1ST QUARTER 2022 GROUNDWATER ASSESSMENT MONITORING REPORT FEBRUARY 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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THE TENNESSEE DEPARTMENT OF ENVIRONMENT AND CONSERVATION

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CEC PROJECT 181-364

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EXECUTIVE SUMMARY

This report documents the 1st quarter 2022 assessment-monitoring event, which was performed at the former Environmental Waste Solutions, LLC (EWS) Camden Class II Landfill on February 9, 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 into 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 February 2022 event (9.65 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 1st quarter 2022 sampling event at the facility included the following sampling activities:

Groundwater samples were collected by CEC on February 9, 2022, from MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3. A leachate sample was collected from the "Industrial Waste Cell (IWC) on February 9, 2022, but analytical results were not reported due to sample integrity issues (refer to Page 8 for more details). 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 1st quarter 2022 groundwater analyses were prepared by Pace and reported to CEC on February 19, 2022 for the groundwater samples and February 19, 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.

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 this February 2022 sampling event. The cadmium detections at MW-3 during previous events from 2016 through 2021 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 24 sampling events at MW-3 since November 2016. Total cadmium was first detected above the PQL during the November 10, 2016 event (0.00177 mg/l) and was first detected above the MCL at MW-3 during the June 8, 2017 event (total cadmium at MW-3 = 0.0286 mg/l). Since the fall of 2018, the total cadmium concentrations observed in MW-3 have shown an overall decrease in concentration. 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.

Eight SSIs were identified over background during this event. SSIs included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), and sulfate (MW-3). Total cadmium was not detected and was not indicated as an SSI during this monitoring event at MW-3. The chloride, fluoride, and sulfate detections observed in the site monitoring wells were all below their associated MCLs or 2DWS.

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, storm water 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, 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 SESD) 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:

Established Top of Casing Elevation – Depth to Water = 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 21.05 feet below the top of casing at the up-gradient monitor well MW-1 to approximately 9.22 feet below the top of casing at monitor well MW-4. The potentiometric gradient calculated from groundwater elevation data collected on February 9, 2022 is approximately 1.21%.

The potentiometric gradient is calculated according to the following formula:

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

$$\frac{(395.42') - (372.25')}{1{,}910'} * 100 = 1.21\%$$

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 February 9, 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.

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 ($Na_2S_2O_3$); 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 February 9, 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**.

On February 9, 2022, 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. After reviewing the field data for the IWC leachate sample, the recorded pH value was 9.72 SU. However, this observed pH value was higher than previous pH values observed in this leachate, which are typically in the pH range of 3.0-5.0 SU. For instance, the pH values for the IWC-leachate during the previous December 2020 event and August 2021 event were 3.70 SU and 3.35 SU, respectively. In addition, the total cadmium concentration reported in the leachate sample during this February 9, 2022 sample event (0.0631 mg/l) was extremely low compared to previous results since June 2017, which have ranged from 9.43 mg/l to 375 mg/l. After further review, it was discovered that the leachate collection hose located in the secondary containment area (which was used to collect the sample during this event) is also used periodically during the leachate pre-treatment process to cycle leachate through the pre-treatment system. The leachate pre-treatment process involves adding hydrated lime to adjust the pH of the incoming IWC leachate. Therefore, it is probable that this collection hose contained residual lime which raised the pH value of the incoming leachate. This rise in pH most likely caused the cadmium to precipitate out of solution. Therefore, CEC has determined that the IWC-leachate analytical results from this February 9, 2022 sample are not representative of the actual IWC-leachate, and the analytical results from this leachate sample should be removed from the database.

CEC will modify the method used to sample the IWC-leachate during future quarterly events by installing a dedicated sample port on the IWC-leachate line, which will eliminate cross-contamination of the leachate sample with lime from the pre-treatment process.

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 from within 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 February 19, 2022. Laboratory analytical testing of the field blank presented in the analytical report showed one detection above the laboratory PQL for vinyl chloride. Vinyl chloride was not detected in any monitoring wells or leachate samples during this February 9, 2022 monitoring event.

The results for the duplicate sample collected from MW-3 were similar to the original MW-3 sample results with the exception of chromium, copper, and nickel at MW-3. Chromium was detected in the sample collected from the original MW-3 (0.00265 mg/l), but was not detected above the PQL (<0.002 mg/l) in the duplicate sample MW-3 sample. Copper was detected in the sample collected from the original MW-3 (0.00941 mg/l), but was not detected above the PQL (<0.005 mg/l) in the duplicate sample MW-3 sample. Nickel was detected in the sample collected from the original MW-3 (0.00238 mg/l), but was not detected above the PQL (<0.002 mg/l) in the duplicate sample MW-3 sample. The relative percent difference (RPD) between most constituent values (including chromium and nickel) reported in MW-3 and the duplicate sample were within the acceptable 20% RPD control limit. However, the RPD between the copper detection at MW-3 and the duplicate sample collected from MW-3 was 61.21% RPD. Therefore, the reported copper concentrations are outside the established quality control range for precision. This reported difference in the copper concentrations at MW-3 may be due to sample heterogeneity.

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 groundwater laboratory report from this February 2022 event indicated that the manganese concentration at MW-1 was too high to evaluate accurate spike recoveries, as indicated by laboratory qualifier "V"; the sample matrix of the laboratory batch QA/QC for the reported non-detect value of copper at MW-1 indicated that the sample matrix interfered with the ability to make any accurate determination (batch QA value for copper was high) as indicated by laboratory qualifier "J5"; and the manganese concentration in the batch QA/QC criteria was too high to evaluate accurate spike recoveries for the associated manganese concentration reported at MW-1, as indicated by laboratory qualifier "V". Based on the overall quality review, the laboratory data as reported appears to be usable for quantitative reporting and decision-making purposes. 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 50 of 54 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 1st 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 detected above the MCL (0.01 mg/l) at up-gradient MW-1 (0.0219 mg/l) during this 1st 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 2021 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 was detected **below** the laboratory PQL (<0.001 mg/l) at MW-3 and the duplicate sample collected from MW-3 during this February 2022 monitoring event. 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 graph 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)**
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

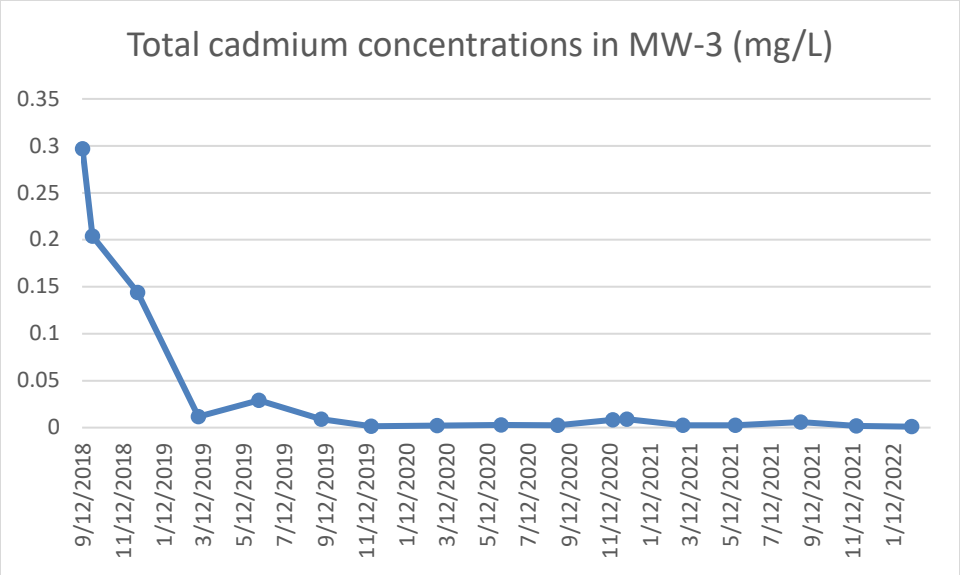


Figure – Cadmium Concentrations in MW-3

Since the fall of 2018, the total cadmium observed in MW-3 has shown an overall decrease in concentration. In addition, a statistically significant decreasing trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 23 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 this February 2022 sampling event. This is the first monitoring event since May 9th 2016 in which total cadmium was not detected in MW-3.

Total Cobalt was detected in up-gradient well MW-1 (0.0676 mg/l) during this February 2022 event. 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 February 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.

Total Chromium was detected in downgradient wells MW-3 (0.00265 mg/l) and MW-5 (0.0030 mg/l), which were not above the MCL of 0.1 mg/l for chromium. Chromium has been detected at similar concentrations in up-gradient well MW-1.

Total Copper was detected in MW-3 (0.00941 mg/l) and MW-5 (0.00575 mg/l) which were not above the MCL of 1.3 mg/l for copper. Total copper was not detected above the laboratory PQL (<0.0050 mg/l) in the duplicate sample collected from MW-3.

Total Mercury was detected in up-gradient well MW-1 (0.000837 mg/l), which was below the MCL of 0.002 mg/l for mercury concentrations during this February 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 February 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 February 2022 sampling event from the former EWS Class II Landfill groundwater monitoring well network indicated that three of the site-specific groundwater-monitoring list of compounds were detected at concentrations that exceeded the National Secondary Drinking Water Standards (2DWS). Those parameters include **aluminum** in up-gradient MW-1 and down-gradient wells MW-3 and MW-5; **iron** in up-gradient well MW-1 and down-gradient wells MW-4, MW-5, and TMW-1; and **manganese** in up-gradient well MW-1 and down-gradient wells MW-4 and MW-5. **Chloride, sulfate, nickel, silver,** and **zinc** detections were below the 2DWS during this event. The observed concentrations for the constituents given below are discussed relative to the 2DWS.

The **Total Aluminum** concentrations observed in MW-3 (0.212 mg/l) during this February 2022 sampling event was above the 2DWS (0.2 mg/l). However, total aluminum has previously been detected at concentrations above the 2DWS in upgradient well MW-1. Total aluminum was also detected in down-gradient wells MW-5 (0.161 mg/l) and TMW-2 (0.155 mg/l), but both were below the 2DWS (0.2 mg/l). Aluminum was not detected above the PQL (<0.1 mg/l) at MW-1, MW-4, TMW-1, or TMW-3 during this February 2022 event.

The **Chloride** concentrations reported at MW-1, MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3 during this February 2022 event were below the 2DWS for chloride concentrations (250 mg/l). The chloride concentrations for this February 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 (9.65 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 was detected in MW-3 (0.200 mg/l) during this February 2022 sampling event, which was well below the 2DWS for fluoride (2 mg/l). Fluoride was not detected (<0.150 mg/l) in any other wells during this current sample event.

Total Iron was detected above the 2DWS (0.3 mg/l) in up-gradient well MW-1 (17.3mg/l) and down-gradient wells MW-3 (0.361 mg/l) during this February 2022 monitoring event. Iron was detected above the PQLs of the laboratory (0.1 mg/l), but below the 2DWS (0.3 mg/l) during this February 2022 event at wells MW-4, MW-5, TMW-1, and TMW-3. Total iron was not detected above the PQL in TMW-2 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 (1.16 mg/l) and down-gradient well MW-5 (0.264 mg/l) during the February 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 February 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-3, TMW-1, and TMW-3. Total manganese was not detected above the PQL in MW-4 and TMW-2 during this event.

Total Nickel was detected in up-gradient well MW-1 (0.00739 mg/l) and down-gradient wells MW-3 (0.00238 mg/l), MW-4 (0.00209 mg/l), and MW-5 (0.00664 mg/l) during the February 2022 sampling event, and these values 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 the duplicate sample collected from MW-3, 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 (31.4 mg/l) during this February 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 down-gradient well MW-5 (14.4 mg/l), during the February 2022 event and were also 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 February 2022 event (4.30 mg/l) shows that overall total magnesium levels in MW-3 have been decreasing since 2018.

Magnesium was also detected above the laboratory PQL (1.00 mg/l) during the February 2022 event in MW-1, MW-4, MW-5, TMW-1, TMW-2, and TMW-3.

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. Four (4) QC qualifier codes (J, J5, P1, and V) were indicated during the laboratory analysis of groundwater samples collected during the February 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 50 of 54 in the February 19, 2022 Groundwater Laboratory Analytical Report. Three (3) QC qualifier codes (J, J5, and V) were indicated during the laboratory analysis of the leachate samples collected during this February 2022 event. Specific information concerning each laboratory QC qualifier code can be found on page 24 of 26 in the February 19, 2022 Leachate Analytical Report. 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.

After the non-representative background sample data were removed, 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 was 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 cobalt data set that passed normality testing. However, all other data sets (arsenic, barium, chloride,

mercury, and nickel 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 (aluminum, barium, total cadmium, chloride, chromium, copper, fluoride, nickel, 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 aluminum, barium, total cadmium, chloride, chromium, copper, fluoride, nickel, 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). The cobalt data in the background dataset from 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 cobalt data that passed normality testing. 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 of time. 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

No statistically significant increases (SSIs) were identified in up-gradient well MW-1 during this event. 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. There were no distinct statistically significant trends in concentrations for the detected arsenic, chloride, mercury, and nickel concentrations at MW-1.

Total cadmium **was not** indicated as an SSI over background during this event at MW-3. SSIs over background identified for the current monitoring event include chloride at MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3, fluoride at MW-3, and sulfate at MW-3. 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; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium concentrations at MW-3; total cadmium 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.

Total cadmium was not detected above the laboratory PQL (<0.00100 mg/l) during this event, and total cadmium at MW-3 **was not** 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. In addition, a statistically significant decreasing trend was identified by Mann-Kendall for total cadmium concentrations at MW-3 when considering data from the past 23 sampling events since November 10, 2016. The total cadmium concentration observed at MW-3 during the previous November 2021 sampling event was **below** the MCL. During the previous August 2021 monitoring event, the total cadmium concentration at MW-3 was above the MCL. However, during the previous monitoring events in March 2021 and May 2021 the total cadmium concentration at MW-3 was below the MCL. During previous sampling events prior to March 2021, the total cadmium concentrations observed at MW-3 were above the MCL of 0.005 mg/l from June 2017 to September 2019, and during the previous two sampling events in November 2020 and December 2020. However, the total cadmium concentrations observed at MW-3 from November 2019 to August 2020 were below the MCL.

The chloride concentrations observed at MW-3 (9.65 mg/l), MW-4 (8.79 mg/l), MW-5 (74.1 mg/l), TMW-1 (35.6 mg/l), TMW-2 (37.1 mg/l), and TMW-3 (65.8 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 concentrations observed at MW-3 (0.00265 mg/l) and MW-5 (0.0300mg/l) were 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-3 and MW-5 since November 2016, the data

did not show an upward or downward trend in chromium concentrations using the Mann-Kendall trend analysis at the 95% confidence level.

A SSI for the fluoride concentrations at MW-3 was identified during this sampling event. The fluoride concentration at MW-3 (0.200 mg/l) was slightly above the laboratory PQL of 0.15 mg/l and less than the MCL (4.0 mg/l) during this event. The fluoride concentration at MW-3 is consistent with previous data from June 2017 to February 2022. In addition, no distinct statistically significant trend was identified by Mann-Kendall for fluoride concentrations at MW-3 when considering data from the past 21 sampling events since November 10, 2016.

A 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 (31.4 mg/l) remains below the 2DWS of 250 mg/l. Sulfate was also detected in MW-5 (14.4 mg/l) during this February 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 and the sulfate concentration during this event was similar to previous events. 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 2021 are summarized as follows:

- Total cadmium **was not** detected above the laboratory PQL (<0.00100 mg/l) in MW-3 during this February 2022 monitoring event, and total cadmium was not indicated as an SSI during this monitoring event. Total cadmium has previously been detected in MW-3 during each of the previous 23 consecutive monitoring events (November 10, 2016 - November 18, 2021). In addition, inter-well prediction limit analysis results have indicated SSIs in total cadmium concentrations at MW-3 during each of the previous 23 monitoring events (November 10, 2016 - November 18, 2021). During many of the events from June 2017- August 2021, the observed cadmium concentrations at MW-3 had been above the EPA MCL of 0.005 mg/l. The current total cadmium non-detect value observed at MW-3 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.
- SSIs during this February 2022 event included chloride (MW-3, MW-4, MW-5, TMW-1, TMW-2, and TMW-3), fluoride (MW-3), and sulfate (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; and sulfate at MW-5. Trend analysis revealed a downward trend in aluminum concentrations at TMW-2; barium concentrations at MW-3; total cadmium 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 during this event.
- A 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 fluoride concentration reported at MW-3 was indicated as an SSI using all available data since 2008, the concentration remains well below the MCL of 4 mg/l and also below the 2DWS of 2 mg/l. In addition, the fluoride concentrations at MW-3 did not exhibit a statistically significant increasing or decreasing trend when considering data from MW-3 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 second quarter 2021 assessment-monitoring event is tentatively scheduled for May 2022 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 2022 assessment-monitoring event.

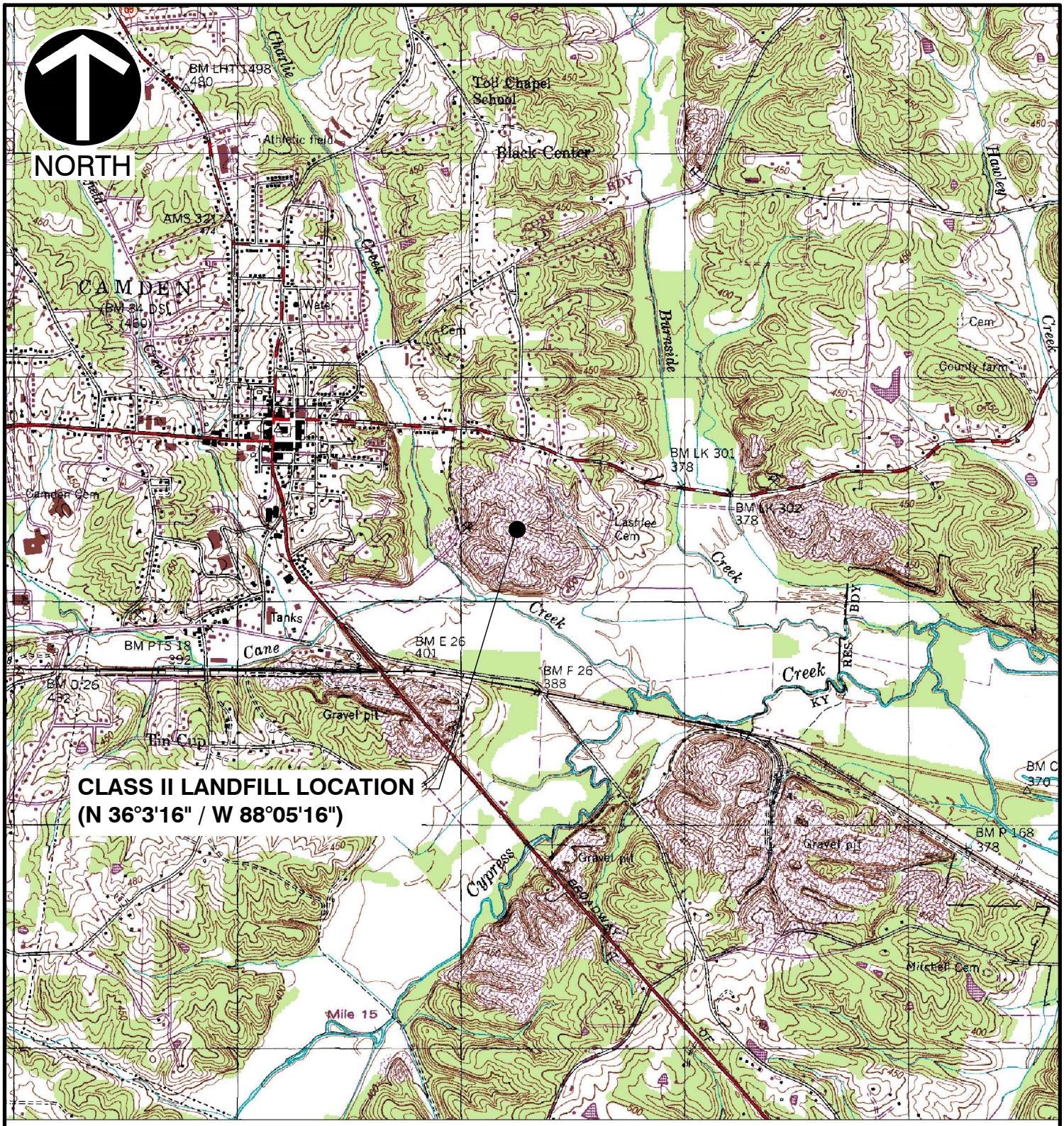
Since the former EWS Class II Landfill site remains in assessment monitoring, a private water use survey update is required annually. An annual water use survey update for the former EWS Class II Landfill site was completed by CEC in November 2021, and no new wells or springs were identified within the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

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. It is recommended that a dedicated sampling port be installed on the IWC-leachate line.

APPENDIX A
MAPS & TABLES



REFERENCE

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

SCALE IN FEET

0 2000' 4000'

* HAND SIGNATURE ON FILE

Civil & Environmental Consultants, Inc.

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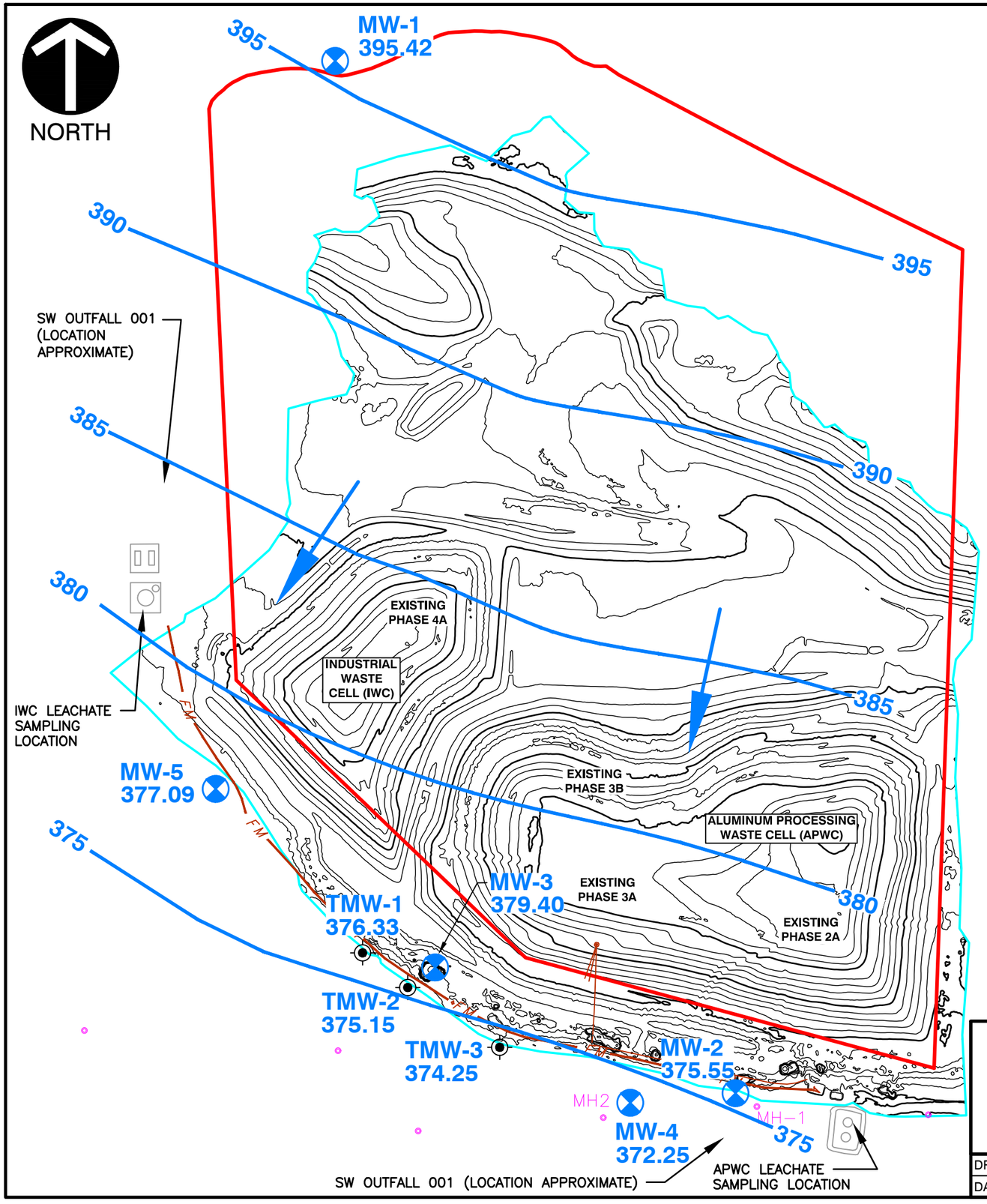
FORMER EWS SITE
CLASS II CAMDEN LANDFILL
CAMDEN, TENNESSEE

SITE LOCATION MAP 1Q2022

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	KBW*	FIGURE NO.:	1
DATE:	APRIL 2022	DWG SCALE:	1"=2000'	PROJECT NO:	181-364		

P:\2018\181-364\-CADD\Dwg\181-364_ FIGURE 1 - SITE LOCATION MAP.dwg{LAYOUT1} LS:(4/25/2022 - pcampbell) - LP: 4/25/2022 3:56 PM



LEGEND

- MW1 395.04 — GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
- TMW-1 374.97 — TEMPORARY GROUND WATER MONITORING WELL GROUND WATER ELEVATION (FMSL)
- 390 — POTENTIOMETRIC SURFACE CONTOUR (FMSL)
- GROUND WATER FLOW DIRECTION
- MH1 — MANHOLE
- APPROXIMATE FILL LIMITS
- FM — FORMER LEACHATE FORCE MAIN

NOTE:

Hydraulic gradient calculation between MW−1 and MW−4 locations.

$$i = \frac{395.42' \text{ (MW−1)} - 372.25' \text{ (MW−4)}}{1{,}910'} = 0.0121 \text{ ft/ft}$$

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.

SCALE IN FEET
0 200 400

*HAND SIGNATURE ON FILE

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FORMER ENVIRONMENTAL WASTE SOLUTIONS
CAMDEN CLASS II LANDFILL
CAMDEN, TENNESSEE

FEBRUARY 2022
POTENTIOMETRIC SURFACE MAP

DRAWN BY:	AAB	CHECKED BY:	PJC	APPROVED BY:	*KW	FIGURE NO.: 2
DATE:	APRIL 2022	DWG SCALE:	1"=200'	PROJECT NO:	181-364.0005	

P:\2018\181-364\-CADD\DWG\181-364_ GROUNDWATER MAP FEBRUARY 2022.DWG{FIG 2 (2)}LS:(PCAMPBELL - 4/8/2022) - LP: 4/8/2022_12:12:29_PM

Table 1

Former Environmental Waste Solutions Camden Class II Landfill

Field Parameters and Potentiometric Data - 1st 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	2/9/2022	10:35	416.47	385.97	0.17	1.6	21.05	395.42	15.0	93.4	112.6	5.91	0.49	58.7	10.8
MW-2*	2/9/2022	NS	380.35	367.70	0.17	1.3	4.80	375.55	8.4	216.0	314.6	6.17	4.64	271.8	7.55
MW-3	2/9/2022	15:00	392.90	365.10	0.17	2.4	13.50	379.40	11.5	111.2	149.9	5.89	3.68	268.3	27.5
MW-4	2/9/2022	13:15	381.47	358.37	0.17	2.4	9.22	372.25	14.8	70.9	88.0	5.99	2.57	269.3	4.60
MW-5	2/9/2022	12:15	385.25	351.40	0.17	4.4	8.16	377.09	16.4	280.5	335.5	5.32	0.66	253.6	14.1
TMW-1	2/9/2022	12:40	381.19	348.99	0.085	1.2	4.86	376.33	16.0	138.2	166.2	5.57	4.09	283.7	5.97
TMW-2	2/9/2022	11:40	384.27	356.77	0.085	0.8	9.12	375.15	15.9	130.9	158.0	5.57	5.48	294.0	5.69
TMW-3	2/9/2022	10:15	381.37	353.37	0.085	0.9	7.12	374.25	15.4	245.5	300.2	5.29	0.88	257.9	4.55
** Leachate (IWC-L)	2/9/2022	14:00	NA	NA	NA	NA	NA	NA	19.4	14,936	16,703	9.72**	6.56	53.5	17.1
***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 February 9, 2022.

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

**IWC-L analytical data were not reported for this event due to sample integrity issues.

***APWC-L was not producing leachate and were 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 - 1st Quarter 2022

Parameter	MCL/GWPS (mg/l)	MW-1	Q	MW-3	Q	Duplicate (MW-3)	Q	MW-4	Q	MW-5	Q	TMW-1	Q	TMW-2	Q	TMW-3	Q	IWC-Leachate*	Q	APWC-Leachate**	Q	Field Blank	Q
		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022		2/9/2022	
		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)		Value (mg/l)	
Hardness	-	**21.8**		**47.6**		**49.1**		**30.8**		**92.7**		**57.2**		**54.6**		**87.0**		NA*		NS**		<2.50	
Alkalinity	-	**53.9**		<20.0		<20.0		**24.1**		<20.0		<20.0		<20.0		<20.0		NA*		NS**		<20.0	
Ammonia Nitrogen	-	<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		<0.250		NA*		NS**		<0.250	
COD	-	<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		<20.0		NA*		NS**		<20.0	
Boron	-	<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		<0.200		NA*		NS**		<0.200	
Bromide	-	<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		<1.00		NA*		NS**		<1.00	
Chloride	250 [2]	**1.93**		**9.65**		**9.82**		**8.79**		**74.1**		**35.6**		**37.1**		**65.8**		NA*		NS**		<1.00	
Fluoride	2 [2]	<0.150	P1	**0.200**		**0.194**		<0.150		<0.150		<0.150		<0.150		<0.150		NA*		NS**		<0.150	
Nitrate	10 [1]	<0.100		**0.499**		**0.504**		**0.66**		**1.12**		**1.60**		**0.818**		**6.70**		NA*		NS**		<0.100	
Sulfate	250 [2]	<5.00		**31.4**		**31.0**		<5.00		**14.4**		<5.00		<5.00		<5.00		NA*		NS**		<5.00	
Aluminum	0.2 [2]	<0.100		**0.212**		**0.245**		<0.100		**0.161**		<0.100		**0.115**		<0.100		NA*		NS**		<0.100	
Antimony	0.006	<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		<0.00400		NA*		NS**		<0.00400	
Arsenic	0.01	**0.0219**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Barium	2	**0.0213**		**0.0360**		**0.0354**		**0.00884**		**0.0581**		**0.0143**		**0.0301**		**0.0487**		NA*		NS**		<0.00200	
Beryllium	0.004	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Total Cadmium	0.005	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		NA*		NS**		<0.00100	
Calcium	-	**3.81**		**12.0**		**12.5**		**6.46**		**17.4**		**15.6**		**13.6**		**22.5**		NA*		NS**		<1.00	
Chromium	0.1	<0.00200		**0.00265**		<0.00200		<0.00200		**0.0030**		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Cobalt	0.006 [3]	**0.0676**		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Copper	1.3	<0.00500	J5	**0.00941**		<0.00500		<0.00500		**0.00575**		<0.00500		<0.00500		<0.00500		NA*		NS**		<0.00500	
Iron	0.3 [2]	**17.3**		**0.361**		**0.359**		**0.232**		**0.273**		**0.139**		**0.107**		<0.100		NA*		NS**		<0.100	
Lead	0.015	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Magnesium	-	**2.99**		**4.30**		**4.35**		**3.56**		**11.9**		**4.41**		**5.01**		**7.47**		NA*		NS**		<1.00	
Manganese	0.05 [2]	**1.16**	V	**0.018**		**0.019**		<0.00500		**0.264**		**0.00936**		<0.00500		**0.0108**		NA*		NS**		<0.00500	
Nickel	0.10 [1]	**0.00739**		**0.00238**		<0.00200		**0.00209**		**0.00664**		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Potassium	-	<2.00		**3.25**		**3.47**		<2.00		<2.00		<2.00		<2.00		**2.11**		NA*		NS**		<2.00	
Selenium	0.05	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		**0.00228**		<0.00200		NA*		NS**		<0.00200	
Silver	0.10 [2]	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Sodium	-	**3.30**		**5.86**		**6.46**		**4.52**		**19.5**		**4.48**		**5.33**		**15.1**		NA*		NS**		<2.00	
Thallium	0.002	<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		<0.00200		NA*		NS**		<0.00200	
Vanadium	-	<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		<0.00500		NA*		NS**		<0.00500	
Zinc	5 [2]	<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		<0.0250		NA*		NS**		<0.0250	
Mercury	0.002	**0.000837**		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		<0.000200		NA*		NS**		<0.000200	
Carbon Disulfide	-	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		NA*		NS**		<0.00100	
Vinyl Chloride	-	<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		<0.00100		NA*		NS**		**0.00197**	

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

NA* - IWC-L analytical data were not reported for this event due to sample integrity issues.

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 - 1st Quarter 2022

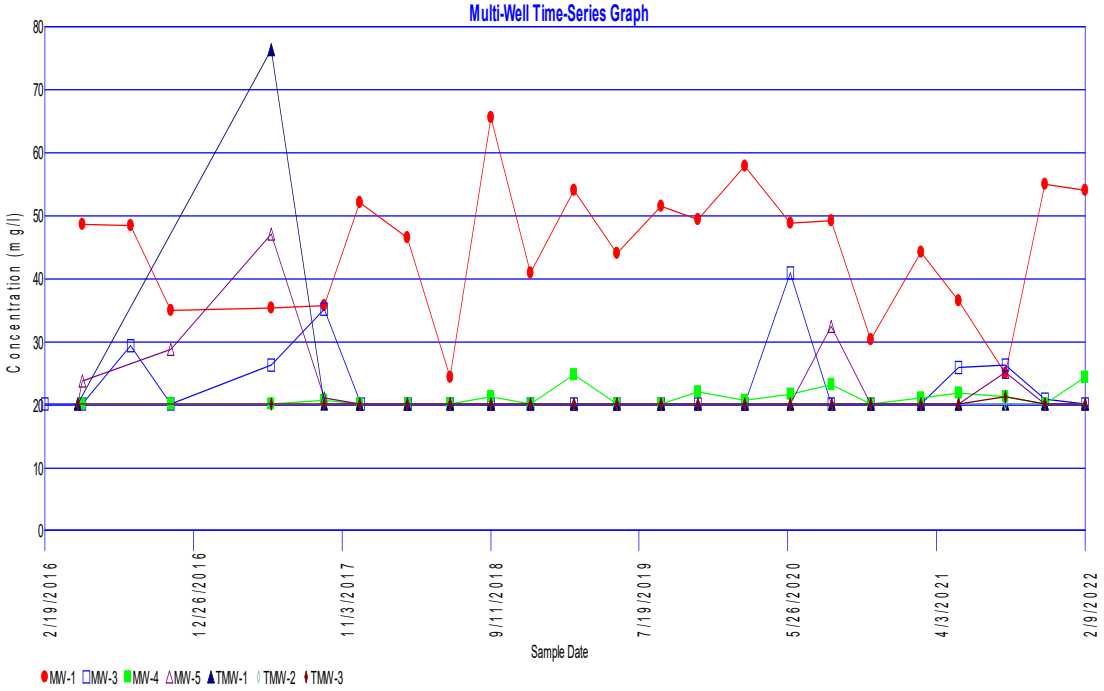
Intra-Well Statistical Summary (Upgradient Background Well MW-1)							
Constituent	Well	% Non Detects	Normality	Intra-well NPPL	Intra-well PPL	SSI	Mann-Kendall Trend Analysis[1]
Arsenic	MW-1	0.00	non-parametric	Pass	--	No	No Trend
Barium	MW-1	8.33	non-parametric	Pass	--	No	**Upward Trend**
Chloride	MW-1	0.00	non-parametric	Pass	--	No	No Trend
Cobalt	MW-1	0.00	log-normal	--	Pass	No	**Upward Trend**
Nickel	MW-1	30.56	non-parametric	Pass	--	No	No Trend
Mercury	MW-1	30.56	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]
Aluminum	MW-3	61.11	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
	TMW-2		non-parametric	Pass	--	No	**Downward Trend**
Barium	MW-3	8.33	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**
Total Cadmium	MW-3	100.00	non-parametric	Pass	--	No	**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-3	91.67	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Copper	MW-3	83.33	non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Fluoride	MW-3	96.15	non-parametric	**Fail**	--	**Yes**	No Trend
Nickel	MW-3	30.56	non-parametric	Pass	--	No	No Trend
	MW-4		non-parametric	Pass	--	No	No Trend
	MW-5		non-parametric	Pass	--	No	No Trend
Sulfate	MW-3	58.82	non-parametric	**Fail**	--	**Yes**	No Trend
	MW-5		non-parametric	Pass	--	No	**Upward Trend**

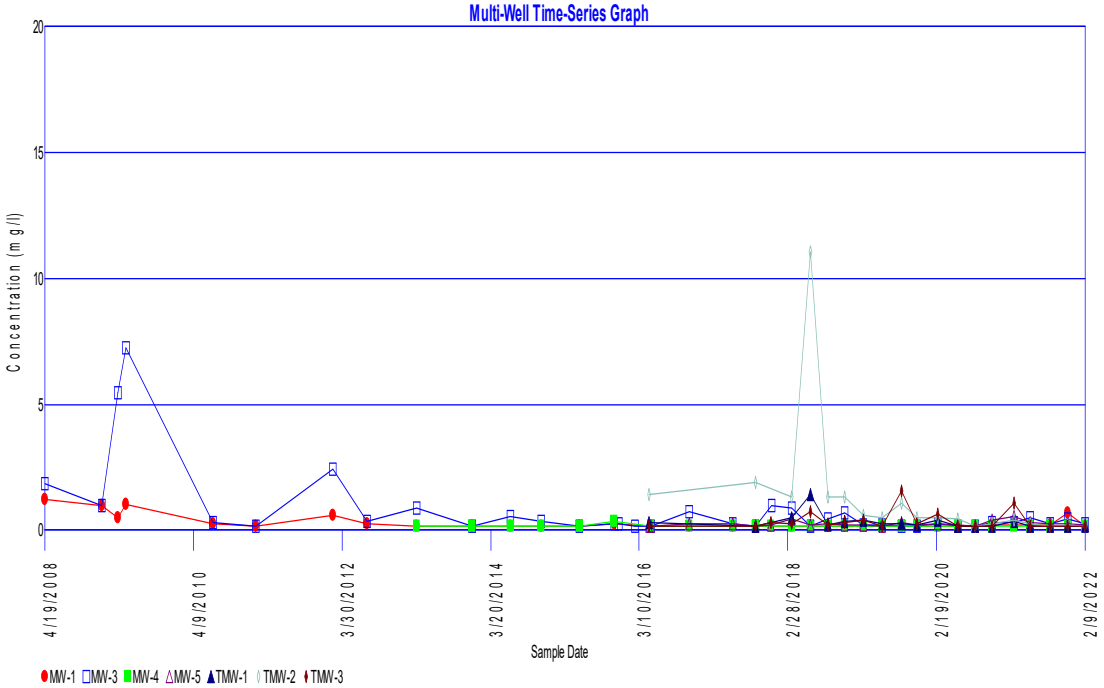
[1] **Mann-Kendall Trend Analysis was completed using recent data since the November 10, 2016 sampling event.**

APPENDIX B
STATISTICAL EVALUATIONS & TIME SERIES PLOTS

Alkalinity

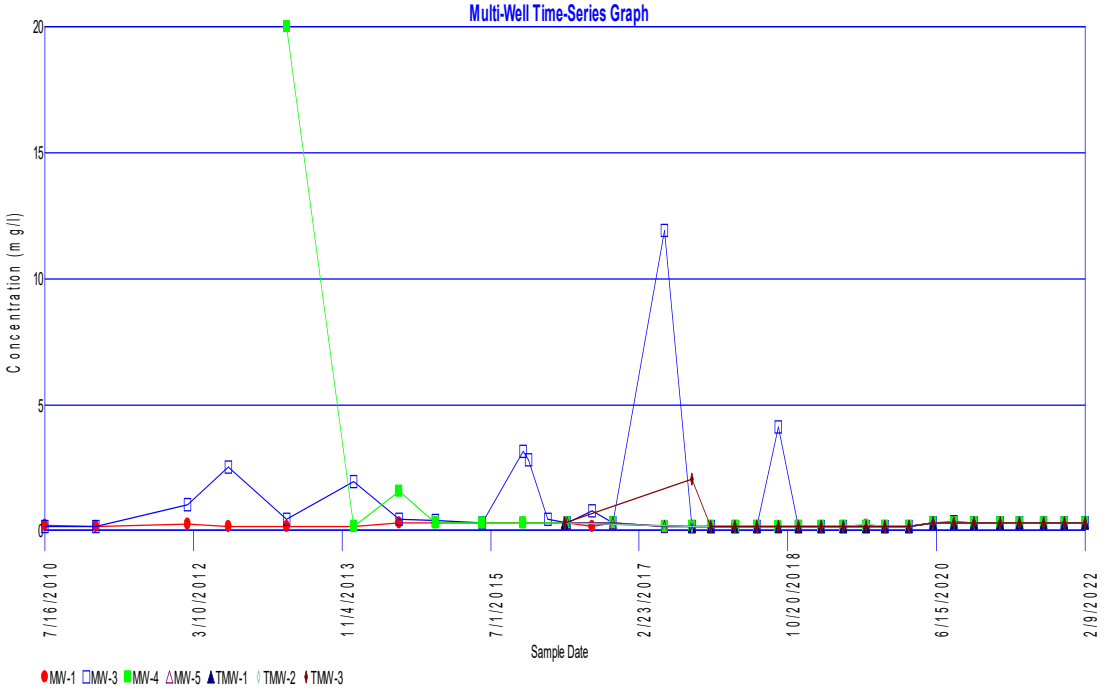


Aluminum



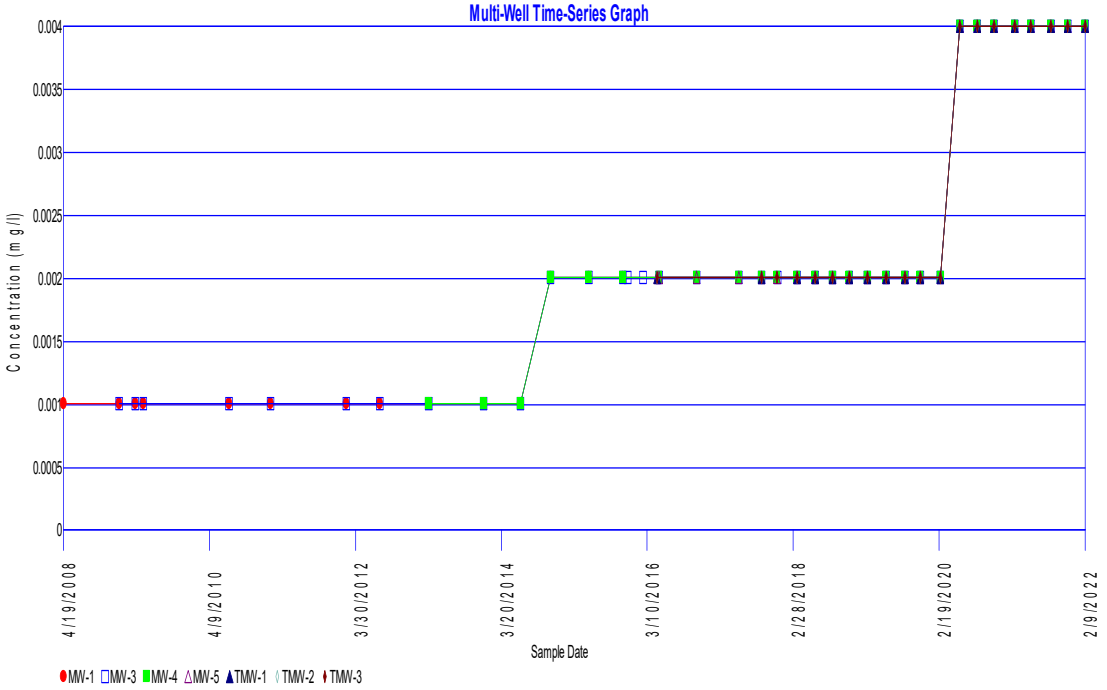
Ammonia Nitrogen

Multi-Well Time-Series Graph

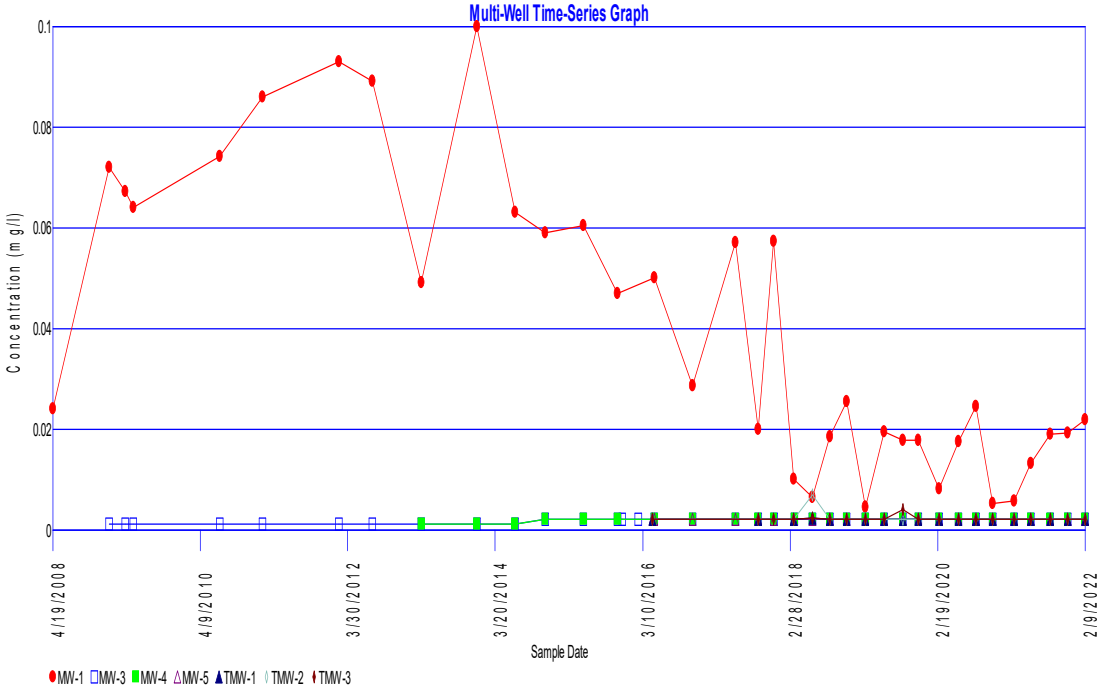


Antimony

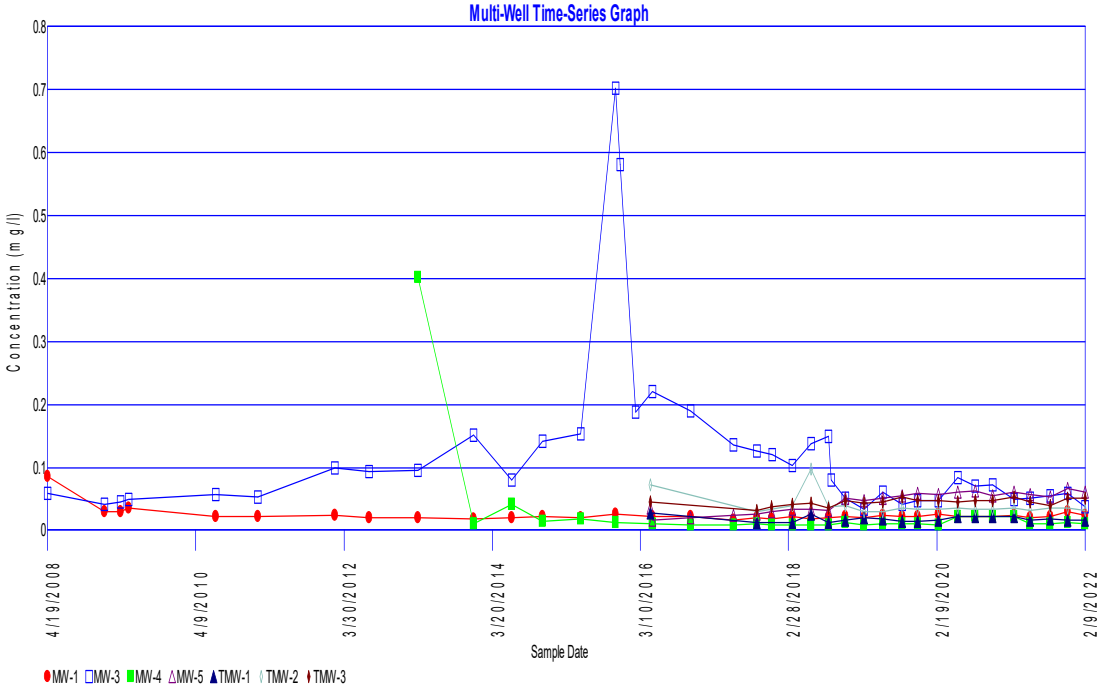
Multi-Well Time-Series Graph

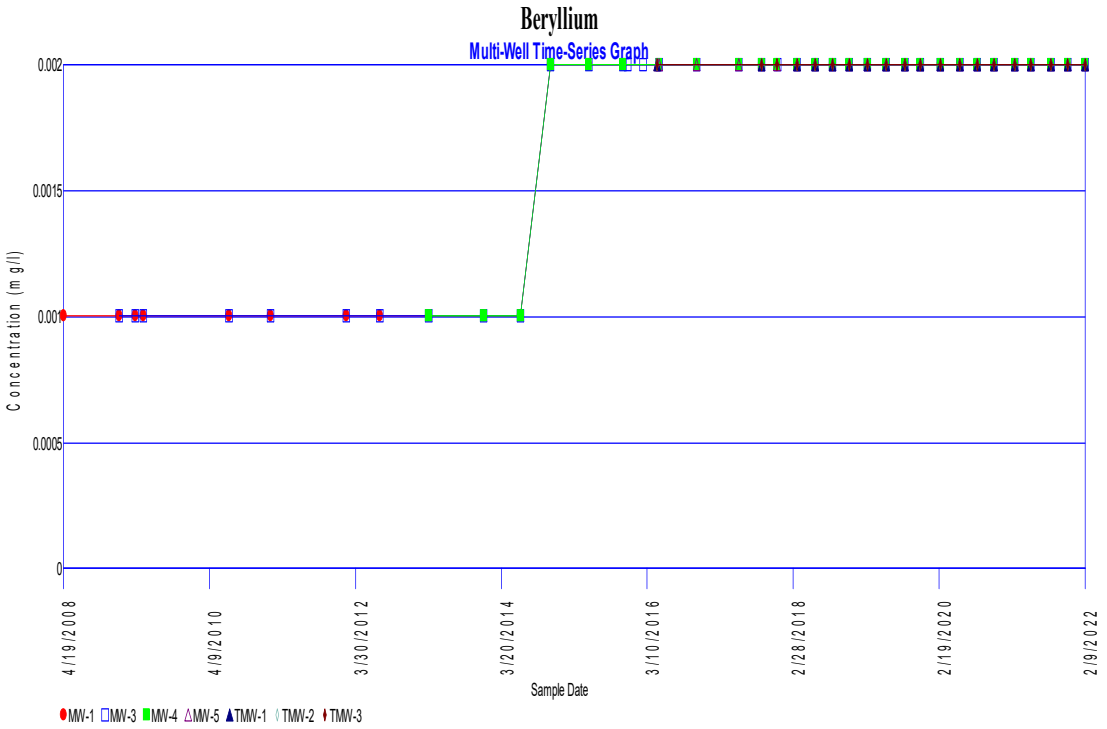


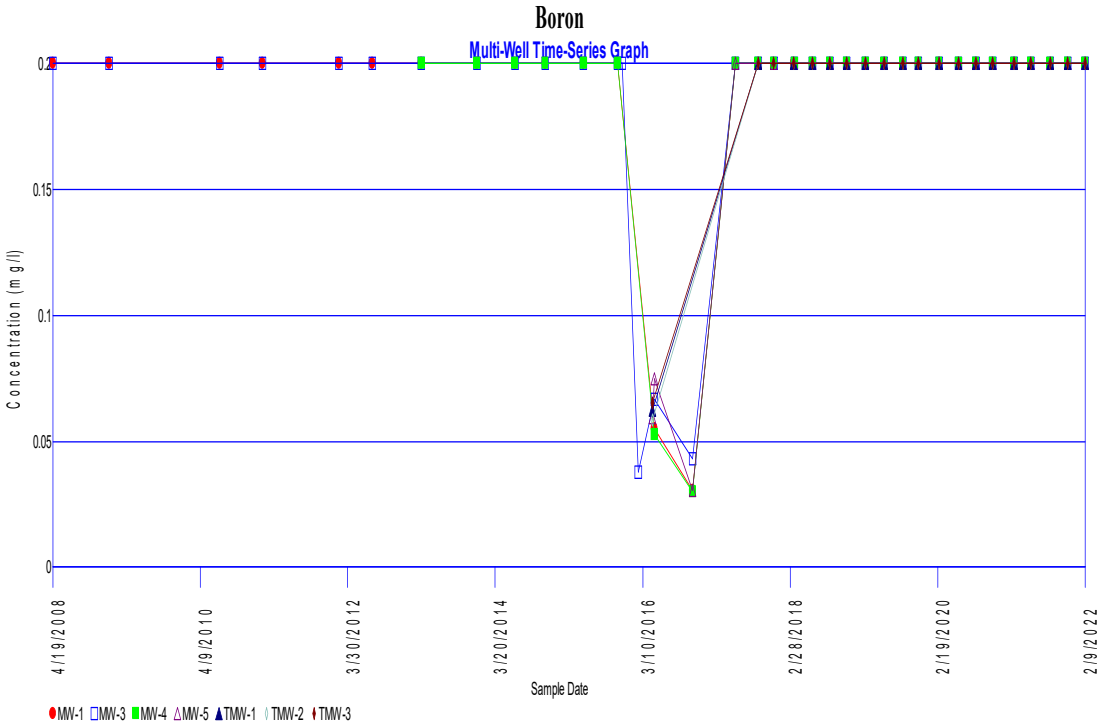
Arsenic



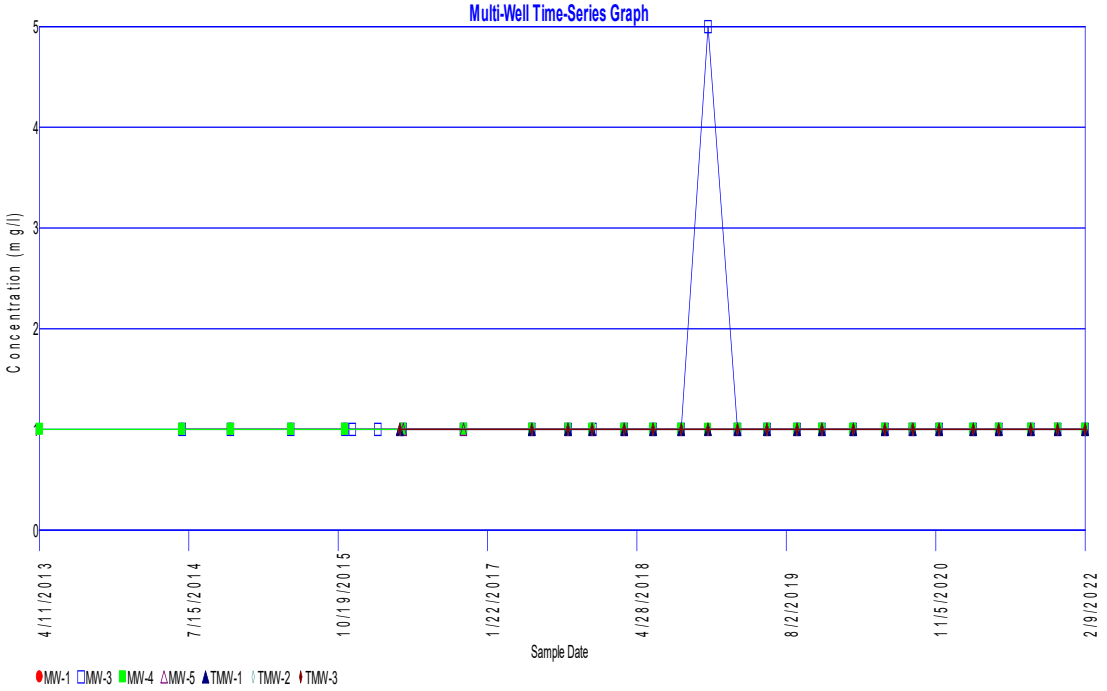
Barium



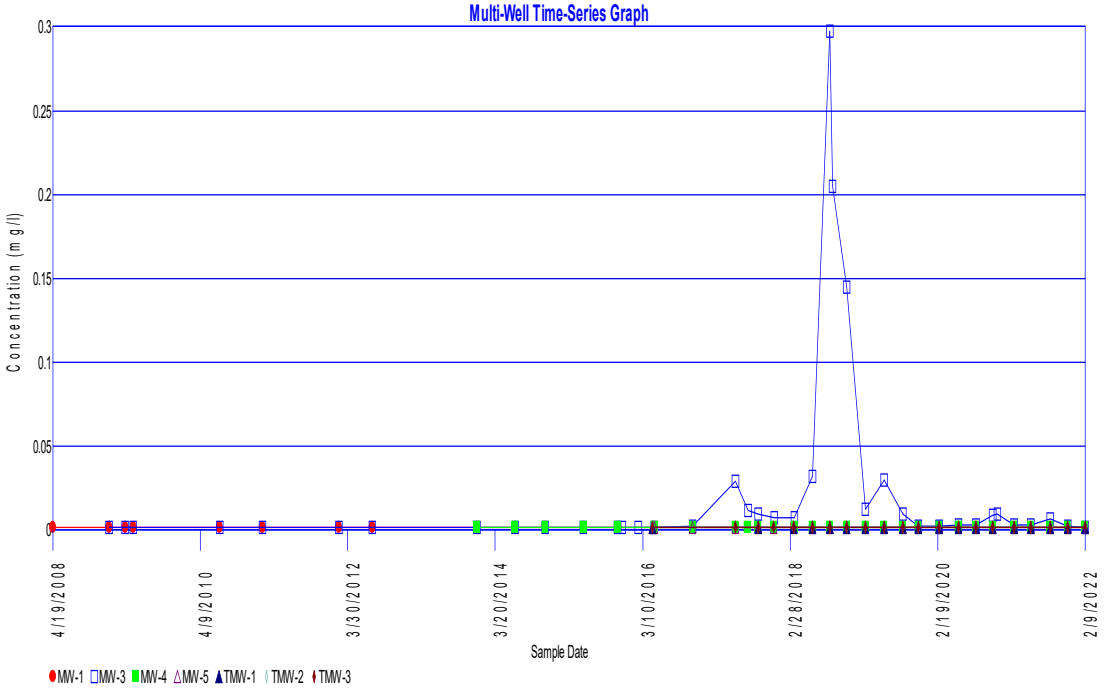

Beryllium
Multi-Well Time-Series Graph
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
4/9/2010
3/30/2012
3/20/2014
3/10/2016
2/28/2018
2/19/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Boron
Multi-Well Time-Series Graph
0.2
0.15
0.1
0.05
0
Concentration (mg/l)
4/19/2008
4/9/2010
3/30/2012
3/20/2014
3/10/2016
2/28/2018
2/19/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

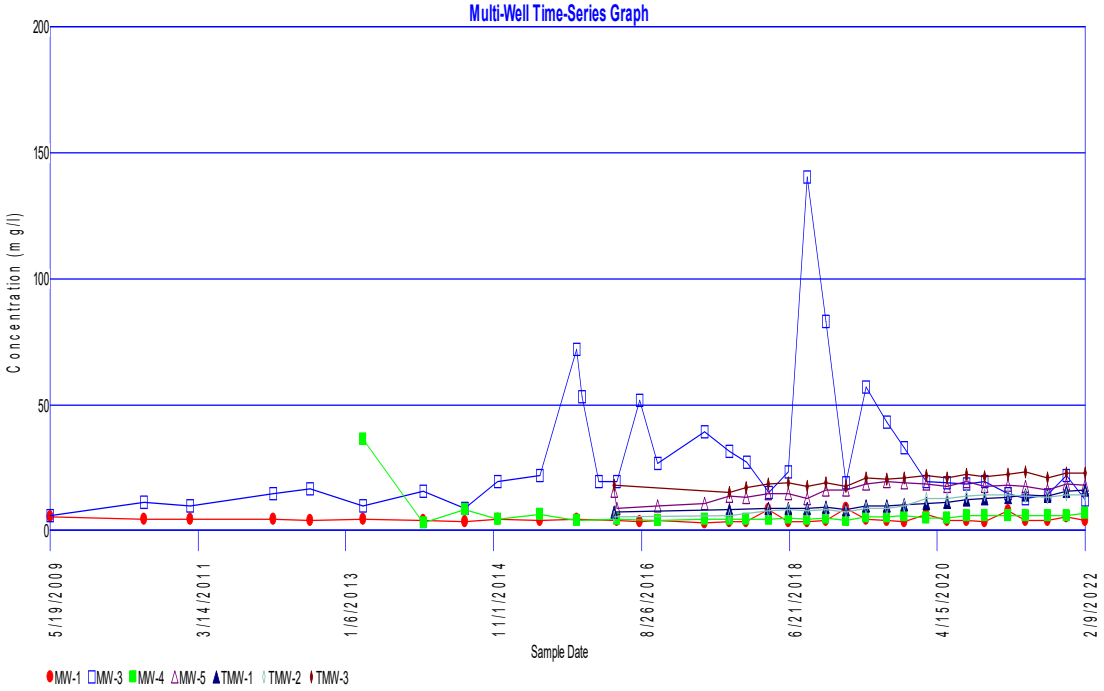
Bromide



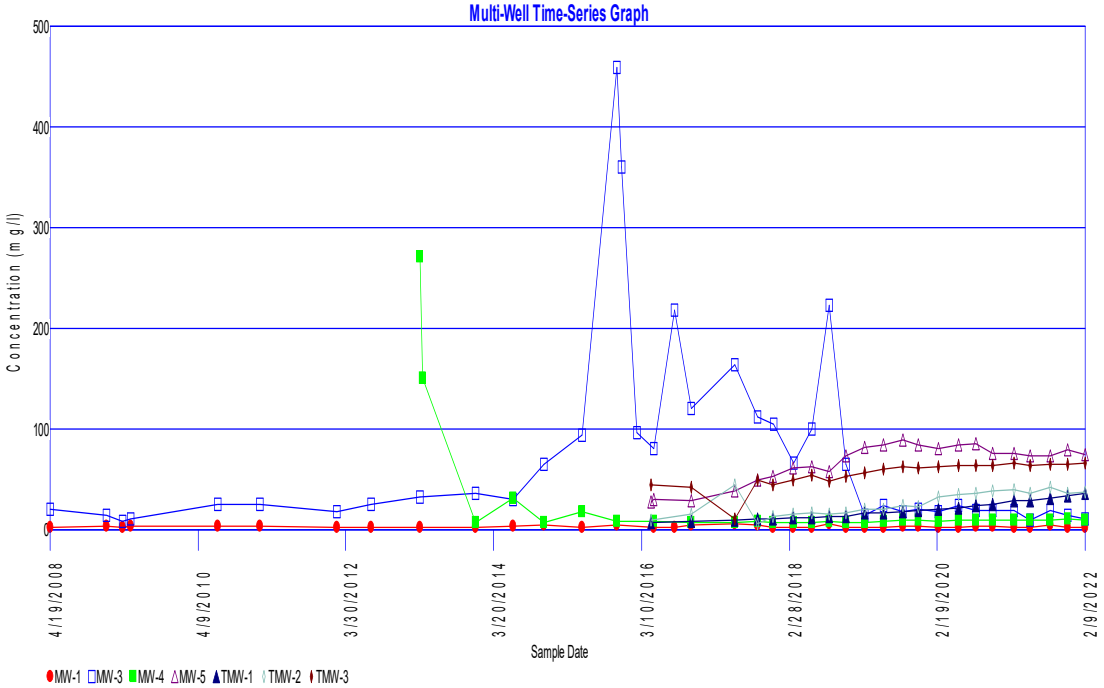
Total Cadmium



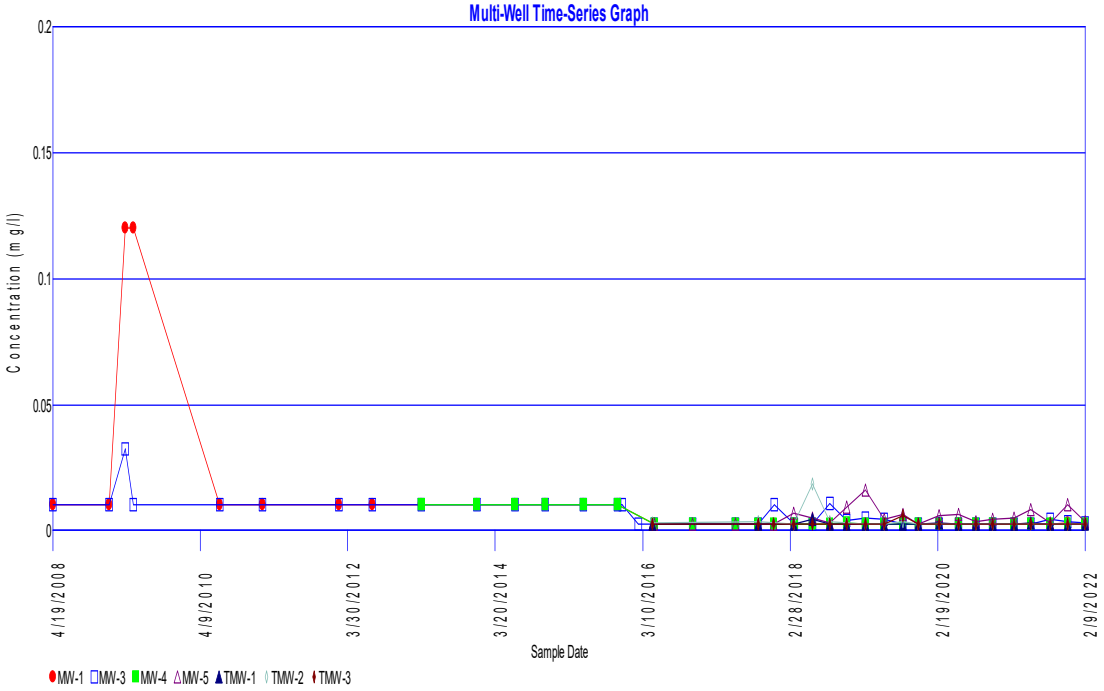
Calcium



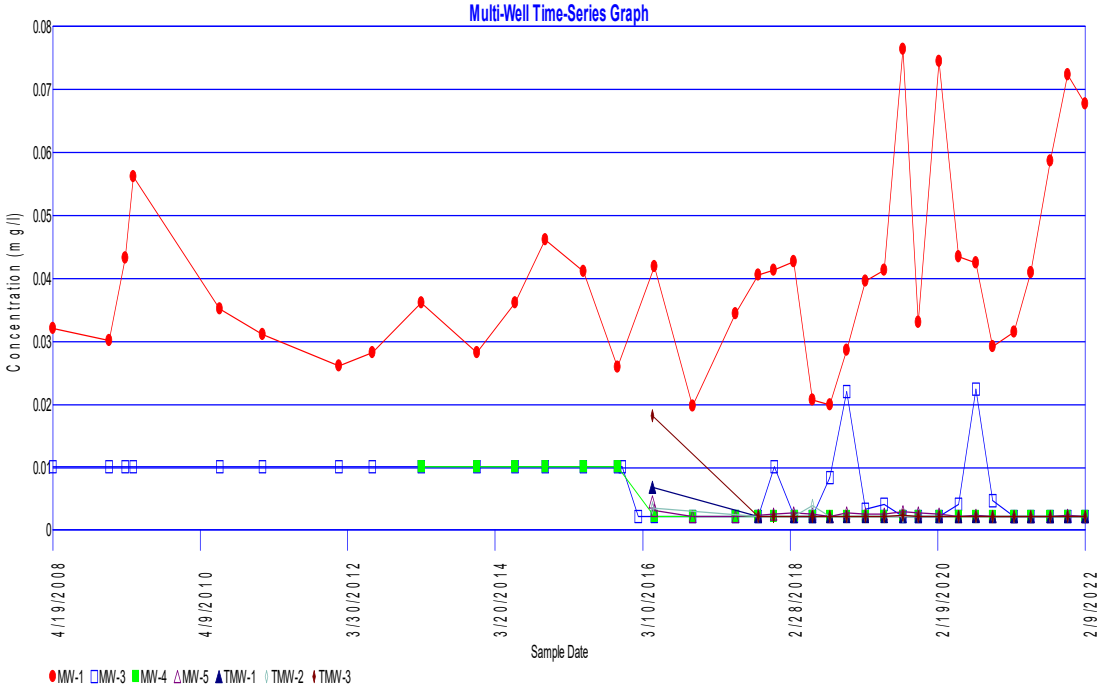
Chloride



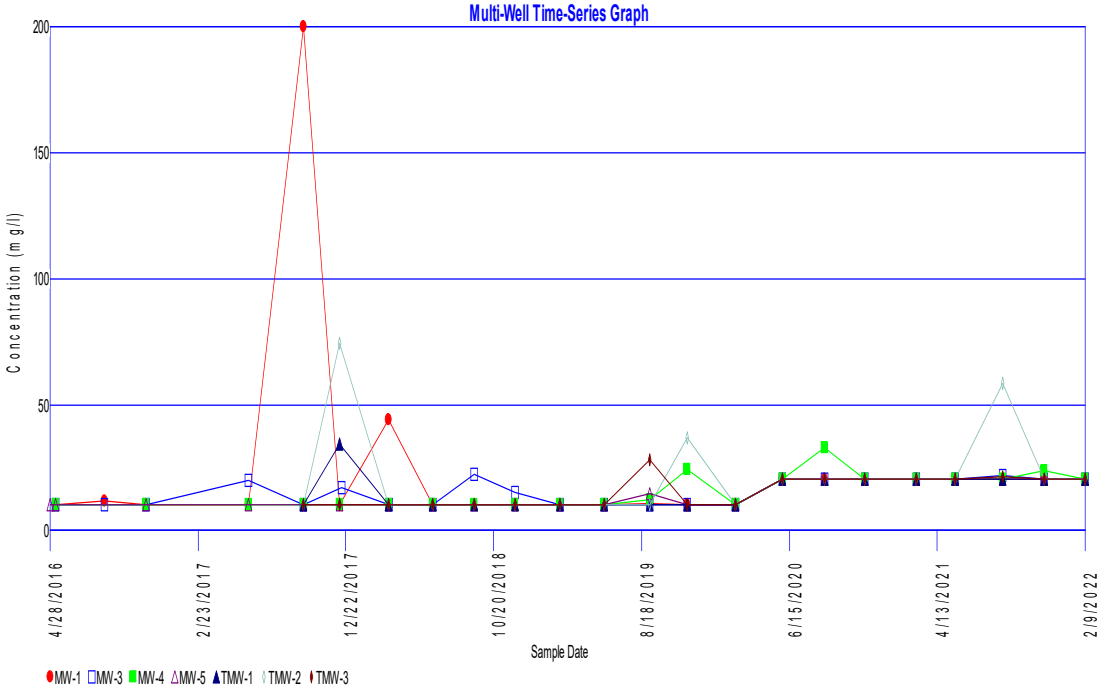
Chromium



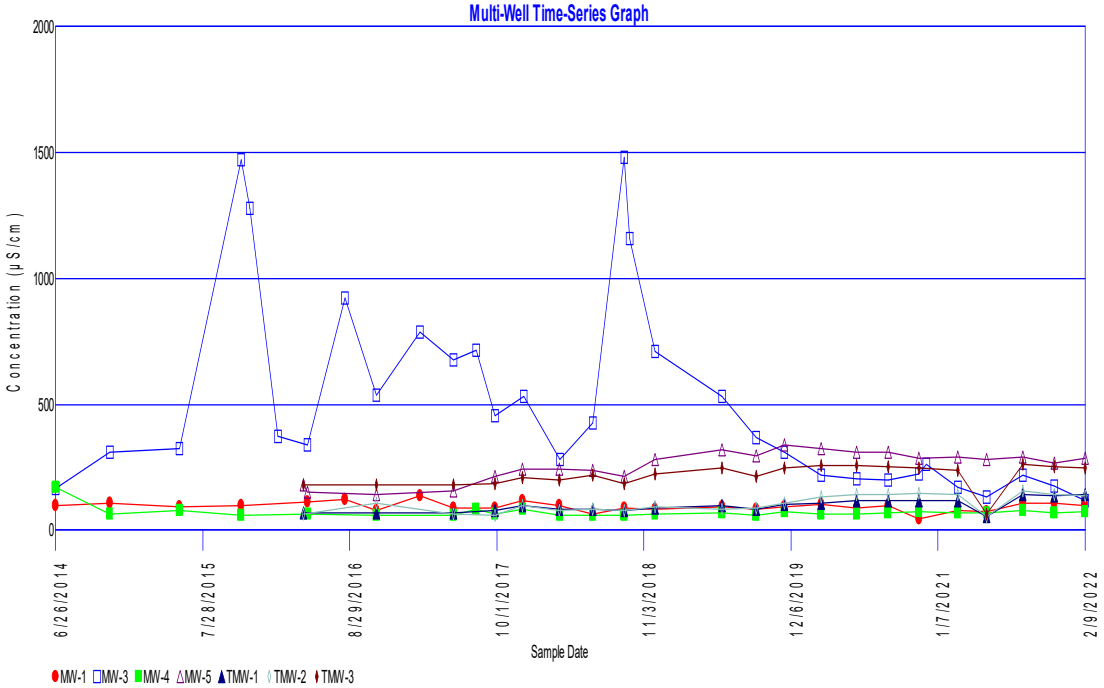
Cobalt



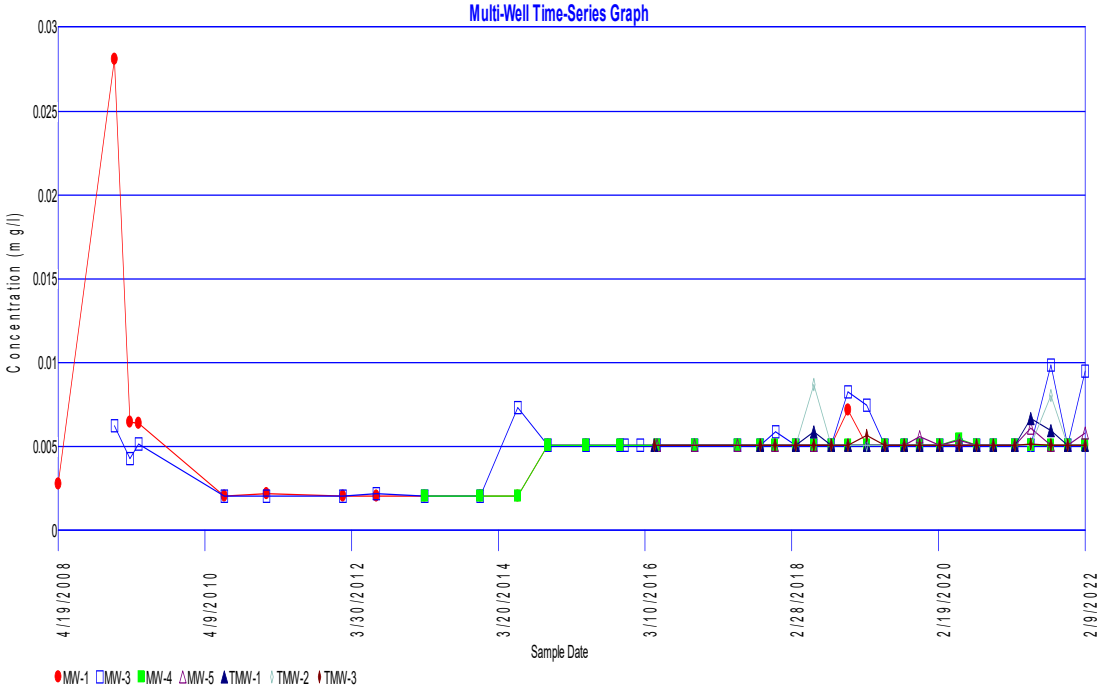
COD



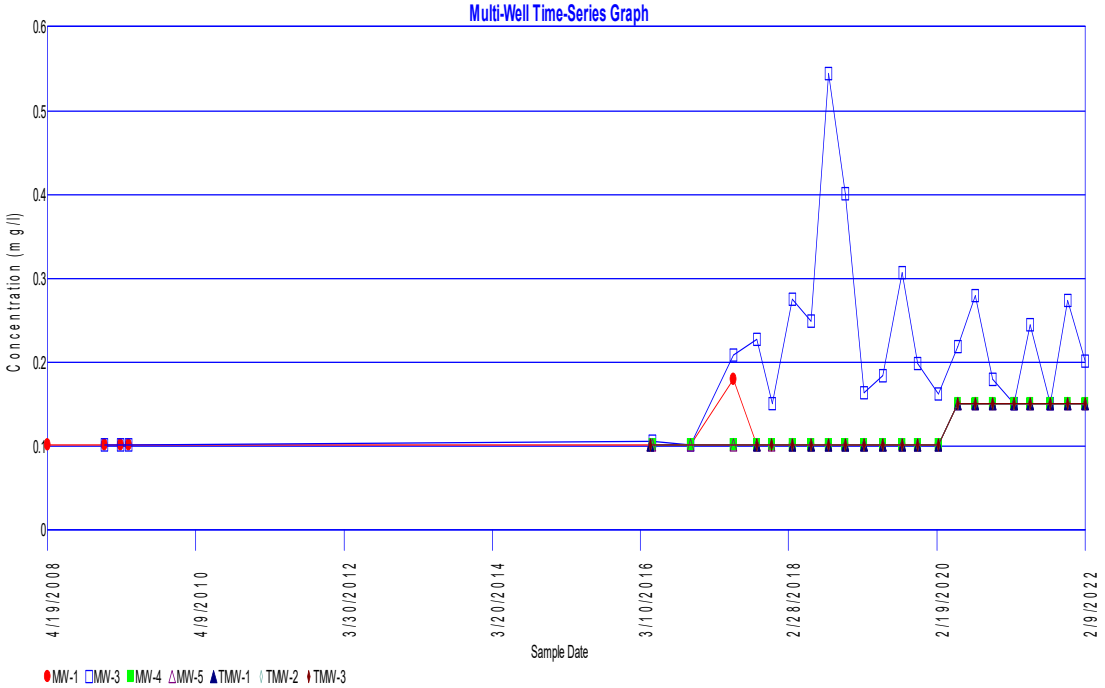
Conductivity



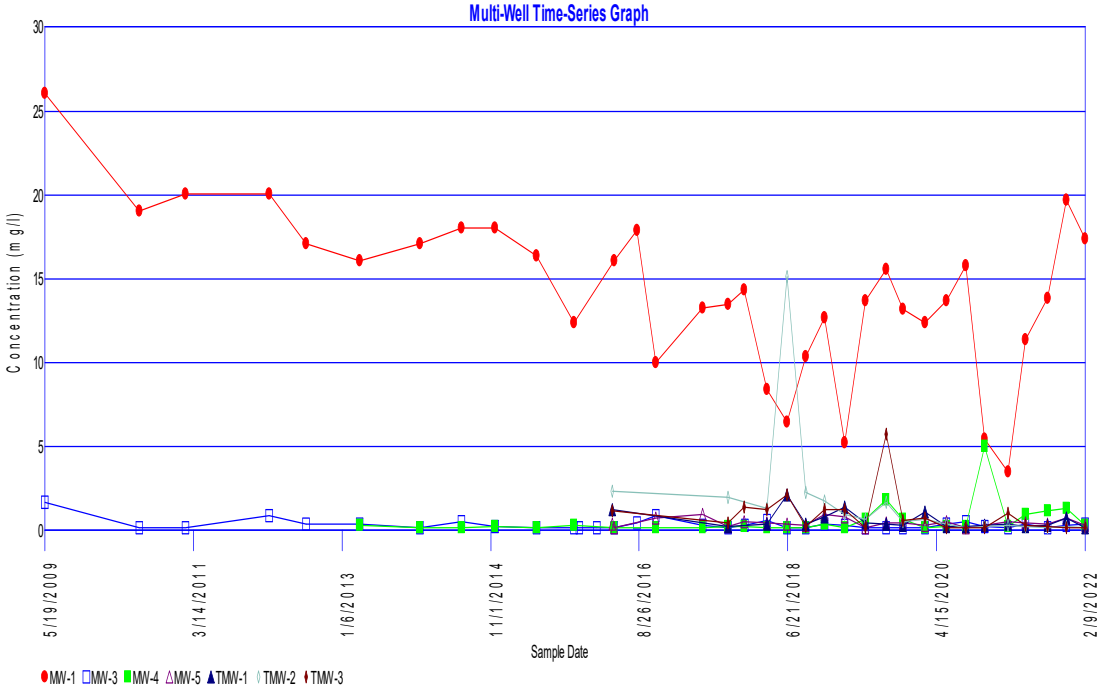
Copper



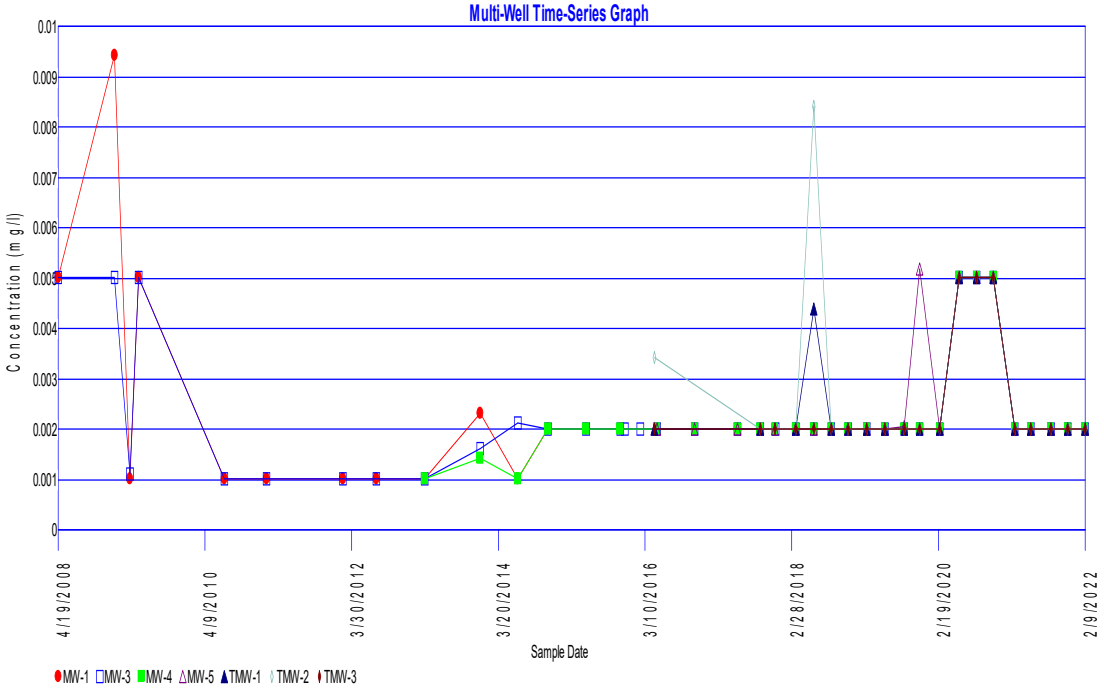
Fluoride



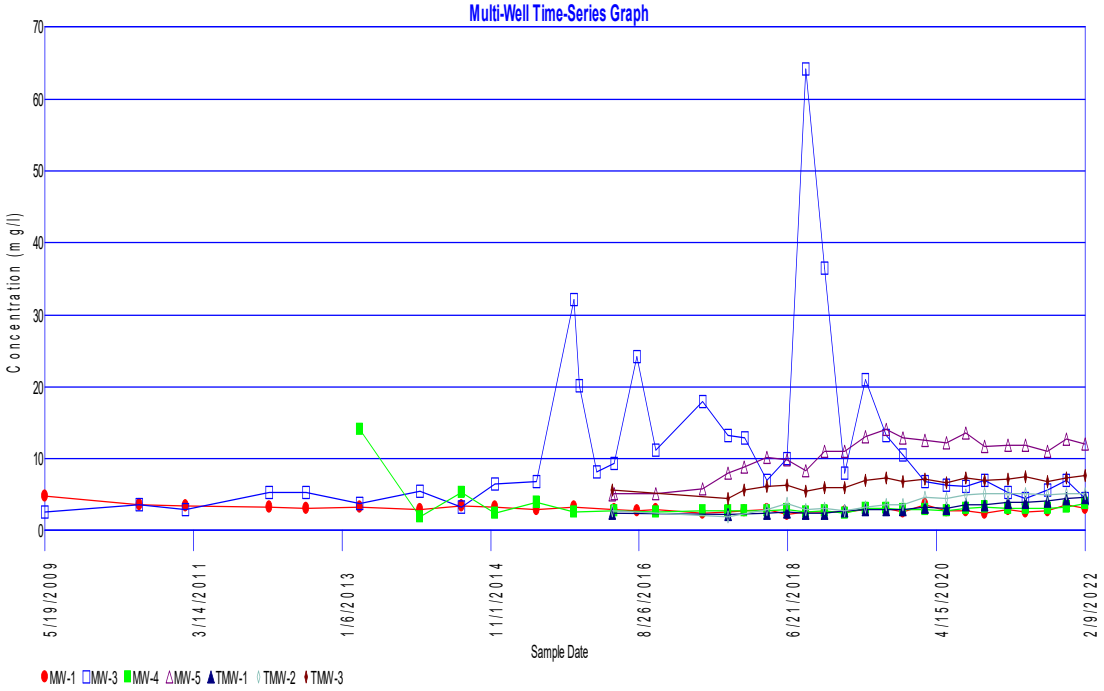
Iron


Multi-Well Time-Series Graph
Concentration (mg/l)
30
25
20
15
10
5
0
5/19/2009
3/14/2011
1/6/2013
11/1/2014
8/26/2016
6/21/2018
4/15/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

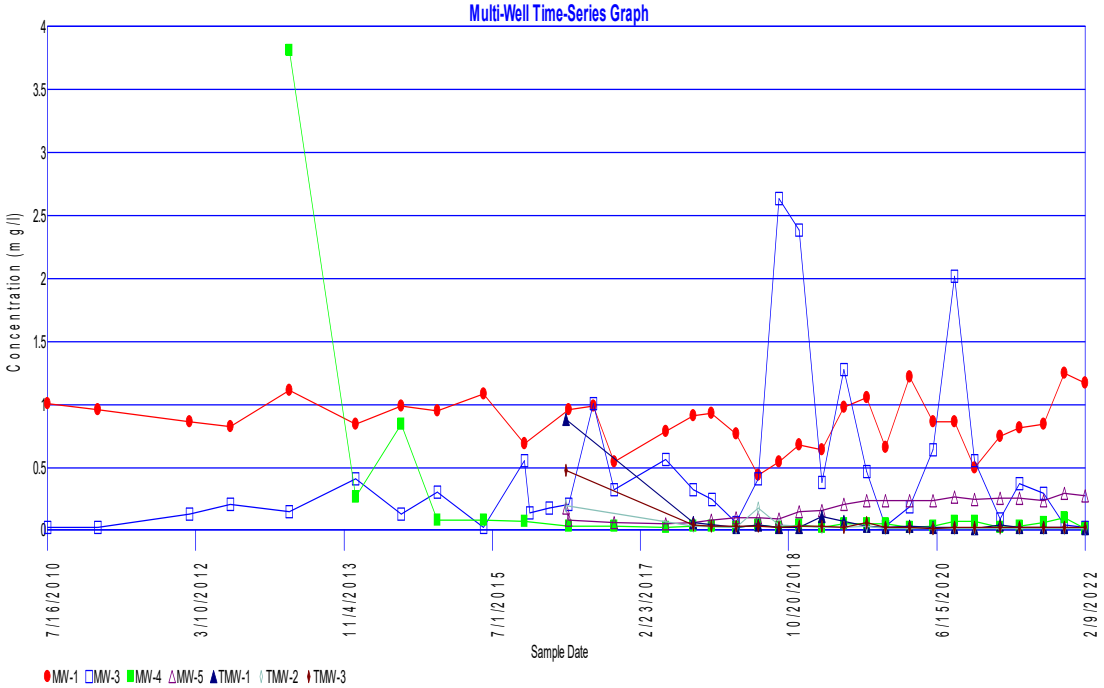
Lead


Multi-Well Time-Series Graph
Concentration (mg/l)
0.01
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0
4/19/2008
4/9/2010
3/30/2012
3/20/2014
3/10/2016
2/28/2018
2/19/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

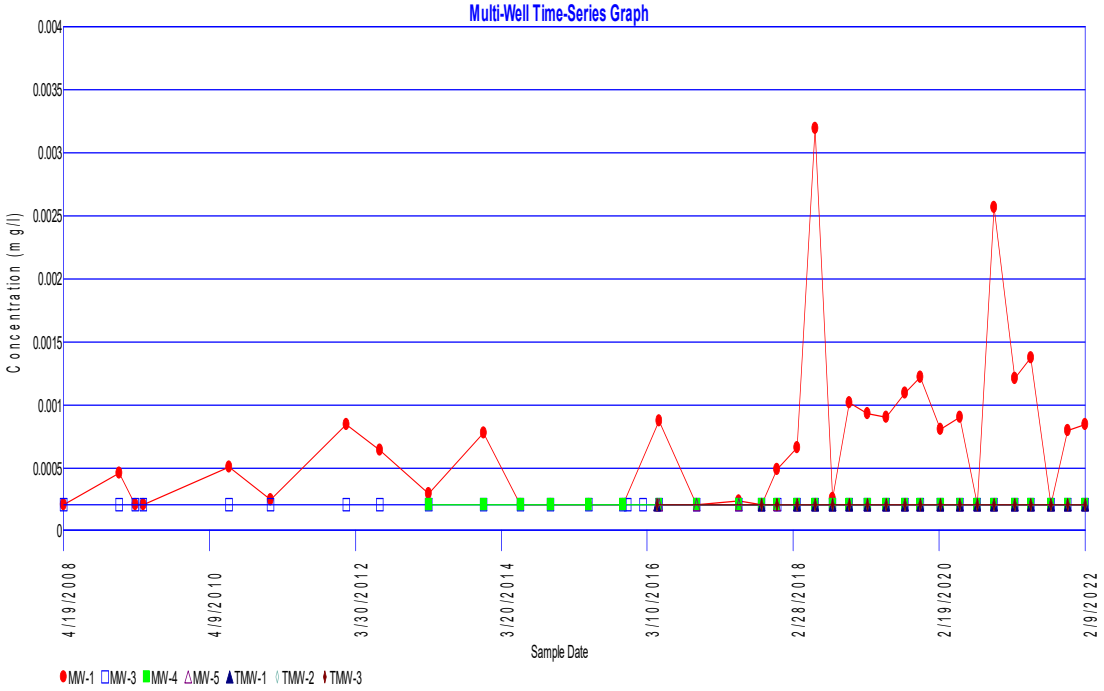
Magnesium



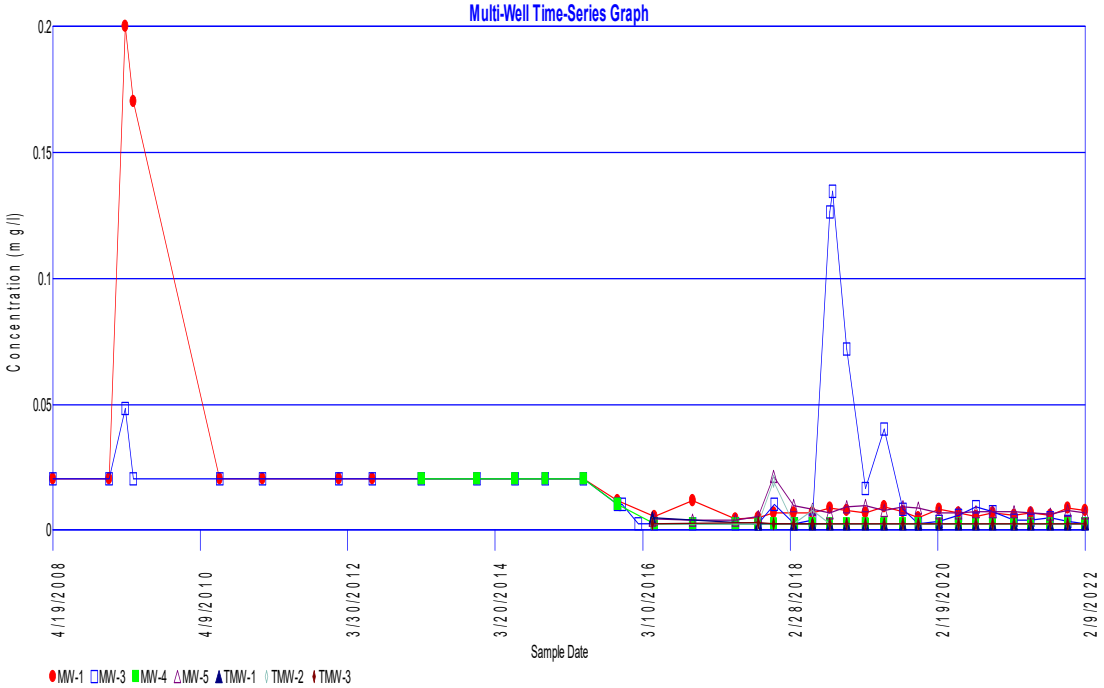
Manganese



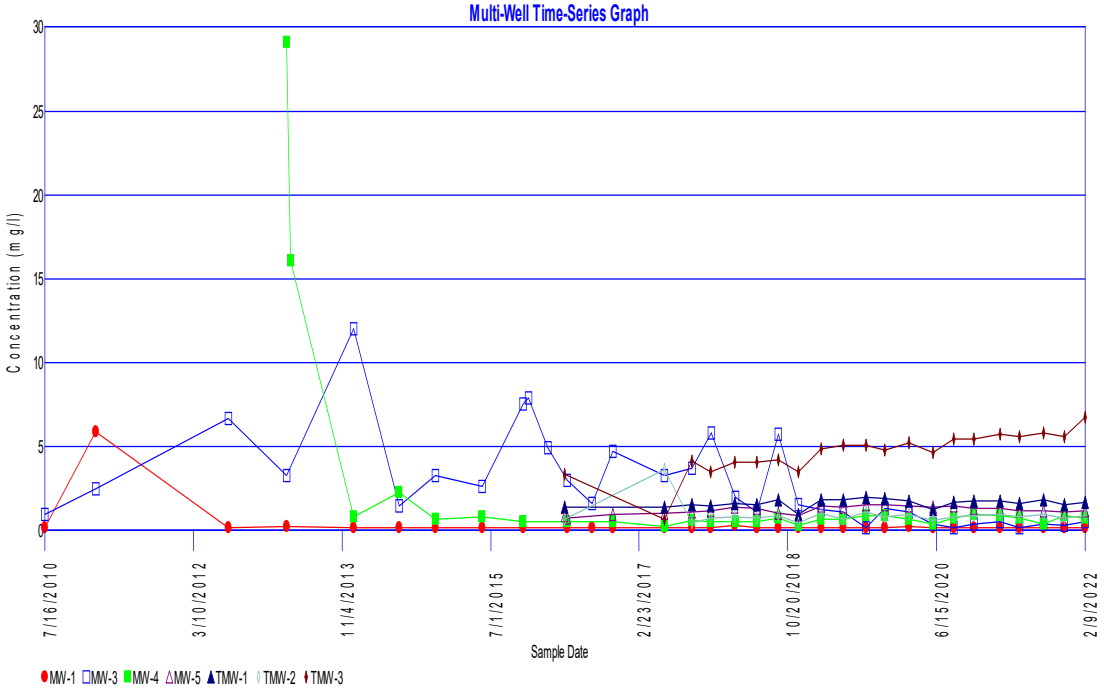
Mercury



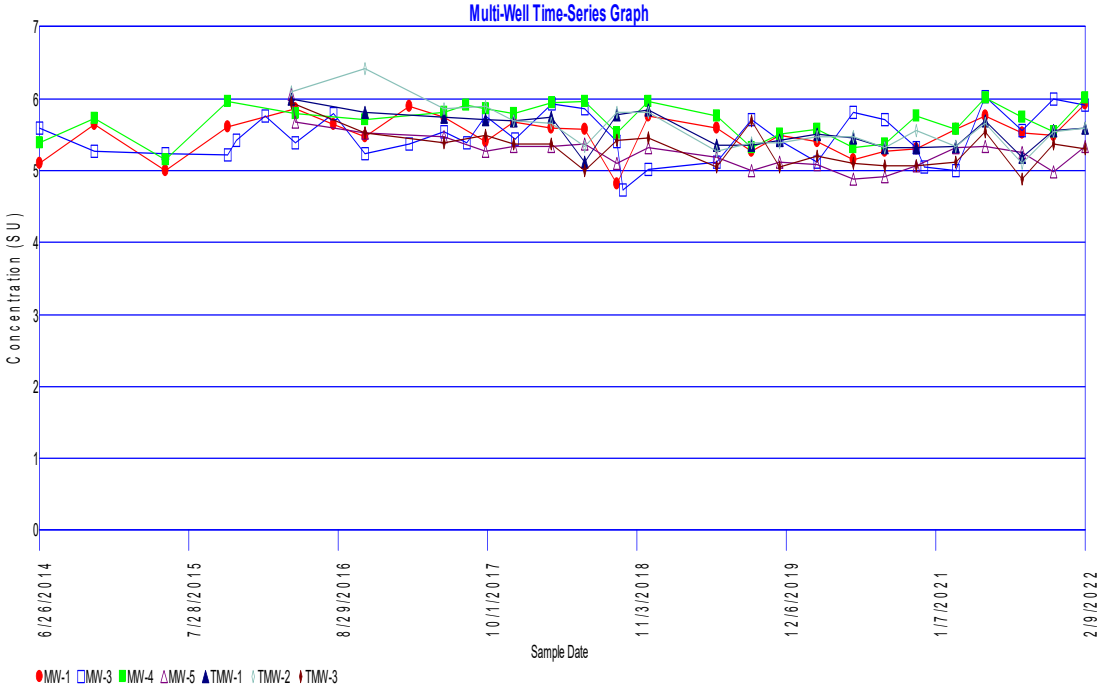
Nickel



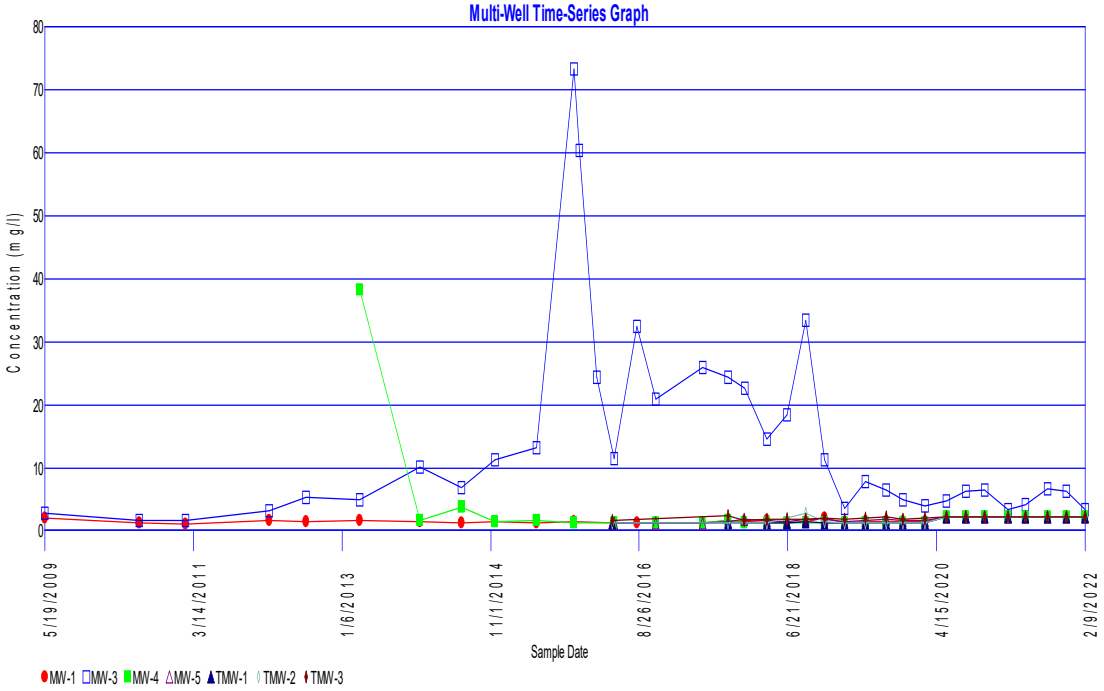
Nitrate


Multi-Well Time-Series Graph
Concentration (mg/l)
30
25
20
15
10
5
0
7/16/2010
3/10/2012
11/4/2013
7/1/2015
2/23/2017
10/20/2018
6/15/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

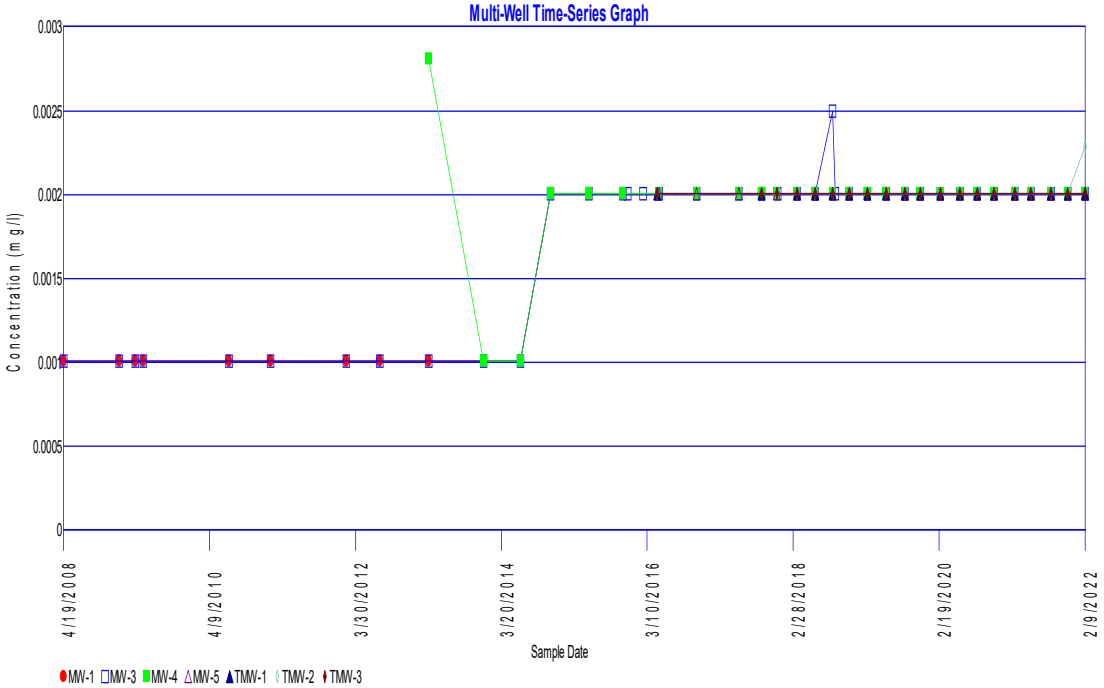
pH

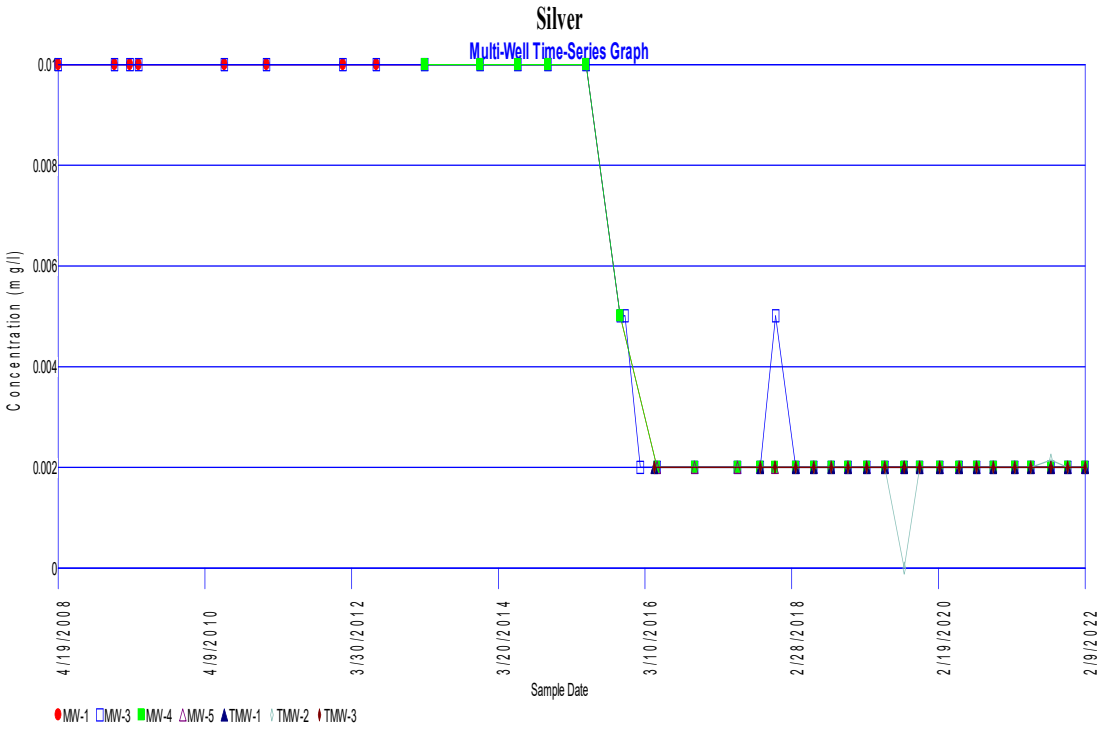

Multi-Well Time-Series Graph
Concentration (SU)
7
6
5
4
3
2
1
0
6/26/2014
7/28/2015
8/29/2016
10/1/2017
11/3/2018
12/6/2019
1/7/2021
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

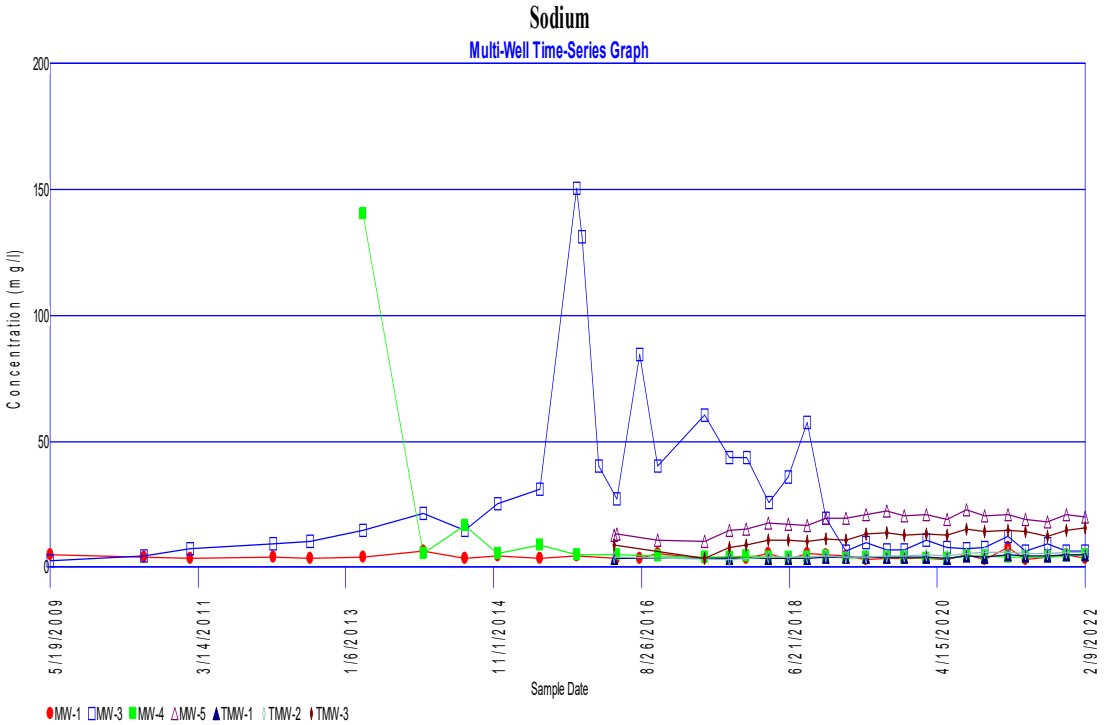
Potassium



Selenium

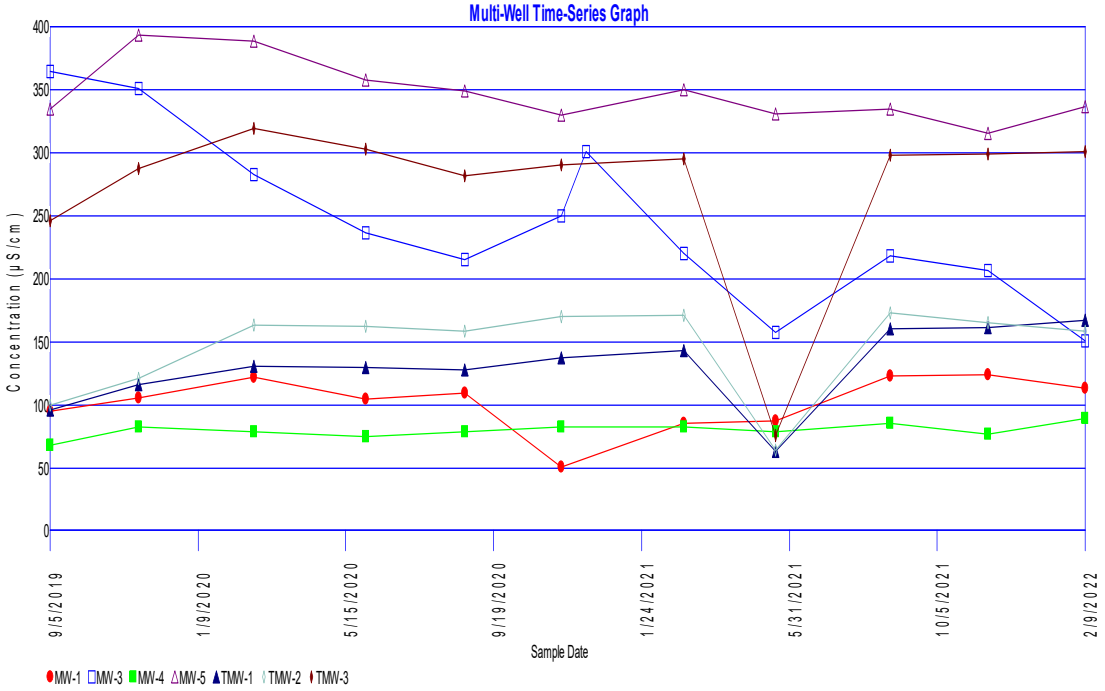



Silver
Multi-Well Time-Series Graph
0.01
0.008
0.006
0.004
0.002
0
Concentration (mg/l)
4/19/2008
4/9/2010
3/30/2012
3/20/2014
3/10/2016
2/28/2018
2/19/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Sodium
Multi-Well Time-Series Graph
200
150
100
50
0
Concentration (mg/l)
5/19/2009
3/14/2011
1/6/2013
11/1/2014
8/26/2016
6/21/2018
4/15/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

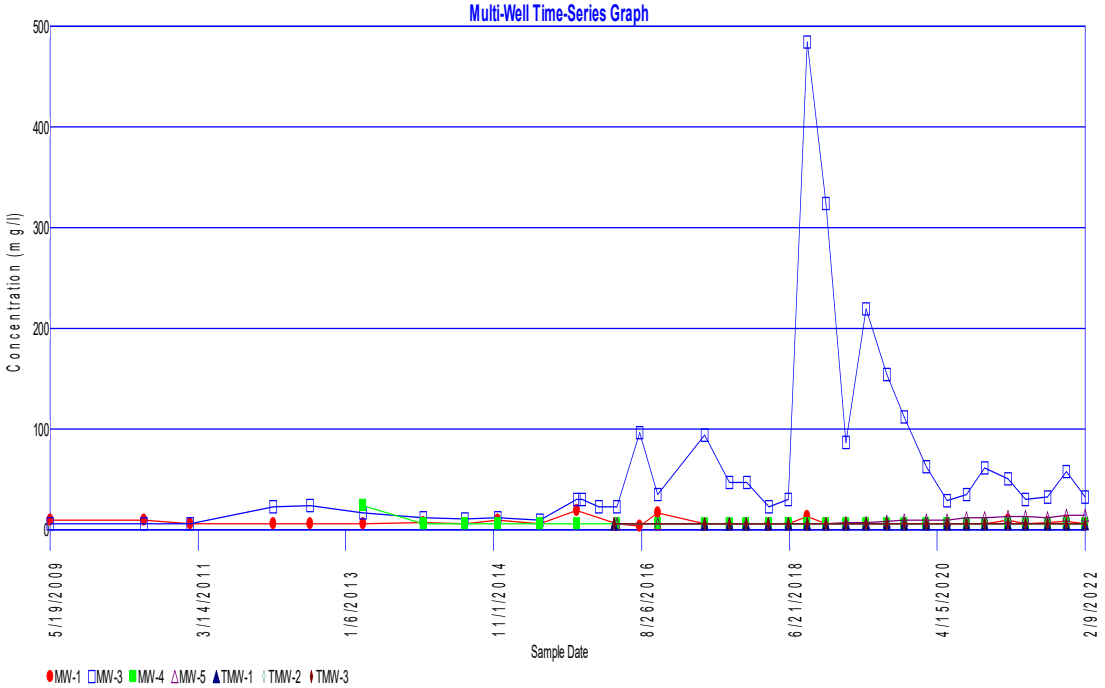
Specific Conductivity

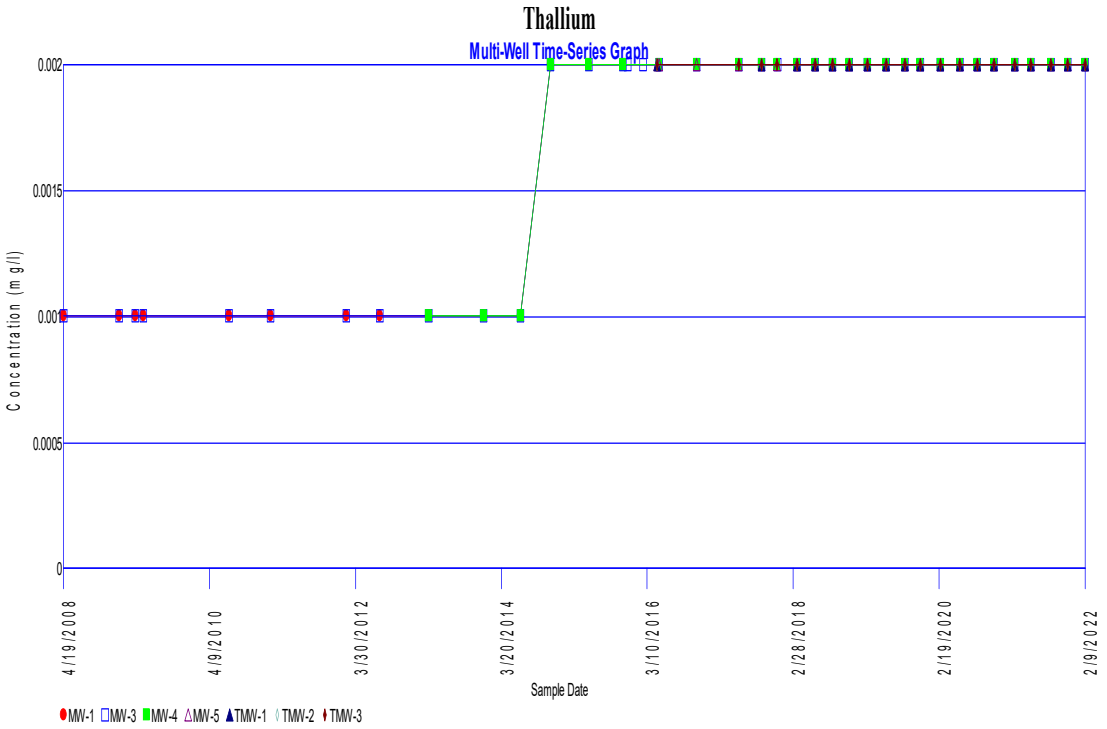
Multi-Well Time-Series Graph

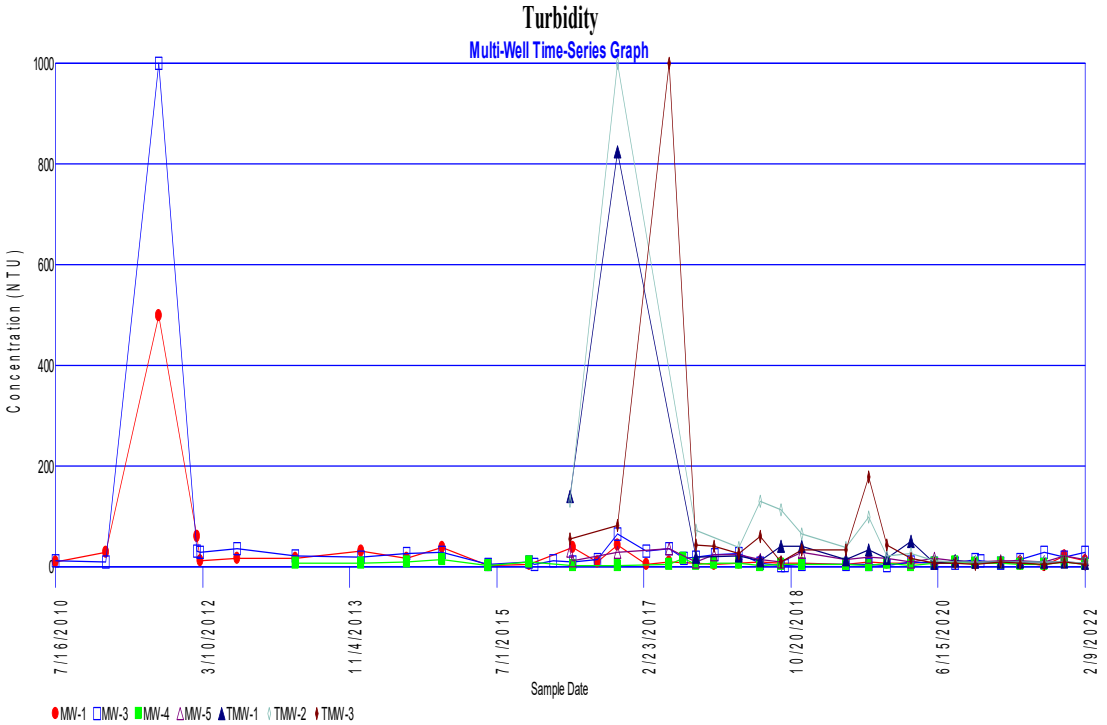


Sulfate

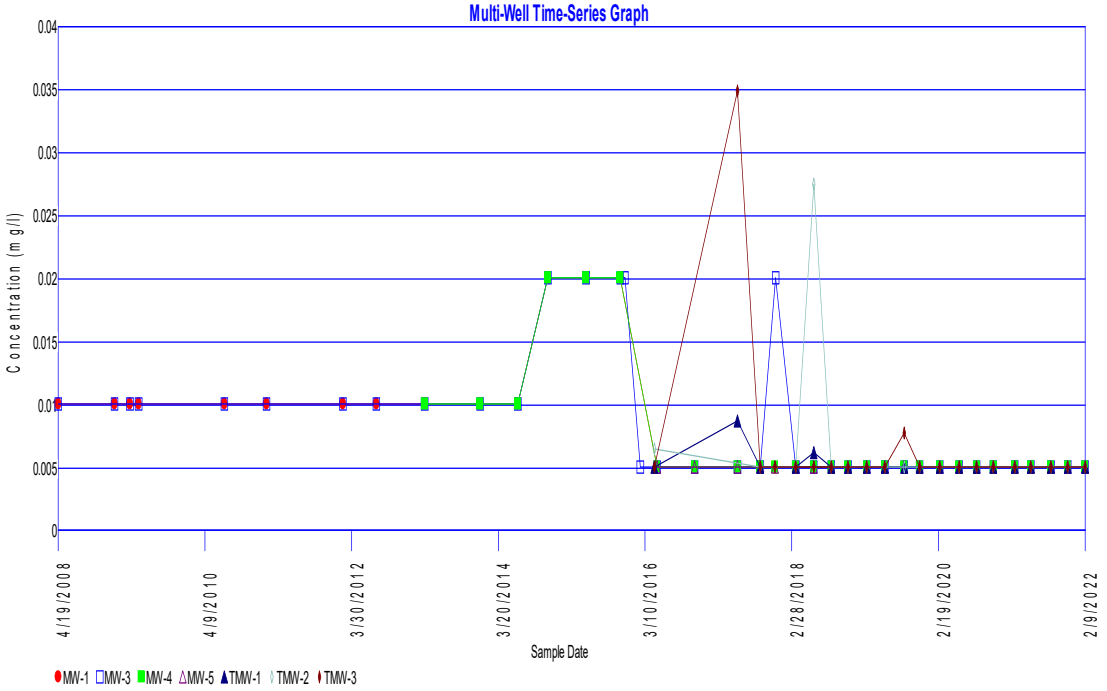
Multi-Well Time-Series Graph



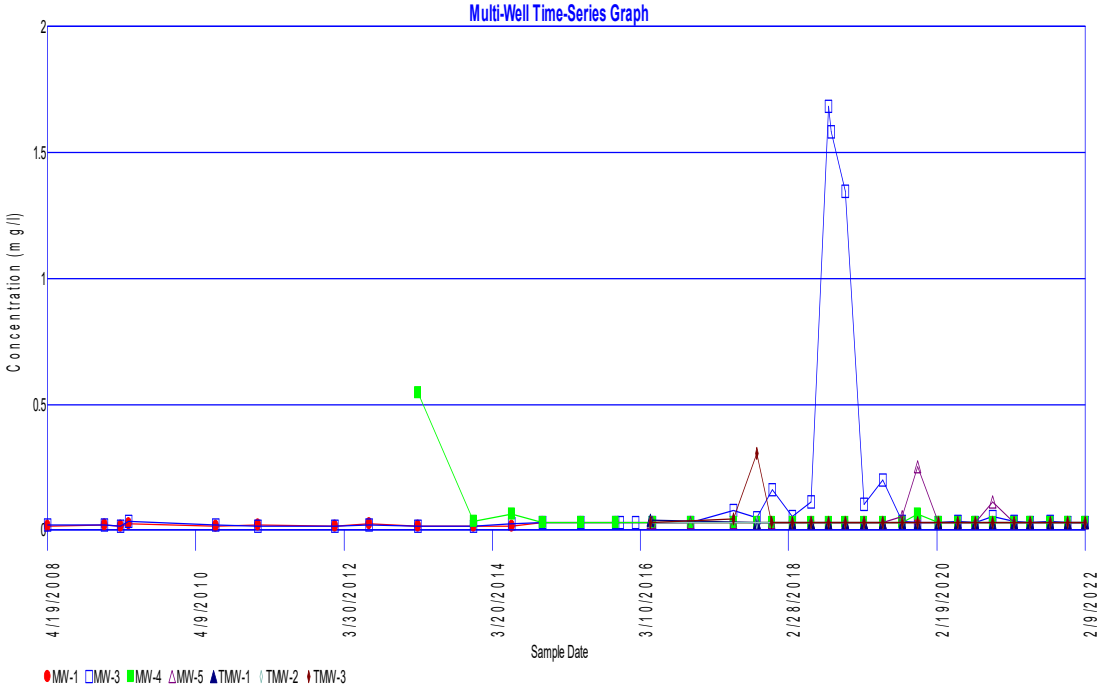

Thallium
Multi-Well Time-Series Graph
0.002
0.0015
0.001
0.0005
0
Concentration (mg/l)
4/19/2008
4/9/2010
3/30/2012
3/20/2014
3/10/2016
2/28/2018
2/19/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3


Turbidity
Multi-Well Time-Series Graph
1000
800
600
400
200
0
Concentration (NTU)
7/16/2010
3/10/2012
11/4/2013
7/1/2015
2/23/2017
10/20/2018
6/15/2020
2/9/2022
Sample Date
MW-1 MW-3 MW-4 MW-5 TMW-1 TMW-2 TMW-3

Vanadium



Zinc



Shapiro-Wilks Test of Normality

Parameter: Arsenic

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 0.160058
Sample Standard Deviation = 0.028682
W Statistic = 0.889754

5% Critical value of 0.935 exceeds 0.889754
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.889754
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 0.0437652
Sample Standard Deviation = 0.0111722
W Statistic = 0.438441

5% Critical value of 0.935 exceeds 0.438441
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.438441
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 37 measurements

Sum of b values = 5.29823
Sample Standard Deviation = 0.978794
W Statistic = 0.813911

5% Critical value of 0.936 exceeds 0.813911
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.813911
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Location: MW-1

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 0.0815101
Sample Standard Deviation = 0.0146978
W Statistic = 0.878724

5% Critical value of 0.935 exceeds 0.878724
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.878724
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury
Location: MW-1
Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 0.0032872
Sample Standard Deviation = 0.000649913
W Statistic = 0.730926

5% Critical value of 0.935 exceeds 0.730926
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.730926
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel
Location: MW-1
Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 18 for 36 measurements

Sum of b values = 0.148914
Sample Standard Deviation = 0.0410336
W Statistic = 0.376291

5% Critical value of 0.935 exceeds 0.376291
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.376291
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Arsenic
Location: MW-1
Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 5.10666
Sample Standard Deviation = 0.899024
W Statistic = 0.921858

5% Critical value of 0.935 exceeds 0.921858
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 is less than 0.921858
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Barium
Location: MW-1
Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 1.92162
Sample Standard Deviation = 0.357105
W Statistic = 0.827321

5% Critical value of 0.935 exceeds 0.827321
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.827321
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Chloride

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 37 measurements

Sum of b values = 1.8084
Sample Standard Deviation = 0.317094
W Statistic = 0.903469

5% Critical value of 0.936 exceeds 0.903469
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.903469
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Cobalt

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 2.00597
Sample Standard Deviation = 0.34729
W Statistic = 0.953227

5% Critical value of 0.935 is less than 0.953227
Data is normally distributed at 95% level of significance

1% Critical value of 0.912 is less than 0.953227
Data is normally distributed at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Mercury

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 5.97392
Sample Standard Deviation = 1.08461
W Statistic = 0.866774

5% Critical value of 0.935 exceeds 0.866774
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.866774
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Nickel

Location: MW-1

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 18 for 36 measurements

Sum of b values = 3.59232
Sample Standard Deviation = 0.793371
W Statistic = 0.585773

5% Critical value of 0.935 exceeds 0.585773
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.585773
Evidence of non-normality at 99% level of significance

Parametric Prediction Interval Analysis

Intra-Well Comparison for MW-1

Parameter: Cobalt

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL

Intra-Well Unified Guid. Formula 99% One-Sided 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

From 35 baseline samples
Baseline mean = -3.30239
Baseline std Dev = 0.337015

For 1 recent sampling event(s)
Actual confidence level is 1.0 - (0.01/1) = 99 %
t is Percentile of Student's T-Test (0.99/1) = 0.99
Degrees of Freedom = 35 (background observations) - 1
t(0.99, 34) = 2.44115

Date	Samples	Mean	Interval	Significant
2/9/2022	1	-2.69415	[0, -2.46802]	FALSE

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) = 35
Maximum Baseline Concentration = 0.1
Confidence Level = 97.2%
False Positive Rate = 2.8%

Baseline Measurem	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

Date	Count	Mean	Significant
2/9/2022	1	0.0219	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 = 8.57143%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 35
Maximum Baseline Concentration = 0.084
Confidence Level = 97.2%
False Positive Rate = 2.8%

Baseline Measurem	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	<0.02
	8/26/2020	<0.02
	11/17/2020	<0.02
	3/2/2021	0.0222
	5/20/2021	0.0177
	8/26/2021	0.0198
	11/18/2021	0.0276

Date	Count	Mean	Significant
2/9/2022	1	0.0213	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) = 35
Maximum Baseline Concentration = 5.68
Confidence Level = 97.2%
False Positive Rate = 2.8%

Baseline Measurem	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

Date	Count	Mean	Significant
2/9/2022	1	1.93	FALSE

Non-Parametric Prediction Interval

Intra-Well Comparison for MW-1

Parameter: Mercury

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 31.4286%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 35
Maximum Baseline Concentration = 0.00319
Confidence Level = 97.2%
False Positive Rate = 2.8%

Baseline Measurem	Date	Value
	4/19/2008	<0.0002
	1/21/2009	0.00045
	4/9/2009	<0.0002
	5/19/2009	<0.0002
	7/16/2010	0.0005
	2/8/2011	0.00024
	2/17/2012	0.00083
	7/31/2012	0.00063
	3/27/2013	0.00028
	12/23/2013	0.00077
	6/26/2014	<0.0002
	11/21/2014	<0.0002
	5/28/2015	<0.0002
	11/11/2015	<0.0002
	5/9/2016	0.000858
	11/10/2016	<0.0002
	6/8/2017	0.000222
	9/28/2017	<0.0002
	12/11/2017	0.000473
	3/21/2018	0.000651
	6/19/2018	0.00319
	9/12/2018	0.000244
	12/4/2018	0.00101
	3/5/2019	0.000922
	6/4/2019	0.000889
	9/5/2019	0.00108
	11/20/2019	0.00121
	2/27/2020	0.000796
	6/2/2020	0.000888
	8/26/2020	<0.0002
	11/17/2020	0.00256
	3/2/2021	0.0012
	5/20/2021	0.00136
	8/26/2021	<0.0002
	11/18/2021	0.000785

Date	Count	Mean	Significant
2/9/2022	1	0.000837	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 = 31.4286%
Future Samples (k) = 1
Recent Dates = 1
Baseline Measurements (n) = 35
Maximum Baseline Concentration = 0.2
Confidence Level = 97.2%
False Positive Rate = 2.8%

Baseline Measurem	Date	Value
	4/19/2008	<0.02
	1/21/2009	<0.02
	4/9/2009	0.2
	5/19/2009	0.17
	7/16/2010	<0.02
	2/8/2011	<0.02
	2/17/2012	<0.02
	7/31/2012	<0.02
	3/27/2013	<0.02
	12/23/2013	<0.02
	6/26/2014	<0.02
	11/21/2014	<0.02
	5/28/2015	<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

Date	Count	Mean	Significant
2/9/2022	1	0.00739	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 = 83 - 126 = -43

Tied Grou	Value	Members
1	0.0176	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

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 = -1.26885
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.26885| <= 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 = 142 - 64 = 78

Tied Grou	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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1092
Z-Score = 2.33013
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.33013 > 1.65463 indicating an upward 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 = 72 - 134 = -62

Tied Grou	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

There are 0 time periods with multiple data

A = 84
B = 0
C = 6
D = 0
E = 8
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1092
Z-Score = -1.84594
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.84594| <= 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 = 142 - 67 = 75

Tied Grou	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

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 = 2.23559
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.23559 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Mercury

Location: MW-1

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 126 - 78 = 48

Tied Grou	Value	Members
1	0.0002	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

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 = 1.4249
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.4249| <= 1.97737 indicating no evidence of a 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 = 105 - 105 = 0

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 0
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0| <= 1.97737 indicating no evidence of a trend

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 = 18 for 36 measurements

Sum of b values = 1.23295
Sample Standard Deviation = 0.280865
W Statistic = 0.550591

5% Critical value of 0.935 exceeds 0.550591
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.550591
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 = 18 for 36 measurements

Sum of b values = 0.0437652
Sample Standard Deviation = 0.0111722
W Statistic = 0.438441

5% Critical value of 0.935 exceeds 0.438441
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.438441
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 = 17 for 35 measurements

Sum of b values = 0
Sample Standard Deviation = 6.60018e-019
W Statistic = 0

5% Critical value of 0.934 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 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 = 18 for 37 measurements

Sum of b values = 5.29823
Sample Standard Deviation = 0.978794
W Statistic = 0.813911

5% Critical value of 0.936 exceeds 0.813911
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.813911
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 = 18 for 36 measurements

Sum of b values = 0.0939972
Sample Standard Deviation = 0.0270161
W Statistic = 0.345873

5% Critical value of 0.935 exceeds 0.345873
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.345873
Evidence of non-normality 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 = 18 for 36 measurements

Sum of b values = 0.0158084
Sample Standard Deviation = 0.00415545
W Statistic = 0.413496

5% Critical value of 0.935 exceeds 0.413496
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.413496
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Fluoride

Background Locations

Normality Test of Parameter Concentrations

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit
K = 13 for 26 measurements

Sum of b values = 0.10641
Sample Standard Deviation = 0.026303
W Statistic = 0.654654

5% Critical value of 0.92 exceeds 0.654654
Evidence of non-normality at 95% level of significance

1% Critical value of 0.891 exceeds 0.654654
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 = 18 for 36 measurements

Sum of b values = 0.148914
Sample Standard Deviation = 0.0410336
W Statistic = 0.376291

5% Critical value of 0.935 exceeds 0.376291
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.376291
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 = 17 for 34 measurements

Sum of b values = 15.065
Sample Standard Deviation = 3.34709
W Statistic = 0.613891

5% Critical value of 0.933 exceeds 0.613891
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.613891
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 = 18 for 36 measurements

Sum of b values = 5.22152
Sample Standard Deviation = 1.0353
W Statistic = 0.726757

5% Critical value of 0.935 exceeds 0.726757
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.726757
Evidence of non-normality 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 = 18 for 36 measurements

Sum of b values = 1.92162
Sample Standard Deviation = 0.357105
W Statistic = 0.827321

5% Critical value of 0.935 exceeds 0.827321
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.827321
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 = 17 for 35 measurements

Sum of b values = 0
Sample Standard Deviation = 9.01145e-016
W Statistic = 0

5% Critical value of 0.934 exceeds 0
Evidence of non-normality at 95% level of significance

1% Critical value of 0.91 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 = 18 for 37 measurements

Sum of b values = 1.8084
Sample Standard Deviation = 0.317094
W Statistic = 0.903469

5% Critical value of 0.936 exceeds 0.903469
Evidence of non-normality at 95% level of significance

1% Critical value of 0.914 exceeds 0.903469
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 = 18 for 36 measurements

Sum of b values = 5.90253
Sample Standard Deviation = 1.23158
W Statistic = 0.656275

5% Critical value of 0.935 exceeds 0.656275
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.656275
Evidence of non-normality 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 = 18 for 36 measurements

Sum of b values = 3.11443
Sample Standard Deviation = 0.626798
W Statistic = 0.705399

5% Critical value of 0.935 exceeds 0.705399
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.705399
Evidence of non-normality at 99% level of significance

Shapiro-Wilks Test of Normality

Parameter: Fluoride

Background Locations

Normality Test of Parameter Concentrations

Natural Logarithm Transformation
Non-Detects Replaced with 1/2 DL
K = 13 for 26 measurements

Sum of b values = 1.14374
Sample Standard Deviation = 0.292847
W Statistic = 0.610141

5% Critical value of 0.92 exceeds 0.610141
Evidence of non-normality at 95% level of significance

1% Critical value of 0.891 exceeds 0.610141
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 = 18 for 36 measurements

Sum of b values = 3.59232
Sample Standard Deviation = 0.793371
W Statistic = 0.585773

5% Critical value of 0.935 exceeds 0.585773
Evidence of non-normality at 95% level of significance

1% Critical value of 0.912 exceeds 0.585773
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 = 17 for 34 measurements

Sum of b values = 3.21349
Sample Standard Deviation = 0.650205
W Statistic = 0.740186

5% Critical value of 0.933 exceeds 0.740186
Evidence of non-normality at 95% level of significance

1% Critical value of 0.908 exceeds 0.740186
Evidence of non-normality at 99% level of significance

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Aluminum

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 39.8907%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 1.2
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.212	FALSE
MW-4	2/9/2022	1	0.1	FALSE
MW-5	2/9/2022	1	0.161	FALSE
TMW-1	2/9/2022	1	0.1	FALSE
TMW-2	2/9/2022	1	0.115	FALSE
TMW-3	2/9/2022	1	0.1	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Barium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 5.97826%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 0.084
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.036	FALSE
MW-4	2/9/2022	1	0.00884	FALSE
MW-5	2/9/2022	1	0.0581	FALSE
TMW-1	2/9/2022	1	0.0143	FALSE
TMW-2	2/9/2022	1	0.0301	FALSE
TMW-3	2/9/2022	1	0.0487	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 = 87.5%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 35
Maximum Background Value = 0.001
Confidence Level = 85.4%
False Positive Rate = 14.6%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.001	FALSE
MW-4	2/9/2022	1	0.001	FALSE
MW-5	2/9/2022	1	0.001	FALSE
TMW-1	2/9/2022	1	0.001	FALSE
TMW-2	2/9/2022	1	0.001	FALSE
TMW-3	2/9/2022	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) = 37
Maximum Background Value = 5.68
Confidence Level = 86%
False Positive Rate = 14%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	9.65	TRUE
MW-4	2/9/2022	1	8.79	TRUE
MW-5	2/9/2022	1	74.1	TRUE
TMW-1	2/9/2022	1	35.6	TRUE
TMW-2	2/9/2022	1	37.1	TRUE
TMW-3	2/9/2022	1	65.8	TRUE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Chromium

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 72.6776%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 0.12
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.00265	FALSE
MW-4	2/9/2022	1	0.002	FALSE
MW-5	2/9/2022	1	0.00298	FALSE
TMW-1	2/9/2022	1	0.002	FALSE
TMW-2	2/9/2022	1	0.002	FALSE
TMW-3	2/9/2022	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 = 84.0659%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 0.028
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.00941	FALSE
MW-4	2/9/2022	1	0.005	FALSE
MW-5	2/9/2022	1	0.00575	FALSE
TMW-1	2/9/2022	1	0.005	FALSE
TMW-2	2/9/2022	1	0.005	FALSE
TMW-3	2/9/2022	1	0.005	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Fluoride

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 87.013%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 26
Maximum Background Value = 0.178
Confidence Level = 81.3%
False Positive Rate = 18.7%

Location	Date	Count	Mean	Significant
MW-3	**2/9/2022**	**1**	**0.2**	**TRUE**
MW-4	2/9/2022	1	0.15	FALSE
MW-5	2/9/2022	1	0.15	FALSE
TMW-1	2/9/2022	1	0.15	FALSE
TMW-2	2/9/2022	1	0.15	FALSE
TMW-3	2/9/2022	1	0.15	FALSE

Non-Parametric Prediction Interval

Inter-Well Comparison

Parameter: Nickel

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

Total Percent Non-Detects = 57.8378%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 36
Maximum Background Value = 0.2
Confidence Level = 85.7%
False Positive Rate = 14.3%

Location	Date	Count	Mean	Significant
MW-3	2/9/2022	1	0.00238	FALSE
MW-4	2/9/2022	1	0.00209	FALSE
MW-5	2/9/2022	1	0.00664	FALSE
TMW-1	2/9/2022	1	0.002	FALSE
TMW-2	2/9/2022	1	0.002	FALSE
TMW-3	2/9/2022	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 = 64.6739%
Number of comparisons = 6
Future Samples (k) = 6
Recent Dates = 1
Background Measurements (n) = 34
Maximum Background Value = 18.8
Confidence Level = 85%
False Positive Rate = 15%

Location	Date	Count	Mean	Significant
MW-3	**2/9/2022**	**1**	**31.4**	**TRUE**
MW-4	2/9/2022	1	5	FALSE
MW-5	2/9/2022	1	14.4	FALSE
TMW-1	2/9/2022	1	5	FALSE
TMW-2	2/9/2022	1	5	FALSE
TMW-3	2/9/2022	1	5	FALSE

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 91 - 109 = -18

Tied Grou	Value	Members
1	0.1	5

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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1080
Z-Score = -0.517294
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.517294| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: MW-5

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 103 - 104 = -1

Tied Grou	Value	Members
1	0.1	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

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1093
Z-Score = 0
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Aluminum

Location: TMW-2

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 15 - 137 = -122

Tied Grou	Value	Members
1	0.115	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 696
Z-Score = -4.58649
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.58649 < -1.65463 indicating a downward 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 = 62 - 169 = -107

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1257.67
Z-Score = -2.98898
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.98898 < -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 = 145 - 59 = 86

Tied Group	Value	Members
1	0.02	4

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

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 = 2.57694
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.57694 > 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 = 182 - 28 = 154

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 4.62013
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.62013 > 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 = 89 - 58 = 31

Tied Grou	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

There are 0 time periods with multiple data

A = 156
B = 0
C = 24
D = 0
E = 12
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 688.333
Z-Score = 1.14346
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.14346| <= 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 = 61 - 91 = -30

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 12546
b = 44064
c = 612
Group Variance = 696
Z-Score = -1.09924
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.09924| <= 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 = 124 - 46 = 78

Tied Grou	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

There are 0 time periods with multiple data

A = 18
B = 0
C = 0
D = 0
E = 2
F = 0
a = 14706
b = 52326
c = 684
Group Variance = 816
Z-Score = 2.69554
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.69554 > 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 = 90 - 186 = -96

Tied GrouValue	Members

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

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 = -2.35642
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-2.35642 < -1.65463 indicating a downward 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 = 36 - 172 = -136

Tied Grou	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

There are 0 time periods with multiple data

A = 36
B = 0
C = 0
D = 0
E = 4
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1094.67
Z-Score = -4.08031
Comparison Level at 95% confidence level = -1.65463 (downward trend)
-4.08031 < -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 = 178 - 32 = 146

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 4.37855
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.37855 > 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 = 148 - 61 = 87

Tied Grou	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

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 = 2.59812
Comparison Level at 95% confidence level = 1.65463 (upward trend)
2.59812 > 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 = 207 - 3 = 204

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 6.12998
Comparison Level at 95% confidence level = 1.65463 (upward trend)
6.12998 > 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 = 176 - 34 = 142

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 4.25777
Comparison Level at 95% confidence level = 1.65463 (upward trend)
4.25777 > 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 = 198 - 12 = 186

Tied GrouValue	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

There are 0 time periods with multiple data

A = 0
B = 0
C = 0
D = 0
E = 0
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1096.67
Z-Score = 5.58643
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.58643 > 1.65463 indicating an upward trend

Mann-Kendall Trend Analysis

Parameter: Chromium

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 78 - 66 = 12

Tied Grou	Value	Members
1	0.002	12

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

There are 0 time periods with multiple data

A = 3828
B = 0
C = 1320
D = 0
E = 132
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 884
Z-Score = 0.36997
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.36997| <= 1.97737 indicating no evidence of a 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 = 130 - 74 = 56

Tied Grou	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

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 = 1.66743
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.66743| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Copper

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 54 - 36 = 18

Tied Grou	Value	Members
1	0.005	16

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

There are 0 time periods with multiple data

A = 8880
B = 0
C = 3360
D = 0
E = 240
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 603.333
Z-Score = 0.692102
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|0.692102| <= 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 = 59 - 15 = 44

Tied Grou	Value	Members
1	0.005	17

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

There are 0 time periods with multiple data

A = 10608
B = 0
C = 4080
D = 0
E = 272
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 507.333
Z-Score = 1.90907
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.90907| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Fluoride

Location: MW-3

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 103 - 106 = -3

Tied Grou	Value	Members
1	0.15	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

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 = -0.0604214
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.0604214| <= 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 = 110 - 118 = -8

Tied Grou	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

There are 0 time periods with multiple data

A = 66
B = 0
C = 6
D = 0
E = 6
F = 0
a = 22638
b = 83160
c = 924
Group Variance = 1254
Z-Score = -0.197674
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.197674| <= 1.97737 indicating no evidence of a trend

Mann-Kendall Trend Analysis

Parameter: Nickel

Location: MW-4

Original Data (Not Transformed)
Non-Detects Replaced with Detection Limit

95% Confidence Level

S Statistic = 20 - 0 = 20

Tied Grou	Value	Members
1	0.002	20

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

There are 0 time periods with multiple data

A = 17100
B = 0
C = 6840
D = 0
E = 380
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 146.667
Z-Score = 1.56887
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|1.56887| <= 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 = 91 - 118 = -27

Tied Grou	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

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 = -0.785478
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-0.785478| <= 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 = 86 - 123 = -37

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

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 = -1.08759
Comparison Level at 1.0 - (0.05 / 2) = 97.5% confidence level = 1.97737 (two-tailed)
|-1.08759| <= 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 = 194 - 6 = 188

Tied Grou	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

There are 0 time periods with multiple data

A = 300
B = 0
C = 60
D = 0
E = 20
F = 0
a = 19740
b = 71820
c = 840
Group Variance = 1080
Z-Score = 5.69023
Comparison Level at 95% confidence level = 1.65463 (upward trend)
5.69023 > 1.65463 indicating an upward trend

APPENDIX C
LABORATORY ANALYTICAL REPORTS & FIELD INFORMATION LOGS

ANALYTICAL REPORT

February 19, 2022

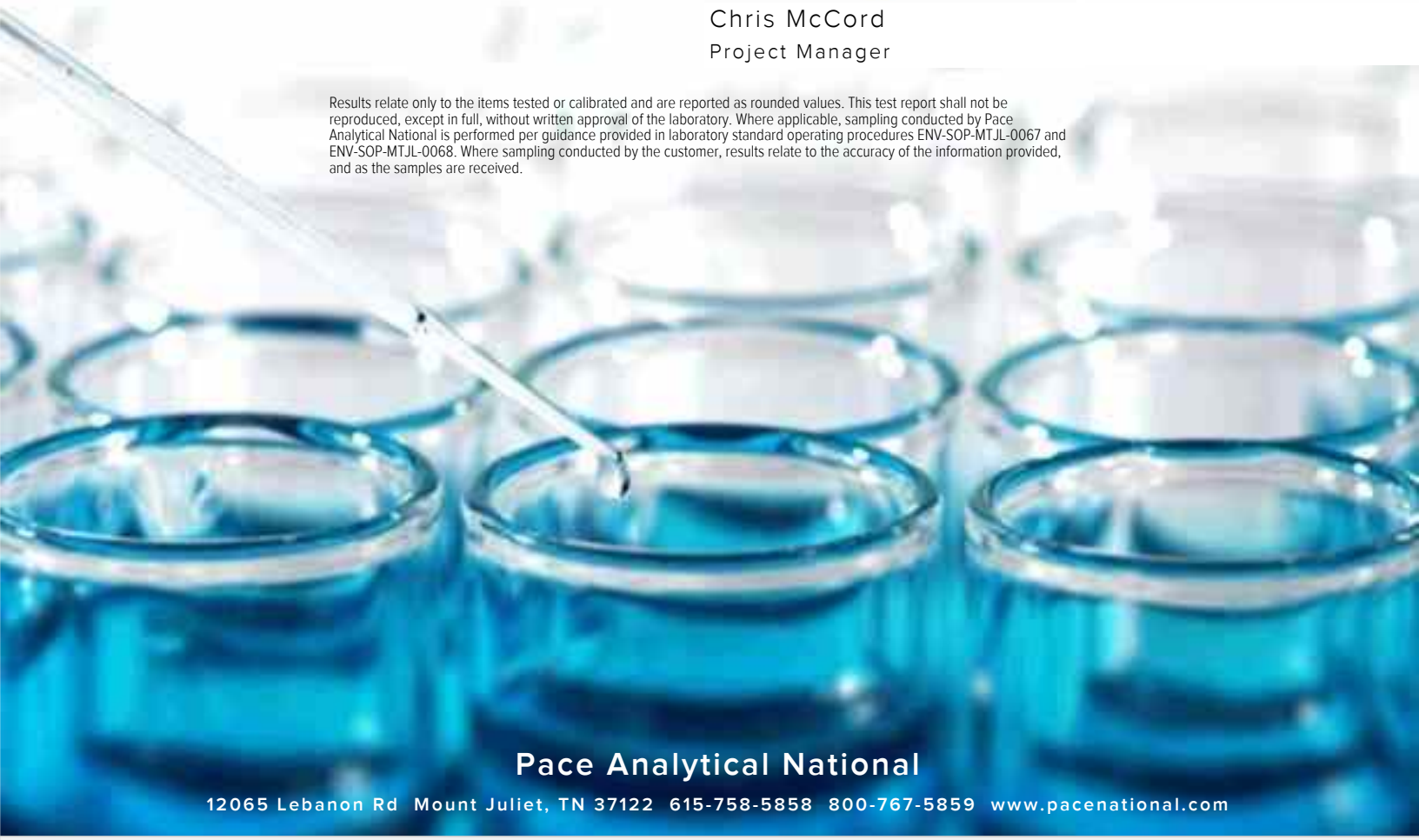
Civil & Environmental Consultants - TN

Sample Delivery Group:	L1460080
Samples Received:	02/10/2022
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

TABLE OF CONTENTS

MW-1 L1460080-01 GW

Collected by: Alex Black | Collected date/time: 02/09/22 10:35 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 12:41	02/13/22 12:41	JDG	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 07:52	02/14/22 07:52	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 15:54	02/14/22 15:54	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:52	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 18:51	02/10/22 18:51	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 11:56	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 12:45	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 12:41	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:05	JDG	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 00:48	02/11/22 00:48	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/14/22 15:02	HMH	Mt. Juliet, TN

MW-3 L1460080-02 GW

Collected by: Alex Black | Collected date/time: 02/09/22 15:00 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:03	02/13/22 13:03	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 07:55	02/14/22 07:55	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 15:58	02/14/22 15:58	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:53	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 19:39	02/10/22 19:39	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 11:58	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 12:47	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:03	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:30	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 01:11	02/11/22 01:11	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/15/22 02:12	HMH	Mt. Juliet, TN

MW-4 L1460080-03 GW

Collected by: Alex Black | Collected date/time: 02/09/22 13:15 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:06	02/13/22 13:06	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 07:58	02/14/22 07:58	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:06	02/14/22 16:06	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:53	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 19:55	02/10/22 19:55	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:00	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 12:50	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:06	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:33	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 01:32	02/11/22 01:32	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1.02	02/11/22 12:36	02/15/22 02:24	HMH	Mt. Juliet, TN

MW-5 L1460080-04 GW

Collected by: Alex Black | Collected date/time: 02/09/22 12:15 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:10	02/13/22 13:10	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:08	02/14/22 08:08	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:07	02/14/22 16:07	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:53	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 20:11	02/10/22 20:11	LBR	Mt. Juliet, TN

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

MW-5 L1460080-04 GW

Collected by: Alex Black | Collected date/time: 02/09/22 12:15 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:02	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 12:53	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:10	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:37	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 01:54	02/11/22 01:54	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/15/22 02:35	HMH	Mt. Juliet, TN

TMW-1 L1460080-05 GW

Collected by: Alex Black | Collected date/time: 02/09/22 12:40 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:13	02/13/22 13:13	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:11	02/14/22 08:11	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:09	02/14/22 16:09	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:53	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 20:59	02/10/22 20:59	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:03	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 13:01	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:13	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:40	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 02:15	02/11/22 02:15	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/15/22 02:47	HMH	Mt. Juliet, TN

TMW-2 L1460080-06 GW

Collected by: Alex Black | Collected date/time: 02/09/22 11:40 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:17	02/13/22 13:17	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:14	02/14/22 08:14	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:10	02/14/22 16:10	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:53	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 21:15	02/10/22 21:15	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:05	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 13:04	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:17	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:43	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 02:37	02/11/22 02:37	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/15/22 02:59	HMH	Mt. Juliet, TN

TMW-3 L1460080-07 GW

Collected by: Alex Black | Collected date/time: 02/09/22 10:15 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:20	02/13/22 13:20	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:17	02/14/22 08:17	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:12	02/14/22 16:12	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:54	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 21:31	02/10/22 21:31	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:07	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 13:06	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:20	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:46	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 02:58	02/11/22 02:58	BMB	Mt. Juliet, TN

TMW-3 L1460080-07 GW

Collected by: Alex Black | Collected date/time: 02/09/22 10:15 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
EDB / DBCP by Method 8011	WG1816276	1.02	02/11/22 12:36	02/15/22 03:10	HMH	Mt. Juliet, TN

DUPLICATE L1460080-08 GW

Collected by: Alex Black | Collected date/time: 02/09/22 00:00 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:24	02/13/22 13:24	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:19	02/14/22 08:19	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:13	02/14/22 16:13	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817359	1	02/13/22 15:16	02/13/22 17:54	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 21:46	02/10/22 21:46	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:09	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 13:09	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:24	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:50	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/11/22 03:19	02/11/22 03:19	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1.01	02/11/22 12:36	02/15/22 03:22	HMH	Mt. Juliet, TN

FIELD BLANK L1460080-09 GW

Collected by: Alex Black | Collected date/time: 02/09/22 12:55 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Calculated Results	WG1816474	1	02/13/22 13:27	02/13/22 13:27	LD	Mt. Juliet, TN
Wet Chemistry by Method 2320 B-2011	WG1817280	1	02/14/22 08:22	02/14/22 08:22	ARD	Mt. Juliet, TN
Wet Chemistry by Method 350.1	WG1817563	1	02/14/22 16:15	02/14/22 16:15	SL	Mt. Juliet, TN
Wet Chemistry by Method 410.4	WG1817361	1	02/13/22 10:29	02/14/22 14:58	PSN	Mt. Juliet, TN
Wet Chemistry by Method 9056A	WG1816316	1	02/10/22 22:02	02/10/22 22:02	LBR	Mt. Juliet, TN
Mercury by Method 7470A	WG1817101	1	02/16/22 09:30	02/17/22 12:11	MRW	Mt. Juliet, TN
Metals (ICP) by Method 6010B	WG1816435	1	02/14/22 04:35	02/16/22 13:12	KMG	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 13:27	LD	Mt. Juliet, TN
Metals (ICPMS) by Method 6020A	WG1816474	1	02/11/22 13:55	02/13/22 15:53	LD	Mt. Juliet, TN
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/10/22 22:23	02/10/22 22:23	BMB	Mt. Juliet, TN
EDB / DBCP by Method 8011	WG1816276	1	02/11/22 12:36	02/15/22 03:34	HMH	Mt. Juliet, TN

TRIP BLANK L1460080-10 GW

Collected by: Alex Black | Collected date/time: 02/09/22 00:00 | Received date/time: 02/10/22 13:00

Method	Batch	Dilution	Preparation date/time	Analysis date/time	Analyst	Location
Volatile Organic Compounds (GC/MS) by Method 8260B	WG1816345	1	02/10/22 22:02	02/10/22 22:02	BMB	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

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	21.8		2.50	1	02/13/2022 12:41	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	53.9		20.0	1	02/14/2022 07:52	WG1817280

Sample Narrative:
L1460080-01 WG1817280: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 15:54	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:52	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 18:51	WG1816316
Chloride	1.93		1.00	1	02/10/2022 18:51	WG1816316
Fluoride	ND	P1	0.150	1	02/10/2022 18:51	WG1816316
Nitrate	ND		0.100	1	02/10/2022 18:51	WG1816316
Sulfate	ND		5.00	1	02/10/2022 18:51	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	0.000837		0.000200	1	02/17/2022 11:56	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 12:45	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	02/13/2022 12:41	WG1816474
Antimony	ND		0.00400	1	02/13/2022 12:41	WG1816474
Arsenic	0.0219		0.00200	1	02/13/2022 12:41	WG1816474
Barium	0.0213		0.00200	1	02/13/2022 12:41	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 12:41	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 12:41	WG1816474
Calcium	3.81		1.00	1	02/13/2022 12:41	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:05	WG1816474
Cobalt	0.0676		0.00200	1	02/13/2022 12:41	WG1816474
Copper	ND	J5	0.00500	1	02/13/2022 12:41	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	17.3		0.100	1	02/13/2022 12:41	WG1816474
Lead	ND		0.00200	1	02/13/2022 12:41	WG1816474
Magnesium	2.99		1.00	1	02/13/2022 12:41	WG1816474
Manganese	1.16	V	0.00500	1	02/13/2022 12:41	WG1816474
Nickel	0.00739		0.00200	1	02/13/2022 12:41	WG1816474
Potassium	ND		2.00	1	02/13/2022 12:41	WG1816474
Selenium	ND		0.00200	1	02/13/2022 12:41	WG1816474
Silver	ND		0.00200	1	02/13/2022 12:41	WG1816474
Sodium	3.30		2.00	1	02/13/2022 12:41	WG1816474
Thallium	ND		0.00200	1	02/13/2022 12:41	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 12:41	WG1816474
Zinc	ND		0.0250	1	02/13/2022 12:41	WG1816474

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	02/11/2022 00:48	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 00:48	WG1816345
Benzene	ND		0.00100	1	02/11/2022 00:48	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 00:48	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 00:48	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 00:48	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 00:48	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 00:48	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 00:48	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 00:48	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 00:48	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 00:48	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 00:48	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 00:48	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 00:48	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 00:48	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 00:48	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 00:48	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 00:48	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 00:48	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 00:48	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 00:48	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 00:48	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 00:48	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 00:48	WG1816345
Styrene	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 00:48	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 00:48	WG1816345
Toluene	ND		0.00100	1	02/11/2022 00:48	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 00:48	WG1816345

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	02/11/2022 00:48	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 00:48	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 00:48	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 00:48	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 00:48	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 00:48	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 00:48	WG1816345
(S) Toluene-d8	*111*		*80.0-120*		*02/11/2022 00:48*	WG1816345
(S) 4-Bromofluorobenzene	*89.7*		*77.0-126*		*02/11/2022 00:48*	WG1816345
(S) 1,2-Dichloroethane-d4	*86.3*		*70.0-130*		*02/11/2022 00:48*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/14/2022 15:02	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/14/2022 15:02	WG1816276

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

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	47.6		2.50	1	02/13/2022 13:03	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 07:55	WG1817280

Sample Narrative:

L1460080-02 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 15:58	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:53	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 19:39	WG1816316
Chloride	9.65		1.00	1	02/10/2022 19:39	WG1816316
Fluoride	0.200		0.150	1	02/10/2022 19:39	WG1816316
Nitrate	0.499		0.100	1	02/10/2022 19:39	WG1816316
Sulfate	31.4		5.00	1	02/10/2022 19:39	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 11:58	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 12:47	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.212		0.100	1	02/13/2022 13:03	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:03	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:03	WG1816474
Barium	0.0360		0.00200	1	02/13/2022 13:03	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:03	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:03	WG1816474
Calcium	12.0		1.00	1	02/13/2022 13:03	WG1816474
Chromium	0.00265		0.00200	1	02/13/2022 15:30	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:03	WG1816474
Copper	0.00941		0.00500	1	02/13/2022 13:03	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.361		0.100	1	02/13/2022 13:03	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:03	WG1816474
Magnesium	4.30		1.00	1	02/13/2022 13:03	WG1816474
Manganese	0.0180		0.00500	1	02/13/2022 13:03	WG1816474
Nickel	0.00238		0.00200	1	02/13/2022 13:03	WG1816474
Potassium	3.25		2.00	1	02/13/2022 13:03	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:03	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:03	WG1816474
Sodium	5.86		2.00	1	02/13/2022 13:03	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:03	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:03	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:03	WG1816474

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	02/11/2022 01:11	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 01:11	WG1816345
Benzene	ND		0.00100	1	02/11/2022 01:11	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 01:11	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 01:11	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 01:11	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 01:11	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 01:11	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 01:11	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 01:11	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 01:11	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 01:11	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:11	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 01:11	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 01:11	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:11	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 01:11	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:11	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:11	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 01:11	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 01:11	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 01:11	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 01:11	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 01:11	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 01:11	WG1816345
Styrene	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:11	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 01:11	WG1816345
Toluene	ND		0.00100	1	02/11/2022 01:11	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 01:11	WG1816345

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	02/11/2022 01:11	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 01:11	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 01:11	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 01:11	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 01:11	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 01:11	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 01:11	WG1816345
(S) Toluene-d8	*113*		*80.0-120*		*02/11/2022 01:11*	WG1816345
(S) 4-Bromofluorobenzene	*95.5*		*77.0-126*		*02/11/2022 01:11*	WG1816345
(S) 1,2-Dichloroethane-d4	*88.6*		*70.0-130*		*02/11/2022 01:11*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/15/2022 02:12	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/15/2022 02:12	WG1816276

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

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	30.8		2.50	1	02/13/2022 13:06	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	24.1		20.0	1	02/14/2022 07:58	WG1817280

Sample Narrative:
L1460080-03 WG1817280: Endpoint pH 4.5

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:06	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:53	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 19:55	WG1816316
Chloride	8.79		1.00	1	02/10/2022 19:55	WG1816316
Fluoride	ND		0.150	1	02/10/2022 19:55	WG1816316
Nitrate	0.660		0.100	1	02/10/2022 19:55	WG1816316
Sulfate	ND		5.00	1	02/10/2022 19:55	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:00	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 12:50	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	02/13/2022 13:06	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:06	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:06	WG1816474
Barium	0.00884		0.00200	1	02/13/2022 13:06	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:06	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:06	WG1816474
Calcium	6.46		1.00	1	02/13/2022 13:06	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:33	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:06	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:06	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.232		0.100	1	02/13/2022 13:06	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:06	WG1816474
Magnesium	3.56		1.00	1	02/13/2022 13:06	WG1816474
Manganese	ND		0.00500	1	02/13/2022 13:06	WG1816474
Nickel	0.00209		0.00200	1	02/13/2022 13:06	WG1816474
Potassium	ND		2.00	1	02/13/2022 13:06	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:06	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:06	WG1816474
Sodium	4.52		2.00	1	02/13/2022 13:06	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:06	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:06	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:06	WG1816474

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	02/11/2022 01:32	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 01:32	WG1816345
Benzene	ND		0.00100	1	02/11/2022 01:32	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 01:32	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 01:32	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 01:32	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 01:32	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 01:32	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 01:32	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 01:32	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 01:32	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 01:32	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:32	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 01:32	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 01:32	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:32	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 01:32	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:32	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:32	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 01:32	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 01:32	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 01:32	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 01:32	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 01:32	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 01:32	WG1816345
Styrene	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 01:32	WG1816345
Toluene	ND		0.00100	1	02/11/2022 01:32	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345

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
1,1,2-Trichloroethane	ND		0.00100	1	02/11/2022 01:32	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 01:32	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 01:32	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 01:32	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 01:32	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 01:32	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 01:32	WG1816345
(S) Toluene-d8	*110*		*80.0-120*		*02/11/2022 01:32*	WG1816345
(S) 4-Bromofluorobenzene	*94.9*		*77.0-126*		*02/11/2022 01:32*	WG1816345
(S) 1,2-Dichloroethane-d4	*87.3*		*70.0-130*		*02/11/2022 01:32*	WG1816345

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	02/15/2022 02:24	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	02/15/2022 02:24	WG1816276

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	92.7		2.50	1	02/13/2022 13:10	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:08	WG1817280

Sample Narrative:

L1460080-04 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:07	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:53	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 20:11	WG1816316
Chloride	74.1		1.00	1	02/10/2022 20:11	WG1816316
Fluoride	ND		0.150	1	02/10/2022 20:11	WG1816316
Nitrate	1.12		0.100	1	02/10/2022 20:11	WG1816316
Sulfate	14.4		5.00	1	02/10/2022 20:11	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:02	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 12:53	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.161		0.100	1	02/13/2022 13:10	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:10	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:10	WG1816474
Barium	0.0581		0.00200	1	02/13/2022 13:10	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:10	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:10	WG1816474
Calcium	17.4		1.00	1	02/13/2022 13:10	WG1816474
Chromium	0.00298		0.00200	1	02/13/2022 15:37	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:10	WG1816474
Copper	0.00575		0.00500	1	02/13/2022 13:10	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.273		0.100	1	02/13/2022 13:10	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:10	WG1816474
Magnesium	11.9		1.00	1	02/13/2022 13:10	WG1816474
Manganese	0.264		0.00500	1	02/13/2022 13:10	WG1816474
Nickel	0.00664		0.00200	1	02/13/2022 13:10	WG1816474
Potassium	ND		2.00	1	02/13/2022 13:10	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:10	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:10	WG1816474
Sodium	19.5		2.00	1	02/13/2022 13:10	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:10	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:10	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:10	WG1816474

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	02/11/2022 01:54	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 01:54	WG1816345
Benzene	ND		0.00100	1	02/11/2022 01:54	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 01:54	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 01:54	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 01:54	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 01:54	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 01:54	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 01:54	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 01:54	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 01:54	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 01:54	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 01:54	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 01:54	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 01:54	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:54	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 01:54	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:54	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 01:54	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 01:54	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 01:54	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 01:54	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 01:54	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 01:54	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 01:54	WG1816345
Styrene	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 01:54	WG1816345
Toluene	ND		0.00100	1	02/11/2022 01:54	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345

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
1,1,2-Trichloroethane	ND		0.00100	1	02/11/2022 01:54	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 01:54	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 01:54	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 01:54	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 01:54	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 01:54	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 01:54	WG1816345
(S) Toluene-d8	*110*		*80.0-120*		*02/11/2022 01:54*	WG1816345
(S) 4-Bromofluorobenzene	*95.9*		*77.0-126*		*02/11/2022 01:54*	WG1816345
(S) 1,2-Dichloroethane-d4	*85.8*		*70.0-130*		*02/11/2022 01:54*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/15/2022 02:35	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/15/2022 02:35	WG1816276

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

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	57.2		2.50	1	02/13/2022 13:13	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:11	WG1817280

Sample Narrative:
L1460080-05 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:09	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:53	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 20:59	WG1816316
Chloride	35.6		1.00	1	02/10/2022 20:59	WG1816316
Fluoride	ND		0.150	1	02/10/2022 20:59	WG1816316
Nitrate	1.60		0.100	1	02/10/2022 20:59	WG1816316
Sulfate	ND		5.00	1	02/10/2022 20:59	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:03	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 13:01	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	02/13/2022 13:13	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:13	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:13	WG1816474
Barium	0.0143		0.00200	1	02/13/2022 13:13	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:13	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:13	WG1816474
Calcium	15.6		1.00	1	02/13/2022 13:13	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:40	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:13	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:13	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.139		0.100	1	02/13/2022 13:13	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:13	WG1816474
Magnesium	4.41		1.00	1	02/13/2022 13:13	WG1816474
Manganese	0.00936		0.00500	1	02/13/2022 13:13	WG1816474
Nickel	ND		0.00200	1	02/13/2022 13:13	WG1816474
Potassium	ND		2.00	1	02/13/2022 13:13	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:13	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:13	WG1816474
Sodium	4.48		2.00	1	02/13/2022 13:13	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:13	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:13	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:13	WG1816474

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	02/11/2022 02:15	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 02:15	WG1816345
Benzene	ND		0.00100	1	02/11/2022 02:15	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 02:15	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 02:15	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 02:15	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 02:15	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 02:15	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 02:15	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 02:15	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 02:15	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 02:15	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:15	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 02:15	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 02:15	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:15	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 02:15	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:15	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:15	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 02:15	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 02:15	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 02:15	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 02:15	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 02:15	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 02:15	WG1816345
Styrene	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 02:15	WG1816345
Toluene	ND		0.00100	1	02/11/2022 02:15	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345

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
1,1,2-Trichloroethane	ND		0.00100	1	02/11/2022 02:15	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 02:15	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 02:15	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 02:15	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 02:15	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 02:15	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 02:15	WG1816345
(S) Toluene-d8	*110*		*80.0-120*		*02/11/2022 02:15*	WG1816345
(S) 4-Bromofluorobenzene	*100*		*77.0-126*		*02/11/2022 02:15*	WG1816345
(S) 1,2-Dichloroethane-d4	*87.8*		*70.0-130*		*02/11/2022 02:15*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/15/2022 02:47	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/15/2022 02:47	WG1816276

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	54.6		2.50	1	02/13/2022 13:17	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:14	WG1817280

Sample Narrative:

L1460080-06 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:10	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:53	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 21:15	WG1816316
Chloride	37.1		1.00	1	02/10/2022 21:15	WG1816316
Fluoride	ND		0.150	1	02/10/2022 21:15	WG1816316
Nitrate	0.818		0.100	1	02/10/2022 21:15	WG1816316
Sulfate	ND		5.00	1	02/10/2022 21:15	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:05	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 13:04	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.115		0.100	1	02/13/2022 13:17	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:17	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:17	WG1816474
Barium	0.0301		0.00200	1	02/13/2022 13:17	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:17	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:17	WG1816474
Calcium	13.6		1.00	1	02/13/2022 13:17	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:43	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:17	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:17	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.107		0.100	1	02/13/2022 13:17	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:17	WG1816474
Magnesium	5.01		1.00	1	02/13/2022 13:17	WG1816474
Manganese	ND		0.00500	1	02/13/2022 13:17	WG1816474
Nickel	ND		0.00200	1	02/13/2022 13:17	WG1816474
Potassium	ND		2.00	1	02/13/2022 13:17	WG1816474
Selenium	0.00228		0.00200	1	02/13/2022 13:17	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:17	WG1816474
Sodium	5.33		2.00	1	02/13/2022 13:17	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:17	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:17	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:17	WG1816474

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	02/11/2022 02:37	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 02:37	WG1816345
Benzene	ND		0.00100	1	02/11/2022 02:37	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 02:37	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 02:37	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 02:37	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 02:37	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 02:37	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 02:37	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 02:37	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 02:37	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 02:37	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:37	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 02:37	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 02:37	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:37	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 02:37	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:37	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:37	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 02:37	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 02:37	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 02:37	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 02:37	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 02:37	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 02:37	WG1816345
Styrene	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:37	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 02:37	WG1816345
Toluene	ND		0.00100	1	02/11/2022 02:37	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 02:37	WG1816345

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	02/11/2022 02:37	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 02:37	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 02:37	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 02:37	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 02:37	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 02:37	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 02:37	WG1816345
(S) Toluene-d8	*110*		*80.0-120*		*02/11/2022 02:37*	WG1816345
(S) 4-Bromofluorobenzene	*94.0*		*77.0-126*		*02/11/2022 02:37*	WG1816345
(S) 1,2-Dichloroethane-d4	*86.6*		*70.0-130*		*02/11/2022 02:37*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/15/2022 02:59	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/15/2022 02:59	WG1816276

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	87.0		2.50	1	02/13/2022 13:20	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:17	WG1817280

Sample Narrative:

L1460080-07 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:12	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:54	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 21:31	WG1816316
Chloride	65.8		1.00	1	02/10/2022 21:31	WG1816316
Fluoride	ND		0.150	1	02/10/2022 21:31	WG1816316
Nitrate	6.70		0.100	1	02/10/2022 21:31	WG1816316
Sulfate	ND		5.00	1	02/10/2022 21:31	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:07	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 13:06	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	02/13/2022 13:20	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:20	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:20	WG1816474
Barium	0.0487		0.00200	1	02/13/2022 13:20	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:20	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:20	WG1816474
Calcium	22.5		1.00	1	02/13/2022 13:20	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:46	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:20	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:20	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	02/13/2022 13:20	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:20	WG1816474
Magnesium	7.47		1.00	1	02/13/2022 13:20	WG1816474
Manganese	0.0108		0.00500	1	02/13/2022 13:20	WG1816474
Nickel	ND		0.00200	1	02/13/2022 13:20	WG1816474
Potassium	2.11		2.00	1	02/13/2022 13:20	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:20	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:20	WG1816474
Sodium	15.1		2.00	1	02/13/2022 13:20	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:20	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:20	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:20	WG1816474

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	02/11/2022 02:58	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 02:58	WG1816345
Benzene	ND		0.00100	1	02/11/2022 02:58	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 02:58	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 02:58	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 02:58	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 02:58	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 02:58	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 02:58	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 02:58	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 02:58	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 02:58	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 02:58	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 02:58	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 02:58	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:58	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 02:58	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:58	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 02:58	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 02:58	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 02:58	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 02:58	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 02:58	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 02:58	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 02:58	WG1816345
Styrene	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 02:58	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 02:58	WG1816345
Toluene	ND		0.00100	1	02/11/2022 02:58	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 02:58	WG1816345

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	02/11/2022 02:58	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 02:58	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 02:58	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 02:58	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 02:58	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 02:58	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 02:58	WG1816345
(S) Toluene-d8	*111*		*80.0-120*		*02/11/2022 02:58*	WG1816345
(S) 4-Bromofluorobenzene	*96.3*		*77.0-126*		*02/11/2022 02:58*	WG1816345
(S) 1,2-Dichloroethane-d4	*88.0*		*70.0-130*		*02/11/2022 02:58*	WG1816345

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	02/15/2022 03:10	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000204	1.02	02/15/2022 03:10	WG1816276

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	49.1		2.50	1	02/13/2022 13:24	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:19	WG1817280

Sample Narrative:

L1460080-08 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:13	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/13/2022 17:54	WG1817359

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 21:46	WG1816316
Chloride	9.82		1.00	1	02/10/2022 21:46	WG1816316
Fluoride	0.194		0.150	1	02/10/2022 21:46	WG1816316
Nitrate	0.504		0.100	1	02/10/2022 21:46	WG1816316
Sulfate	31.0		5.00	1	02/10/2022 21:46	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:09	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 13:09	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	0.245		0.100	1	02/13/2022 13:24	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:24	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:24	WG1816474
Barium	0.0354		0.00200	1	02/13/2022 13:24	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:24	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:24	WG1816474
Calcium	12.5		1.00	1	02/13/2022 13:24	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:50	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:24	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:24	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	0.359		0.100	1	02/13/2022 13:24	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:24	WG1816474
Magnesium	4.35		1.00	1	02/13/2022 13:24	WG1816474
Manganese	0.0190		0.00500	1	02/13/2022 13:24	WG1816474
Nickel	ND		0.00200	1	02/13/2022 13:24	WG1816474
Potassium	3.47		2.00	1	02/13/2022 13:24	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:24	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:24	WG1816474
Sodium	6.46		2.00	1	02/13/2022 13:24	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:24	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:24	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:24	WG1816474

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	02/11/2022 03:19	WG1816345
Acrylonitrile	ND		0.0100	1	02/11/2022 03:19	WG1816345
Benzene	ND		0.00100	1	02/11/2022 03:19	WG1816345
Bromochloromethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
Bromodichloromethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
Bromoform	ND		0.00100	1	02/11/2022 03:19	WG1816345
Bromomethane	ND		0.00500	1	02/11/2022 03:19	WG1816345
Carbon disulfide	ND		0.00100	1	02/11/2022 03:19	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/11/2022 03:19	WG1816345
Chlorobenzene	ND		0.00100	1	02/11/2022 03:19	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
Chloroethane	ND		0.00500	1	02/11/2022 03:19	WG1816345
Chloroform	ND		0.00500	1	02/11/2022 03:19	WG1816345
Chloromethane	ND		0.00250	1	02/11/2022 03:19	WG1816345
Dibromomethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/11/2022 03:19	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/11/2022 03:19	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/11/2022 03:19	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/11/2022 03:19	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 03:19	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/11/2022 03:19	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 03:19	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/11/2022 03:19	WG1816345
Ethylbenzene	ND		0.00100	1	02/11/2022 03:19	WG1816345
2-Hexanone	ND		0.0100	1	02/11/2022 03:19	WG1816345
Iodomethane	ND		0.0100	1	02/11/2022 03:19	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/11/2022 03:19	WG1816345
Methylene Chloride	ND		0.00500	1	02/11/2022 03:19	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/11/2022 03:19	WG1816345
Styrene	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
Tetrachloroethene	ND		0.00100	1	02/11/2022 03:19	WG1816345
Toluene	ND		0.00100	1	02/11/2022 03:19	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345

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
1,1,2-Trichloroethane	ND		0.00100	1	02/11/2022 03:19	WG1816345
Trichloroethene	ND		0.00100	1	02/11/2022 03:19	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/11/2022 03:19	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/11/2022 03:19	WG1816345
Vinyl acetate	ND		0.0100	1	02/11/2022 03:19	WG1816345
Vinyl chloride	ND		0.00100	1	02/11/2022 03:19	WG1816345
Xylenes, Total	ND		0.00300	1	02/11/2022 03:19	WG1816345
(S) Toluene-d8	*109*		*80.0-120*		*02/11/2022 03:19*	WG1816345
(S) 4-Bromofluorobenzene	*93.8*		*77.0-126*		*02/11/2022 03:19*	WG1816345
(S) 1,2-Dichloroethane-d4	*85.2*		*70.0-130*		*02/11/2022 03:19*	WG1816345

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	02/15/2022 03:22	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000202	1.01	02/15/2022 03:22	WG1816276

Calculated Results

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Hardness (calculated) as CaCO3	ND		2.50	1	02/13/2022 13:27	WG1816474

Wet Chemistry by Method 2320 B-2011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Alkalinity	ND		20.0	1	02/14/2022 08:22	WG1817280

Sample Narrative:

L1460080-09 WG1817280: Endpoint pH 4.5 Heaspace

Wet Chemistry by Method 350.1

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ammonia Nitrogen	ND		0.250	1	02/14/2022 16:15	WG1817563

Wet Chemistry by Method 410.4

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
COD	ND		20.0	1	02/14/2022 14:58	WG1817361

Wet Chemistry by Method 9056A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Bromide	ND		1.00	1	02/10/2022 22:02	WG1816316
Chloride	ND		1.00	1	02/10/2022 22:02	WG1816316
Fluoride	ND		0.150	1	02/10/2022 22:02	WG1816316
Nitrate	ND		0.100	1	02/10/2022 22:02	WG1816316
Sulfate	ND		5.00	1	02/10/2022 22:02	WG1816316

Mercury by Method 7470A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Mercury	ND		0.000200	1	02/17/2022 12:11	WG1817101

Metals (ICP) by Method 6010B

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Boron	ND		0.200	1	02/16/2022 13:12	WG1816435

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Aluminum	ND		0.100	1	02/13/2022 13:27	WG1816474
Antimony	ND		0.00400	1	02/13/2022 13:27	WG1816474
Arsenic	ND		0.00200	1	02/13/2022 13:27	WG1816474
Barium	ND		0.00200	1	02/13/2022 13:27	WG1816474
Beryllium	ND		0.00200	1	02/13/2022 13:27	WG1816474
Cadmium	ND		0.00100	1	02/13/2022 13:27	WG1816474
Calcium	ND		1.00	1	02/13/2022 13:27	WG1816474
Chromium	ND		0.00200	1	02/13/2022 15:53	WG1816474
Cobalt	ND		0.00200	1	02/13/2022 13:27	WG1816474
Copper	ND		0.00500	1	02/13/2022 13:27	WG1816474

Metals (ICPMS) by Method 6020A

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Iron	ND		0.100	1	02/13/2022 13:27	WG1816474
Lead	ND		0.00200	1	02/13/2022 13:27	WG1816474
Magnesium	ND		1.00	1	02/13/2022 13:27	WG1816474
Manganese	ND		0.00500	1	02/13/2022 13:27	WG1816474
Nickel	ND		0.00200	1	02/13/2022 13:27	WG1816474
Potassium	ND		2.00	1	02/13/2022 13:27	WG1816474
Selenium	ND		0.00200	1	02/13/2022 13:27	WG1816474
Silver	ND		0.00200	1	02/13/2022 13:27	WG1816474
Sodium	ND		2.00	1	02/13/2022 13:27	WG1816474
Thallium	ND		0.00200	1	02/13/2022 13:27	WG1816474
Vanadium	ND		0.00500	1	02/13/2022 13:27	WG1816474
Zinc	ND		0.0250	1	02/13/2022 13:27	WG1816474

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	02/10/2022 22:23	WG1816345
Acrylonitrile	ND		0.0100	1	02/10/2022 22:23	WG1816345
Benzene	ND		0.00100	1	02/10/2022 22:23	WG1816345
Bromochloromethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
Bromodichloromethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
Bromoform	ND		0.00100	1	02/10/2022 22:23	WG1816345
Bromomethane	ND		0.00500	1	02/10/2022 22:23	WG1816345
Carbon disulfide	ND		0.00100	1	02/10/2022 22:23	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/10/2022 22:23	WG1816345
Chlorobenzene	ND		0.00100	1	02/10/2022 22:23	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
Chloroethane	ND		0.00500	1	02/10/2022 22:23	WG1816345
Chloroform	ND		0.00500	1	02/10/2022 22:23	WG1816345
Chloromethane	ND		0.00250	1	02/10/2022 22:23	WG1816345
Dibromomethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/10/2022 22:23	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/10/2022 22:23	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/10/2022 22:23	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/10/2022 22:23	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/10/2022 22:23	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/10/2022 22:23	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/10/2022 22:23	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/10/2022 22:23	WG1816345
Ethylbenzene	ND		0.00100	1	02/10/2022 22:23	WG1816345
2-Hexanone	ND		0.0100	1	02/10/2022 22:23	WG1816345
Iodomethane	ND		0.0100	1	02/10/2022 22:23	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/10/2022 22:23	WG1816345
Methylene Chloride	ND		0.00500	1	02/10/2022 22:23	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/10/2022 22:23	WG1816345
Styrene	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/10/2022 22:23	WG1816345
Tetrachloroethene	ND		0.00100	1	02/10/2022 22:23	WG1816345
Toluene	ND		0.00100	1	02/10/2022 22:23	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/10/2022 22:23	WG1816345

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	02/10/2022 22:23	WG1816345
Trichloroethene	ND		0.00100	1	02/10/2022 22:23	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/10/2022 22:23	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/10/2022 22:23	WG1816345
Vinyl acetate	ND		0.0100	1	02/10/2022 22:23	WG1816345
Vinyl chloride	0.00197		0.00100	1	02/10/2022 22:23	WG1816345
Xylenes, Total	ND		0.00300	1	02/10/2022 22:23	WG1816345
(S) Toluene-d8	*116*		*80.0-120*		*02/10/2022 22:23*	WG1816345
(S) 4-Bromofluorobenzene	*93.3*		*77.0-126*		*02/10/2022 22:23*	WG1816345
(S) 1,2-Dichloroethane-d4	*88.8*		*70.0-130*		*02/10/2022 22:23*	WG1816345

EDB / DBCP by Method 8011

Analyte	Result mg/l	Qualifier	RDL mg/l	Dilution	Analysis date / time	Batch
Ethylene Dibromide	ND		0.0000200	1	02/15/2022 03:34	WG1816276
1,2-Dibromo-3-Chloropropane	ND		0.0000200	1	02/15/2022 03:34	WG1816276

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	02/10/2022 22:02	WG1816345
Acrylonitrile	ND		0.0100	1	02/10/2022 22:02	WG1816345
Benzene	ND		0.00100	1	02/10/2022 22:02	WG1816345
Bromochloromethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
Bromodichloromethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
Bromoform	ND		0.00100	1	02/10/2022 22:02	WG1816345
Bromomethane	ND		0.00500	1	02/10/2022 22:02	WG1816345
Carbon disulfide	ND		0.00100	1	02/10/2022 22:02	WG1816345
Carbon tetrachloride	ND		0.00100	1	02/10/2022 22:02	WG1816345
Chlorobenzene	ND		0.00100	1	02/10/2022 22:02	WG1816345
Chlorodibromomethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
Chloroethane	ND		0.00500	1	02/10/2022 22:02	WG1816345
Chloroform	ND		0.00500	1	02/10/2022 22:02	WG1816345
Chloromethane	ND		0.00250	1	02/10/2022 22:02	WG1816345
Dibromomethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,2-Dibromo-3-Chloropropane	ND		0.00500	1	02/10/2022 22:02	WG1816345
1,2-Dibromoethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,2-Dichlorobenzene	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,4-Dichlorobenzene	ND		0.00100	1	02/10/2022 22:02	WG1816345
trans-1,4-Dichloro-2-butene	ND		0.00250	1	02/10/2022 22:02	WG1816345
1,1-Dichloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,2-Dichloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,1-Dichloroethene	ND		0.00100	1	02/10/2022 22:02	WG1816345
cis-1,2-Dichloroethene	ND		0.00100	1	02/10/2022 22:02	WG1816345
trans-1,2-Dichloroethene	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,2-Dichloropropane	ND		0.00100	1	02/10/2022 22:02	WG1816345
cis-1,3-Dichloropropene	ND		0.00100	1	02/10/2022 22:02	WG1816345
trans-1,3-Dichloropropene	ND		0.00100	1	02/10/2022 22:02	WG1816345
Ethylbenzene	ND		0.00100	1	02/10/2022 22:02	WG1816345
2-Hexanone	ND		0.0100	1	02/10/2022 22:02	WG1816345
Iodomethane	ND		0.0100	1	02/10/2022 22:02	WG1816345
2-Butanone (MEK)	ND		0.0100	1	02/10/2022 22:02	WG1816345
Methylene Chloride	ND		0.00500	1	02/10/2022 22:02	WG1816345
4-Methyl-2-pentanone (MIBK)	ND		0.0100	1	02/10/2022 22:02	WG1816345
Styrene	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,1,1,2-Tetrachloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,1,2,2-Tetrachloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
Tetrachloroethene	ND		0.00100	1	02/10/2022 22:02	WG1816345
Toluene	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,1,1-Trichloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
1,1,2-Trichloroethane	ND		0.00100	1	02/10/2022 22:02	WG1816345
Trichloroethene	ND		0.00100	1	02/10/2022 22:02	WG1816345
Trichlorofluoromethane	ND		0.00500	1	02/10/2022 22:02	WG1816345
1,2,3-Trichloropropane	ND		0.00250	1	02/10/2022 22:02	WG1816345
Vinyl acetate	ND		0.0100	1	02/10/2022 22:02	WG1816345
Vinyl chloride	ND		0.00100	1	02/10/2022 22:02	WG1816345
Xylenes, Total	ND		0.00300	1	02/10/2022 22:02	WG1816345
(S) Toluene-d8	*116*		*80.0-120*		*02/10/2022 22:02*	WG1816345
(S) 4-Bromofluorobenzene	*89.9*		*77.0-126*		*02/10/2022 22:02*	WG1816345
(S) 1,2-Dichloroethane-d4	*88.5*		*70.0-130*		*02/10/2022 22:02*	WG1816345

Method Blank (MB)

(MB) R3759980-2 02/14/22 07:16

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Alkalinity	U		8.45	20.0

Sample Narrative:

BLANK: Endpoint pH 4.5

L1460066-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460066-01 02/14/22 07:29 • (DUP) R3759980-4 02/14/22 07:36

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	17300	17300	1	0.0631		20

Sample Narrative:

OS: Endpoint pH 4.5 Heaspace

DUP: Endpoint pH 4.5

L1460491-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460491-01 02/14/22 09:00 • (DUP) R3759980-6 02/14/22 09:04

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Alkalinity	49.4	50.2	1	1.71		20

Sample Narrative:

OS: Endpoint pH 4.5 Heaspace

DUP: Endpoint pH 4.5

Laboratory Control Sample (LCS)

(LCS) R3759980-1 02/14/22 07:12

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Alkalinity	100	100	100	90.0-110	

Sample Narrative:

LCS: Endpoint pH 4.5

Method Blank (MB)

(MB) R3759948-1 02/14/22 15:49

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ammonia Nitrogen	U		0.117	0.250

L1460080-02 Original Sample (OS) • Duplicate (DUP)

(OS) L1460080-02 02/14/22 15:58 • (DUP) R3759948-5 02/14/22 16:00

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	ND	ND	1	0.000		10

L1460438-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460438-01 02/14/22 16:52 • (DUP) R3759948-8 02/14/22 16:54

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Ammonia Nitrogen	11.1	11.0	5	1.37		10

Laboratory Control Sample (LCS)

(LCS) R3759948-2 02/14/22 15:51

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Ammonia Nitrogen	7.50	7.25	96.7	90.0-110	

L1460080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-01 02/14/22 15:54 • (MS) R3759948-3 02/14/22 15:55 • (MSD) R3759948-4 02/14/22 15:57

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 %
Ammonia Nitrogen	5.00	ND	5.15	5.05	101	98.5	1	90.0-110			2.10	10

L1460430-02 Original Sample (OS) • Matrix Spike (MS)

(OS) L1460430-02 02/14/22 16:22 • (MS) R3759948-6 02/14/22 16:24

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ammonia Nitrogen	5.00	1.34	6.46	102	1	90.0-110	

Method Blank (MB)

(MB) R3759620-1 02/13/22 17:48

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1459921-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1459921-01 02/13/22 17:50 • (DUP) R3759620-3 02/13/22 17:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	44.9	45.7	1	1.93		20

L1459980-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1459980-01 02/13/22 17:51 • (DUP) R3759620-4 02/13/22 17:51

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	242	242	1	0.00414		20

Laboratory Control Sample (LCS)

(LCS) R3759620-2 02/13/22 17:49

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	492	98.4	90.0-110	

L1460080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-01 02/13/22 17:52 • (MS) R3759620-5 02/13/22 17:52 • (MSD) R3759620-6 02/13/22 17:52

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 %
COD	500	ND	492	500	98.4	100	1	80.0-120			1.66	20

Method Blank (MB)

(MB) R3759899-1 02/14/22 14:57

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
COD	U		11.7	20.0

L1460332-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460332-01 02/14/22 15:06 • (DUP) R3759899-3 02/14/22 15:06

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	116	115	1	0.682		20

L1460489-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460489-01 02/14/22 15:08 • (DUP) R3759899-6 02/14/22 15:09

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
COD	630	621	1	1.38		20

Laboratory Control Sample (LCS)

(LCS) R3759899-2 02/14/22 14:57

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
COD	500	514	103	90.0-110	

L1460410-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460410-01 02/14/22 15:06 • (MS) R3759899-4 02/14/22 15:06 • (MSD) R3759899-5 02/14/22 15:07

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 %
COD	500	ND	474	483	94.8	96.6	1	80.0-120			1.91	20

Method Blank (MB)

(MB) R3759327-1 02/10/22 11:02

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL 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

L1460080-01 Original Sample (OS) • Duplicate (DUP)

(OS) L1460080-01 02/10/22 18:51 • (DUP) R3759327-3 02/10/22 19:07

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
Bromide	ND	ND	1	0.000		15
Chloride	1.93	1.90	1	1.58		15
Fluoride	ND	ND	1	200	P1	15
Nitrate	ND	ND	1	0.000		15
Sulfate	ND	ND	1	3.09		15

L1460080-09 Original Sample (OS) • Duplicate (DUP)

(OS) L1460080-09 02/10/22 22:02 • (DUP) R3759327-5 02/10/22 22:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
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

Laboratory Control Sample (LCS)

(LCS) R3759327-2 02/10/22 11:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Bromide	40.0	39.5	98.7	80.0-120	
Chloride	40.0	39.9	99.7	80.0-120	
Fluoride	8.00	8.10	101	80.0-120	
Nitrate	8.00	8.05	101	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3759327-2 02/10/22 11:18

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Sulfate	40.0	40.4	101	80.0-120	

L1460080-01 Original Sample (OS) • Matrix Spike (MS)

(OS) L1460080-01 02/10/22 18:51 • (MS) R3759327-4 02/10/22 19:23

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Bromide	50.0	ND	48.7	97.4	1	80.0-120	
Chloride	50.0	1.93	52.1	100	1	80.0-120	
Fluoride	5.00	ND	5.12	101	1	80.0-120	
Nitrate	5.00	ND	4.90	98.1	1	80.0-120	
Sulfate	50.0	ND	53.7	100	1	80.0-120	

L1460080-09 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-09 02/10/22 22:02 • (MS) R3759327-6 02/10/22 22:34 • (MSD) R3759327-7 02/10/22 22:50

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 %
Bromide	50.0	ND	46.1	47.1	92.3	94.2	1	80.0-120			2.02	15
Chloride	50.0	ND	47.8	47.8	95.5	95.6	1	80.0-120			0.0548	15
Fluoride	5.00	ND	4.83	4.79	96.6	95.7	1	80.0-120			0.944	15
Nitrate	5.00	ND	4.66	4.73	93.3	94.6	1	80.0-120			1.40	15
Sulfate	50.0	ND	47.5	47.3	95.0	94.6	1	80.0-120			0.435	15

Method Blank (MB)

(MB) R3761064-1 02/17/22 11:22

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) R3761064-2 02/17/22 11:28

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

L1459975-04 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1459975-04 02/17/22 11:30 • (MS) R3761064-3 02/17/22 11:32 • (MSD) R3761064-4 02/17/22 11:34

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	0.00322	0.00329	107	110	1	75.0-125			2.19	20

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

Method Blank (MB)

(MB) R3760843-1 02/16/22 12:29

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) R3760843-2 02/16/22 12:32

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Boron	1.00	0.979	97.9	80.0-120	

L1460245-02 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460245-02 02/16/22 12:34 • (MS) R3760843-4 02/16/22 12:40 • (MSD) R3760843-5 02/16/22 12:42

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	0.998	1.01	99.8	101	1	75.0-125			0.879	20

Method Blank (MB)

(MB) R3759609-1 02/13/22 12:34

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
Copper	U		0.00151	0.00500
Cobalt	U		0.0000596	0.00200
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	0.134	J	0.108	2.00
Selenium	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

Method Blank (MB)

(MB) R3759613-1 02/13/22 14:58

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Chromium	U		0.00124	0.00200

Laboratory Control Sample (LCS)

(LCS) R3759609-2 02/13/22 12:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Aluminum	5.00	4.72	94.4	80.0-120	
Antimony	0.0500	0.0514	103	80.0-120	
Arsenic	0.0500	0.0477	95.3	80.0-120	
Barium	0.0500	0.0480	96.1	80.0-120	
Beryllium	0.0500	0.0442	88.4	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3759609-2 02/13/22 12:37

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Cadmium	0.0500	0.0508	102	80.0-120	
Calcium	5.00	4.88	97.5	80.0-120	
Copper	0.0500	0.0508	102	80.0-120	
Cobalt	0.0500	0.0499	99.9	80.0-120	
Iron	5.00	4.62	92.5	80.0-120	
Lead	0.0500	0.0478	95.6	80.0-120	
Magnesium	5.00	4.83	96.6	80.0-120	
Manganese	0.0500	0.0494	98.9	80.0-120	
Nickel	0.0500	0.0500	100	80.0-120	
Potassium	5.00	4.91	98.1	80.0-120	
Selenium	0.0500	0.0557	111	80.0-120	
Silver	0.0500	0.0498	99.6	80.0-120	
Sodium	5.00	5.02	100	80.0-120	
Thallium	0.0500	0.0483	96.7	80.0-120	
Vanadium	0.0500	0.0477	95.4	80.0-120	
Zinc	0.500	0.478	95.7	80.0-120	

Laboratory Control Sample (LCS)

(LCS) R3759613-2 02/13/22 15:02

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Chromium	0.0500	0.0487	97.4	80.0-120	

L1460080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-01 02/13/22 12:41 • (MS) R3759609-4 02/13/22 12:47 • (MSD) R3759609-5 02/13/22 12:51

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 %
Aluminum	5.00	ND	4.79	4.82	93.9	94.4	1	75.0-125			0.579	20
Antimony	0.0500	ND	0.0505	0.0517	97.7	100	1	75.0-125			2.22	20
Arsenic	0.0500	0.0219	0.0673	0.0711	90.9	98.5	1	75.0-125			5.50	20
Barium	0.0500	0.0213	0.0696	0.0688	96.6	94.9	1	75.0-125			1.20	20
Beryllium	0.0500	ND	0.0448	0.0438	89.7	87.5	1	75.0-125			2.42	20
Cadmium	0.0500	ND	0.0501	0.0519	99.9	103	1	75.0-125			3.48	20
Calcium	5.00	3.81	8.74	8.63	98.6	96.4	1	75.0-125			1.29	20
Copper	0.0500	ND	0.0630	0.0706	126	141	1	75.0-125	J5	J5	11.5	20
Cobalt	0.0500	0.0676	0.115	0.121	95.1	106	1	75.0-125			4.57	20
Potassium	5.00	ND	6.14	5.96	95.3	91.8	1	75.0-125			2.91	20

L1460080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-01 02/13/22 12:41 • (MS) R3759609-4 02/13/22 12:47 • (MSD) R3759609-5 02/13/22 12:51

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 %
Iron	5.00	17.3	21.3	22.0	78.8	94.4	1	75.0-125			3.62	20
Lead	0.0500	ND	0.0480	0.0494	95.9	98.8	1	75.0-125			2.98	20
Magnesium	5.00	2.99	8.19	8.07	104	102	1	75.0-125			1.44	20
Manganese	0.0500	1.16	1.16	1.25	0.000	171	1	75.0-125	V	V	7.52	20
Nickel	0.0500	0.00739	0.0570	0.0606	99.3	106	1	75.0-125			6.01	20
Selenium	0.0500	ND	0.0524	0.0535	105	107	1	75.0-125			2.03	20
Silver	0.0500	ND	0.0499	0.0501	99.4	99.9	1	75.0-125			0.498	20
Sodium	5.00	3.30	8.13	8.22	96.7	98.5	1	75.0-125			1.14	20
Thallium	0.0500	ND	0.0476	0.0490	94.3	97.1	1	75.0-125			2.85	20
Vanadium	0.0500	ND	0.0480	0.0511	96.1	102	1	75.0-125			6.12	20
Zinc	0.500	ND	0.481	0.510	93.7	99.5	1	75.0-125			5.82	20

L1460080-01 Original Sample (OS) • Matrix Spike (MS) • Matrix Spike Duplicate (MSD)

(OS) L1460080-01 02/13/22 15:05 • (MS) R3759613-4 02/13/22 15:12 • (MSD) R3759613-5 02/13/22 15:15

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 %
Chromium	0.0500	ND	0.0521	0.0531	104	106	1	75.0-125			1.88	20

Method Blank (MB)

(MB) R3759141-2 02/10/22 17:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
1,1,1,2-Tetrachloroethane	U		0.000147	0.00100
1,1,1-Trichloroethane	U		0.000149	0.00100
1,1,2,2-Tetrachloroethane	U		0.000133	0.00100
1,1,2-Trichloroethane	U		0.000158	0.00100
1,1-Dichloroethane	U		0.000100	0.00100
1,1-Dichloroethene	U		0.000188	0.00100
1,2,3-Trichloropropane	U		0.000237	0.00250
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
1,2-Dichloroethane	U		0.0000819	0.00100
1,2-Dichloropropane	U		0.000149	0.00100
1,4-Dichlorobenzene	U		0.000120	0.00100
2-Butanone (MEK)	U		0.00119	0.0100
2-Hexanone	U		0.000787	0.0100
4-Methyl-2-pentanone (MIBK)	U		0.000478	0.0100
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
cis-1,2-Dichloroethene	U		0.000126	0.00100
cis-1,3-Dichloropropene	U		0.000111	0.00100
Dibromomethane	U		0.000122	0.00100
Ethylbenzene	U		0.000137	0.00100
Iodomethane	U		0.00600	0.0100
Methylene Chloride	U		0.000430	0.00500
Styrene	U		0.000118	0.00100
Tetrachloroethene	U		0.000300	0.00100
Toluene	U		0.000278	0.00100
trans-1,2-Dichloroethene	U		0.000149	0.00100

Method Blank (MB)

(MB) R3759141-2 02/10/22 17:19

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
trans-1,3-Dichloropropene	U		0.000118	0.00100
trans-1,4-Dichloro-2-butene	U		0.000467	0.00250
Trichloroethene	U		0.000190	0.00100
Trichlorofluoromethane	U		0.000160	0.00500
Vinyl acetate	U		0.000692	0.0100
Vinyl chloride	U		0.000234	0.00100
Xylenes, Total	U		0.000174	0.00300
(S) 1,2-Dichloroethane-d4	*90.0*			*70.0-130*
(S) 4-Bromofluorobenzene	*93.3*			*77.0-126*
(S) Toluene-d8	*111*			*80.0-120*

Laboratory Control Sample (LCS)

(LCS) R3759141-1 02/10/22 16:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
1,1,1,2-Tetrachloroethane	0.00500	0.00461	92.2	75.0-125	
1,1,1-Trichloroethane	0.00500	0.00525	105	73.0-124	
1,1,2,2-Tetrachloroethane	0.00500	0.00495	99.0	65.0-130	
1,1,2-Trichloroethane	0.00500	0.00520	104	80.0-120	
1,1-Dichloroethane	0.00500	0.00486	97.2	70.0-126	
1,1-Dichloroethene	0.00500	0.00554	111	71.0-124	
1,2,3-Trichloropropane	0.00500	0.00542	108	73.0-130	
1,2-Dibromo-3-Chloropropane	0.00500	0.00311	62.2	58.0-134	
1,2-Dibromoethane	0.00500	0.00527	105	80.0-122	
1,2-Dichlorobenzene	0.00500	0.00411	82.2	79.0-121	
1,2-Dichloroethane	0.00500	0.00522	104	70.0-128	
1,2-Dichloropropane	0.00500	0.00505	101	77.0-125	
1,4-Dichlorobenzene	0.00500	0.00465	93.0	79.0-120	
2-Butanone (MEK)	0.0250	0.0220	88.0	44.0-160	
2-Hexanone	0.0250	0.0232	92.8	67.0-149	
4-Methyl-2-pentanone (MIBK)	0.0250	0.0233	93.2	68.0-142	
Acetone	0.0250	0.0210	84.0	19.0-160	
Acrylonitrile	0.0250	0.0234	93.6	55.0-149	
Benzene	0.00500	0.00494	98.8	70.0-123	
Bromochloromethane	0.00500	0.00551	110	76.0-122	
Bromodichloromethane	0.00500	0.00455	91.0	75.0-120	
Bromoform	0.00500	0.00413	82.6	68.0-132	
Bromomethane	0.00500	0.00573	115	10.0-160	

Laboratory Control Sample (LCS)

(LCS) R3759141-1 02/10/22 16:19

Analyte	Spike Amount mg/l	LCS Result mg/l	LCS Rec. %	Rec. Limits %	LCS Qualifier
Carbon disulfide	0.00500	0.00515	103	61.0-128	
Carbon tetrachloride	0.00500	0.00524	105	68.0-126	
Chlorobenzene	0.00500	0.00512	102	80.0-121	
Chlorodibromomethane	0.00500	0.00488	97.6	77.0-125	
Chloroethane	0.00500	0.00592	118	47.0-150	
Chloroform	0.00500	0.00541	108	73.0-120	
Chloromethane	0.00500	0.00454	90.8	41.0-142	
cis-1,2-Dichloroethene	0.00500	0.00526	105	73.0-120	
cis-1,3-Dichloropropene	0.00500	0.00484	96.8	80.0-123	
Dibromomethane	0.00500	0.00533	107	80.0-120	
Ethylbenzene	0.00500	0.00505	101	79.0-123	
Iodomethane	0.0250	0.0299	120	33.0-147	
Methylene Chloride	0.00500	0.00535	107	67.0-120	
Styrene	0.00500	0.00393	78.6	73.0-130	
Tetrachloroethene	0.00500	0.00596	119	72.0-132	
Toluene	0.00500	0.00522	104	79.0-120	
trans-1,2-Dichloroethene	0.00500	0.00564	113	73.0-120	
trans-1,3-Dichloropropene	0.00500	0.00495	99.0	78.0-124	
trans-1,4-Dichloro-2-butene	0.00500	0.00537	107	33.0-144	
Trichloroethene	0.00500	0.00556	111	78.0-124	
Trichlorofluoromethane	0.00500	0.00573	115	59.0-147	
Vinyl acetate	0.0250	0.0222	88.8	11.0-160	
Vinyl chloride	0.00500	0.00535	107	67.0-131	
Xylenes, Total	0.0150	0.0140	93.3	79.0-123	
(S) 1,2-Dichloroethane-d4			*89.9*	*70.0-130*	
(S) 4-Bromofluorobenzene			*94.4*	*77.0-126*	
(S) Toluene-d8			*110*	*80.0-120*	

Method Blank (MB)

(MB) R3759923-1 02/14/22 12:43

Analyte	MB Result mg/l	MB Qualifier	MB MDL mg/l	MB RDL mg/l
Ethylene Dibromide	U		0.00000536	0.0000200
1,2-Dibromo-3-Chloropropane	U		0.00000748	0.0000200

L1459633-05 Original Sample (OS) • Duplicate (DUP)

(OS) L1459633-05 02/14/22 13:29 • (DUP) R3759923-3 02/14/22 13:18

Analyte	Original Result mg/l	DUP Result mg/l	Dilution	DUP RPD %	DUP Qualifier	DUP RPD Limits %
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) R3759923-4 02/14/22 15:26 • (LCSD) R3759923-5 02/14/22 15:49

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 %
Ethylene Dibromide	0.000250	0.000334	0.000337	134	135	60.0-140			0.894	20
1,2-Dibromo-3-Chloropropane	0.000250	0.000261	0.000258	104	103	60.0-140			1.16	20

L1459633-06 Original Sample (OS) • Matrix Spike (MS)

(OS) L1459633-06 02/14/22 13:06 • (MS) R3759923-2 02/14/22 12:54

Analyte	Spike Amount mg/l	Original Result mg/l	MS Result mg/l	MS Rec. %	Dilution	Rec. Limits %	MS Qualifier
Ethylene Dibromide	0.000104	ND	0.000111	107	1.04	64.0-159	
1,2-Dibromo-3-Chloropropane	0.000104	ND	0.000114	110	1.04	72.0-148	

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
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.
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	LAO000356
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

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

Pres Chk

Report to: **Philip Campbell**

Email To: **pcampbell@cecinc.com**

Project Description: **Former EWS Camden Class 2 Landfill**

City/State Collected: Camden, TN

Please Circle: PT MT CT ET

Phone: **615-333-7797**

Client Project # **181-364**

Lab Project # **CEC-EWS CAMDEN LF**

Collected by (print): Alex Black

Site/Facility ID # **CAMDEN, TN**

P.O. #

Collected by (signature):

Immediately Packed on Ice N ___ Y ___

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

Date Results Needed

Quote #

Analysis / Container / Preservative

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 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk			Remarks	Sample # (lab only)
							✓ 2			✓ 2								
MW-1	G	GW		2/9/22	1035	10	X	X	X	X	X	X	X					-01
MW-3	"	GW		"	1500	10	X	X	X	X	X	X	X					-02
MW-4	"	GW		"	1315	10	X	X	X	X	X	X	X					-03
MW-5	"	GW		"	1215	10	X	X	X	X	X	X	X					-04
TMW-1	"	GW		"	1240	10	X	X	X	X	X	X	X					-05
TMW-2	"	GW		"	1142	10	X	X	X	X	X	X	X					-06
TMW-3	"	GW		"	1015	10	X	X	X	X	X	X	X					-07
DUPLICATE	"	GW		"	—	10	X	X	X	X	X	X	X					-08
FIELD BLANK	"	GW		"	1255	10	X	X	X		X	X	X					-09
EQUIPMENT BLANK		GW				10	X	X	X		X	X	X					

Chain of Custody Page ___ of ___

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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 # L1460080
A223

Acctnum: **CEC**
Template: **T133579**
Prelogin: **P903773**
PM: **526 - Chris McCord**
PB: 2-7-2022 bm
Shipped Via: **Courier**

* 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 #

Sample Receipt Checklist
COC Seal Present/Intact: __NP __Y __N
COC Signed/Accurate: __Y __N
Bottles arrive intact: __Y __N
Correct bottles used: __Y __N
Sufficient volume sent: __Y __N
If Applicable
VOA Zero Headspace: __Y __N
Preservation Correct/Checked: __Y __N
RAD Screen <0.5 mR/hr: __Y __N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2/10/22	11:00	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)
	2-10-22	17:00	
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)

Trip Blank Received: Yes / No
HCL / MeoH
TBR

Temp: 2.5-1-2.4 °C Bottles Received: 90

Date: 2/10/22 Time: 1300

If preservation required by Login: Date/Time

Hold:

Condition: NCF / OK

Company Name/Address:
Civil & Environmental Consultants - TN

117 Seaboard Ln.
Suite E100
Franklin, TN 37067

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

Pres Chk

Report to: **Philip Campbell**

Email To: **pcampbell@cecinc.com**

Project Description: **Former EWS Camden Class 2 Landfill**

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Immediately Packed on Ice N ___ Y 1

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

Quote #

Date Results Needed

Analysis / Container / Preservative

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 40mlClr-NaThio	Total Metals,HARD 250mlHDPE-HNO3	V8260AP1 40mlAmb-HCl	V8260AP1-Trip Blank 40mlAmb-HCl-Blk			Remarks	Sample # (lab only)
TRIP BLANK	G	GW		2/9/22	—	1								X				-11

Chain of Custody Page ___ of ___

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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 # L1460080

Table #

Acctnum: **CEC**
Template: **T133579**
Prelogin: **P903773**
PM: **526 - Chris McCord**
PB: 2-7-2022 GM

Shipped Via: **Courier**

* 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 #

Sample Receipt Checklist
COC Seal Present/Intact: __ NP __ Y __ N
COC Signed/Accurate: __ Y __ N
Bottles arrive intact: __ Y __ N
Correct bottles used: __ Y __ N
Sufficient volume sent: __ Y __ N
If Applicable
VOA Zero Headspace: __ Y __ N
Preservation Correct/Checked: __ Y __ N
RAD Screen <0.5 mR/hr: __ Y __ N

Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Trip Blank Received: Yes / No HCL / MeoH TBR	If preservation required by Login: Date/Time
	2/10/22	11:00		4-2HCl -2NaOH 3-HCl	
Relinquished by : (Signature)	Date:	Time:	Received by: (Signature)	Temp: 2.5-1-2.4 Bottles Received:	
	2-10-22	13:00			
Relinquished by : (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 2/10/22 Time: 1300	Hold: Condition: NCF / OK

L1460080

Tracking Numbers		Temperature
courier		3.4
courier		5.6

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	40s Sunny
DATE & TIME	2/9/22 0915	EVENT FREQUENCY	Quarterly
PURGE METHOD	Peristaltic Pump	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	30.5	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	21.05	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	9.45	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	4.0	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	21.05	9[illegible]32	12.6	5.97	87.5	65.4	6.10	213.3	102
.5	21.19	9[illegible]36	14.8	5.59	51.5	41.4	3.62	182.2	141
.75	21.22	9[illegible]40	14.9	5.60	53.6	43.4	3.27	156.0	62.1
1.0	21.22	9[illegible]44	14.8	5.74	72.6	58.7	2.12	118.5	31.6
1.25	21.18	9[illegible]48	14.9	5.76	74.9	60.5	2.01	116.6	26.8
1.5	21.20	952	14.9	5.80	81.8	66.1	1.73	111.8	21.84
1.75	21.2	956	14.9	5.83	87.2	70.8	1.51	107.2	18.8
1.95	21.2	1000	14.9	5.84	91.1	73.7	1.32	105.2	17.5
2.25	21.2	1004	15.0	5.87	97.9	79.3	1.04	100.5	13.8
2.5	21.2	1008	15.0	5.88	101.1	83.0	.89	92.5	13.1
2.75	21.2	1012	15.1	5.89	105.7	85.6	.74	95.7	12.7
3.0	21.2	1016	15.1	5.89	106.1	86.0	.71	95.2	12.3

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
4.0	21.20	1035	15.0	5.91	112.6	93.4	0.49	58.7	10.8
Preservatives Used	See COC			Sample Charateristics (Odor, Color)			Clear; no odor		
Number of Containers	10			Sampler Signature			A Baugh		

WELL DATA

Number of Baffles	4 + Fence	Well Cap Dedicated/In Place?	yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	yes; gate OK

7/9/22 MW-1 Cont...

gallons	DTW	Time	°C	pH	spec cond	cond	DO	orp	NTU
3.25	21.2	1020	15.1	5.89	107.3	86.9	.67	94.4	11.4
3.5	21.2	1024	15.0	5.90	110.5	89.5	.58	92.3	11.8
3.75	21.2	1028	15.0	5.91	112.2	91.3	.53	90.2	11.1
4.0	21.2	1032	15.0	5.91	115.4	93.4	.49	88.7	10.8

Sampled @ 1035

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-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	40s, Sunny
DATE & TIME	2/9/22 0920	EVENT FREQUENCY	Quarterly
PURGE METHOD	NA, parameters only	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	10	SAMPLING EQUIPMENT	Bailer
DEPTH TO WATER (feet)	4.80	IS SAMPLE EQUIPMENT DEDICATED?	No
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	5.20	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	N/A	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
–	4.90	–	8.4	6.17	314.6	216.0	4.64	271.8	7.55

Preservatives Used	N/A	Sample Charateristics (Odor, Color)	N/A
Number of Containers	N/A	Sampler Signature	

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?	Yes

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	50s Sunny
DATE & TIME	2/9/22 1345	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Bayh
TOTAL WELL DEPTH (feet)	27	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	13.50	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	YES
WATER COLUMN (feet)	13.50	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.8	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	13.50	14:04	17.4	5.75	173.6	136.4	3.95	276.9	27.19
.5	13.6	1408	17.0	5.70	166.3	129.8	3.50	277.9	22.7
.9	13.6	1412	11.6	5.73	164.7	122.4	3.42	275.0	24.3
1.3	13.6	1416	11.5	5.80	157.7	116.8	3.46	270.7	27.3
1.6	13.6	1420	11.5	5.80	157.7	117.1	3.45	270.7	26.0
2.0	13.6	1424	11.4	5.82	156.1	115.6	3.48	270.2	27.4
2.3	13.6	1428	11.4	5.83	155.2	114.3	3.51	270.4	28.8
2.6	13.6	1432	11.4	5.84	153.6	113.9	3.54	270.1	31.6
2.9	13.6	1436	11.5	5.86	153.2	113.5	3.58	269.4	26.1
3.2	13.6	1440	11.4	5.85	152.8	112.9	3.58	269.5	25.4
3.5	13.6	1448	11.4	5.86	152.2	112.7	3.54	269.1	27.1
3.8	13.6	1452	11.5	5.89	149.9	111.2	3.68	268.3	27.5

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.8	17.6	1500	11.5	5.89	149.9	111.2	3.68	268.3	27.5

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Cloudy; no odor
Number of Containers	10	Sampler Signature	

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?	lots of thorns & 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	50s Sunny
DATE & TIME	2/9/22 1240	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low flow	FIELD REPRESENTATIVE	Baugh
TOTAL WELL DEPTH (feet)	23.1	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	~~9.16~~ 9.22	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	13.88	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	1.75	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	9.22	1252	15.2	6.01	93.5	75.8	3.33	300.5	28.4
.5	9.26	1256	14.8	6.00	89.4	72.0	2.60	285.2	20.7
.8	9.30	1300	14.8	6.00	88.6	71.4	2.67	278.4	3.81
1.1	9.32	1304	14.8	6.00	88.2	71.0	2.56	276	5.27
1.5	9.34	1308	14.7	5.99	88.1	70.8	2.56	275.9	1.74
1.75	9.34	1312	14.8	5.99	88.0	70.9	2.57	269.3	4.60

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
1.75	9.34	1315	14.8	5.99	88.0	70.9	2.57	269.3	4.60

Preservatives Used	See COC	Sample Charateristics (Odor, Color)	Clear, no odor
Number of Containers	10	Sampler Signature	Baugh

WELL DATA

Number of Baffles	0	Well Cap Dedicated/In Place?	Y
Lock Condition	good	Fittings/Well Head Condition	Sample tubing loose letting air in flow thru cell
Pad/Casing Quality	good	Well Clear of Weeds/Accessible?	yi Tree down on fence

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	MW-5
LOCATION	Camden, TN	TEMPERATURE & WEATHER	50s Sunny
DATE & TIME	4/9/22	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	Bayh
TOTAL WELL DEPTH (feet)	33.85	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	~~9.22~~ 8.16	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	25.69	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	3.4	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	8.16	~~10~~ 1006	14.3	5.66	538	426	2.58	210.0	20.1
.25	8.29	1010	15.7	5.30	364.2	299.3	.74	228.7	23.5
.5	8.55	1014	15.9	5.29	356.0	293.9	.56	239.9	32.6
.65	8.55	1018	15.9	5.30	351.2	290.1	.55	245.2	33.4
.8	8.57	1022	15.9	5.30	348.9	288.2	.57	246.3	32.1
1.0	8.60	1026	16.0	5.30	346.7	287.0	.59	247.6	31.2
1.2	8.60	1030	16.1	5.31	343.9	285.5	.58	247.8	25.2
1.4	8.60	1034	16.2	5.31	342.5	284.2	.60	247.8	25.1
1.6	8.58	1038	16.1	5.31	342.3	284.4	.60	247.8	24.6
1.8	8.65	1042	16.2	5.31	341.1	283.8	.61	247.6	23.7
2.0	8.65	1046	16.3	5.31	340.0	283.3	.61	247.9	25.1
2.2	8.65	1050	16.3	5.32	339.3	283.0	.62	248.0	27.5

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
3.4	8.64	1215	16.4	5.32	335.5	280.5	0.66	253.6	14.1
Preservatives Used	See COC			Sample Charateristics (Odor, Color)			Mostly clear tannish color		
Number of Containers	10			Sampler Signature					

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?	yes

2/9/22

MW-5 cont...

gallons	DTW	Time	°C	pH	spec cond	cond	DO	ORP	NTU
2.4	8.65	1154	16.4	5.32	338.2	282.4	.62	248.3	28.4
2.6	8.63	1156	16.4	5.32	337.4	281.8	.62	248.4	30.4 ← air bubbles in
2.8	8.63	1202	16.4	5.32	336.9	281.4	.66	251.2	15.3
3.0	8.63	1206	16.4	5.32	336.5	281.4	.65	252.3	14.8
3.2	8.64	1210	16.5	5.32	335.9	281.3	.68	253.1	14.6
3.4	8.64	1214	16.4	5.32	335.5	280.5	.66	253.6	14.1

Sampled @ 1215

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	50s, sunny
DATE & TIME	2/9/22	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	32.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	4.86	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	27.64	FIELD BLANK COLLECTED?	Y 1255
PURGE VOLUME (gallons)	6.0	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	4.86	1155	14.9	5.62	152.2	123.6	5.31	284.1	212
1.5	9.80	1205	15.7	5.55	167.5	139.0	3.78	287.3	76.4
3.0	10.52	1215	15.9	5.58	165.9	137.2	3.50	286.5	22.2
4.5	10.90	1225	16.0	5.58	165.3	137.0	3.95	285.0	15.5
6.0	11.12	1235	16.0	5.57	166.2	138.2	4.09	283.7	5.97

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
6.0	11.12	1240	16.0	5.57	166.2	138.2	4.09	283.7	5.97

Preservatives Used	5x2 COC	Sample Charateristics (Odor, Color)	Clear; no odor
Number of Containers	10	Sampler Signature	

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	No pad / casing good	Well Clear of Weeds/Accessible?	Yes

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

FACILITY NAME	EWS	MONITORING WELL I.D.	TMW-2
LOCATION	Camden, TN	TEMPERATURE & WEATHER	50s, Sunny
DATE & TIME	2/9/22 1020	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	27.50	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	9.12	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	18.38	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	10.5	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	9.12	1028	14.5	5.90	109.1	87.6	7.38	256.0	36.6
1.5	14.99	1038	15.8	5.63	150.8	123.8	5.48	274.7	142
3.0	15.25	1048	15.8	5.62	154.9	128.0	5.27	279.4	63.5
4.5	15.70	1058	15.8	5.60	156.4	128.7	5.15	282.4	29.0
6.0	15.78	1108	15.8	5.60	156.9	129.4	5.14	286.1	19.8
7.5	15.55	1118	15.9	5.60	156.4	129.1	5.20	288.0	16.5
9.0	15.60	1128	15.9	5.57	158.9	131.3	5.26	291.5	12.0
10.5	15.60	1138	15.9	5.57	158.0	130.9	5.48	294.0	NA 5.69

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
10.5	15.60	1140	15.9	5.57	158.0	130.9	5.48	294.0	5.69

Preservatives Used	Ice, COC	Sample Charateristics (Odor, Color)	clear; no odor
Number of Containers	10	Sampler Signature	

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	Yes
Lock Condition	good	Fittings/Well Head Condition	good
Pad/Casing Quality	no pad / casing good	Well Clear of Weeds/Accessible?	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	40s, Sunny
DATE & TIME	2/9/22 0925	EVENT FREQUENCY	Quarterly
PURGE METHOD	Low-flow	FIELD REPRESENTATIVE	A. Black
TOTAL WELL DEPTH (feet)	28.00	SAMPLING EQUIPMENT	Bladder Pump
DEPTH TO WATER (feet)	7.12	IS SAMPLE EQUIPMENT DEDICATED?	Yes
CASING DIAMETER (inches)	2	DUPLICATE COLLECTED?	N
WATER COLUMN (feet)	20.88	FIELD BLANK COLLECTED?	N
PURGE VOLUME (gallons)	6.0	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
1.0	7.12	0930	17.0	5.98	337.9	262.2	1.86	273.5	23.9
1.5	9.01	0940	15.2	5.40	317.0	257.4	0.84	270.2	40.5
3.0	10.20	0950	15.3	5.32	307.0	251.1	0.85	262.5	20.1
4.5	10.30	1000	15.4	5.29	302.4	247.0	0.87	259.4	10.5
6.0	10.34	1010	15.4	5.29	300.2	245.5	0.88	257.9	4.55

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
6.0	10.34	1015	15.4	5.29	300.2	245.5	0.88	257.9	4.55

Preservatives Used	Sat ice	Sample Charateristics (Odor, Color)	Clear, no odor
Number of Containers	10	Sampler Signature	

WELL DATA

Number of Baffles	1	Well Cap Dedicated/In Place?	Yes
Lock Condition	Good	Fittings/Well Head Condition	good
Pad/Casing Quality	no pad / Casing broken at ground level	Well Clear of Weeds/Accessible?	Yes

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**	Sunny
DATE & TIME	2/9/22 1350	**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Grab	**FIELD REPRESENTATIVE**	A. Black
TOTAL WELL DEPTH (feet)	NA	**SAMPLING EQUIPMENT**	Grab
DEPTH TO WATER (feet)	NA	**IS SAMPLE EQUIPMENT DEDICATED?**	No
CASING DIAMETER (inches)	NA	**DUPLICATE COLLECTED?**	N/A
WATER COLUMN (feet)	NA	**FIELD BLANK COLLECTED?**	N/A
PURGE VOLUME (gallons)	NA	**EQUIPMENT BLANK COLLECTED?**	N/A

SAMPLE DATA

Gallons Purged	DTW (ft)	Time (00:00)	°C	pH	Specific Cond (µs/cm)	Conductivity (µs/cm)	DO (mg/L)	ORP	NTU
-	-	1400	19.4	9.72	16703	14936	6.56	53.3	17.1
Preservatives Used		Sulfuric Acid		**Sample Charateristics (Odor, Color)**			Clear, fresh odor		
Number of Containers		40		**Sampler Signature**					

WELL DATA

Number of Baffles	N/A	**Well Cap Dedicated/In Place?**	N/A
Lock Condition	N/A	**Fittings/Well Head Condition**	N/A
Pad/Casing Quality	N/A	**Well Clear of Weeds/Accessible?**	N/A

GROUNDWATER MONITORING FIELD INFORMATION LOG

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SITE AND MONITORING WELL DATA

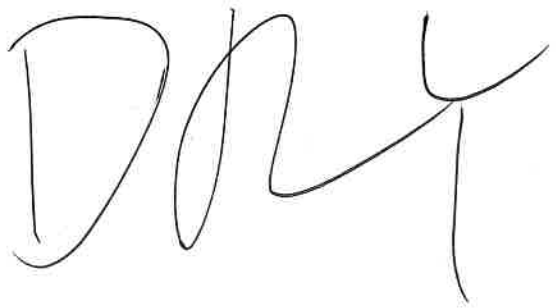
FACILITY NAME	EWS	**MONITORING WELL I.D.**	Leachate (APWC)
LOCATION	Camden, TN	**TEMPERATURE & WEATHER**	
DATE & TIME		**EVENT FREQUENCY**	Quarterly
PURGE METHOD	Grab	**FIELD REPRESENTATIVE**	
TOTAL WELL DEPTH (feet)	NA	**SAMPLING EQUIPMENT**	
DEPTH TO WATER (feet)	NA	**IS SAMPLE EQUIPMENT DEDICATED?**	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 Charateristics (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?**	



EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane Suite E-100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	A. Black
LOCATION	Former EWS
DATE AND TIME	2/8/22 1130
Equipment and Model # (ex. YSI Pro Plus 556)	YSI PPS / HACH 2100Q
Equipment Serial #	YSI Pro Plus ! / HACH 1

pH Calibration

pH buffer Calibration Standard	Buffer solution exp. date	Pre-Cal Reading (S.U.)	ph mV Value	Accepted Range mV	Within Range? (Yes or No)	Post-Cal Reading (S.U.)	Calibrated? (yes/no)
4	3/23	~~165.8~~ 4.00	165.8	160 to 180	Y	3.96	Y
7	10/23	7.02	-6.7	+/-50	Y	7.05	Y
10	3/23	10.05	-163.9	-160 to -180	Y	10.07	Y

Temperature Calibration Check

Cert. Thermometer Value (deg C)	Meter Value (deg C)
21.7	21.1

DO Calibration

Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
767.3	795.8	98.1	98.2	Y

Specific Conductivity Calibration

Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1413	6/22	1427	1427

ORP Calibration

ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
220	6/22	212.7	219.8

Hach Model 2100P Turbidimeter Calibration

Calibration verification Test performed and passed?	NTU Standard	Within Range? (Yes/No)	Measured Value	Stored?	Final Verification test passed? (Yes/No)
(Yes)	20				
No	100				
Note: if verification passed, calibration not required	800				

EQUIPMENT CALIBRATION LOG

Civil & Environmental Consultants, Inc. 117 Seaboard Lane Suite E100 Franklin, Tennessee 37067 - 800-763-2326 - www.cecinc.com

EQUIPMENT CALIBRATION FORM

NAME OF REPRESENTATIVE	A. Black
LOCATION	Foster EUS
DATE AND TIME	2/8/22 1130
Equipment and Model # (ex. YSI Pro Plus 556)	YSI Pro Plus / HACH 2100Q
Equipment Serial #	YSI #1 / HACH #7

pH Calibration							
pH buffer Calibration Standard	Buffer solution exp. date	Pre-Cal Reading (S.U.)	ph mV Value	Accepted Range mV	Within Range? (Yes or No)	Post-Cal Reading (S.U.)	Calibrated? (yes/no)
4	3/23	4.00	161.9	160 to 180	Y	3.99	Y
7	10/23	7.02	-7.9	+/-50	Y	7.06	Y
10	3/23	10.05	-165.6	-160 to -180	Y	10.02	Y

Temperature Calibration Check	
Cert. Thermometer Value (deg C)	Meter Value (deg C)
21.7	21.2

DO Calibration				
Actual Barometric Pressure	Barometric Pressure (mm Hg)	D.O. Value (% Saturated)	Unit reading (%)	% DO accepted?
767.3	771.8	99.9	100.1	Y

Specific Conductivity Calibration			
Sp. Conductivity Calibration Standard buffer solution	Buffer solution exp. date	Pre Cal Reading (umhos)	Post Cal Reading (umhos)
1413	6/22	1419	1413

ORP Calibration			
ORP Calibration (mV)	Buffer solution exp. date	Pre Cal Reading (mV)	Post Cal Reading (mV)
220	6/22	222.2	220.1

Hach Model 2100P Turbidimeter Calibration					
Calibration verification Test performed and passed?	NTU Standard	Within Range? (Yes/No)	Measured Value	Stored?	Final Verification test passed? (Yes/No)
(Yes)	20				
No	100				
Note: if verification passed, calibration not required	800				