.0-120	
Beryllium	0.0500	0.0541	108	80.0-120	
Cadmium	0.0500	0.0554	111	80.0-120	
Calcium	5.00	5.35	107	80.0-120	
Chromium	0.0500	0.0550	110	80.0-120	
Cobalt	0.0500	0.0557	111	80.0-120	
Copper	0.0500	0.0549	110	80.0-120	
Iron	5.00	5.63	113	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3862225-2 11/17/22 12:13

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	<u>LCS Qualifier</u>
Lead	0.0500	0.0521	104	80.0-120	
Magnesium	5.00	5.49	110	80.0-120	
Manganese	0.0500	0.0543	109	80.0-120	
Nickel	0.0500	0.0554	111	80.0-120	
Potassium	5.00	5.26	105	80.0-120	
Selenium	0.0500	0.0558	112	80.0-120	
Silver	0.0500	0.0551	110	80.0-120	
Sodium	5.00	5.26	105	80.0-120	
Thallium	0.0500	0.0533	107	80.0-120	
Vanadium	0.0500	0.0547	109	80.0-120	
Zinc	0.500	0.535	107	80.0-120	

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

L1554000-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1554000-01 11/17/22 12:16 • (MS) R3862225-4 11/17/22 12:23 • (MSD) R3862225-5 11/17/22 12:26

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MSD Result mg/l	MS Rec. %	MSD Rec. %	Dilution	Rec. Limits %	<u>MS Qualifier</u>	<u>MSD Qualifier</u>	RPD %	RPD Limits %
Aluminum	5.00	ND	5.32	5.22	106	104	1	75.0-125			2.02	20
Antimony	0.0500	ND	0.0525	0.0526	105	105	1	75.0-125			0.241	20
Arsenic	0.0500	ND	0.0537	0.0520	107	104	1	75.0-125			3.26	20
Barium	0.0500	0.00529	0.0568	0.0565	103	102	1	75.0-125			0.553	20
Beryllium	0.0500	ND	0.0544	0.0539	109	108	1	75.0-125			0.914	20
Cadmium	0.0500	ND	0.0562	0.0567	112	113	1	75.0-125			0.927	20
Calcium	5.00	71.6	78.2	76.9	131	104	1	75.0-125	<u>V</u>		1.68	20
Chromium	0.0500	ND	0.0531	0.0531	106	106	1	75.0-125			0.0655	20
Cobalt	0.0500	ND	0.0533	0.0529	107	106	1	75.0-125			0.826	20
Copper	0.0500	ND	0.0542	0.0528	108	106	1	75.0-125			2.74	20
Iron	5.00	ND	5.52	5.49	110	109	1	75.0-125			0.502	20
Lead	0.0500	ND	0.0539	0.0536	108	107	1	75.0-125			0.413	20
Magnesium	5.00	41.1	46.6	46.4	109	107	1	75.0-125			0.272	20
Manganese	0.0500	ND	0.0552	0.0541	106	104	1	75.0-125			1.91	20
Nickel	0.0500	ND	0.0526	0.0524	105	105	1	75.0-125			0.377	20
Potassium	5.00	ND	6.16	5.98	109	105	1	75.0-125			2.92	20
Selenium	0.0500	ND	0.0566	0.0549	112	109	1	75.0-125			3.13	20
Silver	0.0500	ND	0.0558	0.0551	112	110	1	75.0-125			1.20	20
Sodium	5.00	9.42	15.0	14.7	111	106	1	75.0-125			1.63	20
Thallium	0.0500	ND	0.0551	0.0547	110	109	1	75.0-125			0.741	20
Vanadium	0.0500	ND	0.0540	0.0526	108	105	1	75.0-125			2.50	20
Zinc	0.500	ND	0.514	0.512	102	102	1	75.0-125			0.364	20

Method Blank (MB)

(MB) R3860552-3 11/10/22 21:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acrylonitrile	U		0.000671	0.0100
Benzene	U		0.0000941	0.00100
Bromochloromethane	U		0.000128	0.00100
Bromodichloromethane	U		0.000136	0.00100
Bromoform	U		0.000129	0.00100
Bromomethane	U		0.000605	0.00500
Carbon disulfide	U		0.0000962	0.00100
Carbon tetrachloride	U		0.000128	0.00100
Chlorobenzene	U		0.000116	0.00100
Chlorodibromomethane	U		0.000140	0.00100
Chloroethane	U		0.000192	0.00500
Chloroform	U		0.000111	0.00500
Chloromethane	U		0.000960	0.00250
Dibromomethane	U		0.000122	0.00100
1,2-Dibromo-3-Chloropropane	U		0.000276	0.00500
1,2-Dibromoethane	U		0.000126	0.00100
1,2-Dichlorobenzene	U		0.000107	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
1,1-Dichloroethane	U		0.000100	0.00100
1,2-Dichloroethane	U		0.0000819	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
cis-1,2-Dichloroethene	U		0.000126	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
trans-1,3-Dichloropropene	U		0.000118	0.00100
Ethylbenzene	U		0.000137	0.00100
2-Hexanone	U		0.000787	0.0100
Iodomethane	U		0.00600	0.0100
2-Butanone (MEK)	U		0.00119	0.0100
Methylene Chloride	U		0.000430	0.00500
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
Styrene	U		0.000118	0.00100
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100
1,1,2-Trichloroethane	U		0.000158	0.00100

¹Cp

²Tc

³Ss

⁴Cn

⁵Sr

⁶Qc

⁷Gl

⁸Al

⁹Sc

Method Blank (MB)

(MB) R3860552-3 11/10/22 21:03

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
1,2,3-Trichloropropane	U		0.000237	0.00250
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) Toluene-d8	112			80.0-120
(S) 4-Bromofluorobenzene	99.1			77.0-126
(S) 1,2-Dichloroethane-d4	94.9			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860552-1 11/10/22 19:27 • (LCSD) R3860552-2 11/10/22 19:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acrylonitrile	0.0250	0.0252	0.0242	101	96.8	55.0-149			4.05	20
Benzene	0.00500	0.00490	0.00464	98.0	92.8	70.0-123			5.45	20
Bromochloromethane	0.00500	0.00526	0.00511	105	102	76.0-122			2.89	20
Bromodichloromethane	0.00500	0.00516	0.00496	103	99.2	75.0-120			3.95	20
Bromoform	0.00500	0.00590	0.00582	118	116	68.0-132			1.37	20
Bromomethane	0.00500	0.00466	0.00468	93.2	93.6	10.0-160			0.428	25
Carbon disulfide	0.00500	0.00516	0.00501	103	100	61.0-128			2.95	20
Carbon tetrachloride	0.00500	0.00543	0.00516	109	103	68.0-126			5.10	20
Chlorobenzene	0.00500	0.00582	0.00577	116	115	80.0-121			0.863	20
Chlorodibromomethane	0.00500	0.00574	0.00582	115	116	77.0-125			1.38	20
Chloroethane	0.00500	0.00516	0.00502	103	100	47.0-150			2.75	20
Chloroform	0.00500	0.00477	0.00456	95.4	91.2	73.0-120			4.50	20
Chloromethane	0.00500	0.00493	0.00486	98.6	97.2	41.0-142			1.43	20
Dibromomethane	0.00500	0.00476	0.00483	95.2	96.6	80.0-120			1.46	20
1,2-Dibromo-3-Chloropropane	0.00500	0.00540	0.00550	108	110	58.0-134			1.83	20
1,2-Dibromoethane	0.00500	0.00579	0.00575	116	115	80.0-122			0.693	20
1,2-Dichlorobenzene	0.00500	0.00559	0.00568	112	114	79.0-121			1.60	20
1,4-Dichlorobenzene	0.00500	0.00544	0.00550	109	110	79.0-120			1.10	20
trans-1,4-Dichloro-2-butene	0.00500	0.00637	0.00624	127	125	33.0-144			2.06	20
1,1-Dichloroethane	0.00500	0.00550	0.00527	110	105	70.0-126			4.27	20
1,2-Dichloroethane	0.00500	0.00445	0.00470	89.0	94.0	70.0-128			5.46	20
1,1-Dichloroethene	0.00500	0.00532	0.00510	106	102	71.0-124			4.22	20
cis-1,2-Dichloroethene	0.00500	0.00499	0.00502	99.8	100	73.0-120			0.599	20
trans-1,2-Dichloroethene	0.00500	0.00516	0.00497	103	99.4	73.0-120			3.75	20

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860552-1 11/10/22 19:27 • (LCSD) R3860552-2 11/10/22 19:46

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	<u>LCS Qualifier</u>	<u>LCSD Qualifier</u>	RPD %	RPD Limits %
1,2-Dichloropropane	0.00500	0.00535	0.00530	107	106	77.0-125			0.939	20
cis-1,3-Dichloropropene	0.00500	0.00505	0.00505	101	101	80.0-123			0.000	20
trans-1,3-Dichloropropene	0.00500	0.00576	0.00589	115	118	78.0-124			2.23	20
Ethylbenzene	0.00500	0.00571	0.00563	114	113	79.0-123			1.41	20
2-Hexanone	0.0250	0.0319	0.0323	128	129	67.0-149			1.25	20
Iodomethane	0.0250	0.0240	0.0234	96.0	93.6	33.0-147			2.53	26
2-Butanone (MEK)	0.0250	0.0286	0.0266	114	106	44.0-160			7.25	20
Methylene Chloride	0.00500	0.00524	0.00510	105	102	67.0-120			2.71	20
4-Methyl-2-pentanone (MIBK)	0.0250	0.0298	0.0298	119	119	68.0-142			0.000	20
Styrene	0.00500	0.00572	0.00583	114	117	73.0-130			1.90	20
1,1,1,2-Tetrachloroethane	0.00500	0.00600	0.00611	120	122	75.0-125			1.82	20
1,1,2,2-Tetrachloroethane	0.00500	0.00603	0.00609	121	122	65.0-130			0.990	20
Tetrachloroethene	0.00500	0.00654	0.00641	131	128	72.0-132			2.01	20
Toluene	0.00500	0.00571	0.00556	114	111	79.0-120			2.66	20
1,1,1-Trichloroethane	0.00500	0.00534	0.00510	107	102	73.0-124			4.60	20
1,1,2-Trichloroethane	0.00500	0.00560	0.00577	112	115	80.0-120			2.99	20
Trichloroethene	0.00500	0.00510	0.00451	102	90.2	78.0-124			12.3	20
Trichlorofluoromethane	0.00500	0.00521	0.00517	104	103	59.0-147			0.771	20
1,2,3-Trichloropropane	0.00500	0.00585	0.00564	117	113	73.0-130			3.66	20
Vinyl acetate	0.0250	0.0269	0.0299	108	120	11.0-160			10.6	20
Vinyl chloride	0.00500	0.00567	0.00547	113	109	67.0-131			3.59	20
Xylenes, Total	0.0150	0.0183	0.0180	122	120	79.0-123			1.65	20
(S) Toluene-d8				114	114	80.0-120				
(S) 4-Bromofluorobenzene				101	101	77.0-126				
(S) 1,2-Dichloroethane-d4				93.8	91.5	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3861993-3 11/15/22 11:24

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Acetone	U		0.0113	0.0500
(S) Toluene-d8	104			80.0-120
(S) 4-Bromofluorobenzene	103			77.0-126
(S) 1,2-Dichloroethane-d4	88.9			70.0-130

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3861993-1 11/15/22 10:21 • (LCSD) R3861993-2 11/15/22 10:42

Analyte	Spike Amount mg/l	LCS Result mg/l	LCSD Result mg/l	LCS Rec. %	LCSD Rec. %	Rec. Limits %	LCS Qualifier	LCSD Qualifier	RPD %	RPD Limits %
Acetone	0.0250	0.0289	0.0272	116	109	19.0-160			6.06	27
(S) Toluene-d8				103	103	80.0-120				
(S) 4-Bromofluorobenzene				106	104	77.0-126				
(S) 1,2-Dichloroethane-d4				90.5	91.4	70.0-130				

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

Method Blank (MB)

(MB) R3860499-1 11/11/22 17:29

Analyte	MB Result	MB Qualifier	MB MDL	MB RDL
	mg/l		mg/l	mg/l
Ethylene Dibromide	U		0.0000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.0000748	0.0000200

L1554414-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1554414-02 11/11/22 18:16 • (DUP) R3860499-3 11/11/22 18:05

Analyte	Original Result	DUP Result	Dilution	DUP RPD	DUP Qualifier	DUP RPD Limits
	mg/l	mg/l		%		%
Ethylene Dibromide	ND	ND	1.01	0.000		20
1,2-Dibromo-3-Chloropropane	ND	ND	1.01	0.000		20

Laboratory Control Sample (LCS) • Laboratory Control Sample Duplicate (LCSD)

(LCS) R3860499-4 11/11/22 20:15 • (LCSD) R3860499-5 11/11/22 22:48

Analyte	Spike Amount	LCS Result	LCSD Result	LCS Rec.	LCSD Rec.	Rec. Limits	LCS Qualifier	LCSD Qualifier	RPD	RPD Limits
	mg/l	mg/l	mg/l	%	%	%			%	%
Ethylene Dibromide	0.000250	0.000292	0.000291	117	116	60.0-140			0.343	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000221	0.000222	88.4	88.8	60.0-140			0.451	20

L1555112-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1555112-01 11/11/22 17:53 • (MS) R3860499-2 11/11/22 17:41

Analyte	Spike Amount	Original Result	MS Result	MS Rec.	Dilution	Rec. Limits	MS Qualifier
	mg/l	mg/l	mg/l	%		%	
Ethylene Dibromide	0.0000921	ND	0.000216	235	1	64.0-159	<u>J5</u>
1,2-Dibromo-3-Chloropropane	0.0000921	ND	0.000128	139	1	72.0-148	<u>P</u>

1 Cp

2 Tc

3 Ss

4 Cn

5 Sr

6 Qc

7 Gl

8 Al

9 Sc

GLOSSARY OF TERMS

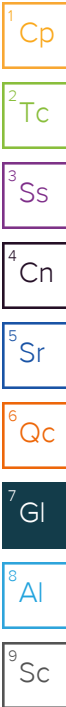
Guide to Reading and Understanding Your Laboratory Report

The information below is designed to better explain the various terms used in your report of analytical results from the Laboratory. This is not intended as a comprehensive explanation, and if you have additional questions please contact your project representative.

Results Disclaimer - Information that may be provided by the customer, and contained within this report, include Permit Limits, Project Name, Sample ID, Sample Matrix, Sample Preservation, Field Blanks, Field Spikes, Field Duplicates, On-Site Data, Sampling Collection Dates/Times, and Sampling Location. Results relate to the accuracy of this information provided, and as the samples are received.

Abbreviations and Definitions

MDL	Method Detection Limit.
ND	Not detected at the Reporting Limit (or MDL where applicable).
RDL	Reported Detection Limit.
Rec.	Recovery.
RPD	Relative Percent Difference.
SDG	Sample Delivery Group.
(S)	Surrogate (Surrogate Standard) - Analytes added to every blank, sample, Laboratory Control Sample/Duplicate and Matrix Spike/Duplicate; used to evaluate analytical efficiency by measuring recovery. Surrogates are not expected to be detected in all environmental media.
U	Not detected at the Reporting Limit (or MDL where applicable).
Analyte	The name of the particular compound or analysis performed. Some Analyses and Methods will have multiple analytes reported.
Dilution	If the sample matrix contains an interfering material, the sample preparation volume or weight values differ from the standard, or if concentrations of analytes in the sample are higher than the highest limit of concentration that the laboratory can accurately report, the sample may be diluted for analysis. If a value different than 1 is used in this field, the result reported has already been corrected for this factor.
Limits	These are the target % recovery ranges or % difference value that the laboratory has historically determined as normal for the method and analyte being reported. Successful QC Sample analysis will target all analytes recovered or duplicated within these ranges.
Original Sample	The non-spiked sample in the prep batch used to determine the Relative Percent Difference (RPD) from a quality control sample. The Original Sample may not be included within the reported SDG.
Qualifier	This column provides a letter and/or number designation that corresponds to additional information concerning the result reported. If a Qualifier is present, a definition per Qualifier is provided within the Glossary and Definitions page and potentially a discussion of possible implications of the Qualifier in the Case Narrative if applicable.
Result	The actual analytical final result (corrected for any sample specific characteristics) reported for your sample. If there was no measurable result returned for a specific analyte, the result in this column may state "ND" (Not Detected) or "BDL" (Below Detectable Levels). The information in the results column should always be accompanied by either an MDL (Method Detection Limit) or RDL (Reporting Detection Limit) that defines the lowest value that the laboratory could detect or report for this analyte.
Uncertainty (Radiochemistry)	Confidence level of 2 sigma.
Case Narrative (Cn)	A brief discussion about the included sample results, including a discussion of any non-conformances to protocol observed either at sample receipt by the laboratory from the field or during the analytical process. If present, there will be a section in the Case Narrative to discuss the meaning of any data qualifiers used in the report.
Quality Control Summary (Qc)	This section of the report includes the results of the laboratory quality control analyses required by procedure or analytical methods to assist in evaluating the validity of the results reported for your samples. These analyses are not being performed on your samples typically, but on laboratory generated material.
Sample Chain of Custody (Sc)	This is the document created in the field when your samples were initially collected. This is used to verify the time and date of collection, the person collecting the samples, and the analyses that the laboratory is requested to perform. This chain of custody also documents all persons (excluding commercial shippers) that have had control or possession of the samples from the time of collection until delivery to the laboratory for analysis.
Sample Results (Sr)	This section of your report will provide the results of all testing performed on your samples. These results are provided by sample ID and are separated by the analyses performed on each sample. The header line of each analysis section for each sample will provide the name and method number for the analysis reported.
Sample Summary (Ss)	This section of the Analytical Report defines the specific analyses performed for each sample ID, including the dates and times of preparation and/or analysis.



Qualifier Description

B	The same analyte is found in the associated blank.
J	The identification of the analyte is acceptable; the reported value is an estimate.
J5	The sample matrix interfered with the ability to make any accurate determination; spike value is high.
P	RPD between the primary and confirmatory analysis exceeded 40%.
P1	RPD value not applicable for sample concentrations less than 5 times the reporting limit.
V	The sample concentration is too high to evaluate accurate spike recoveries.

ACCREDITATIONS & LOCATIONS

Pace Analytical National 12065 Lebanon Rd Mount Juliet, TN 37122

Alabama	40660	Nebraska	NE-OS-15-05
Alaska	17-026	Nevada	TN000032021-1
Arizona	AZ0612	New Hampshire	2975
Arkansas	88-0469	New Jersey–NELAP	TN002
California	2932	New Mexico ¹	TN00003
Colorado	TN00003	New York	11742
Connecticut	PH-0197	North Carolina	Env375
Florida	E87487	North Carolina ¹	DW21704
Georgia	NELAP	North Carolina ³	41
Georgia ¹	923	North Dakota	R-140
Idaho	TN00003	Ohio–VAP	CL0069
Illinois	200008	Oklahoma	9915
Indiana	C-TN-01	Oregon	TN200002
Iowa	364	Pennsylvania	68-02979
Kansas	E-10277	Rhode Island	LA000356
Kentucky ^{1,6}	KY90010	South Carolina	84004002
Kentucky ²	16	South Dakota	n/a
Louisiana	AI30792	Tennessee ^{1,4}	2006
Louisiana	LA018	Texas	T104704245-20-18
Maine	TN00003	Texas ⁵	LAB0152
Maryland	324	Utah	TN000032021-11
Massachusetts	M-TN003	Vermont	VT2006
Michigan	9958	Virginia	110033
Minnesota	047-999-395	Washington	C847
Mississippi	TN00003	West Virginia	233
Missouri	340	Wisconsin	998093910
Montana	CERT0086	Wyoming	A2LA
A2LA – ISO 17025	1461.01	AIHA-LAP,LLC EMLAP	100789
A2LA – ISO 17025 ⁵	1461.02	DOD	1461.01
Canada	1461.01	USDA	P330-15-00234
EPA–Crypto	TN00003		

¹ Drinking Water ² Underground Storage Tanks ³ Aquatic Toxicity ⁴ Chemical/Microbiological ⁵ Mold ⁶ Wastewater n/a Accreditation not applicable

* Not all certifications held by the laboratory are applicable to the results reported in the attached report.

* Accreditation is only applicable to the test methods specified on each scope of accreditation held by Pace Analytical.





GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	60s cloudy
DATE & TIME	11/7/21 1035	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	23.83	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	6.67	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	2.3	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	23.83	1052	17.3	4.98	67.2	52.9	2.69	390.6	16.0
0.15	25.5	1056	16.9	4.87	53.1	44.9	1.01	386.8	21.4
0.75	25.8	1100	17.1	4.87	52.6	44.6	2.78	384.9	28.4
1	26.2	1104	17.1	4.86	52.8	44.8	1.49	395.5	43.4
1.25	26.5	1108	17.2	4.97	55.2	55.4	1.59	180.2	44.8
1.45	26.6	1112	17.2	5.06	79.3	67.5	1.49	140.8	39.5
1.7	26.9	1116	17.2	5.09	84.8	72.2	1.55	116.0	76.8
1.85	26.9	1120	17.4	5.11	88.2	75.4	1.74	94.7	33.0
2.05	26.0	1124	17.7	5.12	88.4	76.4	1.55	89.2	34.2
2.15	26.0	1128	17.6	5.12	90.4	77.4	1.72	84.9	35.3
2.3	26.0	1132	17.1	5.14	92.1	78.3	1.75	74.8	32.7

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
2.3	26.0	1135	17.1	5.14	92.1	78.3	1.75	74.8	33.6
Preservatives Used	See CDC			Sample Characteristics (Odor, Color)			slightly cloudy		
Number of Containers	Disinfectants taken Lab Filter			Sampler Signature			Baugh		

WELL DATA

Number of Baffles	Well Cap Dedicated/In Place?
Lock Condition	Fittings/Well Head Condition
Pad/Casing Quality	Well Clear of Weeds/Accessible?

4
good
good

gate 4723

@metals



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	50s cloudy
DATE & TIME	11/7/22 9:15	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	10.03	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	—	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	—	EQUIPMENT BLANK COLLECTED?	N

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
—	10.03	9:15	19.8	5.98	203.3	183.1	5.52	287.6	—
Preservatives Used				Sample Characteristics (Odor, Color)					
Number of Containers	N/A			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	good	Fittings/Well Head Condition	N/A
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70s mist
DATE & TIME	11/7/22 1400	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh / Miller
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	20.2	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	Yes
WATER COLUMN (feet)	6.8	FIELD BLANK COLLECTED?	Yes
PURGE VOLUME (gallons)	1.8	EQUIPMENT BLANK COLLECTED?	No

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	20.2	1411	19.1	5.01	279.4	229.5	2.23	233.4	348
.2	21.0	1415	19.0	5.28	250.6	222.0	1.50	290.7	29.1
.4	21.2	1419	19.1	5.29	240.5	213.3	1.18	280.1	9.90
.6	21.45	1423	19.1	5.30	240.5	213.2	1.08	274.8	13.7
.8	21.6	1427	19.0	5.34	239.0	214.4	1.76	261.7	18.6

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.8	21.6	1430	19.0	5.34	239.0	214.4	1.76	261.7	18.6
Preservatives Used	See CAL			Sample Characteristics (Odor, Color)			Slightly Cloudy		
Number of Containers	Diss Metals taken			Sampler Signature			Baugh		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	Good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	Weeds



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-4
LOCATION	Camden, TN	TEMPERATURE & WEATHER	60s light mist
DATE & TIME	11/7/22 1305	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	11.40	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	<input checked="" type="checkbox"/>
WATER COLUMN (feet)	11.7	FIELD BLANK COLLECTED?	<input checked="" type="checkbox"/>
PURGE VOLUME (gallons)	1.1	EQUIPMENT BLANK COLLECTED?	<input checked="" type="checkbox"/>

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	11.40	1316	17.7	5.63	90.8	77.9	4.23	306.3	35.9
0.35	11.43	1320	17.5	5.72	89.8	77.0	4.25	297.1	26.8
0.5	11.45	1322	17.5	5.73	89.4	76.6	4.09	294.7	7.66
0.7	11.45	1326	17.5	5.74	89.1	76.0	4.11	294.7	5.21
0.9	11.45	1330	17.5	5.73	89.6	75.3	4.13	294.4	4.88
1.1	11.45	1334	17.5	5.73	88.1	74.3	4.22	294.9	3.29

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.1	11.45	1335	17.5	5.73	88.4	74.3	4.22	294.9	3.29
Preservatives Used	See col			Sample Characteristics (Odor, Color)			Clear		
Number of Containers	See col			Sampler Signature			ASaugh		

WELL DATA

Number of Baffles	None	Well Cap Dedicated/In Place?	Y
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	OK	Well Clear of Weeds/Accessible?	Y



GROUNDWATER MONITORING FIELD INFORMATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane, Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	65° light mist
DATE & TIME	11/2/77 1700	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Baumh
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.6	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	13.25	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.6	EQUIPMENT BLANK COLLECTED?	N

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	10.6	1205	19.3	5.52	538.1	454.2	2.05	144.5	12.5
0.25	11.0	1212	17.5	5.03	321.7	275.4	1.80	167.2	28.3
0.5	11.2	1216	17.4	5.04	311.5	266.4	1.06	194.6	31.6
0.7	11.2	1218	17.4	5.05	310.2	264.8	0.92	196.1	29.7
0.9	11.2	1222	17.4	5.05	307.4	262.8	0.88	194.4	25.8
1.2	11.2	1226	17.4	5.05	305.9	261.5	0.85	200.5	22.1
1.4	11.2	1230	17.4	5.05	304.7	260.4	0.82	204.9	20.5
1.6	11.2	1234	17.4	5.06	302.2	258.2	0.90	214.4	17.4

@metals

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.6	11.2	1235	17.4	5.06	302.2	258.2	0.90	214.4	17.4
Preservatives Used	See COC			Sample Characteristics (Odor, Color)			slightly cloudy		
Number of Containers	Diss. Metals taken			Sampler Signature			Baumh		

WELL DATA

Number of Baffles	4	Well Cap Dedicated/In Place?	Y
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	Y



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-1
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70's sunny
DATE & TIME	11-7-22 12:35	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Miller, Baugh
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	7.8	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	no
WATER COLUMN (feet)	4.70	FIELD BLANK COLLECTED?	yes 19:27
PURGE VOLUME (gallons)	1.65	EQUIPMENT BLANK COLLECTED?	no

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	7.8	12:42	16.9	5.44	203.2	172.2	2.12	269.7	67.3
0.2	10.9	12:46	16.9	5.47	202.4	172.0	2.13	266.8	44.4
0.75	11.1	12:50	16.9	5.48	201.4	170.0	2.57	265.7	24.9
1.25	11.4	12:54	16.8	5.49	199.8	168.5	2.21	265.2	15.9
1.65	11.5	12:58	16.8	5.49	199.3	168.0	2.19	264.9	8.38

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.65	11.5	13:04	16.8	5.49	199.3	168.0	2.19	264.9	8.38
Preservatives Used	None, surface			Sample Characteristics (Odor, Color)			None/clear		
Number of Containers	10			Sampler Signature			<i>[Signature]</i>		

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	yes
Lock Condition	GOOD	Fittings/Well Head Condition	GOOD
Pad/Casing Quality	GOOD	Well Clear of Weeds/Accessible?	yes



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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70s cloudy/rainy
DATE & TIME	11-7-22 11:10	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Stuart Miller, Ardian Baul
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	12.20	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	no
WATER COLUMN (feet)	15.30	FIELD BLANK COLLECTED?	no
PURGE VOLUME (gallons)	3.15	EQUIPMENT BLANK COLLECTED?	no

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	12.20	11:28	17.6	5.66	103.1	93.6	2.20	259.3	50.4
1/2	15.6	11:32	17.3	5.38	162.4	139.4	1.80	270.5	75.6
1.0	16.0	11:36	17.2	5.49	171.3	146.0	1.56	264.8	49.3
1.15	16.0	11:40	17.2	5.51	168.2	143.6	1.29	265.0	19.4
1.50	16.2	11:44	17.2	5.40	173.6	147.9	1.32	266.1	83.6
1.80	16.2	11:48	17.2	5.53	172.9	147.5	1.41	267.1	66.7
2.15	15.8	11:56	17.2	5.50	177.9	151.6	1.92	267.3	73.8
2.75	15.7	12:04	17.2	5.49	179.2	152.8	2.00	267.0	19.2
3.15	15.7	12:08	17.3	5.48	179.8	153.4	2.05	267.6	9.10

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.15	15.7	12:12	17.3	5.48	179.8	153.4	2.05	267.6	9.10
Preservatives Used	NONE SURFAC				Sample Characteristics (Odor, Color)			none	
Number of Containers	10				Sampler Signature			<i>J. Miller</i>	

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	yes
Lock Condition	GOOD	Fittings/Well Head Condition	Good
Pad/Casing Quality	GOOD	Well Clear of Weeds/Accessible?	Good, yes



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-3
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70s clear/cloudy
DATE & TIME	11-7-22 10:12	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Miller, Bewatt
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	10.18	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	no
WATER COLUMN (feet)	17.82	FIELD BLANK COLLECTED?	no
PURGE VOLUME (gallons)	1.30	EQUIPMENT BLANK COLLECTED?	no

PURGE INFORMATION

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
0	10.18	10:26	17.5	5.03	331.7	282.9	5.21	247.1	155
.5	8.9	10:30	17.2	5.16	302.5	257.4	4.98	237.0	66.5
.75	9.0	10:34	17.1	5.18	301.2	256.5	4.39	235.8	25.4
1.00	9.0	10:38	17.2	5.19	300.8	255.9	3.99	228.6	14.5
1.25	9.0	10:42	17.2	5.22	300.0	255.4	4.52	222.1	8.56
1.30	9.1	10:46	17.2	5.22	299.3	254.6	4.54	216.7	7.11

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.30	9.1	10:50	17.2	5.22	299.3	254.6	4.54	216.7	7.11
Preservatives Used	None			Sample Characteristics (Odor, Color)			None		
Number of Containers	10			Sampler Signature			<i>J. Miller</i>		

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	yes
Lock Condition	Good	Fittings/Well Head Condition	yes / good
Pad/Casing Quality	Good	Well Clear of Weeds/Accessible?	yes



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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	Leachate (APWC)
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70s cloudy
DATE & TIME	11/7/22	EVENT FREQUENCY	Quarterly
PURGE METHOD	Grab	FIELD REPRESENTATIVE	Bargh
TOTAL WELL DEPTH (feet)	NA	SAMPLING EQUIPMENT	-
DEPTH TO WATER (feet)	NA	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	NA	DUPLICATE COLLECTED?	-
WATER COLUMN (feet)	NA	FIELD BLANK COLLECTED?	-
PURGE VOLUME (gallons)	NA	EQUIPMENT BLANK COLLECTED?	-

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
Preservatives Used				Sample Characteristics (Odor, Color)					
Number of Containers				Sampler Signature					

WELL DATA

Number of Baffles	Well Cap Dedicated/In Place?	
Lock Condition	Fittings/Well Head Condition	
Pad/Casing Quality	Well Clear of Weeds/Accessible?	



GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	Leachate (IWC)
LOCATION	Camden, TN	TEMPERATURE & WEATHER	70's cloudy / rain
DATE & TIME	11/7/22 15:15	EVENT FREQUENCY	Quarterly
PURGE METHOD	Grab	FIELD REPRESENTATIVE	Miller, Bough
TOTAL WELL DEPTH (feet)	NA	SAMPLING EQUIPMENT	Bucket
DEPTH TO WATER (feet)	NA	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	NA	DUPLICATE COLLECTED?	no
WATER COLUMN (feet)	NA	FIELD BLANK COLLECTED?	no
PURGE VOLUME (gallons)	NA	EQUIPMENT BLANK COLLECTED?	no

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
-	-	15:25	19	3.6	191702	169726	4.52	303.1	
Preservatives Used				Sample Characteristics (Odor, Color)			none / clear lingering odor		
Number of Containers	NA			Sampler Signature			[Signature]		

WELL DATA

Number of Baffles	NA	Well Cap Dedicated/In Place?	
Lock Condition	NA	Fittings/Well Head Condition	NA
Pad/Casing Quality		Well Clear of Weeds/Accessible?	