2024 ANNUAL GROUNDWATER QUALITY REPORT

FOR THE
NORTH CENTRAL IOWA REGIONAL SOLID WASTE AGENCY (NCIRSWA) SANITARY LANDFILL
94-SDP-1-75P
FORT DODGE, IOWA

by:

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February, 2025

6030-23A.320

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Certification

Prepared by: ________________________________ Date: 2-26-2025

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Section 1.0 Background Information

1.1 Report Format

Table 1 through Table 13 are attached to this report and satisfy the IDNR requirement to provide the tables to meet the IDNR format requirements included in Special Provision X.4. of the Permit, dated February 26, 2025.

1.2 Report Priority

Low priority is assigned to review of this document. The thirteen (13) rounds of background data required for intrawell statistical evaluations are complete at monitoring wells MW-10A, MW-10B, MW-18, MW-20, MW-21R, and MW-22. The comprehensive background is not yet complete at MW-25, MW-28, MW-29 (new in 2025), MW-30, MW-31 (new in 2024), MW-32 (new in 2024), GU-2 (frequently dry), GU-3 (frequently dry), GU-4 (new in 2024), GU-5 (new in 2024), and GU-6 (new in 2024).

Continued semi-annual monitoring activities are recommended in accordance with IAC 567, Chapter 113.10(5), 113.10(6), and 113.10(9).

1.3 Period of Report Coverage

Water quality data evaluation is based on a running compilation of data beginning in October 28, 2014. Water quality reported herein is based on the most recent water quality data collected April 23,2024; September 27, 2024; October 11, 2024; October 16, 2024; November 11, 2024; and December 10, 2024.

1.4 Current Site Map

Figure 1 and Figure 2 are attached illustrating the current site features and monitoring well locations.

1.5 Site Status and Applicable Rules

<u>Site Location</u>

The NCIRSWA Sanitary Landfill is located in E1/2 of the NE1/4 Section 1, T88N, R29W and the NW1/4 Section 6, T88N, R28W in Webster County, Iowa. The facility is situated on Gypsum Hollow Road approximately 1 mile south of the corporate limits of Fort Dodge, Iowa. The facility operates under the Iowa Department of Natural Resources (IDNR) Permit Number 94-SDP-1-75P.

<u>Landfill Layout</u>

The site is situated in the uplands between the Des Moines River to the west-southwest and Gypsum Creek to the east. An inactive strip mine is situated north of the fill areas at this site.

The site has been mined for gypsum historically by both strip mining and underground room and pillar methods. Localized strip mining has also been performed in recent years in order to remove pillars that remain following historic mining.

The site has been landfilled since 1974 and is a long-term multiphase development. Generally, landfilling was initiated along the west side of the site and sequential developments progressed eastward across the site and are now progressing to the north.

Applicable Rules

Iowa Administrative Code (IAC) 567-113 is applicable to the site due to the contiguous nature of the closed and operating landfill areas.

1.6 Summary of Hydrologic Monitoring System Plan (HMSP)

There are three (3) geologic units described across this facility. Pliestocene glacial till soils lie unconformably over the Jurassic age Fort Dodge Formation (the bedrock deposits that include the gypsum). The Fort Dodge formation unconformably overlies the Pennsylvanian Bedrock (shales and coal). Historically, coal and gypsum were mined in the Fort Dodge area. However, at this site, there is only known record of gypsum mining and the underlying Pennsylvanian shales and coal are believed to be undisturbed.

There are two (2) monitored geologic units at this facility. The first unit includes all soils (glacial tills) and spoils (both glacial tills and Fort Dodge Formation materials) on top of Pennsylvanian formations, and the second unit is the basal Pennsylvanian shales across the site.

The HMSP was approved on June 25, 2018 (Doc #92666) and is incorporated in Special Provision X.4 of the Permit, dated February 26, 2025. The approved HMSP includes twelve (12) monitoring wells and five (5) groundwater underdrain line discharges. MW-30, GU-2, and GU-3 were constructed in 2019 and all are associated with the Phase 2 Expansion. MW-31, MW-32, GU-4, GU-5, and GU-6 were constructed in 2024 and all are associated with the Phase 3 Expansion. The approved statistical plan for the facility includes an intrawell statistical approach based on the prevalence of naturally occurring metals within the shale bedrock formations monitored along the east side of the site. The approved monitoring network is illustrated on Figure 2. The current HMSP is summarized in Table 1. The HMSP Implementation Schedule for 2025 is itemized in Table 2.

MONITORING WELL MAINTENANCE PERFORMANCE REEVALUATION

Table 3 outlines the status of well performance and maintenance activities performed as required by IAC 567-113.10(2) f.

MW-19

MW-19 was inadvertently destroyed by heavy equipment during routine site maintenance in the fall of 2024. The existing monitoring well MW-29 (nearby to MW-19) is proposed as the replacement monitoring well for MW-19 per the request filed February 14, 2025 (Doc# 112283). This request was approved in the Permit, dated February 26, 2025.

High & Low Water Levels
Current year water elevation data is included on Table 4. Historic water elevation data is included in Table 4A. A Groundwater Contour Map - Shallow (Figure 3) and a Groundwater Contour Map - Deep (Figure 4) dated October, 2024 are included with this report. The Groundwater Contour Maps illustrate the water table surface within the unconsolidated and the potentiometric surface in the bedrock.

Well Depth & Sedimentation
Well depth measurements were made on October 11, 2024. Review of the well depth data included on Table 4 indicate that well sedimentation is estimated to be less than one (1) foot at all site HMSP monitoring wells.

Well Recharge Rates & Chemistry
The measured horizontal hydraulic conductivity testing results for each site monitoring well is included on Table 4. The horizontal hydraulic conductivities ranged between 10^{-3} cm/sec and 10^{-6} cm/sec.

Field recovery data recorded for April 19, 2022 indicated that the monitoring wells recover to at least 90% recovery within 4 to 12 hours after purging. The exception is at MW-21R, and MW-22, where approximately 24 hours are required for the wells to recover. Field recovery data recorded for April 23, 2024 (Table 4) confirmed the 2022 findings. Well recovery information indicates that recharge to the individual wells remains sufficient to promote collection of representative water quality samples and the wells were functioning as intended. Monitoring well recharge reevaluation is due biennially according to 113.10(2)"f", and should be evaluated again in 2026.

Based on the apparent static condition of the water surfaces across the site, it appears that the semi-annual water elevation data is sufficient to adequately monitor the hydrologic condition of the site. Further, the wells are interpreted to be appropriately located to detect any impact, should it occur. No changes or modifications to the site monitoring wells are recommended.

Section 2.0 Reporting Period Monitoring Activities

Table 2 includes information related to the Monitoring Activities at this facility. A comprehensive summary of all well testing beginning October 8, 2008 is included in the Table 2A. A summary of the Appendix II sample collection events at each well is included on Table 2.

Field sampling information for April 23,2024; September 27, 2024; October 11, 2024; October 16, 2024; November 11, 2024; and December 10, 2024 sampling episodes is included on the field forms (IDNR Form 542-1322) in Appendix A.

A comprehensive summary of Analytical Data for the episodes between October 28, 2014 and October 11, 2024 is included on Table 9.

2.1 Current Detection Monitoring Activities

The HMSP includes twelve (12) monitoring wells and five (5) groundwater underdrain line discharges. The Statistical Plan requires intrawell statistical evaluations, as the site does not lend itself to interwell statistical evaluations. Monitoring points included in the HMSP are: MW-10A, MW-10B, MW-18, MW-20, MW-21R, MW-22, MW-25, MW-28, MW-29, MW-30, MW-31, MW-32, GU-2, GU-3, GU-4, GU-5, and GU-6.

Monitoring wells currently designated as detection system monitoring wells includes: MW-10A, MW-10B, MW-18, MW-20, MW-22, MW-25, MW-28, MW-29, MW-30, MW-31, MW-32, GU-2, GU-3, GU-4, GU-5, and GU-6.

2.2 Current Assessment Monitoring Activities

MW-21R has historically recorded statistically significant increases (SSI). Permit Amendment #2, dated February 14, 2013 approved a five (5) year sampling frequency for full Appendix II analyses at monitoring points that are in assessment monitoring and have had at least two (2) rounds of analyses using the entire Appendix II list. Table 2 confirms the Appendix II sample collection event dates, along with the next scheduled Appendix II sample collection event(s).

2.3 Current Correction Action Monitoring Activities

Not applicable at this time.

Section 3.0 Data Evaluation and Summary

Statistical Evaluations are prepared by Otter Creek Environmental Services for each monitoring episode. The Groundwater Statistics Report for the North Central Iowa Regional Landfill, First Semi-Annual Monitoring Event in 2024, dated May, 2024 is included in Appendix B.1. The Groundwater Statistics Report for the North Central Iowa Regional Landfill, Second Semi-Annual Monitoring Event in 2024, dated December, 2024 is included in Appendix B.2. Time Series plots are included in Appendix B.2 for those wells where background is still insufficient for evaluation.

The Analytical Reports for the laboratory testing on April 23, 2024; September 27, 2024; October 11, 2024; October 16, 2024; November 11, 2024; and December 10, 2024 are included in Appendix C.

QUALITY ASSURANCE/QUALITY CONTROL

A blind duplicate sample was collected at MW-25 during the April 23, 2024 sampling episode. A blind duplicate sample was collected at MW-18 during the October 11, 2024 sampling episode.

The purpose of the field duplicate is to evaluate the precision of sample collection and analysis process from the field through the laboratory. The calculation of the Relative Percent Difference (RPD) for duplicate pair results is used as a means to evaluate the precision.

The Quality Control (QC) limit for the RPD on field duplicates is established at thirty percent (30%) for duplicate pairs that have reported concentrations five (5) times greater than the laboratory Reporting Limit. For samples and respective duplicates with reported analyte concentrations nearer the Reporting Limit, the RPD calculations demonstrate greater variability and the RPD can be very large. RPD values are considered non-representative in the following conditions:

a) Both the original and the duplicate results are less than five (5) times the Reporting Limit.
b) One or both results are qualified, flagged, or estimated.
c) One or both results are non-detected.

The results of the blind duplicate and the monitoring well for April 23, 2024 and October 11, 2024 were within the limits established and indicate that the data quality is acceptable without restriction.

BACKGROUND DATA VALIDATION

On July 10, 2014 an unnumbered Permit Amendment and Memo was issued by the IDNR regarding turbidity (Doc # 80749). A TSS and Field Turbidity Evaluation Report was prepared and submitted on February 27, 2015 (Doc# 82593) and was approved by IDNR on September 9, 2015 (Doc #84187).

The background data utilized herein has been restricted to include only sample results that have been collected by “No Purge” methods in order to avoid turbidity related issues that may have been associated with historic sample collection methods. A summary of the recorded field turbidity measurements is included in Appendix D.

The control limits for VOC are equivalent to the laboratory reporting limits and are established in the background data for each well. Background data required for calculation of control limits for inorganic compounds based on thirteen points is currently complete for all monitoring points, except MW-21R, MW-25, MW-28, MW-29, MW-30, MW-31, MW-32, GU-2, GU-3, GU-4, GU-5, and GU-6. For compounds detected at a rate greater than 25% of the time, normal control limits for intrawell statistics can be calculated based on a minimum of eight data points. For compounds detected at a rate less than 25% of the time, nonparametric control limits for intrawell statistics require a minimum of thirteen (13) data points.

The information included in Table 5 indicates that the normally distributed and nonparametric data results in calculation of Control Limits for most compounds at most wells (MW-25, MW-28, MW-29, MW-31, MW-32, and the GU’s are the exception). Additional data will be required for the remaining compounds at the listed wells/underdrains. Note that MW-31, MW-32, GU-4, GU-5, and GU-6 were constructed in the fall of 2024. GU-2 and GU-3 are most frequently dry. Time Series plots are included in Appendix B.2 for those wells where background is still insufficient for evaluation.

SITE SPECIFIC GROUNDWATER PROTECTION STANDARDS (GWPS)

As discussed in the HMSP dated June 14, 2018 (Doc #92593), the normal background concentrations of cobalt are recognized as being naturally elevated above the Statewide Standard for Protected Groundwater in IAC 567, Chapter 137. Additional metals are also recognized as being elevated.

In instances where the natural concentrations of a compound endemic to a site are recorded at levels greater than the published standard, development of a Site-Specific Groundwater Protection Standard should be developed in accordance with the 2009 Unified Guidance for Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities by US EPA. The Site-Specific GWPS is based on development of a site wide prediction limit for water quality from all wells that are free of impact. In instances where a compound has a Site-Wide Prediction limit that exceeds the published IAC 567, Chapter 137 Statewide Standard, then the Site-Wide Prediction Limit is used as the Site-Specific GWPS. At NCIRSWA, the Site-Specific GWPS for arsenic, cobalt, and nickel are set equal to the site wide prediction limit. Table 5A is included summarizing the Site-Wide Prediction Limits (used as the Site-Specific GWPS for the site).

STATISTICALLY SIGNIFICANT INCREASES (SSI)

The detected concentrations of each compound are compared to the control limit for each respective compound calculated based on the background data set. The control limits for each VOC are established (equal to the laboratory Reporting Limit). Inorganic compound control limits are established for both normally distributed and nonparametric data at all monitoring points except MW-25, MW-28, MW-29, MW-31, MW-32, GU-2, GU-3, GU-4, GU-5, and GU-6. Therefore, this evaluation of inorganic compounds is not yet comprehensive for all monitoring points. Time Series plots are included in Appendix B.2 for those wells where background is still insufficient for evaluation.

For those compounds where control limits are established in a well, a compound detected at a concentration that is in excess of the calculated control limit is recorded as a Statistically Significant Increase (SSI). SSI only apply to detection monitoring wells. *There are no SSI recorded in 2024 at any well currently in the detection monitoring system.*

Exceedances of a control limit in a designated assessment monitoring well (MW-21R) are not recorded as SSI.

Table 6 summarizes the compounds that exceed the Control Limits in 2024. Note all exceedances are detected in MW-21R (an assessment monitoring point).

The on-going control limit exceedances were recorded at assessment monitoring point MW-21R and are summarized in Table 1 and Table 7. Brown highlights on Table 7 indicate exceedance of the Control Limit. A running summary of recorded control limit exceedances by year is included in Appendix E.

This report serves as notice to the operating record in accordance with IAC 567-113.10(5)c.

ASSESSMENT MONITORING SUMMARY

Assessment monitoring including the full Appendix II list has been performed at each well where an SSI is recorded (MW-21R). Two (2) full rounds of Appendix II assessment monitoring have been completed at MW-21R. The most recent Appendix II sampling episode at MW-21R was collected on April 11, 2023 (Table 2).

To date there are no compounds detected beyond the Appendix I list at MW-21R.

The summary of assessment monitoring to date is presented in Appendix F. The full Appendix II sampling episodes are highlighted in green in the tables in Appendix F.

STATISTICALLY SIGNIFICANT LEVELS (SSL)

The Confidence Interval (the 95% lower confidence limits (LCL) and the 95% upper control limits (UCL)) is calculated for those compounds identified as SSI. The 95% LCL values are compared to applicable GWPS. Any 95% LCL value that exceeds an applicable GWPS is recorded as a Statistically Significant Level (SSL). All wells with a recorded SSL require the plume of impact to be defined in the horizontal and vertical directions and require completion of an Assessment of Corrective Measures (ACM).

The SSL Evaluation is based on data collected since October 28, 2014. The Confidence Intervals (95% LCL and 95% UCL) are calculated during each statistical evaluation based on the most recent four (4) data points.

There are no SSL recorded at MW-21R.

DELINEATION & ASSESSMENT OF CORRECTIVE MEASURES (ACM)

Based on the absence of SSL at the site, delineation and assessment of corrective measures is not required at this site at this time.

CORRECTIVE ACTION MONITORING & EVALUATIONS

Corrective action monitoring is not required at this site at this time.

Section 4.0 Leachate Collection System Performance Evaluation

Data from US Water (operators of the Fort Dodge POTW) indicated that approximately 2,020,600 gallons of leachate were discharged to the Fort Dodge POTW from the landfill in 2024. Treated leachate volumes are included in Appendix G.1.

Chemical analysis of the waste stream (Appendix G.2) is conducted in accordance with the Industrial User Wastewater Discharge Permit between the City of Fort Dodge and the North Central Iowa Regional Solid Waste Agency (Appendix G.3).

Leachate Recirculation

A Leachate Recirculation Request was submitted to IDNR on June 24, 2022 (Doc #103489). Leachate recirculation over Subtitle D composite lined disposal areas Phase 1 and Phase 2 was approved in Special Provision X.7 of the June 27, 2022 SDP Permit revision. Note that recirculation on the Subtitle D compliant abutment lined area was specifically excluded in the approval. Leachate is typically recirculated by surface application using a tank.

In 2024, leachate was not recirculated.

Leachate Head Monitoring Points

Leachate head monitoring point LH-6 is located in the Subtitle D composite lined Phase 1 Expansion Area. Leachate head monitoring points LH-7 and LH-8 are located in the Subtitle D composite lined Phase 2 Expansion Area. Leachate head monitoring points LH-9, LH-10, and LH-11 are located in the Subtitle D composite lined Phase 3 Expansion Area. Leachate head measurements are presented in Table 12

<u>Phase 1 Expansion Area</u>
A leachate head monitoring point was constructed during the Phase 1 Expansion in 2014. Documentation on the leachate head monitoring point was included in the QC&A Report approved in Permit Amendment #9 dated August 26, 2014. LH-6 measures leachate head on the liner in Phase 1.

Levels recorded at LH-6 did not exceed 1' in 2024.

<u>Phase 2 Expansion Area</u>
Leachate head monitoring points were constructed during the Phase 2 Expansion in 2019. Documentation on the leachate head monitoring points was included in the QC&A Report approved in the SDP Permit Revision dated August 28, 2019. Two leachate head monitoring points were constructed during the Phase 2 project. LH-7 measures leachate head levels on the southern portion of Phase 2. LH-8 measures leachate head levels on the northern portion of Phase 2.

Levels recorded at LH-7 did not exceed 1' during measurement events in 2024. Levels recorded at LH-8 did not exceed 1' during measurement events in 2024.

Phase 3 Expansion Area

Leachate head monitoring points were constructed during the Phase 3 Expansion in 2024. Documentation on the leachate head monitoring points was included in the QC&A Report approved in the SDP Permit Revision dated October 18, 2024 (Doc #111091). Three (3) leachate head monitoring points were constructed during the Phase 3 project. LH-9 measures leachate head levels on the southern portion of Phase 3. LH-10 measures leachate head levels in the central portion of Phase 3. LH-11 measures leachate head levels on the northern portion of Phase 3.

Note that solid waste was not deposited in Phase 3 until January 3, 2025, so measurement of LH-9, LH-10, and LH-11are not reported for 2024.

Original Landfilling Area

Based on a completed and certified site risk assessment meeting the requirements outlined in Iowa Code section 455B.305(6), the NCIRSWA was conditionally exempted under the Department letter dated September 21, 1995 from providing and implementing a leachate control plan for the original permitted waste footprint that received wastes prior to July 1, 1992.

Groundwater Separation from the MSWLF Base

Groundwater head monitoring point GUH-1 is located in the Subtitle D composite lined Phase 1 Expansion Area.

Groundwater head monitoring points GUH-2 and GUH-3 are located in the Subtitle D composite lined Phase 2 Expansion Area. GUH-2 measures groundwater head levels on the southern portion of Phase 2. GUH-3 measures groundwater head levels on the northern portion of Phase 2.

Groundwater head monitoring points GUH-4, GUH-5, and GUH-6 are located in the Subtitle D composite lined Phase 3 Expansion Area. GUH-4 measures groundwater head levels on the southern portion of Phase 3. GUH-5 measures groundwater head levels on the central portion of Phase 3. GUH-6 measures groundwater head levels on the northern portion of Phase 3.

Note that solid waste was not deposited in Phase 3 until January 3, 2025, so measurement of GUH-4, GUH-5, and GUH-6 did not occur in 2024.

Special Provision X.4.f requires semi-annual monitoring of liquid levels in the Groundwater Diversion Layer Monitoring Points GUH-1, GUH-2, and GUH-3 to document separation between the MSWLF base and the water table. Groundwater head readings are included in Table 4. Based on the groundwater head data, separation is maintained between the base of refuse and the groundwater surface. No changes are recommended.

Leachate Line Cleaning

IAC 567-113.7(5)b(5) requires that the leachate system be cleaned every three (3) years at a minimum. The leachate collection and conveyance lines, including the force main from the lower pump station to the upper pump station, were cleaned in 2021. NCIRSWA has a qualified third party under contract (signed 2024) to complete the leachate line cleaning. In December 2024, the contractor postponed the cleaning until the Spring of 2025 as temperatures and weather conditions allow. IDNR will be notified when the leachate line cleaning is completed.

Section 5.0 Gas Monitoring

Explosive gas monitoring per 113.9(2) and the approved GMSP was conducted quarterly during the last reporting period (2024).

Monitoring points include the four (4) subsurface gas probes designated SG-1, SG-2, SG-3, and GP-4; four (4) site monitoring wells (MW-8, MW10A, MW-13, and LB-4); five (5) groundwater underdrains (GU-1 manhole, GU-2, GU-3, GU-4, GU-5, and GU-6); and the shop and office structures on site. Figure 2 in this report illustrates the locations of gas monitoring locations.

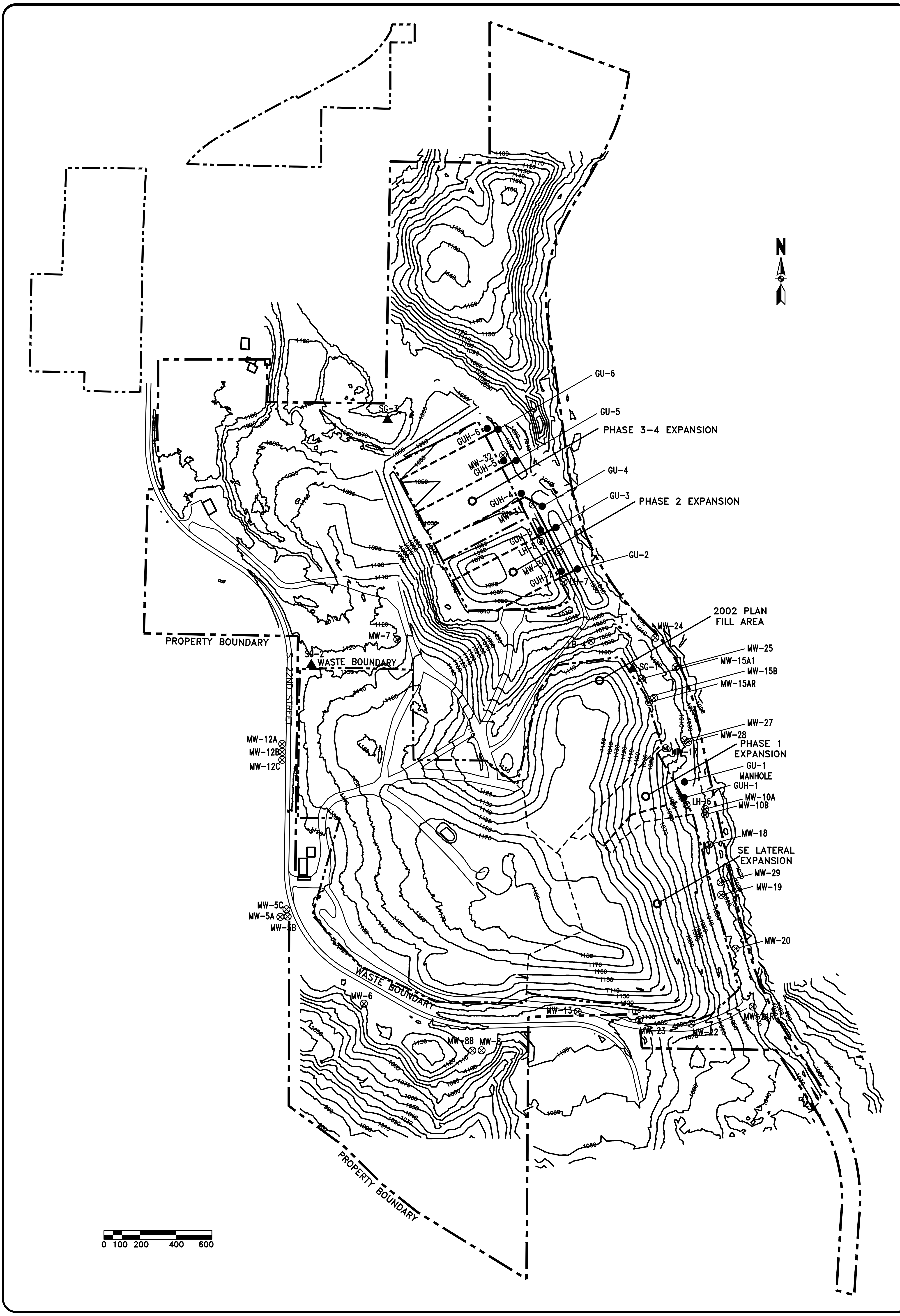
Explosive gas concentrations were undetected or were below actionable levels during the monitoring episodes. The exception is the monitoring result at SG-1, which was recorded at 100% LEL (generally ≥5% methane) on April 23, 2024. IDNR has been notified of similar conditions beginning July 1, 2010 (Doc 58387).

A summary of gas monitoring in 2024 is included in Table 13.

Section 6.0 Recommendations/Requests

Continue semi-annual detection/assessment/interim corrective action monitoring in accordance with IAC 567, Chapter 113.10(5), 113.10(6), and 113.10(9). Testing should continue on a semi-annual basis as indicated in Table 2.

Figures



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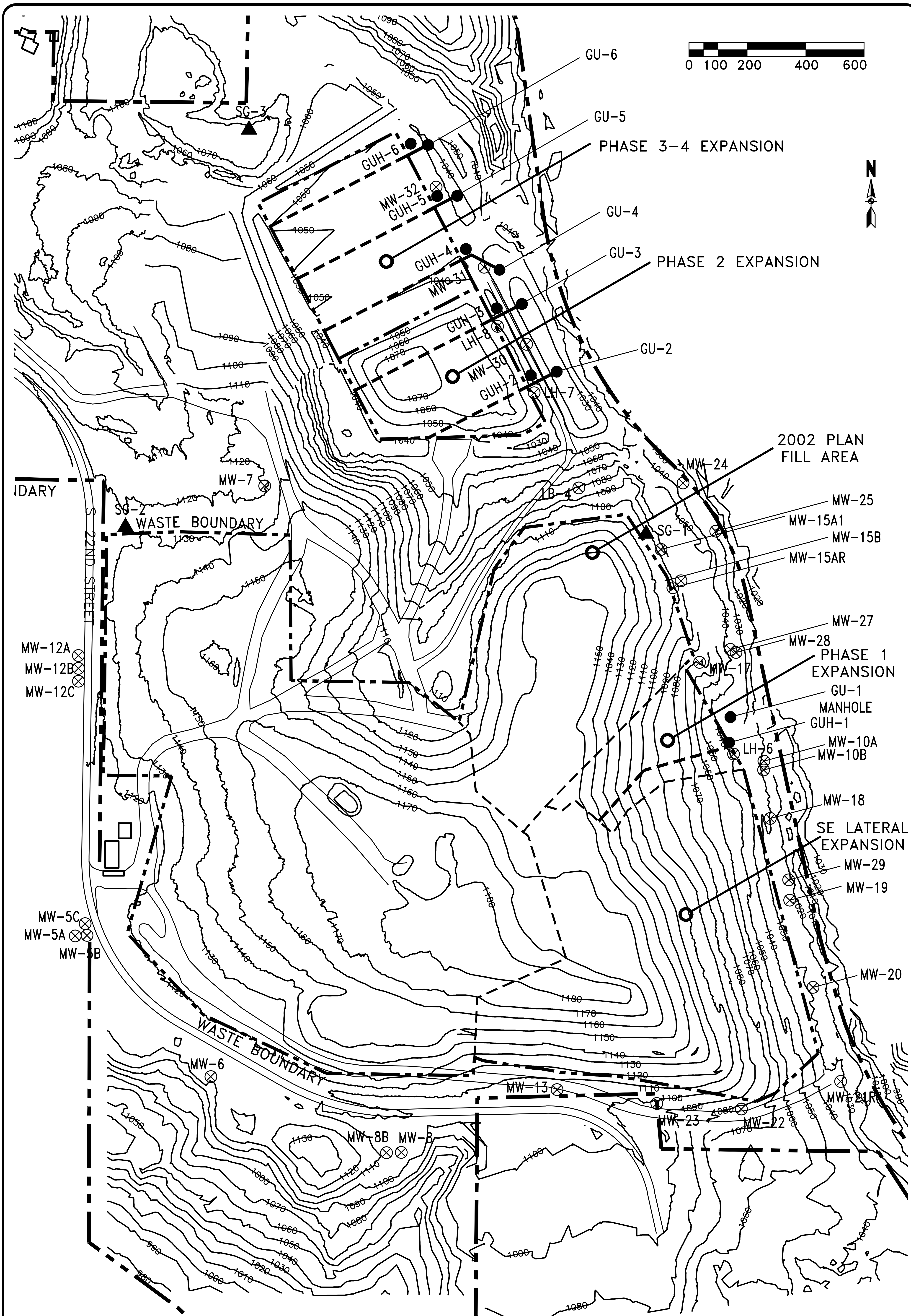
SITE PLAN
TOTAL PROPERTY

NORTH CENTRAL IOWA REGIONAL SANITARY LANDFILL
FORT DODGE, IOWA

FIGURE:	1	
REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6030	DATE 1-22-24



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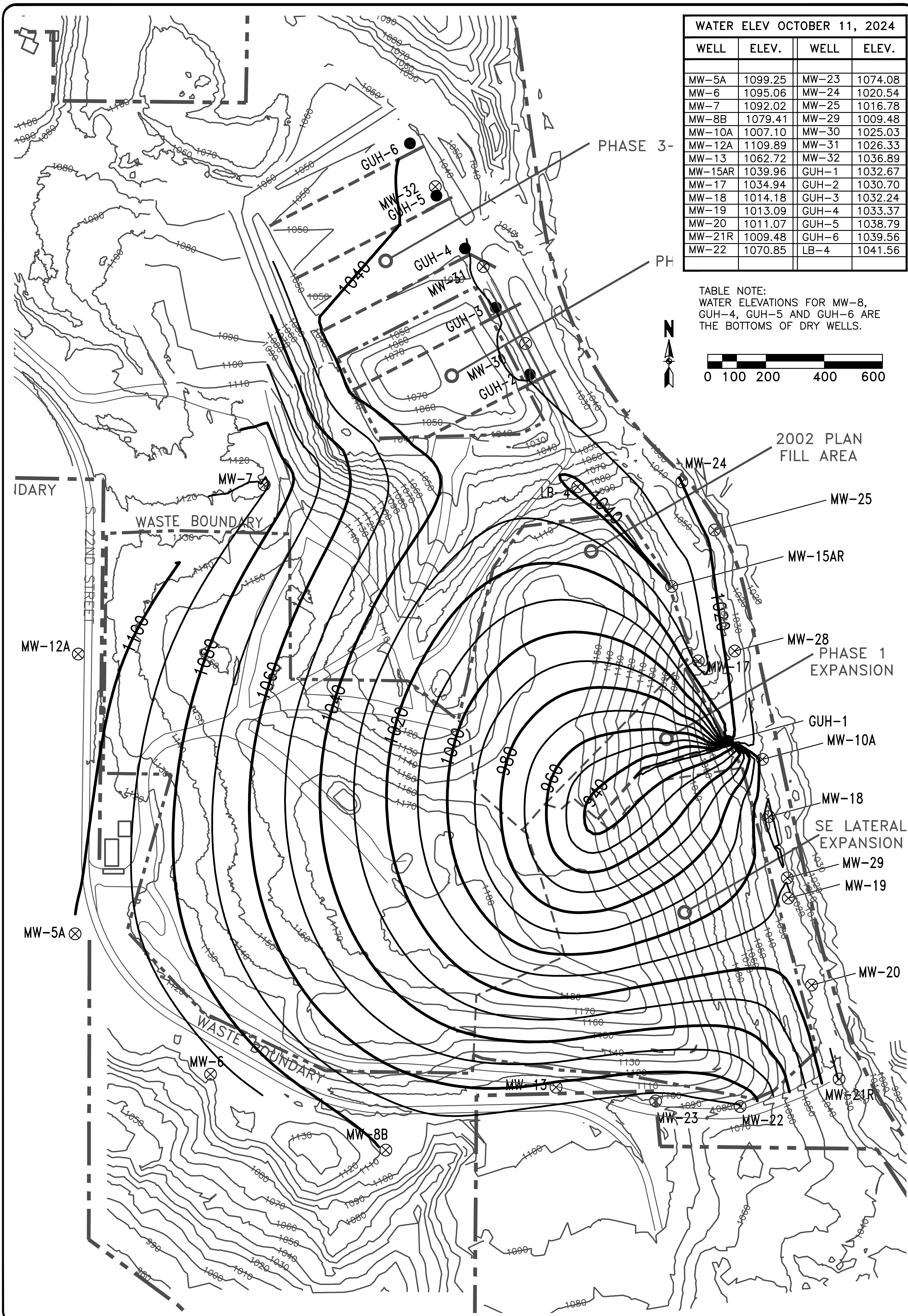
SITE PLAN
LANDFILL VICINITY

NORTH CENTRAL IOWA REGIONAL SANITARY LANDFILL
FORT DODGE, IOWA

FIGURE:	2	
REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6030	DATE 1-22-24



WATER ELEV OCTOBER 11, 2024			
WELL	ELEV.	WELL	ELEV.
MW-5A	1099.25	MW-23	1074.08
MW-6	1095.06	MW-24	1020.54
MW-7	1092.02	MW-25	1016.78
MW-8B	1079.41	MW-29	1009.48
MW-10A	1007.10	MW-30	1025.03
MW-12A	1109.89	MW-31	1026.33
MW-13	1062.72	MW-32	1036.89
MW-15AR	1039.96	GUH-1	1032.67
MW-17	1034.94	GUH-2	1030.70
MW-18	1014.18	GUH-3	1032.24
MW-19	1013.09	GUH-4	1033.37
MW-20	1011.07	GUH-5	1038.79
MW-21R	1009.48	GUH-6	1039.56
MW-22	1070.85	LB-4	1041.56

TABLE NOTE:
WATER ELEVATIONS FOR MW-8, GUH-4, GUH-5 AND GUH-6 ARE THE BOTTOMS OF DRY WELLS.

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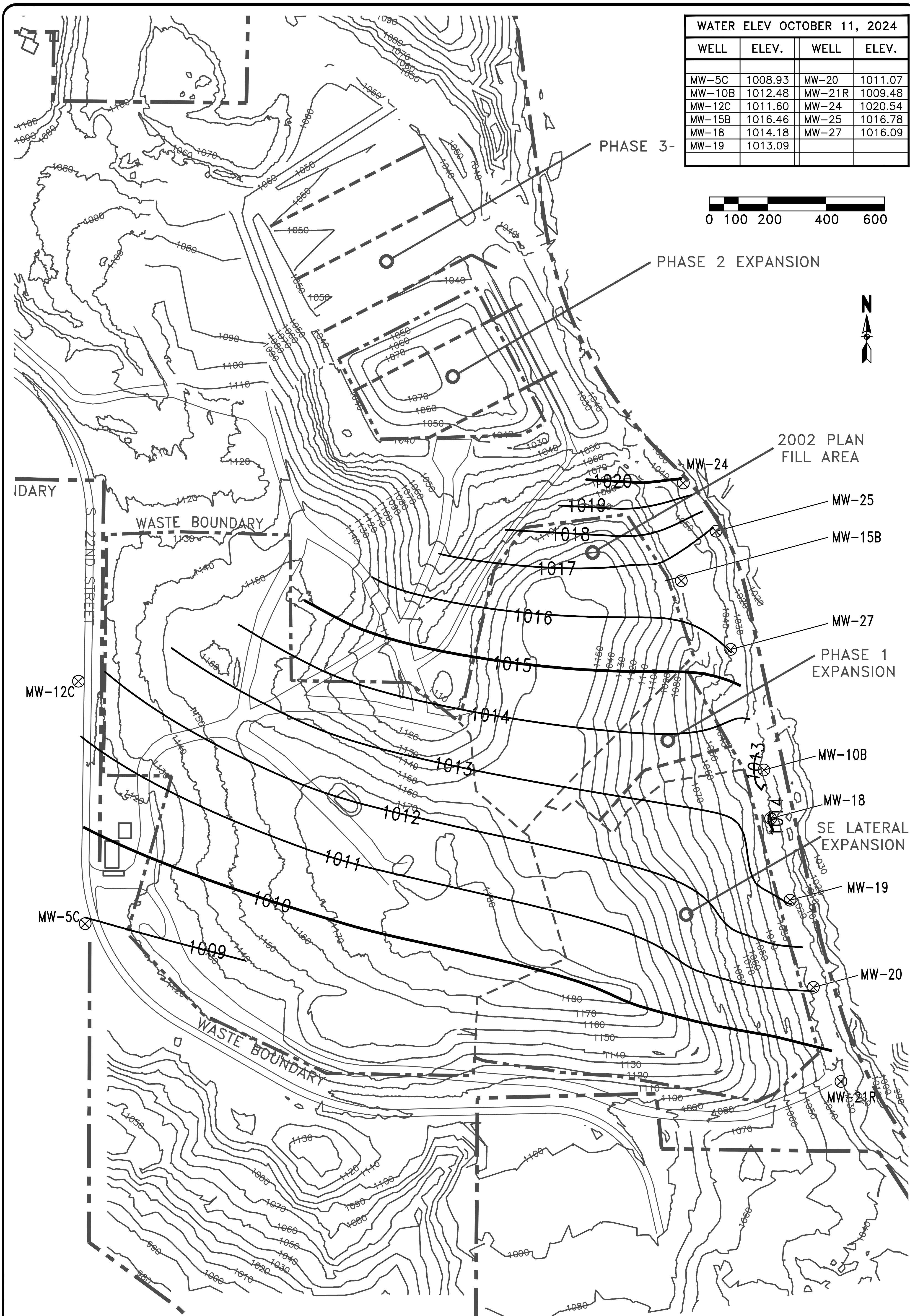
GROUNDWATER CONTOURS
SHALLOW – CLAY TILLS

NORTH CENTRAL IOWA REGIONAL SANITARY LANDFILL
FORT DODGE, IOWA

FIGURE:	3	
REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6030	DATE 1-22-24



WATER ELEV OCTOBER 11, 2024			
WELL	ELEV.	WELL	ELEV.
MW-5C	1008.93	MW-20	1011.07
MW-10B	1012.48	MW-21R	1009.48
MW-12C	1011.60	MW-24	1020.54
MW-15B	1016.46	MW-25	1016.78
MW-18	1014.18	MW-27	1016.09
MW-19	1013.09		

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GROUNDWATER CONTOURS DEEP – SHALE BEDROCK

NORTH CENTRAL IOWA REGIONAL SANITARY LANDFILL
FORT DODGE, IOWA

FIGURE: 4

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6030	DATE 1-22-24

Tables
(in IDNR Format)

Table Index

Table 1 – Monitoring Program Summary

Table 1
Monitoring Program Summary
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Monitoring Well	Formation	Current Monitoring Program	Change for next sampling event	Constituents w/ SSI	Constituents w/ SSL	Total # of Samples in each monitoring program since October 28, 2014		
						Detection	Assessment	Corrective Action
MW-10A	Alluvium/Red Claystone	Detection	NC	None	None	**17**	0	0
MW-10B	Basal Shale	Detection	NC	None	None	**18**	0	0
MW-25	Alluvium/Basal Shale	Detection	NC	None	None	**6**	0	0
MW-28	Fill/Till	Detection	NC	None	None	**5**	0	0
MW-18	Alluvium/Red Claystone	Detection	NC	None	None	**17**	0	0
MW-19	Alluvium/Red Claystone/Basal Shale	Detection	NC	None	None	**16**	0	0
MW-20	Alluvium/Basal Shale	Detection	NC	None	None	**17**	0	0
MW-21R	Fill/Basal Shale	**Assessment**	NC	**Arsenic**	None	0	**16**	0
MW-22	Alluvium/Red Claystone	Detection	NC	None	None	**19**	0	0
MW-30	Alluvium/Red Claystone	Detection	NC	None	None	**10**	0	0
MW-31	Alluvium/Red Claystone	Detection	NC	None	None	**2**	0	0
MW-32	Alluvium/Red Claystone	Detection	NC	None	None	**2**	0	0
GU-2	Underdrain	Detection	NC	None	None	**4**	0	0
GU-3	Underdrain	Detection	NC	None	None	**6**	0	0
GU-4	Underdrain	Detection	NC	None	None	**3**	0	0
GU-5	Underdrain	Detection	NC	None	None	**2**	0	0
GU-6	Underdrain	Detection	NC	None	None	**1**	0	0
LB-4	Fill/Gypsum/Red Claystone	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-7	Till/Fill	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-12A	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-12B	Till/Gypsum	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-12C	Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-5	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-5B	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-5C	Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-6	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-8	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-8B	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-13	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-23	Glacial Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-15A1	Till/Gypsum	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-15AR	Fill/Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-15B	Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-17	Gypsum/Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-24	Red Claystone/Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-25	Alluvium/Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-26	Gypsum/Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-27	Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-28	Fill/Till	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A
MW-29	Alluvium/Red Claystone/Basal Shale	Water Elevation Only	NC	N/A	N/A	N/A	N/A	N/A

Table 2 – Monitoring Program Implementation Schedule

Table 2
Monitoring Program Implementation Schedule
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Monitoring Well	Recent Sampling Dates and Constituents	Upcoming Sampling Dates and Constituents		Full Appendix II Sample Dates	
		April, 2025	October, 2025	Previously Collected	Next Event
MW-10A		Appendix I	Appendix I		N/A
MW-10B	**See Table 2A**	Appendix I	Appendix I		N/A
MW-25		Appendix I	Appendix I		N/A
MW-28		Appendix I	Appendix I		N/A
MW-18		Appendix I	Appendix I	10/6/2011, 10/5/2012, 10/19/2017	N/A
MW-20		Appendix I	Appendix I	10/6/2011, 10/5/2012, 10/19/2017	N/A
MW-21R		Appendix I	Appendix I	4/19/2022, 4/11/2023	April, 2028
MW-22		Appendix I	Appendix I		N/A
MW-29		Appendix I	Appendix I		N/A
MW-30		Appendix I	Appendix I		N/A
MW-31		Appendix I	Appendix I		N/A
MW-32		Appendix I	Appendix I		N/A
GU-2		Appendix I	Appendix I		N/A
GU-3		Appendix I	Appendix I		N/A
GU-4		Appendix I	Appendix I		N/A
GU-5		Appendix I	Appendix I		N/A
GU-6		Appendix I	Appendix I		N/A

Table 2A – Monitoring Well Testing to Date

Table 2A

WELL	**10//8/08**	**12/17/08**	**4/21/09**	**7/29/09**	**10/06/09**
MW-5	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-5B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-6	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-7	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-8	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-8B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-10B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-12A	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-12B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-13	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-15B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-23		Appendix I	Appendix I	Appendix I	Appendix I
LB-4	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-5C	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-10A	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-12C	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-17		Appendix I	Appendix I	Appendix I	Appendix I
MW-18		Appendix I	Appendix I	Appendix I	Appendix I
MW-19		Appendix I	Appendix I	Appendix I	Appendix I
MW-20		Appendix I	Appendix I	Appendix I	Appendix I
MW-21		Appendix I	Appendix I	Appendix I	Appendix I
MW-22		Appendix I	Appendix I	Appendix I	Appendix I

WELL	**12/29/09**	**4/08/10**	**10/06/10**	**5/12/11**	**10/6/11**
MW-5	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-5B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-6	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-7	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-8	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-8B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-10B	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-12A	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-12B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-13	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-15B	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-23	Appendix I	Appendix I	Appendix I	Appendix I	
LB-4	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-5C	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-10A	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-12C	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-15AR					**Appendix II**
MW-17	Appendix I	Appendix I	Appendix I	**Appendix II**	**Appendix II**
MW-18	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-19	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-20	Appendix I	Appendix I	Appendix I	Appendix I	**Appendix II**
MW-21	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I
MW-22	Appendix I	Appendix I	Appendix I	Appendix I	Appendix I

WELL	12/20/11	4/02/12	7/12/12	10/5/12	12/26/12
MW-5		Appendix I		Appendix I	
MW-5B		Appendix I		Appendix I	
MW-6		Appendix I		Appendix I	
MW-7		Appendix I		Appendix I	Appendix I
MW-8		I		Appendix I	
MW-8B		Appendix I		Appendix I	
MW-10B	Appendix I(1)	Appendix I	Appendix I(1)	**Appendix II**	
MW-12A	Appendix I(1)	Appendix I	Appendix I	Appendix I	
MW-12B	Appendix I(1,3)	Appendix I		Appendix I(1,2)	
MW-13	Appendix I	Appendix I	Appendix I	**Appendix II**	
MW-15B	Appendix I	Appendix I(1)	Appendix I	Appendix I	
MW-23	Appendix I	Appendix I	Appendix I	**Appendix II**	
LB-4	**Appendix II**	Appendix I(1)	Appendix I	**Appendix II**	
MW-5C		Appendix I		Appendix I(1,2)	
MW-10A	Appendix I	Appendix I(1)	Appendix I	**Appendix II**	Appendix I
MW-12C		Appendix I		Appendix I(1,2)	
MW-15AR	Appendix I	Appendix I(1)	Appendix I(1)	**Appendix II**	
MW-17	Appendix I(1,3)	Appendix I		**Appendix II**	
MW-18	Appendix I(1)	Appendix I(1)	Appendix I(1)	**Appendix II**	
MW-19	Appendix I(1)	Appendix I(1)	Appendix I(1)	**Appendix II**	
MW-20	Appendix I(1)	Appendix I(1)	Appendix I(1)	**Appendix II**	
MW-21		Appendix I		Appendix I(1)	
MW-22		Appendix I(1)		Appendix I	Appendix I

WELL	5/17/13	8/5/13	11/9/13	4/11/2014	10/28/2014
MW-5	Appendix I		Appendix I	Appendix I	Appendix I
MW-5B	Appendix I		Appendix I	Appendix I	Appendix I
MW-6	Appendix I		Appendix I	Appendix I	Appendix I
MW-7	Appendix I		Appendix I	Appendix I	Appendix I
MW-8	Appendix I		Appendix I	Dry	Dry
MW-8B	Appendix I		Appendix I	Appendix I	Appendix I
MW-10B	Appendix I		Appendix I	Appendix I	Appendix I
MW-12A	Appendix I		Appendix I	Appendix I	Appendix I
MW-12B	Appendix I		Appendix I	Appendix I	Appendix I
MW-13	Appendix I		Appendix I	Appendix I	Appendix I
MW-15B	Appendix I		Appendix I	Appendix I	Appendix I
MW-23	Appendix I		Appendix I	Appendix I	Appendix I
LB-4	Appendix I		Appendix I(1)	Appendix I(1)	Appendix I(1)
MW-5C	Appendix I		Appendix I	Appendix I	Appendix I
MW-10A	Appendix I	VOC	Appendix I	Appendix I	Appendix I
MW-12C	Appendix I		Appendix I	Appendix I	**Appendix II**
MW-15A1	Appendix I	VOC	Appendix I	Dry	Dry
MW-15AR	Appendix I		Appendix I(1)	Appendix I(1)	Broken
MW-17	Appendix I		Appendix I	Appendix I(1)	Appendix I(1,3)
MW-18	Appendix I		Appendix I(1)	Appendix I	Appendix I(1)
MW-19	Appendix I		Appendix I(1)	Appendix I	Appendix I(1)
MW-20	Appendix I(2)	(2)	Appendix I(1,2)	Appendix I(2)	Appendix I(1,2)
MW-21	Appendix I		Appendix I	Appendix I	Broken
MW-22	Appendix I		Appendix I	Appendix I	Appendix I
Duplicate	At MW-6		At MW-10B	At MW-23	At MW-22

WELL	3/31/15	7/8/15	9/25/15	10/16/15	11/12/15
MW-5	Appendix I	Appendix I	Appendix I	---	---
MW-5B	Appendix I	Appendix I	Appendix I	---	---
MW-6	Appendix I	Appendix I	Appendix I	---	---
MW-7	Appendix I	Appendix I	Appendix I	---	---
MW-8	Appendix I	Appendix I	Appendix I	---	---
MW-8B	Appendix I	Appendix I	Appendix I	---	---
MW-10B	Not Sampled	Not Sampled	Not Sampled	Appendix I	---
MW-12A	Appendix I	Appendix I	Appendix I	---	---
MW-12B	Appendix I	Appendix I	Appendix I	---	---
MW-13	Appendix I	Appendix I	Appendix I	---	---
MW-15B	Not Sampled	Not Sampled	Not Sampled	---	---
MW-23	**Appendix II**	Appendix I	Appendix I	---	---
LB-4	Appendix I[1]	---	Appendix I[1]	---	---
MW-5C	Appendix I	---	Appendix I	---	---
MW-10A	Dry	---	Not Sampled	VOC	---
MW-12C	**Appendix II**	---	Appendix I	---	---
MW-15A1	Dry	---	**Appendix II**	---	---
MW-15AR	Appendix I[1]	---	Appendix I[1]	---	---
MW-17	Appendix I[1,3]	---	Appendix I[1,3]	---	---
MW-18	Appendix I[1]	---	Appendix I[1]	---	---
MW-19	Appendix I[1]	---	Appendix I[1]	---	---
MW-20	Appendix I[1,2]	---	Appendix I[1,2]	---	---
MW-21	Appendix I	---	Appendix I	---	---
MW-22	Appendix I	---	Appendix I	---	---
GU-1	---	---	---	---	Appendix I
Duplicate	At MW-5B	---	At MW-6	---	---

	4/13/16	6/6/16	7/8/16	8/31/16	9/29/16	12/28/16
MW-5	Appendix I	---	---	---	Appendix I	---
MW-5B	**Appendix II**	---	(4)	---	**Appendix II**	---
MW-6	Appendix I	---	---	---	Appendix I	---
MW-7	Appendix I	---	---	---	Appendix I	---
MW-8	Appendix I	---	---	---	Appendix I	---
MW-8B	Appendix I	---	---	---	Appendix I	---
MW-10B	Appendix I	---	---	---	Appendix I	---
MW-12A	Appendix I	---	---	---	Appendix I	---
MW-12B	Appendix I	---	---	---	Appendix I	---
MW-13	Appendix I	---	---	---	Appendix I	---
MW-15B	Appendix I	---	---	---	Not Sampled	---
MW-23	Appendix I	---	---	---	Appendix I	---
LB-4	Appendix I[1]	---	(R) – Co, Ni, Zn	---	Appendix I[1]	---
MW-5C	Appendix I	---	---	---	Appendix I	---
MW-10A	Appendix I	---	---	---	Appendix I	---
MW-12C	Appendix I	---	---	---	Appendix I	---
MW-15A1	**Appendix II**	---	---	---	Appendix I[3,4]	---
MW-15AR	Appendix I[1]	---	---	---	Appendix I[1]	---
MW-17	Appendix I[1,3]	---	---	---	Appendix I[1,3]	---
MW-18	Appendix I[1]	---	---	---	Appendix I[1]	---
MW-19	Appendix I[1]	---	---	---	Appendix I[1]	---
MW-20	Appendix I[1,2]	---	---	---	Appendix I[1,2]	---
MW-21	Appendix I	---	---	---	Broken	---
MW-22	Appendix I	---	---	---	Appendix I	(R) - Ni
GU-1R	---	Appendix I	---	Appendix I	Appendix I	---
Duplicate	At MW-13	---	---	---	At LB-4	---

	4/20/17	**7/17/17**	**10/18/17**	**1/15/18**
MW-5	Appendix I	---	Appendix I	---
MW-5B	Appendix I(4)	---	Appendix I(4)	---
MW-6	Appendix I	---	Appendix I	---
MW-7	Appendix I	---	Appendix I	---
MW-8	Appendix I	---	Dry	---
MW-8B	Appendix I	---	Appendix I	---
MW-10B	Appendix I	---	Appendix I	---
MW-12A	Appendix I	---	Appendix I	---
MW-12B	Appendix I	---	Appendix I	---
MW-13	Appendix I	---	Appendix I	---
MW-15B	Appendix I	---	Appendix I	---
MW-23	Appendix I	---	Appendix I	---
LB-4	Appendix I	---	Appendix I	---
MW-5C	Appendix I	---	Appendix I	---
MW-10A	Appendix I	---	Appendix I	---
MW-12C	Appendix I	(R) – Cd,Se	Appendix I	(R) – Sn
MW-15A1	Appendix I(3,4)	---	Dry	---
MW-15AR	Appendix I	---	**Appendix II**	---
MW-17	Appendix I(3)	---	**Appendix II**	---
MW-18	Appendix I	---	**Appendix II**	(R) – SVOC
MW-19	Appendix I	---	**Appendix II**	---
MW-20	Appendix I	---	Appendix I	(R) – Co
MW-21R	Appendix I	(R) – Co, Ni	**Appendix II**	---
MW-22	Appendix I	(R) – Zn	Appendix I	---
GU-1R	Appendix I	plugged	plugged	---
Duplicate	At MW-5B	---	At MW-5B	---

(1) = tin (2) = mercury (3) = sulfide (4) = bis (2-ethylhexyl)phthalate VOC = Appendix I VOC

	10/15/2018	**4/9/2019**	**5/16/2019**	**8/27/2019**	**9/9/2019**	**9/24/2019**
MW-10A	Appendix I	Appendix I				
MW-10B	Appendix I	Appendix I				
MW-15A1	Appendix I(1,2)	Appendix I(1,2)				
MW-17	Appendix I(1,2)	Appendix I(1,2)				
MW-18	Appendix I	Appendix I				
MW-19	Appendix I	Appendix I				
MW-20	Appendix I	Appendix I	R - acetone			
MW-21R	Appendix I	Appendix I				
MW-22	Appendix I	Appendix I				
MW-30	DNE	DNE				
GU-2	DNE	DNE		Appendix I	Dry	Appendix I
GU-3	DNE	DNE		Appendix I	Appendix I	Appendix I
Duplicate	At MW-17	At MW-10A				

(1) = sulfide (2) = bis (2-ethylhexyl)phthalate DNE – Did not exist

	9/26/2019	**10/9/2019**	**1/8/2020**	**4/1/2020**	**10/5/2020**
MW-10A		Appendix I		Appendix I	Appendix I
MW-10B		Appendix I		Appendix I	Appendix I
MW-15A1		Appendix I(1,2)		Appendix I(1,2)	Appendix I(2)
MW-17		Appendix I(1,2)	R - zinc	Appendix I(1,2)	Appendix I(2)
MW-18		Appendix I	R - zinc	Appendix I	Appendix I
MW-19		Appendix I		Appendix I	Appendix I
MW-20		Appendix I	R - zinc	Appendix I	Appendix I
MW-21R		Appendix I		Appendix I	Appendix I
MW-22		Appendix I	R - zinc	Appendix I	Appendix I
MW-30		Appendix I		Appendix I	Appendix I
GU-2	Appendix I	Dry		Dry	Dry
GU-3	Appendix I	Appendix I		Appendix I	Dry
Duplicate		At MW-10B		At MW-19	At MW-22

(1) = sulfide (2) = bis (2-ethylhexyl)phthalate DNE – Did not exist

	4/13/2021	10/21/2021	1/10/2022	4/19/2022	7/15/2022	10/18/2022
MW-10A	Appendix I	Appendix I		Appendix I	R - barium	Appendix I
MW-10B	Appendix I	Appendix I		Appendix I		Appendix I
MW-15A1	Dry	Dry		Dry		Dry
MW-17	Appendix I(2)	Appendix I(2)		Appendix I		**Appendix II**
MW-18	Appendix I	Appendix I		Appendix I		Appendix I
MW-19	Appendix I	Appendix I		Appendix I		Appendix I
MW-20	Appendix I	Appendix I		Appendix I		Appendix I
MW-21R	Appendix I	Appendix I	R - arsenic	**Appendix II**		Appendix I
MW-22	Appendix I	Appendix I		Appendix I		Appendix I
MW-30	Appendix I	Appendix I		Appendix I		Appendix I
GU-2	Dry	Dry		Dry		Dry
GU-3	Dry	Dry		Dry		Dry
Duplicate	At MW-10B	At MW-17		At MW-21R		At MW-10B

(1) = sulfide *(2) = bis (2-ethylhexyl)phthalate*

	4/11/2023	5/18/2023	7/7/2023	10/5/2023	12/19/2023
MW-10A	Appendix I		R – As, Ba, Cu	Appendix I	
MW-10B	Appendix I			Appendix I	
MW-15A1	Appendix I VOC	---	---	---	
MW-17	Appendix I	---	---	---	
MW-18	Appendix I			Appendix I	
MW-19	Appendix I			Appendix I	
MW-20	Appendix I			Appendix I	R - Cu
MW-21R	**Appendix II**			Appendix I	
MW-22	Appendix I			Appendix I	R - Cu
MW-25	---	Appendix I	Appendix I	Appendix I	
MW-28	---	Appendix I	Appendix I	Appendix I	
MW-30	Appendix I			Appendix I	
GU-2	Appendix I			Dry	
GU-3	Dry			Appendix I	
Duplicate	At MW-17			At MW-25	

Appendix I VOC = VOC only

	4/23/2024	9/27/2024	10/11/2024	10/16/2024	11/22/2024	12/10/2024
MW-10A	Appendix I		Appendix I			
MW-10B	Appendix I		Appendix I			
MW-18	Appendix I		Appendix I			
MW-19	Appendix I		*buried*			
MW-20	Appendix I		Appendix I			
MW-21R	Appendix I		Appendix I			
MW-22	Appendix I		Appendix I			
MW-25	Appendix I		Appendix I			R-1,1-DCE
MW-28	Appendix I		Appendix I			
MW-30	Appendix I		Appendix I			
MW-31	DNE		---	Appendix I	Metals	
MW-32	DNE		---	Appendix I	Metals	
GU-2	Dry		Dry			
GU-3	Dry		Dry			
GU-4	DNE	Metals	Metals		Metals	
GU-5	DNE	Metals	Metals		Dry	
GU-6	DNE	Dry	Dry		Metals	
Duplicate	At MW-25		At MW-18			

Appendix I VOC = VOC only *Metals = Appendix I Metals* *DNE = did not exist*

Note: Waste placement in Phase 3 started 1-3-2025.

Table 3 – Monitoring Well Maintenance Performance Reevaluation Schedule

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
Annual Water Quality Report
NCIRSWA County Sanitary Landfill
Permit No. 94-SDP-01-75P

Compliance with:	Monitoring Calendar Years									
	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
567 IAC 113.10(2)"f"(1) high and low water levels (bi-annual)	X	X	X	X	X	X	X	X	X	X
567 IAC 113.10(2)"f"(2) changes in the hydrologic setting and flow paths (historic = 1 per 5 years; current = bi-annual)	X	X		X		X		X		X
567 IAC 113.10(2)"f"(3) well depths (annual)	X	X	X	X	X	X	X	X	X	X
567 IAC 113.10(2)"f"(4) well recharge rates and chemistry (bi-annual)	X	X		X		X		X		X
Waste separation from ground water 113.6(2)"I"	2X	2X	2X	2X	2X	2X	2X	2X	2X	2X

Compliance with:	Monitoring Calendar Years									
	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
567 IAC 113.10(2)"f"(1) high and low water levels (bi-annual)	X	X	P	P	P	P	P	P	P	P
567 IAC 113.10(2)"f"(2) changes in the hydrologic setting and flow paths (historic = 1 per 5 years; current = bi-annual)		X		P		P		P		P
567 IAC 113.10(2)"f"(3) well depths (annual)	X	X	P	P	P	P	P	P	P	P
567 IAC 113.10(2)"f"(4) well recharge rates and chemistry (bi-annual)		X		P		P		P		P
Waste separation from ground water 113.6(2)"I"	2X	2X	2P	2P	2P	2P	2P	2P	2P	2P

X = completed
P = Planned

Table 4 – Monitoring Well Maintenance Performance Reevaluation Summary

Table 4
Monitoring Well Maintenance and Performance Summary
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Well	Top of casing	Top of Screen	Total Depth		Date of Measurements 4/23/2024	Date of Measurements 10/11/2024	Maximum Depth Discrepancy (ft)	Hydraulic Cond. (cm/sec)/date	Most Recent Recharge Rate ***4/23/2024***	Most Recent Recharge Rate Change
MW-10A	1038.04	1018.59	29.2	Groundwater Level (ft)	24.15	25.09	0	0.000348 January, 2013	Full recovery in 6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1013.89	1012.95				
				Measured Well Depth (ft)	29.2	29.2				
				Submerged (+) or Exposed screen (-)	-4.7	-5.64				
MW-10B	1036.57	998.77	48.7	Groundwater Level (ft)	19.86	19.94	0	0.0000221 January, 2013	Full recovery in >6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1016.71	1016.63				
				Measured Well Depth (ft)	48.7	48.7				
				Submerged (+) or Exposed screen (-)	17.94	17.86				
MW-25	1031.96	1011.56	30.4	Groundwater Level (ft)	13.34	15.18	0	0.0000129 5/18/2023	Full recovery in >6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1018.62	1016.78				
				Measured Well Depth (ft)	30.4	30.4				
				Submerged (+) or Exposed screen (-)	7.06	5.22				
MW-28	1035.16	1027.42	13.31	Groundwater Level (ft)	10.81	11.01	0.31	0.00000873 5/18/2023	Full recovery in >6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1024.35	1024.15				
				Measured Well Depth (ft)	13	13				
				Submerged (+) or Exposed screen (-)	-3.07	-3.27				
MW-18	1032.06	1016.66	25.4	Groundwater Level (ft)	17.85	17.88	-0.2	0.0014 January, 2013	Full recovery in 5 hour	None percieved
				Groundwater Elevation (Ft MSL)	1014.21	1014.18				
				Measured Well Depth (ft)	25.6	25.6				
				Submerged (+) or Exposed screen (-)	-2.45	-2.48				
MW-19	1028.21	1002.61	35.6	Groundwater Level (ft)	14.73		0.1	0.000125 January, 2013	Full recovery in 4 hour	None percieved
				Groundwater Elevation (Ft MSL)	1013.48					
				Measured Well Depth (ft)	35.5					
				Submerged (+) or Exposed screen (-)	10.87					
MW-20	1026.08	1002.61	30.0	Groundwater Level (ft)	14.82	15.01	0.2	0.000732 January, 2013	Full recovery in 6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1011.26	1011.07				
				Measured Well Depth (ft)	29.8	29.8				
				Submerged (+) or Exposed screen (-)	8.65	8.46				
MW-21R	1033.51	998.01	45.5	Groundwater Level (ft)	23.05	24.03	0	Not Measured	Full recovery in 24 hour	None percieved
				Groundwater Elevation (Ft MSL)	1010.46	1009.48				
				Measured Well Depth (ft)	45.5	45.5				
				Submerged (+) or Exposed screen (-)	12.45	11.47				
MW-22	1079.15	1056.45	32.7	Groundwater Level (ft)	9.53	8.03	0.2	0.0000648 January, 2013	Full recovery in 24 hour	None percieved
				Groundwater Elevation (Ft MSL)	1069.62	1071.12				
				Measured Well Depth (ft)	32.5	32.5				
				Submerged (+) or Exposed screen (-)	13.17	14.67				
MW-30	1042.84	1032.39	20.45	Groundwater Level (ft)	17.14	17.81	0	0.0000259 April 2024	Full recovery in 6 hour	None percieved
				Groundwater Elevation (Ft MSL)	1025.7	1025.03				
				Measured Well Depth (ft)	20.45	20.45				
				Submerged (+) or Exposed screen (-)	-6.69	-7.36				
MW-31	1043.75	1028.09	25.96	Groundwater Level (ft)	17.14	17.42	0	0.0000156 October 2024	Full recovery in 2 hour	None percieved
				Groundwater Elevation (Ft MSL)	1026.61	1026.33				
				Measured Well Depth (ft)	25.96	25.96				
				Submerged (+) or Exposed screen (-)	-1.48	-1.76				
MW-32	1049.25	1035.15	19.4	Groundwater Level (ft)	17.14	12.36	0	0.0000916 October 2024	Full recovery in 24 hour	None percieved
				Groundwater Elevation (Ft MSL)	1032.11	1036.89				
				Measured Well Depth (ft)	19.4	19.4				
				Submerged (+) or Exposed screen (-)	-3.04	1.74				

Groundwater Underdrain Piezometer

Well		Date of Measurements 4/23/2024	Date of Measurements 10/11/2024
GUH-1	bottom of waste (feet MSL)	1035	1035
	Top Pipe GUH-1	1035.25	1035.25
	Screen of GPZ (feet MSL)	1029	1029
	Depth to Water in GPZ (ft)	6.4	5.6
	Elevation water in GPZ (feet MSL)	1028.85	1029.65
	Minimum Separation (ft)	6.15	5.35
GUH-2	bottom of waste (feet MSL)	1038	1038
	Top Pipe GUH-2	1042.6	1042.6
	Screen of GPZ (feet MSL)	1029.4	1029.4
	Depth to Water in GPZ (ft)	13.2	11.9
	Elevation water in GPZ (feet MSL)	1029.4	1030.7
	Minimum Separation (ft)	8.6	7.3
GUH-3	bottom of waste (feet MSL)	1038	1038
	Top Pipe GUH-3	1041.44	1041.44
	Screen of GPZ (feet MSL)	1031.75	1031.75
	Depth to Water in GPZ (ft)	9.7	9.2
	Elevation water in GPZ (feet MSL)	1031.74	1032.24
	Minimum Separation (ft)	6.26	5.76

Table 4A – Water Elevation Summary Over Time

Water Elevation Data

NCIRSWA Sanitary Landfill
Fort Dodge, Iowa

								Sedimentation Assessment			
				4/23/2024		**10/11/2024**		**ORIGINAL**		**10/11/2024**	**10/11/2024**
Existing Monitoring Well ID	Gradient	Top of Casing (Elevation)	Ground Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Bottom Of Well Depth (ft)	year modified	Bottom Of Well Depth (ft)	Well Depth Difference (ft)
MW-5A	U	1112.69	1110.42	8.5	1104.19	13.44	1099.25	29.3		29	0.3
MW-5B	U	1111.68	1109.41	17.26	1094.42	18.3	1093.38	52		48.6	3.4
MW-6	U	1116.43	1113.85	16.23	1100.20	21.37	1095.06	40.9		40.3	0.6
MW-7	U	1117.86	1115.91	26.89	1090.97	25.84	1092.02	52.85	2016	52.85	0
MW-8A	U	1109.48	1106.48	22.7	1086.78	22.7	1086.78	22.7	2017	22.45	0.25
MW-8B	U	1107.31	1104.31	29.08	1078.23	27.9	1079.41	52.3		52.4	-0.1
MW-10B	U	1032.42	1030.65	19.86	1012.56	19.94	1012.48	48.7	2015	48.7	0
MW-12A	U	1123.17	1120.67	5.8	1117.37	13.28	1109.89	31.25		31.25	0
MW-12B	U	1123.13	1120.63	72.38	1050.75	72.16	1050.97	81.25		81.2	0.05
MW-13	U	1103.77	1101.27	40.75	1063.02	41.05	1062.72	51.2		51.3	-0.1
MW-15B	U	1099.76	1097.26	82.82	1016.94	83.3	1016.46	102.7		104.4	-1.7
MW-23	U	1097.12	1093.95	22.41	1074.71	23.04	1074.08	47.17		47.1	0.07
LB-4	D	1104.12	1101.4	62.16	1041.96	62.56	1041.56	68.4	2015	68.4	0
MW-5C	D	1110.74	1108.47	101.81	1008.93	101.81	1008.93	110.3		110.3	0
MW-10A	D	1032.19	1030.42	24.5	1007.69	25.09	1007.10	29.2	2015	29.2	0
MW-12C	D	1123.05	1120.55	111.31	1011.74	111.45	1011.60	124		124.1	-0.1
MW-15A1	D	1104.99	1101.45	63.8	1041.19	63.73	1041.26	65.49		64.65	0.84
MW-15AR	D	1104.54	1101.19	64.53	1040.01	64.58	1039.96	67.54		67.5	0.04
MW-17	D	1076.09	1072.5	40.96	1035.13	41.15	1034.94	51.09		50.2	0.89
MW-18	D	1032.06	1028.63	17.85	1014.21	17.88	1014.18	25.93		25.6	0.33
MW-19	D	1028.21	1024.92	14.73	1013.48	15.12	1013.09	35.29		35.5	-0.21
MW-20	D	1026.08	1023.37	14.82	1011.26	15.01	1011.07	32.21		29.8	2.41
MW-21R	D	1033.51	1031.07	23.05	1010.46	24.03	1009.48	45.5	2017	45.5	0
MW-22	D	1079.15	1075.98	9.53	1069.62	8.30	1070.85	33.17		32.5	0.67
MW-24	D	1033.26	1030.86	12.36	1020.9	12.72	1020.54	23.0	2017	23.0	0
MW-25	D	1031.96	1030.25	13.34	1018.62	15.18	1016.78	30.4	2017	30.4	0
MW-27	D	1034.34	1032.95	17.85	1016.49	18.25	1016.09	20.3	2017	20.3	0
MW-28	D	1035.16	1032.85	10.81	1024.35	11.01	1024.15	13.01	2017	13.01	0
MW-29	D	1028.77	1025.43	18.06	1010.71	18.88	1009.89	35.7	2017	35.7	0
MW-30	D	1042.84	1039.55	17.14	1025.7	17.81	1025.03	20.45		20.45	0
MW-31	D	1043.75	1040.90			17.42	1026.33	25.96		25.96	0
MW-32	D	1049.25	1046.20			12.36	1036.89	19.4		19.4	0
GUH-1	D	1038.27	NR	6.35	1031.92	5.60	1032.67	6.35	2017	6.35	0
GUH-2	D	1042.60	NR	13.2	1029.4	11.90	1030.70	13.2	2019	13.2	0
GUH-3	D	1041.44	NR	9.7	1031.74	9.20	1032.24	9.7	2019	9.7	0
GUH-4	D	1045.92	NR			12.55	1033.37	12.55	2024	12.55	0
GUH-5	D	1051.19	NR			12.40	1038.79	12.65	2024	12.65	0
GUH-6	D	1050.71	NR			11.15	1039.56	11.15	2024	11.15	0

U- Indicates Upgraident/Background
D - Inidcates Downgradient

Water Elevation Data

NCIRSWA Sanitary Landfill
Fort Dodge, Iowa

								Sedimentation Assessment			
				4/11/2023		**10/5/2023**		**ORIGINAL**		**10/5/2023**	**10/5/2023**
Existing Monitoring Well ID	Gradient	Top of Casing (Elevation)	Ground Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Bottom Of Well Depth (ft)	year modified	Bottom Of Well Depth (ft)	Well Depth Difference (ft)
MW-5A	U	1112.69	1110.42	8.98	1103.71	14.1	1098.59	29.3		29	0.3
MW-5B	U	1111.68	1109.41	16.7	1094.98	19.49	1092.19	52		48.6	3.4
MW-6	U	1116.43	1113.85	18.19	1098.24	23.5	1092.93	40.9		40.3	0.6
MW-7	U	1117.86	1115.91	26.63	1091.23	27.09	1090.77	52.85	2016	52.85	0
MW-8A	U	1109.48	1106.48	22.5	1086.98	22.7	1086.78	22.7	2017	22.45	0.25
MW-8B	U	1107.31	1104.31	29.27	1078.04	29.91	1077.40	52.3		52.4	-0.1
MW-10B	U	1032.42	1030.65	20.13	1012.29	20.48	1011.94	48.7	2015	48.7	0
MW-12A	U	1123.17	1120.67	9	1114.17	14.26	1108.91	31.25		31.25	0
MW-12B	U	1123.13	1120.63	72.45	1050.68	72.37	1050.76	81.25		81.2	0.05
MW-13	U	1103.77	1101.27	41.73	1062.04	42.48	1061.29	51.2		51.3	-0.1
MW-15B	U	1099.76	1097.26	83.03	1016.73	83.87	1015.89	102.7		104.4	-1.7
MW-23	U	1097.12	1093.95	23.14	1073.98	24.88	1072.24	47.17		47.1	0.07
LB-4	D	1104.12	1101.4	62.48	1041.64	62.83	1041.29	68.4	2015	68.4	0
MW-5C	D	1110.74	1108.47	101.51	1009.23	101.77	1008.97	110.3		110.3	0
MW-10A	D	1032.19	1030.42	24.75	1007.44	24.44	1007.75	29.2	2015	29.2	0
MW-12C	D	1123.05	1120.55	111.31	1011.74	111.34	1011.71	124		124.1	-0.1
MW-15A1	D	1104.99	1101.45	64.1	1040.89	64.28	1040.71	65.49		64.65	0.84
MW-15AR	D	1104.54	1101.19	64.75	1039.79	65.15	1039.39	67.54		67.5	0.04
MW-17	D	1076.09	1072.5	42.4	1033.69	42.64	1033.45	51.09		50.2	0.89
MW-18	D	1032.06	1028.63	17.84	1014.22	17.98	1014.08	25.93		25.6	0.33
MW-19	D	1028.21	1024.92	15	1013.21	15.12	1013.09	35.29		35.5	-0.21
MW-20	D	1026.08	1023.37	14.77	1011.31	15.46	1010.62	32.21		29.8	2.41
MW-21R	D	1033.51	1031.07	22.72	1010.79	24.40	1009.11	45.5	2017	45.5	0
MW-22	D	1079.15	1075.98	8.98	1070.17	7.60	1071.55	33.17		32.5	0.67
MW-24	D	1033.26	1030.86	13.1	1020.16	13.45	1019.81	23.0	2017	23.0	0
MW-25	D	1031.96	1030.25	14.92	1017.04	15.22	1016.74	30.4	2017	30.4	0
MW-27	D	1034.34	1032.95	17.95	1016.39	18.25	1016.09	20.3	2017	20.3	0
MW-28	D	1035.16	1032.85	11.3	1023.86	11.02	1024.14	13.01	2017	13.01	0
MW-29	D	1028.77	1025.43	18.39	1010.38	20.05	1008.72	35.7	2017	35.7	0
MW-30	D	1042.84	1039.55	18.32	1024.52	18.90	1023.94	20.45		20.45	0
GUH-1	D	1038.27	NR	5.5	1032.77	5.70	1032.57	6.25	2017	6.25	0

U- Indicates Upgraident/Background
D - Inidcates Downgradient

Water Elevation Data

NCIRSWA Sanitary Landfill
Fort Dodge, Iowa

								Sedimentation Assessment			
				4/19/2022		**10/18/2022**		**ORIGINAL**		**10/18/2022**	**10/18/2022**
Existing Monitoring Well ID	Gradient	Top of Casing (Elevation)	Ground Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Bottom Of Well Depth (ft)	year modified	Bottom Of Well Depth (ft)	Well Depth Difference (ft)
MW-5A	U	1112.69	1110.42	9.3	1103.39	14.29	1098.40	29.3		29	0.3
MW-5B	U	1111.68	1109.41	15.86	1095.82	18.77	1092.91	52		48.6	3.4
MW-6	U	1116.43	1113.85	17.5	1098.93	24.16	1092.27	40.9		40.3	0.6
MW-7	U	1117.86	1115.91	27.32	1090.54	26.83	1091.03	52.85	2016	52.85	0
MW-8A	U	1109.48	1106.48	21.2	1088.28	22.5	1086.98	22.7	2017	22.45	0.25
MW-8B	U	1107.31	1104.31	25.08	1082.23	28.75	1078.56	52.3		52.4	-0.1
MW-10B	U	1032.42	1030.65	19.72	1012.70	20.23	1012.19	48.7	2015	48.7	0
MW-12A	U	1123.17	1120.67	8.55	1114.62	14.98	1108.19	31.25		31.25	0
MW-12B	U	1123.13	1120.63	72.42	1050.71	72.43	1050.70	81.25		81.2	0.05
MW-13	U	1103.77	1101.27	42.63	1061.14	43.37	1060.40	51.2		51.3	-0.1
MW-15B	U	1099.76	1097.26	83.13	1016.63	83.3	1016.46	102.7		104.4	-1.7
MW-23	U	1097.12	1093.95	23.57	1073.55	NR	NR	47.17		47.1	0.07
LB-4	D	1104.12	1101.4	62.75	1041.37	63.00	1041.12	68.4	2015	68.4	0
MW-5C	D	1110.74	1108.47	101.71	1009.03	101.95	1008.79	110.3		110.3	0
MW-10A	D	1032.19	1030.42	24.7	1007.49	25.18	1007.01	29.2	2015	29.2	0
MW-12C	D	1123.05	1120.55	111.51	1011.54	111.54	1011.51	124		124.1	-0.1
MW-15A1	D	1104.99	1101.45	64.1	1040.89	64.20	1040.79	65.49		64.65	0.84
MW-15AR	D	1104.54	1101.19	64.63	1039.91	65.00	1039.54	67.54		67.5	0.04
MW-17	D	1076.09	1072.5	40.37	1035.72	42.32	1033.77	51.09		50.2	0.89
MW-18	D	1032.06	1028.63	17.88	1014.18	18.06	1014.00	25.93		25.6	0.33
MW-19	D	1028.21	1024.92	14.86	1013.35	15.03	1013.18	35.29		35.5	-0.21
MW-20	D	1026.08	1023.37	15.62	1010.46	15.45	1010.63	32.21		29.8	2.41
MW-21R	D	1033.51	1031.07	21.57	1011.94	23.86	1009.65	45.5	2017	45.5	0
MW-22	D	1079.15	1075.98	8.15	1071	7.00	1072.15	33.17		32.5	0.67
MW-24	D	1033.26	1030.86	12.75	1020.51	13.40	1019.86	23.0	2017	23.0	0
MW-25	D	1031.96	1030.25	14.73	1017.23	15.15	1016.81	30.4	2017	30.4	0
MW-27	D	1034.34	1032.95	18.05	1016.29	18.32	1016.02	20.3	2017	20.3	0
MW-28	D	1035.16	1032.85	11.8	1023.36	11.45	1023.71	13.01	2017	13.01	0
MW-29	D	1028.77	1025.43	17.54	1011.23	17.87	1010.90	35.7	2017	35.7	0
MW-30	D	1042.84	1039.55	18.28	1024.56	18.19	1024.65	20.45		20.45	0
GUH-1	D	1038.27	NR	6.35	1031.92	6.35	1031.92	6.25	2017	6.25	0

U- Indicates Upgraident/Background
D - Inidcates Downgradient

Water Elevation Data

NCIRSWA Sanitary Landfill
Fort Dodge, Iowa

										Sedimentation Assessment			
				4/20/2017		**7/17/2017**		**10/18/2017**		**ORIGINAL**		**10/18/2017**	**10/18/2017**
Existing Monitoring Well ID	Gradient	Top of Casing (Elevation)	Ground Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Bottom Of Well Depth (ft)	year modified	Bottom Of Well Depth (ft)	Well Depth Difference (ft)
M-5	U	1112.69	1110.42	5.1	1107.59	NR	NR	10.46	1102.23	29.3		29	0.3
MW-5B	U	1111.68	1109.41	8.81	1102.87	NR	NR	15.8	1095.88	52		48.6	3.4
MW-6	U	1116.43	1113.85	8.68	1107.75	NR	NR	21.17	1095.26	40.9		40.3	0.6
MW-7	U	1117.86	1115.91	24.34	1093.52	NR	NR	24.55	1093.31	52.85	2016	52.85	0
MW-8A	U	1109.48	1106.48	6.21	1103.27	NR	NR	22.7	1086.78	22.7	2017	22.7	0
MW-8B	U	1107.31	1104.31	15.77	1091.54	NR	NR	27.59	1079.72	52.3		52.4	-0.1
MW-10B	U	1032.42	1030.65	19.34	1013.08	NR	NR	19.13	1013.29	48.7	2015	48.7	0
MW-12A	U	1123.17	1120.67	2.7	1120.47	NR	NR	10.3	1112.87	31.25		31.25	0
MW-12B	U	1123.13	1120.63	73.65	1049.48	NR	NR	72.95	1050.18	81.25		81.2	0.05
MW-13	U	1103.77	1101.27	40.01	1063.76	NR	NR	44.25	1059.52	51.2		51.3	-0.1
MW-15B	U	1099.76	1097.26	81.65	1018.11	NR	NR	82.8	1016.96	102.7		104.4	-1.7
MW-23	U	1097.12	1093.95	18.22	1078.9	NR	NR	23.85	1073.27	47.17		47.1	0.07
LB-4	D	1104.12	1101.4	60.92	1043.2	NR	NR	62.08	1042.04	68.4	2015	68.4	0
MW-5C	D	1110.74	1108.47	100.98	1009.76	NR	NR	101.28	1009.46	110.3		110.3	0
MW-10A	D	1032.19	1030.42	23.22	1008.97	NR	NR	24.3	1007.89	29.2	2015	29.2	0
MW-12C	D	1123.05	1120.55	111.25	1011.8	111.33	1011.72	110.96	1012.09	124		124.1	-0.1
MW-15A1	D	1104.99	1101.45	61.4	1043.59	NR	NR	63.11	1041.88	65.49		64.65	0.84
MW-15AR	D	1104.54	1101.19	60.56	1043.98	NR	NR	63.26	1041.28	67.54		67.5	0.04
MW-17	D	1076.09	1072.5	37.4	1038.69	NR	NR	39.35	1036.74	51.09		50.2	0.89
MW-18	D	1032.06	1028.63	16.91	1015.15	NR	NR	17.39	1014.67	25.93		25.6	0.33
MW-19	D	1028.21	1024.92	13.95	1014.26	NR	NR	14.77	1013.44	35.29		35.5	-0.21
MW-20	D	1026.08	1023.37	13.7	1012.38	NR	NR	14.77	1011.31	32.21		29.8	2.41
MW-21R	D	1033.51	1031.07	27.34	1006.17	25.1	1008.41	31.5	1002.01	45.5	2017	45.5	0
MW-22	D	1079.15	1075.98	4.25	1074.9	4.6	1074.55	3.5	1075.65	33.17		32.5	0.67
MW-24	D	1033.26	1030.86	NR	NR	NR	NR	12.1	1021.16	23.0	2017	23.0	0
MW-25	D	1031.96	1030.25	NR	NR	NR	NR	14.2	1017.76	30.4	2017	30.4	0
MW-26	D	1028.93	1026.15	NR	NR	NR	NR	13.9	1015.03	25.5	2017	25.5	0
MW-27	D	1034.34	1032.95	NR	NR	NR	NR	16.88	1017.46	20.3	2017	20.3	0
MW-28	D	1035.16	1032.85	NR	NR	NR	NR	13.01	1022.15	13.01	2017	13.01	0
MW-29	D	1028.77	1025.43	NR	NR	NR	NR	18.4	1010.37	35.7	2017	35.7	0
GUH-1	D	1038.27	NR	6.2	1032.07	5.5	1032.77	3.4	1034.87	6.25	2017	6.25	0

U- Indicates Upgraident/Background
D - Inidcates Downgradient

Water Elevation Data

NCIRSWA Sanitary Landfill
Fort Dodge, Iowa

				5/17/2013		**7/23/2013**		**8/5/2013**		**11/17/2013**		ORIGINAL	11/17/2013	11/17/2013
Existing Monitoring Well ID	Gradient	Top of Casing (Elevation)	Ground Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Water Depth (ft)	Water Surface (Elevation)	Bottom Of Well Depth (ft)	Bottom Of Well Depth (ft)	Well Depth Difference (ft)
M-5	U	1112.69	1110.42	10.9	1101.79					17.32	1095.37	29.3	29	0.3
MW-5B	U	1111.68	1109.41	16.3	1095.38					19.7	1091.98	52	48.6	3.4
MW-6	U	1116.43	1113.85	14.8	1101.63					24.38	1092.05	40.9	40.35	0.55
MW-7	U	1117.86	1115.91	17.25	1100.61					20.3	1097.56	48.3	45	3.3
MW-8A	U	1109.48	1106.48	15.3	1094.18					22.15	1087.33	20.5	22.15	-1.65
MW-8B	U	1107.31	1104.31	24.25	1083.06					29.1	1078.21	52.3	48.85	3.45
MW-10B	U	1032.42	1030.65	18.3	1014.12					20.4	1012.02	45.8	43.85	1.95
MW-12A	U	1123.17	1120.67	4.25	1118.92					16.48	1106.69	31.25	31.25	0
MW-12B	U	1123.13	1120.63	77	1046.13					77.25	1045.88	81.25	81.25	0
MW-13	U	1103.77	1101.27	41.05	1062.72					44.5	1059.27	51.2	51.2	0
MW-15B	U	1099.76	1097.26	82.6	1017.16					83.2	1016.56	102.7	102.7	0
MW-23	U	1097.12	1093.95	20.5	1076.62					23.8	1073.32	47.17	47.1	0.07
LB-4	D	1104.12	1101.4	62.8	1041.32					65.2	1038.92	71	69.2	1.8
MW-5C	D	1110.74	1108.47	101.4	1009.34					101.6	1009.14	110.3	110.3	0
MW-10A	D	1032.19	1030.42	18.5	1013.69			19.45	1012.74	19.99	1012.2	23.9	23.55	0.35
MW-12C	D	1123.05	1120.55	111.3	1011.75					110.15	1012.9	124	124	0
MW-15A1	D	1104.99	1101.45	62.7	1042.29			63	1041.99	63.25	1041.74	65.49	64.9	0.59
MW-15AR	D	1104.54	1101.19	62.8	1041.74					64.1	1040.44	67.54	67.5	0.04
MW-17	D	1076.09	1072.5	39.9	1036.19					40.91	1035.18	51.09	50.75	0.34
MW-18	D	1032.06	1028.63	16.4	1015.66					17.56	1014.5	25.93	25.66	0.27
MW-19	D	1028.21	1024.92	14.5	1013.71					15	1013.21	35.29	35.5	-0.21
MW-20	D	1026.08	1023.37	14.3	1011.78	14.55	1011.53			15.25	1010.83	32.21	29.7	2.51
MW-21	D	1030.27	1027.31	22.9	1007.37					22.2	1008.07	46.96	46.1	0.86
MW-22	D	1079.15	1075.98	4.4	1074.75					23.8	1055.35	33.17	32.6	0.57

U- Indicates Upgraident/Background
D - Inidcates Downgradient

Table 5 – Background and GWPS Summary

Table 5
Intrawell Control Limits and GWPS Summary
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Intrawell Background / GWPS
see attached

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Antimony, total	ug/L	MW-10A	13	5	41			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10A	13	6	42	6.8000	3.7354	4.0000	22.1000	6.8000	19.2984	31.0802	normal		
Barium, total	ug/L	MW-10A	11	7	43	37.1000	10.5196	31.0000	62.2000	37.1000	51.6804	105.4774	normal		
Beryllium, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10A	13	5	41			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10A	13	5	41			8.0000	8.0000			12.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10A	13	5	41	1.4615	1.9894	0.4000	1.8000	1.4615	1.4615	14.3924	normal		
Copper, total	ug/L	MW-10A	13	6	42			4.0000	4.0000			11.4000	nonpar	.99	**
Lead, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			6.9000	nonpar	.99	**
Nickel, total	ug/L	MW-10A	13	5	41	12.4000	14.5913	4.0000	11.0000	12.4000	12.4000	107.2436	normal		
Selenium, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			9.0000	nonpar	.99	**
Silver, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10A	13	5	41			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10A	13	5	41			20.0000	20.0000			28.4000	nonpar	.99	**
Zinc, total	ug/L	MW-10A	13	5	41	23.1231	14.8627	20.0000	26.6000	23.1231	23.1231	119.7307	normal		
Antimony, total	ug/L	MW-10B	13	6	37			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.1000	nonpar	.99	**
Barium, total	ug/L	MW-10B	11	6	37	31.4091	6.2633	28.7000	26.0000	31.4091	31.4091	72.1205	normal		
Beryllium, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10B	13	6	38			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10B	13	6	37			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10B	13	6	38			0.4000	0.4000			4.1000	nonpar	.99	**
Copper, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			7.4000	nonpar	.99	**
Lead, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.6000	nonpar	.99	**
Nickel, total	ug/L	MW-10B	13	6	38	8.6538	4.8541	5.6000	9.6000	8.6538	8.6538	40.2058	normal		
Selenium, total	ug/L	MW-10B	13	6	38			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-10B	13	6	38			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10B	13	6	37			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10B	13	6	37			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-10B	12	6	37	18.2583	8.2091	20.0000	20.0000	18.2583	18.2583	71.6177	normal		
Antimony, total	ug/L	MW-18	13	7	42			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-18	13	7	42	25.8692	2.9652	24.0000	27.2000	28.4036	27.5105	45.1429	normal		
Beryllium, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-18	13	7	42			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-18	13	7	42			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-18	12	8	43	41.2417	10.3115	39.8000	68.3000	85.3148	104.6395	108.2662	normal		
Copper, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-18	13	7	42	36.9385	9.9355	37.2000	50.1000	36.9385	42.6484	101.5192	normal		
Selenium, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-18	13	7	42			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-18	13	7	42			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-18	13	7	43	18.9077	3.2938	20.0000	27.3000	18.9077	24.8297	40.3174	normal		
Antimony, total	ug/L	MW-20	13	7	41			2.0000	2.0000			2.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Arsenic, total	ug/L	MW-20	13	7	41	25.2154	16.8948	8.0000	26.2000	25.2154	25.2154	135.0314	normal		
Barium, total	ug/L	MW-20	13	7	41	67.6154	27.4452	39.0000	61.8000	67.6154	67.6154	246.0093	normal		
Beryllium, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-20	13	7	41			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-20	13	7	41			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-20	13	7	42	5.9308	2.2574	2.4000	2.1000	5.9308	5.9308	20.6036	normal		
Copper, total	ug/L	MW-20	13	8	42			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-20	13	7	41	8.4692	2.6550	4.0000	4.0000	8.4692	8.4692	25.7267	normal		
Selenium, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-20	13	7	41			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-20	13	7	41			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-20	14	7	42	21.4357	17.4166	20.0000	20.0000	21.4357	21.4357	134.6433	normal		
Antimony, total	ug/L	MW-21R	8	7	15			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-21R	8	8	16	4.1250	0.2315	5.2000	12.6000	4.9685	13.2121	5.6295	normal		
Barium, total	ug/L	MW-21R	8	7	15	31.8000	12.8251	19.6000	25.2000	31.8000	31.8000	115.1631	normal		
Beryllium, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-21R	8	7	15			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-21R	8	7	15			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-21R	9	7	16	17.8111	5.2987	9.1000	6.8000	17.8111	17.8111	52.2526	normal		
Copper, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			5.2000	nonpar	.99	**
Lead, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-21R	9	7	16	35.4889	15.6969	13.6000	9.5000	35.4889	35.4889	137.5189	normal		
Selenium, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-21R	8	7	15			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-21R	8	7	15			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-21R	8	7	15	22.8625	12.7285	20.0000	20.0000	22.8625	22.8625	105.5976	normal		
Antimony, total	ug/L	MW-22	13	7	40			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-22	13	7	40	18.1385	4.1526	13.3000	9.9000	18.1385	18.1385	45.1305	normal		
Beryllium, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-22	13	7	40			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-22	13	7	40			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-22	13	7	40			0.4000	0.4000			0.8000	nonpar	.99	**
Copper, total	ug/L	MW-22	13	8	41			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-22	14	7	41	18.7929	15.0825	4.0000	11.7000	34.5834	18.7929	116.8292	normal		
Selenium, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-22	13	7	40			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-22	13	7	40			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-22	15	7	42	22.3733	13.7636	20.0000	20.0000	22.3733	22.3733	111.8370	normal		
Antimony, total	ug/L	MW-30	8	3	11			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-30	8	3	11			4.0000	4.0000			9.1000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
*   - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Barium, total	ug/L	MW-30	8	3	11	26.8000	9.6465	14.2000	24.5000	26.8000	26.8000	89.5020	normal		
Beryllium, total	ug/L	MW-30	8	3	11			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-30	8	3	11			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-30	8	3	11			8.0000	8.0000			43.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-30	8	3	11	7.3750	7.3738	3.0000	7.4000	7.3750	7.3750	55.3050	normal		
Copper, total	ug/L	MW-30	7	3	11	4.5143	0.8802	4.0000	4.0000	4.5143	4.5143	10.2356	normal		
Lead, total	ug/L	MW-30	8	3	11			4.0000	4.0000			12.7000	nonpar	.99	**
Nickel, total	ug/L	MW-30	8	3	11	15.5875	16.3448	12.7000	29.6000	15.5875	15.5875	121.8287	normal		
Selenium, total	ug/L	MW-30	8	3	11			4.0000	4.0000			5.7000	nonpar	.99	**
Silver, total	ug/L	MW-30	8	3	11			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-30	8	3	11			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-30	8	3	11			20.0000	20.0000			21.4000	nonpar	.99	**
Zinc, total	ug/L	MW-30	8	3	11	38.4375	41.5326	20.0000	29.3000	38.4375	38.4375	308.3996	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 5A – Background and GWPS Summary
(Interwell – Site Wide Prediction Limits)

Table 5A
Site-Wide Interwell Prediction Limits - GWPS Summary
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Site-Wide *Interwell* Background Study January, 2020

Inorganics - Appendix I										
Constituent	**Units**	**Model Type**	**Samples - N**	**Detections**	**Mean**	**SD**	**Prediction Limit**	**Confidence**	**GWPS**	**Source**
Antimony (Sb)	µg/l	nonparametric	71	0			2.000	0.99	6	SS
Arsenic (As)	µg/l	nonparametric	71	20			**66.100**	0.99	**66.1**	**Site**
Barium (Ba)	µg/l	lognormal	71	71	3.5364	0.4836	109.470		2000	SS
Beryllium (Be)	µg/l	nonparametric	71	0			4.000	0.99	4	SS
Cadmium (Cd)	µg/l	nonparametric	71	0			0.800	0.99	5	SS
Chromium (Cr)	µg/l	nonparametric	71	1			12.000	0.99	100	SS
Cobalt (Co)	µg/l	normal	73	49	11.6863	15.2029	**48.105**		**48.1070**	**Site**
Copper (Cu)	µg/l	nonparametric	71	5			32.800	0.99	1300	SS
Lead (Pb)	µg/l	nonparametric	71	2			6.900	0.99	15	SS
Nickel (Ni)	µg/l	lognormal	73	66	2.7603	1.0773	**207.713**		**207.7134**	**Site**
Selenium (Se)	µg/l	nonparametric	71	4			19.200	0.99	50	SS
Silver (Ag)	µg/l	nonparametric	71	0			4.000	0.99	100	SS
Thallium (Tl)	µg/l	nonparametric	71	0			4.000	0.99	2	SS
Vanadium (V)	µg/l	nonparametric	71	1			28.400	0.99	35	SS
Zinc (Zn)	µg/l	nonparametric	72	41			158.000	0.99	2000	SS

VOC - Appendix I										
Constituent	**Units**	**Model Type**	**Samples - N**	**Detections**	**Mean**	**SD**	**Prediction Limit**	**Confidence**	**GWPS**	**Source**
All	µg/l	DQR	71	0	<1	<1	<1		various	SS

= Prediction limit exceeds the GWPS. A Site-Specific GWPS equal to the Prediction Limit is used.

Table 6 – Summary of Detections

Table 6
Summary of Well/Detected Constituent Pairs that Exceed the Control
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Well	Constituent	Date	Most recent result (ug/L)	Background Standard (ug/L)	Monitoring Program
MW-21R	Arsenic	10/11/2024	12.60	5.6295	Assessment Monitoring Well

Table 7 – Summary of Ongoing and Newly Identified SSI

Table 7	KEY:	SSI	SSL LCL>GWPS

Summary of Ongoing & Newly Identified SSI
Note: The absence of shading indicates that the condition does not exist.
Annual Water Quality Report
NCIRSWA
Permit No. 94-SDP-01-75P

Monitoring Well	Compound	Sample Date	Each Result (ug/L)	Control Limit (ug/L)	95% LCL (ug/L)	GWPS Limit (ug/L)	SSI Initial Exceedance	Resamples Due	5th Background Sample
MW-18	Cobalt	9/30/2016	50.80	109.7417	28.128	**51.9***	NA	NA	4/13/2016
MW-18	Cobalt	4/20/2017	33.60	109.7417	31.106	**51.9***	NA	NA	4/13/2016
MW-18	Cobalt	10/18/2017	39.10	109.7417	31.62	**51.9***	NA	NA	4/13/2016
MW-18	Cobalt	10/15/2018	9.00	109.7417	12.41	**51.9***	NA	NA	4/13/2016
MW-18	Cobalt	4/9/2019	48.60	109.7417	12.703	**51.9***	NA	NA	4/13/2016
MW-18	Cobalt	10/9/2019	30.70	131.6205	11.974	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	4/1/2020	29.80	131.6205	10.478	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	10/5/2020	57.50	131.6205	25.581	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	4/13/2021	42.80	111.3162	24.947	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	10/21/2021	53.90	111.3162	31.319	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	4/19/2022	46.70	111.3162	42.364	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	10/18/2022	61.10	108.2662	41.615	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	4/11/2023	56.50	108.2662	47.468	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	10/5/2023	62.70	108.2662	47.468	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	12/19/2023	66.20	108.2662	48.284	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	4/23/2024	39.80	108.2662	42.527	**48.1***	NA	NA	4/13/2016
MW-18	Cobalt	10/11/2024	68.30	108.2662	43.757	**48.1***	NA	NA	4/13/2016
MW-18	Nickel	9/30/2016	46.90	98.9960	35.636	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/20/2017	31.50	98.9960	32.315	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/18/2017	36.10	98.9960	31.191	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/15/2018	13.00	98.9960	15.24	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/9/2019	38.40	98.9660	16.188	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/9/2019	30.90	117.3698	16.069	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/1/2020	30.00	117.3698	15.451	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/5/2020	43.30	117.3698	28.193	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/13/2021	35.60	104.4471	27.793	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/21/2021	41.70	104.4471	30.493	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/19/2022	38.20	104.4471	35.624	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/18/2022	44.10	101.5192	35.485	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/11/2023	43.10	101.5192	38.742	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/5/2023	47.70	101.5192	38.667	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	4/23/2024	37.20	101.5192	37.900	**207.713***	NA	NA	4/13/2016
MW-18	Nickel	10/11/2024	50.10	101.5192	37.842	**207.713***	NA	NA	4/13/2016

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Monitoring Well	Compound	Sample Date	Each Result (ug/L)	Control Limit (ug/L)	95% LCL (ug/L)	GWPS Limit (ug/L)	SSI Initial Exceedance	Resamples Due	5th Background Sample
MW-19	Cobalt	9/30/2016	13.40	84.4742	6.218	**51.9***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/20/2017	36.80	84.4742	9.838	**51.9***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/18/2017	24.8	84.4742	11.847	**51.9***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/15/2018	19.8	84.4742	12.053	**51.9***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/9/2019	35.4	84.4742	19.502	**51.9***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/9/2019	15.8	101.8515	13.981	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/1/2020	9.2	101.8515	6.961	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/5/2020	0.8	101.8515	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/13/2021	0.6	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/21/2021	1.1	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/19/2022	0.7	101.7277	0.546	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/18/2022	10.9	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/11/2023	4.1	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/5/2023	0.8	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	4/23/2024	0.7	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016
MW-19	Cobalt	10/11/2024	Missing	101.7277	0.000	**48.1***	N/A	N/A	4/13/2016

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MW-20	Cobalt	9/30/2016	4.10	20.4992	---	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/20/2017	1.20	20.4992	---	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/18/2017	7.4	20.4992	1.513	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	1/5/2018	6.6	20.4992	1.513	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/15/2018	6.9	20.4992	2.111	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/9/2019	3.9	20.4992	4.355	**51.9***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/9/2019	4.3	24.7523	3.609	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/1/2020	6	24.7523	3.610	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/5/2020	3.3	21.4551	3.012	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/13/2021	3.9	20.8548	3.012	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/21/2021	2.7	20.8548	2.286	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/19/2022	3.2	20.8548	2.696	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/18/2022	3.7	20.6036	2.742	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/11/2023	4	20.6036	2.728	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/5/2023	1.8	20.6036	2.029	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	4/23/2024	2.4	20.6036	1.744	**48.1***	N/A	N/A	10/18/2017
MW-20	Cobalt	10/11/2024	2.1	20.6036	1.421	**48.1***	N/A	N/A	10/18/2017

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Monitoring Well	Compound	Sample Date	Each Result (ug/L)	Control Limit (ug/L)	95% LCL (ug/L)	GWPS Limit (ug/L)	SSI Initial Exceedance	Resamples Due	5th Background Sample
MW-21R	Arsenic	4/20/2017	4.5	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/18/2017	4.5	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/15/2018	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/9/2019	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/9/2019	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/1/2020	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/5/2020	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/13/2021	<4	5.6295	2.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/21/2021	16.2	5.6295	0.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	1/10/2022	15.2	5.6295	0.000	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/19/2022	17.1	5.6295	4.243	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/18/2022	9.8	5.6295	10.712	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/11/2023	14.7	5.6295	10.542	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/5/2023	10.9	5.6295	9.148	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	4/23/2024	5.2	5.6295	5.549	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Arsenic	10/11/2024	12.6	5.6295	6.057	**66.1***	1/10/2022	N/A	4/9/2019
MW-21R	Cobalt	4/20/2017	25.20	---	---	**51.9***	N/A	N/A	4/9/2019
MW-21R	Cobalt	7/17/2017	20.90	---	---	**51.9***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/18/2017	19.4	---	---	**51.9***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/15/2018	15.7	---	15.677	**51.9***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/9/2019	12	43.8208	12.312	**51.9***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/9/2019	16.5	48.1081	12.315	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/1/2020	8.1	53.8038	8.543	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/5/2020	21.1	52.9745	7.814	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/13/2021	21.4	52.2526	9.479	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/21/2021	24.4	52.2526	10.216	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/19/2022	23.6	52.2526	20.713	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/18/2022	23.6	52.2526	21.733	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/11/2023	16.7	52.2526	17.837	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/5/2023	12.0	52.2526	12.300	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	4/23/2024	9.1	52.2526	7.905	**48.1***	N/A	N/A	4/9/2019
MW-21R	Cobalt	10/11/2024	6.8	52.2526	6.129	**48.1***	N/A	N/A	4/9/2019

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MW-25	Cobalt	10/18/2017	10.20	*1 of 8*	*pending*	**48.1***	NA	NA	4/23/2024
MW-25	Cobalt	5/18/2023	8.90	*2 of 8*	*pending*	**48.1***	NA	NA	4/23/2024
MW-25	Cobalt	7/7/2023	8.80	*3 of 8*	*pending*	**48.1***	NA	NA	4/23/2024
MW-25	Cobalt	10/5/2023	7.10	*4 of 8*	*pending*	**48.1***	NA	NA	4/23/2024
MW-25	Cobalt	4/23/2024	4.70	*5 of 8*	*pending*	**48.1***	NA	NA	4/23/2024
MW-25	Cobalt	10/11/2024	3.70	6 of 8	**3.3580**	**48.1***	NA	NA	4/23/2024
MW-25	Nickel	10/18/2017	22.30	*1 of 8*	*pending*	**207.713***	NA	NA	4/23/2024
MW-25	Nickel	5/18/2023	13.20	*2 of 8*	*pending*	**207.713***	NA	NA	4/23/2024
MW-25	Nickel	7/7/2023	15.80	*3 of 8*	*pending*	**207.713***	NA	NA	4/23/2024
MW-25	Nickel	10/5/2023	13.80	*4 of 8*	*pending*	**207.713***	NA	NA	4/23/2024
MW-25	Nickel	4/23/2024	7.90	*5 of 8*	*pending*	**207.713***	NA	NA	4/23/2024
MW-25	Nickel	10/11/2024	6.50	6 of 8	***5.7070***	**207.713***	NA	NA	4/23/2024

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MW-28	Cobalt	10/18/2017	dry	*pending*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Cobalt	5/18/2023	<0.4	*1 of 8*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Cobalt	7/7/2023	<0.4	*2 of 8*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Cobalt	10/5/2023	<0.4	*3 of 8*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Cobalt	4/23/2024	<0.4	*4 of 8*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Cobalt	10/11/2024	<0.4	*5 of 8*	*pending*	**48.1***	NA	NA	10/11/2024
MW-28	Nickel	10/18/2017	dry	*pending*	*pending*	**207.713***	NA	NA	10/11/2024
MW-28	Nickel	5/18/2023	5.80	*1 of 8*	*pending*	**207.713***	NA	NA	10/11/2024
MW-28	Nickel	7/7/2023	8.10	*2 of 8*	*pending*	**207.713***	NA	NA	10/11/2024
MW-28	Nickel	10/5/2023	8.90	*3 of 8*	*pending*	**207.713***	NA	NA	10/11/2024
MW-28	Nickel	4/23/2024	7.10	*4 of 8*	*pending*	**207.713***	NA	NA	10/11/2024
MW-28	Nickel	10/11/2024	7.60	*5 of 8*	*pending*	**207.713***	NA	NA	10/11/2024

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MW-30	Cobalt	10/9/2019	11.3	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	4/1/2020	3.5	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	10/5/2020	2.9	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	4/13/2021	2.9	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	10/21/2021	3	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	4/19/2022	4.7	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	10/18/2022	24.2	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	4/11/2023	6.5	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	10/5/2023	4.1	55.3050	---	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	4/23/2024	3.0	55.3050	0.000	**48.1***	N/A	N/A	10/21/2021
MW-30	Cobalt	10/11/2024	7.4	55.3050	2.842	**48.1***	N/A	N/A	10/21/2021

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Table 8 - Summary of Ongoing and Newly Identified SSL

(**Not Required**)

Table 9 – Analytical Data Summary

Table 9

Analytical Data Summary for GU-2

Constituents	Units	8/27/2019	9/24/2019	9/26/2019	4/11/2023
1,1,1,2-tetrachloroethane	ug/L	<1			<1
1,1,1-trichloroethane	ug/L	<1			<1
1,1,2,2-tetrachloroethane	ug/L	<1			<1
1,1,2-trichloroethane	ug/L	<1			<1
1,1-dichloroethane	ug/L	<1			<1
1,1-dichloroethene	ug/L	<1			<1
1,2,3-trichloropropane	ug/L	<1			<1
1,2-dibromo-3-chloropropane	ug/L	<1			<5
1,2-dibromoethane	ug/L	<1			<1
1,2-dichlorobenzene	ug/L	<1			<1
1,2-dichloroethane	ug/L	<1			<1
1,2-dichloropropane	ug/L	<1			<1
1,4-dichlorobenzene	ug/L	<1			<1
2-butanone (mek)	ug/L	<5			<10
2-hexanone (mbk)	ug/L	<5			<5
4-methyl-2-pentanone (mibk)	ug/L	<5			<5
Acetone	ug/L	<10.0			10.7
Acrylonitrile	ug/L	<5			<5
Antimony, total	ug/L	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	<4.0	4.5
Barium, total	ug/L	18.7	39.6	69.8	39.9
Benzene	ug/L	<1			<1
Beryllium, total	ug/L	<4	<4	<4	<4
Bromochloromethane	ug/L	<1			<1
Bromodichloromethane	ug/L	<1			<1
Bromoform	ug/L	<1			<1
Bromomethane	ug/L	<1			<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1			<1
Carbon tetrachloride	ug/L	<1			<1
Chlorobenzene	ug/L	<1			<1
Chloroethane	ug/L	<1			<1
Chloroform	ug/L	<1			<1
Chloromethane	ug/L	<1			<1
Chromium, total	ug/L	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L	<1			<1
Cis-1,3-dichloropropene	ug/L	<1			<1
Cobalt, total	ug/L	<.8	.9	<.8	6.5
Copper, total	ug/L	32.8	<4.0	<4.0	6.0
Dibromochloromethane	ug/L	<1			<1
Dibromomethane	ug/L	<1			<1
Ethylbenzene	ug/L	<1			<1
Iodomethane	ug/L	<1			<1
Lead, total	ug/L	<4	<4	<4	<4
Methylene chloride	ug/L	<5			<5
Nickel, total	ug/L	23.1	24.7	16.7	44.2
Selenium, total	ug/L	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4
Styrene	ug/L	<1			<1
Tetrachloroethene	ug/L	<1			<1
Thallium, total	ug/L	<2	<2	<2	<2
Toluene	ug/L	<1			<1
Trans-1,2-dichloroethene	ug/L	<1			<1
Trans-1,3-dichloropropene	ug/L	<1			<1
Trans-1,4-dichloro-2-butene	ug/L	<5			<5
Trichloroethene	ug/L	<1			<1
Trichlorofluoromethane	ug/L	<1			<1
Vanadium, total	ug/L	<20	<20	<20	<20
Vinyl acetate	ug/L	<5			<5
Vinyl chloride	ug/L	<1			<1
Xylenes, total	ug/L	<2			<2
Zinc, total	ug/L	22.8	12.2	10.4	30.1

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for GU-3

Constituents	Units	8/27/2019	9/9/2019	9/24/2019	9/26/2019	10/9/2019	4/1/2020	10/5/2023
1,1,1,2-tetrachloroethane	ug/L	<1				<1	<1	<1
1,1,1-trichloroethane	ug/L	<1				<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1				<1	<1	<1
1,1,2-trichloroethane	ug/L	<1				<1	<1	<1
1,1-dichloroethane	ug/L	<1				<1	<1	<1
1,1-dichloroethene	ug/L	<1				<1	<1	<1
1,2,3-trichloropropane	ug/L	<1				<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<1				<1	<5	<5
1,2-dibromoethane	ug/L	<1				<1	<1	<1
1,2-dichlorobenzene	ug/L	<1				<1	<1	<1
1,2-dichloroethane	ug/L	<1				<1	<1	<1
1,2-dichloropropane	ug/L	<1				<1	<1	<1
1,4-dichlorobenzene	ug/L	<1				<1	<1	<1
2-butanone (mek)	ug/L	<5				<5	<5	<10
2-hexanone (mbk)	ug/L	<5				<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5				<5	<5	<5
Acetone	ug/L	<10				<10	<10	<10
Acrylonitrile	ug/L	<5				<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.7
Barium, total	ug/L	26.2	26.1	25.8	24.5	26.3	22.1	55.1
Benzene	ug/L	<1				<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1				<1	<1	<1
Bromodichloromethane	ug/L	<1				<1	<1	<1
Bromoform	ug/L	<1				<1	<1	<1
Bromomethane	ug/L	<1				<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1				<1	<1	<1
Carbon tetrachloride	ug/L	<1				<1	<1	<1
Chlorobenzene	ug/L	<1				<1	<1	<1
Chloroethane	ug/L	<1				<1	<1	<1
Chloroform	ug/L	<1				<1	<1	<1
Chloromethane	ug/L	<1				<1	<1	<1
Chromium, total	ug/L	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	13.8
Cis-1,2-dichloroethene	ug/L	<1				<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1				<1	<1	<1
Cobalt, total	ug/L	3.0	2.3	1.7	1.7	<.8	<.8	19.8
Copper, total	ug/L	<4	<4	<4	<4	<4	<4	12
Dibromochloromethane	ug/L	<1				<1	<1	<1
Dibromomethane	ug/L	<1				<1	<1	<1
Ethylbenzene	ug/L	<1				<1	<1	<1
Iodomethane	ug/L	<1				<1	<1	<1
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4
Methylene chloride	ug/L	<5				<5	<5	<5
Nickel, total	ug/L	33.8	31.5	31.5	30.5	18.7	5.9	67.1
Selenium, total	ug/L	<4.0	<4.0	4.7	6.1	19.2	21.8	<4.0
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1				<1	<1	<1
Tetrachloroethene	ug/L	<1				<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2	<2	<2
Toluene	ug/L	<1				<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1				<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1				<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5				<5	<5	<5
Trichloroethene	ug/L	<1				<1	<1	<1
Trichlorofluoromethane	ug/L	<1				<1	<1	<1
Vanadium, total	ug/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	22.4
Vinyl acetate	ug/L	<5				<5	<5	<5
Vinyl chloride	ug/L	<1				<1	<1	<1
Xylenes, total	ug/L	<2				<2	<2	<2
Zinc, total	ug/L	11.2	8.4	8.8	8.8	<20.0	<20.0	26.4

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for GU-4

Constituents	Units	9/27/2024	10/11/2024
Antimony, total	ug/L	<2	<2
Arsenic, total	ug/L	<4	<4
Barium, total	ug/L	19.6	15.2
Beryllium, total	ug/L	<4	<4
Cadmium, total	ug/L	<.8	<.8
Chromium, total	ug/L	<8	<8
Cobalt, total	ug/L	.6	<.4
Copper, total	ug/L	<4	<4
Lead, total	ug/L	<4	<4
Nickel, total	ug/L	35.5	18.4
Selenium, total	ug/L	<4	<4
Silver, total	ug/L	<4	<4
Thallium, total	ug/L	<2	<2
Vanadium, total	ug/L	<20	<20
Zinc, total	ug/L	3590	358

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for GU-5

Constituents	Units	9/27/2024	10/11/2024
Antimony, total	ug/L	<2	<2
Arsenic, total	ug/L	<4	<4
Barium, total	ug/L	25.6	23.3
Beryllium, total	ug/L	<4	<4
Cadmium, total	ug/L	<.8	<.8
Chromium, total	ug/L	<8	<8
Cobalt, total	ug/L	2.8	2.2
Copper, total	ug/L	<4	<4
Lead, total	ug/L	<4	<4
Nickel, total	ug/L	30.5	23.4
Selenium, total	ug/L	<4	<4
Silver, total	ug/L	<4	<4
Thallium, total	ug/L	<2	<2
Vanadium, total	ug/L	<20	<20
Zinc, total	ug/L	11500	13000

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10A

Constituents	Units	10/28/2014	4/14/2016	9/29/2016	4/20/2017	10/18/2017	10/15/2018	4/9/2019	10/9/2019
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ug/L	18.1	<10.0	<10.0	<10.0	20.3	<10.0	<10.0	<10.0
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	8.4	10.2	8.8	<4.0	6.6	4.1	4.7	16.9
Barium, total	ug/L	143.0	41.3	35.1	29.3	37.8	46.3	31.1	62.3
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	12.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	7.9	1.5	<.8	<.8	<.8	1.3	<.8	2.1
Copper, total	ug/L	11.4	<8.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	6.9	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	55.2	25.8	<8.0	12.9	<4.0	17.5	4.8	14.3
Selenium, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	4.9	<4.0	<4.0
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<4	<4	<4	<4	<4	<4	<2	<2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	28.4	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	39.7	32.4	8.2	9.3	<20.0	8.1	<8.0	62.9

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10A

Constituents	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	7/15/2022	10/18/2022	4/11/2023	7/7/2023
1,1,1,2-tetrachloroethane	<1	<1	<1	<1	<1		<1	<1	
1,1,1-trichloroethane	<1	<1	<1	<1	<1		<1	<1	
1,1,2,2-tetrachloroethane	<1	<1	<1	<1	<1		<1	<1	
1,1,2-trichloroethane	<1	<1	<1	<1	<1		<1	<1	
1,1-dichloroethane	<1	<1	<1	<1	<1		<1	<1	
1,1-dichloroethene	<1	<1	<1	<1	<1		<1	<1	
1,2,3-trichloropropane	<1	<1	<1	<1	<1		<1	<1	
1,2-dibromo-3-chloropropane	<5	<5	<5	<5	<5		<5	<5	
1,2-dibromoethane	<1	<1	<1	<1	<1		<1	<1	
1,2-dichlorobenzene	<1	<1	<1	<1	<1		<1	<1	
1,2-dichloroethane	<1	<1	<1	<1	<1		<1	<1	
1,2-dichloropropane	<1	<1	<1	<1	<1		<1	<1	
1,4-dichlorobenzene	<1	<1	<1	<1	<1		<1	<1	
2-butanone (mek)	<5	<5	<5	<5	<10		<10	<10	
2-hexanone (mbk)	<5	<5	<5	<5	<5		<5	<5	
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5	<5		<5	<5	
Acetone	<10.0	<10.0	<10.0	<10.0	<10.0		<10.0	<10.0	
Acrylonitrile	<5	<5	<5	<5	<5		<5	<5	
Antimony, total	<2	<2	<2	<2	<2		<2	<2	
Arsenic, total	4.5	4.4	7.8	<4.0	<4.0		7.5	38.5	7.3
Barium, total	23.7	28.3	38.7	34.2	453.0	47.6	46.1	173.0	39.0
Benzene	<1	<1	<1	<1	<1		<1	<1	
Beryllium, total	<4	<4	<4	<4	<4		<4	<4	
Bromochloromethane	<1	<1	<1	<1	<1		<1	<1	
Bromodichloromethane	<1	<1	<1	<1	<1		<1	<1	
Bromoform	<1	<1	<1	<1	<1		<1	<1	
Bromomethane	<1	<1	<1	<1	<1		<1	<1	
Cadmium, total	<.8	<.8	<.8	<.8	<.8		<.8	<.8	
Carbon disulfide	<1	<1	<1	<1	<1		<1	<1	
Carbon tetrachloride	<1	<1	<1	<1	<1		<1	<1	
Chlorobenzene	<1	<1	<1	<1	<1		<1	<1	
Chloroethane	<1	<1	<1	<1	<1		<1	<1	
Chloroform	<1	<1	<1	<1	<1		<1	<1	
Chloromethane	<1	<1	<1	<1	<1		<1	<1	
Chromium, total	<8.0	<8.0	<8.0	<8.0	<8.0		<8.0	9.1	
Cis-1,2-dichloroethene	<1	<1	<1	<1	<1		<1	<1	
Cis-1,3-dichloropropene	<1	<1	<1	<1	<1		<1	<1	
Cobalt, total	<.8	.4	.5	.5	<.4		2.0	4.9	
Copper, total	<4.0	<4.0	<4.0	9.0	<4.0		<4.0	16.3	<4.0
Dibromochloromethane	<1	<1	<1	<1	<1		<1	<1	
Dibromomethane	<1	<1	<1	<1	<1		<1	<1	
Ethylbenzene	<1	<1	<1	<1	<1		<1	<1	
Iodomethane	<1	<1	<1	<1	<1		<1	<1	
Lead, total	<4.0	<4.0	<4.0	<4.0	<4.0		<4.0	5.1	
Methylene chloride	<5	<5	<5	<5	<5		<5	<5	
Nickel, total	6.7	<4.0	<4.0	<4.0	<4.0		5.6	22.4	
Selenium, total	<4.0	<4.0	<4.0	<4.0	9.0		<4.0	<4.0	
Silver, total	<4	<4	<4	<4	<4		<4	<4	
Styrene	<1	<1	<1	<1	<1		<1	<1	
Tetrachloroethene	<1	<1	<1	<1	<1		<1	<1	
Thallium, total	<2	<2	<2	<2	<2		<2	<2	
Toluene	<1	<1	<1	<1	<1		<1	<1	
Trans-1,2-dichloroethene	<1	<1	<1	<1	<1		<1	<1	
Trans-1,3-dichloropropene	<1	<1	<1	<1	<1		<1	<1	
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5	<5		<5	<5	
Trichloroethene	<1	<1	<1	<1	<1		<1	<1	
Trichlorofluoromethane	<1	<1	<1	<1	<1		<1	<1	
Vanadium, total	<20.0	<20.0	<20.0	<20.0	<20.0		<20.0	<20.0	
Vinyl acetate	<5	<5	<5	<5	<5		<5	<5	
Vinyl chloride	<1	<1	<1	<1	<1		<1	<1	
Xylenes, total	<2	<2	<2	<2	<2		<2	<2	
Zinc, total	<20.0	<20.0	<20.0	<20.0	<20.0		<20.0	69.3	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10A

Constituents	10/5/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1
1,1-dichloroethane	<1	<1	<1
1,1-dichloroethene	<1	<1	<1
1,2,3-trichloropropane	<1	<1	<1
1,2-dibromo-3-chloropropane	<5	<5	<5
1,2-dibromoethane	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1
1,2-dichloroethane	<1	<1	<1
1,2-dichloropropane	<1	<1	<1
1,4-dichlorobenzene	<1	<1	<1
2-butanone (mek)	<10	<10	<10
2-hexanone (mbk)	<5	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5
Acetone	<10.0	<10.0	<10.0
Acrylonitrile	<5	<5	<5
Antimony, total	<2	<2	<2
Arsenic, total	4.7	<4.0	22.1
Barium, total	29.7	31.0	62.2
Benzene	<1	<1	<1
Beryllium, total	<4	<4	<4
Bromochloromethane	<1	<1	<1
Bromodichloromethane	<1	<1	<1
Bromoform	<1	<1	<1
Bromomethane	<1	<1	<1
Cadmium, total	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1
Carbon tetrachloride	<1	<1	<1
Chlorobenzene	<1	<1	<1
Chloroethane	<1	<1	<1
Chloroform	<1	<1	<1
Chloromethane	<1	<1	<1
Chromium, total	<8.0	<8.0	<8.0
Cis-1,2-dichloroethene	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1
Cobalt, total	.5	<.4	1.8
Copper, total	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1
Dibromomethane	<1	<1	<1
Ethylbenzene	<1	<1	<1
Iodomethane	<1	<1	<1
Lead, total	<4.0	<4.0	<4.0
Methylene chloride	<5	<5	<5
Nickel, total	<4.0	<4.0	11.0
Selenium, total	<4.0	<4.0	<4.0
Silver, total	<4	<4	<4
Styrene	<1	<1	<1
Tetrachloroethene	<1	<1	<1
Thallium, total	<2	<2	<2
Toluene	<1	<1	<1
Trans-1,2-dichloroethene	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5
Trichloroethene	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1
Vanadium, total	<20.0	<20.0	<20.0
Vinyl acetate	<5	<5	<5
Vinyl chloride	<1	<1	<1
Xylenes, total	<2	<2	<2
Zinc, total	<20.0	<20.0	26.6

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10B

Constituents	Units	10/28/2014	12/3/2014	4/14/2016	9/29/2016	4/20/2017	10/18/2017	10/15/2018	4/9/2019
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	19.2	<10.0	<10.0
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	4.1	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Barium, total	ug/L	104.0	97.5	36.9	28.4	30.9	28.2	26.6	30.8
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	3.1	4.1	<.8	<.8	<.8	<.8	<.8	<.8
Copper, total	ug/L	5.3	7.4	<8.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	<4.0	4.6	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	15.8	17.7	13.2	<8.0	9.8	<4.0	<4.0	12.3
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Solids, total suspended	mg/L	614							
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	39.3	158.0	<20.0	9.7	8.2	<20.0	9.3	13.3

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10B

Constituents	10/9/2019	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022	4/11/2023	10/5/2023
1,1,1,2-tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	<1	<5	<5	<5	<5	<5	<5	<5	<5
1,2-dibromoethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	<5	<5	<5	<5	<5	<10	<10	<10	<10
2-hexanone (mbk)	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acrylonitrile	<5	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Barium, total	47.9	31.1	30.8	28.8	25.1	28.5	26.9	28.8	26.8
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	<8	<8	<8	<8	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	<.8	<.8	<.4	<.4	<.4	<.4	1.5	<.4	<.4
Copper, total	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	8.4	9.1	6.2	<4.0	<4.0	<4.0	4.9	4.9	5.6
Selenium, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	<20	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	19.3	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-10B

Constituents	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	<1	<1
1,1,1-trichloroethane	<1	<1
1,1,2,2-tetrachloroethane	<1	<1
1,1,2-trichloroethane	<1	<1
1,1-dichloroethane	<1	<1
1,1-dichloroethene	<1	<1
1,2,3-trichloropropane	<1	<1
1,2-dibromo-3-chloropropane	<5	<5
1,2-dibromoethane	<1	<1
1,2-dichlorobenzene	<1	<1
1,2-dichloroethane	<1	<1
1,2-dichloropropane	<1	<1
1,4-dichlorobenzene	<1	<1
2-butanone (mek)	<10	<10
2-hexanone (mbk)	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5
Acetone	<10.0	<10.0
Acrylonitrile	<5	<5
Antimony, total	<2	<2
Arsenic, total	<4.0	<4.0
Barium, total	28.7	26.0
Benzene	<1	<1
Beryllium, total	<4	<4
Bromochloromethane	<1	<1
Bromodichloromethane	<1	<1
Bromoform	<1	<1
Bromomethane	<1	<1
Cadmium, total	<.8	<.8
Carbon disulfide	<1	<1
Carbon tetrachloride	<1	<1
Chlorobenzene	<1	<1
Chloroethane	<1	<1
Chloroform	<1	<1
Chloromethane	<1	<1
Chromium, total	<8	<8
Cis-1,2-dichloroethene	<1	<1
Cis-1,3-dichloropropene	<1	<1
Cobalt, total	<.4	<.4
Copper, total	<4.0	<4.0
Dibromochloromethane	<1	<1
Dibromomethane	<1	<1
Ethylbenzene	<1	<1
Iodomethane	<1	<1
Lead, total	<4.0	<4.0
Methylene chloride	<5	<5
Nickel, total	5.6	9.6
Selenium, total	<4	<4
Silver, total	<4	<4
Solids, total suspended		
Styrene	<1	<1
Tetrachloroethene	<1	<1
Thallium, total	<2	<2
Toluene	<1	<1
Trans-1,2-dichloroethene	<1	<1
Trans-1,3-dichloropropene	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5
Trichloroethene	<1	<1
Trichlorofluoromethane	<1	<1
Vanadium, total	<20	<20
Vinyl acetate	<5	<5
Vinyl chloride	<1	<1
Xylenes, total	<2	<2
Zinc, total	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	Units	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020
(3 4)-methylphenol	ug/L	<8	<8						
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	21.3	20.0	24.1	22.0	14.8	13.3	12.1	10.3
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	ug/L	<1	<1						
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene	ug/L	<8	<8						
1,2,4-trichlorobenzene	ug/L	<1	<1						
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<5
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene	ug/L	<8	<8						
1,3,5-trinitrobenzene	ug/L	<8	<8						
1,3-dichlorobenzene	ug/L	<1	<1						
1,3-dichloropropane	ug/L	<1	<1						
1,3-dinitrobenzene	ug/L	<8	<8						
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-naphthoquinone	ug/L	<8	<8						
1,4-phenylenediamine	ug/L	<8	<8						
1-naphthylamine	ug/L	<8	<8						
2,2-dichloropropane	ug/L	<1	<1						
2,3,4,6-tetrachlorophenol	ug/L	<8	<8						
2,4,5-t	ug/L	<.5	<.5						
2,4,5-tp (silvex)	ug/L	<.5	<.5						
2,4,5-trichlorophenol	ug/L	<8	<8						
2,4,6-trichlorophenol	ug/L	<8	<8						
2,4-d	ug/L	<2	<2						
2,4-dichlorophenol	ug/L	<8	<8						
2,4-dimethylphenol	ug/L	<8	<8						
2,4-dinitrophenol	ug/L	<8	<8						
2,4-dinitrotoluene	ug/L	<8	<8						
2,6-dichlorophenol	ug/L	<8	<8						
2,6-dinitrotoluene	ug/L	<8	<8						
2-acetylaminofluorene	ug/L	<8	<8						
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-chloronaphthalene	ug/L	<8	<8						
2-chlorophenol	ug/L	<8	<8						
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-methylnaphthalene	ug/L	<8	<8						
2-methylphenol (o-cresol)	ug/L	<8	<8						
2-naphthylamine	ug/L	<8	<8						
2-nitroaniline	ug/L	<8	<8						
2-nitrophenol	ug/L	<8	<8						
3,3´-dichlorobenzidine	ug/L	<8	<8						
3,3'-dimethylbenzidine	ug/L	<8	<8						
3-methylcholanthrene	ug/L	<8	<8						
3-nitroaniline	ug/L	<8	<8						
4,4'-ddd	ug/L	<.05	<.05						
4,4'-dde	ug/L	<.05	<.05						
4,4'-ddt	ug/L	<.05	<.05						
4,6-dinitro-2-methylphenol	ug/L	<8	<8						
4-aminobiphenyl	ug/L	<8	<8						
4-bromophenyl phenyl ether	ug/L	<8	<8						
4-chloro-3-methylphenol	ug/L	<8	<8						
4-chloroaniline	ug/L	<8	<8						
4-chlorophenyl phenyl ether	ug/L	<8	<8						
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-nitroaniline	ug/L	<8	<8						
4-nitrophenol	ug/L	<8	<8						
5-nitro-o-toluidine	ug/L	<8	<8						
7,12-dimethylbenz (a) anthracene	ug/L	<8	<8						
Acenaphthene	ug/L	<8	<8						
Acenaphthylene	ug/L	<8	<8						
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Acetonitrile	ug/L	<10	<10						
Acetophenone	ug/L	<8	<8						
Acrolein	ug/L	<10	<10						
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Aldrin	ug/L	<.05	<.05						
Allyl chloride	ug/L	<1	<1						
Alpha-bhc	ug/L	<.05	<.05						
Anthracene	ug/L	<8	<8						

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	10/6/2020	4/11/2023
(3 4)-methylphenol		
1,1,1,2-tetrachloroethane	<1	<1
1,1,1-trichloroethane	<1	<1
1,1,2,2-tetrachloroethane	<1	<1
1,1,2-trichloroethane	<1	<1
1,1-dichloroethane	9.9	8.6
1,1-dichloroethene	<1	<1
1,1-dichloropropene		
1,2,3-trichloropropane	<1	<1
1,2,4,5-tetrachlorobenzene		
1,2,4-trichlorobenzene		
1,2-dibromo-3-chloropropane	<5	<5
1,2-dibromoethane	<1	<1
1,2-dichlorobenzene	<1	<1
1,2-dichloroethane	<1	<1
1,2-dichloropropane	<1	<1
1,2-dinitrobenzene		
1,3,5-trinitrobenzene		
1,3-dichlorobenzene		
1,3-dichloropropane		
1,3-dinitrobenzene		
1,4-dichlorobenzene	<1	<1
1,4-naphthoquinone		
1,4-phenylenediamine		
1-naphthylamine		
2,2-dichloropropane		
2,3,4,6-tetrachlorophenol		
2,4,5-t		
2,4,5-tp (silvex)		
2,4,5-trichlorophenol		
2,4,6-trichlorophenol		
2,4-d		
2,4-dichlorophenol		
2,4-dimethylphenol		
2,4-dinitrophenol		
2,4-dinitrotoluene		
2,6-dichlorophenol		
2,6-dinitrotoluene		
2-acetylaminofluorene		
2-butanone (mek)	<5	<10
2-chloronaphthalene		
2-chlorophenol		
2-hexanone (mbk)	<5	<5
2-methylnaphthalene		
2-methylphenol (o-cresol)		
2-naphthylamine		
2-nitroaniline		
2-nitrophenol		
3,3´-dichlorobenzidine		
3,3'-dimethylbenzidine		
3-methylcholanthrene		
3-nitroaniline		
4,4'-ddd		
4,4'-dde		
4,4'-ddt		
4,6-dinitro-2-methylphenol		
4-aminobiphenyl		
4-bromophenyl phenyl ether		
4-chloro-3-methylphenol		
4-chloroaniline		
4-chlorophenyl phenyl ether		
4-methyl-2-pentanone (mibk)	<5	<5
4-nitroaniline		
4-nitrophenol		
5-nitro-o-toluidine		
7,12-dimethylbenz (a) anthracene		
Acenaphthene		
Acenaphthylene		
Acetone	<10	<10
Acetonitrile		
Acetophenone		
Acrolein		
Acrylonitrile	<5	<5
Aldrin		
Allyl chloride		
Alpha-bhc		
Anthracene		

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	Units	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arochlor 1016	ug/L	<.1	<.1						
Arochlor 1221	ug/L	<.2	<.2						
Arochlor 1232	ug/L	<.2	<.2						
Arochlor 1242	ug/L	<.2	<.2						
Arochlor 1248	ug/L	<.2	<.2						
Arochlor 1254	ug/L	<.1	<.1						
Arochlor 1260	ug/L	<.1	<.1						
Arsenic, total	ug/L	11.2	10.3	7.4	8.2	5.9	8.2	9.2	14.2
Azobenzene	ug/L	<8	<8						
Barium, total	ug/L	273.0	61.3	52.4	57.8	65.6	62.4	75.9	138.0
Benzene	ug/L	1.2	1.8	1.2	1.6	3.2	2.9	<1.0	2.8
Benzo(a)anthracene	ug/L	<8	<8						
Benzo(a)pyrene	ug/L	<8	<8						
Benzo(b)fluoranthene	ug/L	<8	<8						
Benzo(g,h,i)perylene	ug/L	<8	<8						
Benzo(k)fluoranthene	ug/L	<8	<8						
Benzyl alcohol	ug/L	<8	<8						
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Beta-bhc	ug/L	<.05	<.05						
Bis(2-chloroethoxy)methane	ug/L	<8	<8						
Bis(2-chloroethyl)ether	ug/L	<8	<8						
Bis(2-ethylhexyl)phthalate	ug/L	8	10	<10	<6	<6	6	6	<6
Bis[2-chloroisopropyl]ether	ug/L	<8	<8						
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate	ug/L	<8	<8						
Cadmium, total	ug/L	1.0	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlordane	ug/L	<.1	<.1						
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzilate	ug/L	<8	<8						
Chloroethane	ug/L	6.1	7.0	8.0	8.5	6.5	5.9	6.0	4.9
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroprene	ug/L	<1	<1						
Chromium, total	ug/L	69.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Chrysene	ug/L	<8	<8						
Cis-1,2-dichloroethene	ug/L	6.9	11.8	9.2	8.7	11.8	12.4	9.9	8.4
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	17.6	20.9	18.8	16.2	17.5	23.4	27.6	39.9
Copper, total	ug/L	25.0	<4.0	<4.0	<4.0	8.2	<4.0	<4.0	5.4
Cyanide, total	mg/L	<.005	<.005						
Delta-bhc	ug/L	<.05	<.05						
Diallate	ug/L	<8	<8						
Dibenzo(a,h)anthracene	ug/L	<8	<8						
Dibenzofuran	ug/L	<8	<8						
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L	<1	<1						
Dieldrin	ug/L	<.05	<.05						
Diethyl phthalate	ug/L	<8	<8						
Dimethoate	ug/L	<.4	<.4						
Dimethylphthalate	ug/L	<8	<8						
Di-n-butyl phthalate	ug/L	<8	<8						
Di-n-octyl phthalate	ug/L	<8	<8						
Dinoseb	ug/L	<.5	<.5						
Diphenylamine	ug/L	<8	<8						
Disulfoton	ug/L	<.4	<.4						
Endosulfan i	ug/L	<.05	<.05						
Endosulfan ii	ug/L	<.05	<.05						
Endosulfan sulfate	ug/L	<.05	<.05						
Endrin	ug/L	<.05	<.05						
Endrin aldehyde	ug/L	<.05	<.05						
Ethyl methacrylate	ug/L	<10	<10						
Ethyl methanesulfonate	ug/L	<8	<8						
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Famphur	ug/L	<.4	<.4						
Fluoranthene	ug/L	<8	<8						
Fluorene	ug/L	<8	<8						
Gamma-bhc [lindane]	ug/L	<.05	<.05						
Heptachlor	ug/L	<.05	<.05						
Heptachlor epoxide	ug/L	<.05	<.05						
Hexachlorobenzene	ug/L	<.05	<.05						

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	10/6/2020	4/11/2023
Antimony, total	<2	
Arochlor 1016		
Arochlor 1221		
Arochlor 1232		
Arochlor 1242		
Arochlor 1248		
Arochlor 1254		
Arochlor 1260		
Arsenic, total	8.8	
Azobenzene		
Barium, total	201.0	
Benzene	2.8	3.4
Benzo(a)anthracene		
Benzo(a)pyrene		
Benzo(b)fluoranthene		
Benzo(g,h,i)perylene		
Benzo(k)fluoranthene		
Benzyl alcohol		
Beryllium, total	<4	
Beta-bhc		
Bis(2-chloroethoxy)methane		
Bis(2-chloroethyl)ether		
Bis(2-ethylhexyl)phthalate	<25	
Bis[2-chloroisopropyl]ether		
Bromochloromethane	<1	<1
Bromodichloromethane	<1	<1
Bromoform	<1	<1
Bromomethane	<1	<1
Butyl benzyl phthalate		
Cadmium, total	1.1	
Carbon disulfide	<1	<1
Carbon tetrachloride	<1	<1
Chlordane		
Chlorobenzene	<1	<1
Chlorobenzilate		
Chloroethane	5.1	4.0
Chloroform	<1	<1
Chloromethane	<1	<1
Chloroprene		
Chromium, total	19.7	
Chrysene		
Cis-1,2-dichloroethene	9.9	9.2
Cis-1,3-dichloropropene	<1	<1
Cobalt, total	24.6	
Copper, total	18.6	
Cyanide, total		
Delta-bhc		
Diallate		
Dibenzo(a,h)anthracene		
Dibenzofuran		
Dibromochloromethane	<1	<1
Dibromomethane	<1	<1
Dichlorodifluoromethane		
Dieldrin		
Diethyl phthalate		
Dimethoate		
Dimethylphthalate		
Di-n-butyl phthalate		
Di-n-octyl phthalate		
Dinoseb		
Diphenylamine		
Disulfoton		
Endosulfan i		
Endosulfan ii		
Endosulfan sulfate		
Endrin		
Endrin aldehyde		
Ethyl methacrylate		
Ethyl methanesulfonate		
Ethylbenzene	<1	<1
Famphur		
Fluoranthene		
Fluorene		
Gamma-bhc [lindane]		
Heptachlor		
Heptachlor epoxide		
Hexachlorobenzene		

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	Units	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020
Hexachlorobutadiene	ug/L	<8	<8						
Hexachlorocyclopentadiene	ug/L	<8	<8						
Hexachloroethane	ug/L	<8	<8						
Hexachloropropene	ug/L	<8	<8						
Indeno(1,2,3-cd)pyrene	ug/L	<8	<8						
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Isobutanol	mg/L	<1	<1						
Isodrin	ug/L	<8	<8						
Isophorone	ug/L	<8	<8						
Isosafrole	ug/L	<8	<8						
Kepone	ug/L	<8	<8						
Lead, total	ug/L	23.4	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Mercury, Total	ug/L	<.5	<.5						
Methacrylonitrile	ug/L	<1	<1						
Methapyrilene	ug/L	<8	<8						
Methoxychlor	ug/L	<.05	<.05						
Methyl methacrylate	ug/L	<1	<1						
Methyl methanesulfonate	ug/L	<8	<8						
Methyl parathion	ug/L	<.4	<.4						
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Naphthalene	ug/L	<8	<8						
Nickel, total	ug/L	134	135	117	113	111	128	107	175
Nitrobenzene	ug/L	<8	<8						
N-nitrosodiethylamine	ug/L	<8	<8						
N-nitrosodimethylamine	ug/L	<8	<8						
N-nitrosodi-n-butylamine	ug/L	<8	<8						
N-nitroso-di-n-propylamine	ug/L	<8	<8						
N-nitrosodiphenylamine	ug/L	<8	<8						
N-nitrosomethylethylamine	ug/L	<8	<8						
N-nitrosopiperidine	ug/L	<8	<8						
N-nitrosopyrrolidine	ug/L	<8	<8						
O,o,o-triethyl phosphorothioate	ug/L	<.4	<.4						
O-toluidine	ug/L	<8	<8						
P-(dimethylamino)azobenzene	ug/L	<8	<8						
Parathion	ug/L	<.4	<.4						
Pentachlorobenzene	ug/L	<8	<8						
Pentachloronitrobenzene (pcnb)	ug/L	<8	<8						
Pentachlorophenol	ug/L	<8	<8						
Phenacetin	ug/L	<8	<8						
Phenanthrene	ug/L	<8	<8						
Phenol	ug/L	<8	<8						
Phorate	ug/L	<.4	<.4						
Pronamide	ug/L	<8	<8						
Propionitrile	ug/L	<10	<40						
Pyrene	ug/L	<8	<8						
Safrole	ug/L	<8	<8						
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Sulfide, total	mg/L	.16	<.10	<.10	<.10	<.10	<.10	<.10	<.10
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<1	<4	<4	<4	<4	<2	<2	<2
Thionazin	ug/L	<.4	<.4						
Tin, Total	ug/L	<20	<20						
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Toxaphene	ug/L	<.2	<.2						
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	2.0	2.4	2.2	2.2	2.6	1.8	1.3	2.1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	89.3	15.5	11.0	10.0	13.1	<8.0	22.4	23.6

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-15A1

Constituents	10/6/2020	4/11/2023
Hexachlorobutadiene		
Hexachlorocyclopentadiene		
Hexachloroethane		
Hexachloropropene		
Indeno(1,2,3-cd)pyrene		
Iodomethane	<1	<1
Isobutanol		
Isodrin		
Isophorone		
Isosafrole		
Kepone		
Lead, total	13.9	
Mercury, Total		
Methacrylonitrile		
Methapyrilene		
Methoxychlor		
Methyl methacrylate		
Methyl methanesulfonate		
Methyl parathion		
Methylene chloride	<5	<5
Naphthalene		
Nickel, total	121	
Nitrobenzene		
N-nitrosodiethylamine		
N-nitrosodimethylamine		
N-nitrosodi-n-butylamine		
N-nitroso-di-n-propylamine		
N-nitrosodiphenylamine		
N-nitrosomethylethylamine		
N-nitrosopiperidine		
N-nitrosopyrrolidine		
O,o,o-triethyl phosphorothioate		
O-toluidine		
P-(dimethylamino)azobenzene		
Parathion		
Pentachlorobenzene		
Pentachloronitrobenzene (pcnb)		
Pentachlorophenol		
Phenacetin		
Phenanthrene		
Phenol		
Phorate		
Pronamide		
Propionitrile		
Pyrene		
Safrole		
Selenium, total	<4	
Silver, total	<4	
Styrene	<1	<1
Sulfide, total		
Tetrachloroethene	<1	<1
Thallium, total	<2	
Thionazin		
Tin, Total		
Toluene	<1	<1
Toxaphene		
Trans-1,2-dichloroethene	<1	<1
Trans-1,3-dichloropropene	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5
Trichloroethene	<1	<1
Trichlorofluoromethane	<1	<1
Vanadium, total	<20	
Vinyl acetate	<5	<5
Vinyl chloride	1.6	1.5
Xylenes, total	<2	<2
Zinc, total	81.2	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	Units	10/28/2014	3/30/2015	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
(3 4)-methylphenol	ug/L							<8	
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	2.6	2.3	2.0	1.0	1.5	1.5	1.3	2.2
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	ug/L							<1	
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene	ug/L							<8	
1,2,4-trichlorobenzene	ug/L							<1	
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene	ug/L							<8	
1,3,5-trinitrobenzene	ug/L							<8	
1,3-dichlorobenzene	ug/L							<1	
1,3-dichloropropane	ug/L							<1	
1,3-dinitrobenzene	ug/L							<8	
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-naphthoquinone	ug/L							<8	
1,4-phenylenediamine	ug/L							<8	
1-naphthylamine	ug/L							<8	
2,2-dichloropropane	ug/L							<1	
2,3,4,6-tetrachlorophenol	ug/L							<8	
2,4,5-t	ug/L							<.5	
2,4,5-tp (silvex)	ug/L							<.5	
2,4,5-trichlorophenol	ug/L							<8	
2,4,6-trichlorophenol	ug/L							<8	
2,4-d	ug/L							<2	
2,4-dichlorophenol	ug/L							<8	
2,4-dimethylphenol	ug/L							<8	
2,4-dinitrophenol	ug/L							<8	
2,4-dinitrotoluene	ug/L							<8	
2,6-dichlorophenol	ug/L							<8	
2,6-dinitrotoluene	ug/L							<8	
2-acetylaminofluorene	ug/L							<8	
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-chloronaphthalene	ug/L							<8	
2-chlorophenol	ug/L							<8	
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-methylnaphthalene	ug/L							<8	
2-methylphenol (o-cresol)	ug/L							<8	
2-naphthylamine	ug/L							<8	
2-nitroaniline	ug/L							<8	
2-nitrophenol	ug/L							<8	
3,3´-dichlorobenzidine	ug/L							<8	
3,3'-dimethylbenzidine	ug/L							<8	
3-methylcholanthrene	ug/L							<8	
3-nitroaniline	ug/L							<8	
4,4'-ddd	ug/L							<.05	
4,4'-dde	ug/L							<.05	
4,4'-ddt	ug/L							<.05	
4,6-dinitro-2-methylphenol	ug/L							<8	
4-aminobiphenyl	ug/L							<8	
4-bromophenyl phenyl ether	ug/L							<8	
4-chloro-3-methylphenol	ug/L							<8	
4-chloroaniline	ug/L							<8	
4-chlorophenyl phenyl ether	ug/L							<8	
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-nitroaniline	ug/L							<8	
4-nitrophenol	ug/L							<8	
5-nitro-o-toluidine	ug/L							<8	
7,12-dimethylbenz (a) anthracene	ug/L							<8	
Acenaphthene	ug/L							<8	
Acenaphthylene	ug/L							<8	
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	24.1	<10.0
Acetonitrile	ug/L							<10	
Acetophenone	ug/L							<8	
Acrolein	ug/L							<10	
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Aldrin	ug/L							<.05	
Allyl chloride	ug/L							<1	
Alpha-bhc	ug/L							<.05	
Anthracene	ug/L							<8	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022
(3 4)-methylphenol									<8
1,1,1,2-tetrachloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1-dichloroethane	1.0	<1.0		<1.0	<1.0	<1.0	<1.0	1.1	1.0
1,1-dichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
1,1-dichloropropene									<1
1,2,3-trichloropropane	<1	<1		<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene									<8
1,2,4-trichlorobenzene									<1
1,2-dibromo-3-chloropropane	<1	<1		<5	<5	<5	<5	<5	<1
1,2-dibromoethane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichloropropane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene									<8
1,3,5-trinitrobenzene									<8
1,3-dichlorobenzene									<1
1,3-dichloropropane									<1
1,3-dinitrobenzene									<8
1,4-dichlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
1,4-naphthoquinone									<8
1,4-phenylenediamine									<8
1-naphthylamine									<8
2,2-dichloropropane									<1
2,3,4,6-tetrachlorophenol									<8
2,4,5-t									<.5
2,4,5-tp (silvex)									<.5
2,4,5-trichlorophenol									<8
2,4,6-trichlorophenol									<8
2,4-d									<2
2,4-dichlorophenol									<8
2,4-dimethylphenol									<8
2,4-dinitrophenol									<8
2,4-dinitrotoluene									<8
2,6-dichlorophenol									<8
2,6-dinitrotoluene									<8
2-acetylaminofluorene									<8
2-butanone (mek)	<5	<5		<5	<5	<5	<5	<10	<5
2-chloronaphthalene									<8
2-chlorophenol									<8
2-hexanone (mbk)	<5	<5		<5	<5	<5	<5	<5	<5
2-methylnaphthalene									<8
2-methylphenol (o-cresol)									<8
2-naphthylamine									<8
2-nitroaniline									<8
2-nitrophenol									<8
3,3´-dichlorobenzidine									<8
3,3'-dimethylbenzidine									<8
3-methylcholanthrene									<8
3-nitroaniline									<8
4,4'-ddd									<.05
4,4'-dde									<.05
4,4'-ddt									<.05
4,6-dinitro-2-methylphenol									<8
4-aminobiphenyl									<8
4-bromophenyl phenyl ether									<8
4-chloro-3-methylphenol									<8
4-chloroaniline									<8
4-chlorophenyl phenyl ether									<8
4-methyl-2-pentanone (mibk)	<5	<5		<5	<5	<5	<5	<5	<5
4-nitroaniline									<8
4-nitrophenol									<8
5-nitro-o-toluidine									<8
7,12-dimethylbenz (a) anthracene									<8
Acenaphthene									<8
Acenaphthylene									<8
Acetone	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acetonitrile									<10
Acetophenone									<8
Acrolein									<10
Acrylonitrile	<5	<5		<5	<5	<5	<5	<5	<5
Aldrin									<.05
Allyl chloride									<1
Alpha-bhc									<.05
Anthracene									<8

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Table 9

Analytical Data Summary for MW-17

Constituents	4/11/2023
(3 4)-methylphenol	
1,1,1,2-tetrachloroethane	<1
1,1,1-trichloroethane	<1
1,1,2,2-tetrachloroethane	<1
1,1,2-trichloroethane	<1
1,1-dichloroethane	1.0
1,1-dichloroethene	<1
1,1-dichloropropene	
1,2,3-trichloropropane	<1
1,2,4,5-tetrachlorobenzene	
1,2,4-trichlorobenzene	
1,2-dibromo-3-chloropropane	<5
1,2-dibromoethane	<1
1,2-dichlorobenzene	<1
1,2-dichloroethane	<1
1,2-dichloropropane	<1
1,2-dinitrobenzene	
1,3,5-trinitrobenzene	
1,3-dichlorobenzene	
1,3-dichloropropane	
1,3-dinitrobenzene	
1,4-dichlorobenzene	<1
1,4-naphthoquinone	
1,4-phenylenediamine	
1-naphthylamine	
2,2-dichloropropane	
2,3,4,6-tetrachlorophenol	
2,4,5-t	
2,4,5-tp (silvex)	
2,4,5-trichlorophenol	
2,4,6-trichlorophenol	
2,4-d	
2,4-dichlorophenol	
2,4-dimethylphenol	
2,4-dinitrophenol	
2,4-dinitrotoluene	
2,6-dichlorophenol	
2,6-dinitrotoluene	
2-acetylaminofluorene	
2-butanone (mek)	<10
2-chloronaphthalene	
2-chlorophenol	
2-hexanone (mbk)	<5
2-methylnaphthalene	
2-methylphenol (o-cresol)	
2-naphthylamine	
2-nitroaniline	
2-nitrophenol	
3,3´-dichlorobenzidine	
3,3'-dimethylbenzidine	
3-methylcholanthrene	
3-nitroaniline	
4,4'-ddd	
4,4'-dde	
4,4'-ddt	
4,6-dinitro-2-methylphenol	
4-aminobiphenyl	
4-bromophenyl phenyl ether	
4-chloro-3-methylphenol	
4-chloroaniline	
4-chlorophenyl phenyl ether	
4-methyl-2-pentanone (mibk)	<5
4-nitroaniline	
4-nitrophenol	
5-nitro-o-toluidine	
7,12-dimethylbenz (a) anthracene	
Acenaphthene	
Acenaphthylene	
Acetone	<10.0
Acetonitrile	
Acetophenone	
Acrolein	
Acrylonitrile	<5
Aldrin	
Allyl chloride	
Alpha-bhc	
Anthracene	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	Units	10/28/2014	3/30/2015	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arochlor 1016	ug/L							<.1	
Arochlor 1221	ug/L							<.2	
Arochlor 1232	ug/L							<.2	
Arochlor 1242	ug/L							<.2	
Arochlor 1248	ug/L							<.2	
Arochlor 1254	ug/L							<.1	
Arochlor 1260	ug/L							<.1	
Arsenic, total	ug/L	5.1	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Azobenzene	ug/L							<8	
Barium, total	ug/L	28.6	21.7	16.3	18.7	16.8	15.8	14.9	17.9
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/L							<8	
Benzo(a)pyrene	ug/L							<8	
Benzo(b)fluoranthene	ug/L							<8	
Benzo(g,h,i)perylene	ug/L							<8	
Benzo(k)fluoranthene	ug/L							<8	
Benzyl alcohol	ug/L							<8	
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Beta-bhc	ug/L							<.05	
Bis(2-chloroethoxy)methane	ug/L							<8	
Bis(2-chloroethyl)ether	ug/L							<8	
Bis(2-ethylhexyl)phthalate	ug/L							9	<6
Bis[2-chloroisopropyl]ether	ug/L							<8	
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate	ug/L							<8	
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlordane	ug/L							<.1	
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzilate	ug/L							<8	
Chloroethane	ug/L	<1.0	<1.0	1.2	<1.0	1.0	1.3	<1.0	<1.0
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroprene	ug/L							<1	
Chromium, total	ug/L	17.5	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Chrysene	ug/L							<8	
Cis-1,2-dichloroethene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	15.1	166.0	107.0	134.0	137.0	114.0	113.0	145.0
Copper, total	ug/L	10.8	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	4.0
Cyanide, total	mg/L							<.005	
Delta-bhc	ug/L							<.05	
Diallate	ug/L							<8	
Dibenzo(a,h)anthracene	ug/L							<8	
Dibenzofuran	ug/L							<8	
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L							<1	
Dieldrin	ug/L							<.05	
Diethyl phthalate	ug/L							<8	
Dimethoate	ug/L							<.4	
Dimethylphthalate	ug/L							<8	
Di-n-butyl phthalate	ug/L							<8	
Di-n-octyl phthalate	ug/L							<8	
Dinoseb	ug/L							<.5	
Diphenylamine	ug/L							<8	
Disulfoton	ug/L							<.4	
Endosulfan i	ug/L							<.05	
Endosulfan ii	ug/L							<.05	
Endosulfan sulfate	ug/L							<.05	
Endrin	ug/L							<.05	
Endrin aldehyde	ug/L							<.05	
Ethyl methacrylate	ug/L							<10	
Ethyl methanesulfonate	ug/L							<8	
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Famphur	ug/L							<.4	
Fluoranthene	ug/L							<8	
Fluorene	ug/L							<8	
Gamma-bhc [lindane]	ug/L							<.05	
Heptachlor	ug/L							<.05	
Heptachlor epoxide	ug/L							<.05	
Hexachlorobenzene	ug/L							<.05	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022
Antimony, total	<2	<2		<2	<2	<2	<2	<2	<2
Arochlor 1016									<.1
Arochlor 1221									<.2
Arochlor 1232									<.2
Arochlor 1242									<.2
Arochlor 1248									<.2
Arochlor 1254									<.1
Arochlor 1260									<.1
Arsenic, total	<4.0	4.4		6.1	<4.0	<4.0	4.5	5.4	4.1
Azobenzene									<8
Barium, total	14.8	23.4		17.1	14.5	17.8	17.9	20.2	22.7
Benzene	<1	<1		<1	<1	<1	<1	<1	<1
Benzo(a)anthracene									<8
Benzo(a)pyrene									<8
Benzo(b)fluoranthene									<8
Benzo(g,h,i)perylene									<8
Benzo(k)fluoranthene									<8
Benzyl alcohol									<8
Beryllium, total	<4	<4		<4	<4	<4	<4	<4	<4
Beta-bhc									<.05
Bis(2-chloroethoxy)methane									<8
Bis(2-chloroethyl)ether									<8
Bis(2-ethylhexyl)phthalate	<6	6		<6	6	<6	<6		10
Bis[2-chloroisopropyl]ether									<8
Bromochloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Bromoform	<1	<1		<1	<1	<1	<1	<1	<1
Bromomethane	<1	<1		<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate									<8
Cadmium, total	<.8	<.8		<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1		<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1		<1	<1	<1	<1	<1	<1
Chlordane									<.1
Chlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
Chlorobenzilate									<8
Chloroethane	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Chloroform	<1	<1		<1	<1	<1	<1	<1	<1
Chloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Chloroprene									<1
Chromium, total	<8.0	<8.0		<8.0	<8.0	<8.0	<8.0	<8.0	<8.0
Chrysene									<8
Cis-1,2-dichloroethene	<1.0	<1.0		<1.0	<1.0	<1.0	<1.0	1.6	1.1
Cis-1,3-dichloropropene	<1	<1		<1	<1	<1	<1	<1	<1
Cobalt, total	98.1	140.0		125.0	113.0	137.0	128.0	137.0	17.2
Copper, total	<4.0	4.0		<4.0	4.8	<4.0	12.6	<4.0	<4.0
Cyanide, total									<.005
Delta-bhc									<.05
Diallate									<8
Dibenzo(a,h)anthracene									<8
Dibenzofuran									<8
Dibromochloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Dibromomethane	<1	<1		<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane									<1
Dieldrin									<.05
Diethyl phthalate									<8
Dimethoate									<.4
Dimethylphthalate									<8
Di-n-butyl phthalate									<8
Di-n-octyl phthalate									<8
Dinoseb									<.5
Diphenylamine									<8
Disulfoton									<.4
Endosulfan i									<.05
Endosulfan ii									<.05
Endosulfan sulfate									<.05
Endrin									<.05
Endrin aldehyde									<.05
Ethyl methacrylate									<10
Ethyl methanesulfonate									<8
Ethylbenzene	<1	<1		<1	<1	<1	<1	<1	<1
Famphur									<.4
Fluoranthene									<8
Fluorene									<8
Gamma-bhc [lindane]									<.05
Heptachlor									<.05
Heptachlor epoxide									<.05
Hexachlorobenzene									<.05

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	4/11/2023
Antimony, total	<2
Arochlor 1016	
Arochlor 1221	
Arochlor 1232	
Arochlor 1242	
Arochlor 1248	
Arochlor 1254	
Arochlor 1260	
Arsenic, total	<4.0
Azobenzene	
Barium, total	17.8
Benzene	<1
Benzo(a)anthracene	
Benzo(a)pyrene	
Benzo(b)fluoranthene	
Benzo(g,h,i)perylene	
Benzo(k)fluoranthene	
Benzyl alcohol	
Beryllium, total	<4
Beta-bhc	
Bis(2-chloroethoxy)methane	
Bis(2-chloroethyl)ether	
Bis(2-ethylhexyl)phthalate	
Bis[2-chloroisopropyl]ether	
Bromochloromethane	<1
Bromodichloromethane	<1
Bromoform	<1
Bromomethane	<1
Butyl benzyl phthalate	
Cadmium, total	<.8
Carbon disulfide	<1
Carbon tetrachloride	<1
Chlordane	
Chlorobenzene	<1
Chlorobenzilate	
Chloroethane	<1.0
Chloroform	<1
Chloromethane	<1
Chloroprene	
Chromium, total	<8.0
Chrysene	
Cis-1,2-dichloroethene	<1.0
Cis-1,3-dichloropropene	<1
Cobalt, total	.9
Copper, total	8.2
Cyanide, total	
Delta-bhc	
Diallate	
Dibenzo(a,h)anthracene	
Dibenzofuran	
Dibromochloromethane	<1
Dibromomethane	<1
Dichlorodifluoromethane	
Dieldrin	
Diethyl phthalate	
Dimethoate	
Dimethylphthalate	
Di-n-butyl phthalate	
Di-n-octyl phthalate	
Dinoseb	
Diphenylamine	
Disulfoton	
Endosulfan i	
Endosulfan ii	
Endosulfan sulfate	
Endrin	
Endrin aldehyde	
Ethyl methacrylate	
Ethyl methanesulfonate	
Ethylbenzene	<1
Famphur	
Fluoranthene	
Fluorene	
Gamma-bhc [lindane]	
Heptachlor	
Heptachlor epoxide	
Hexachlorobenzene	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	Units	10/28/2014	3/30/2015	9/22/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
Hexachlorobutadiene	ug/L							<8	
Hexachlorocyclopentadiene	ug/L							<8	
Hexachloroethane	ug/L							<8	
Hexachloropropene	ug/L							<8	
Indeno(1,2,3-cd)pyrene	ug/L							<8	
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Isobutanol	mg/L							<1	
Isodrin	ug/L							<8	
Isophorone	ug/L							<8	
Isosafrole	ug/L							<8	
Kepone	ug/L							<8	
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Mercury, Total	ug/L							<.5	
Methacrylonitrile	ug/L							<1	
Methapyrilene	ug/L							<8	
Methoxychlor	ug/L							<.05	
Methyl methacrylate	ug/L							<1	
Methyl methanesulfonate	ug/L							<8	
Methyl parathion	ug/L							<.4	
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Naphthalene	ug/L							<8	
Nickel, total	ug/L	111.0	201.0	146.0	179.0	156.0	141.0	136.0	138.0
Nitrobenzene	ug/L							<8	
N-nitrosodiethylamine	ug/L							<8	
N-nitrosodimethylamine	ug/L							<8	
N-nitrosodi-n-butylamine	ug/L							<8	
N-nitroso-di-n-propylamine	ug/L							<8	
N-nitrosodiphenylamine	ug/L							<8	
N-nitrosomethylethylamine	ug/L							<8	
N-nitrosopiperidine	ug/L							<8	
N-nitrosopyrrolidine	ug/L							<8	
O,o,o-triethyl phosphorothioate	ug/L							<.4	
O-toluidine	ug/L							<8	
P-(dimethylamino)azobenzene	ug/L							<8	
Parathion	ug/L							<.4	
Pentachlorobenzene	ug/L							<8	
Pentachloronitrobenzene (pcnb)	ug/L							<8	
Pentachlorophenol	ug/L							<8	
Phenacetin	ug/L							<8	
Phenanthrene	ug/L							<8	
Phenol	ug/L							<8	
Phorate	ug/L							<.4	
Pronamide	ug/L							<8	
Propionitrile	ug/L							<10	
Pyrene	ug/L							<8	
Safrole	ug/L							<8	
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Solids, total suspended	mg/L		56						
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Sulfide, total	mg/L	1.0	<.1	<.1	<.1	<.1	<.1	<.3	<.1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<4	<4	<1	<4	<4	<4	<4	<4
Thionazin	ug/L							<.4	
Tin, Total	ug/L	<20	<20	<20	<20	<20		<20	
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Toxaphene	ug/L							<.2	
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	40.0	43.4	36.2	39.2	37.0	31.5	35.0	33.4

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022
Hexachlorobutadiene									<8
Hexachlorocyclopentadiene									<8
Hexachloroethane									<8
Hexachloropropene									<8
Indeno(1,2,3-cd)pyrene									<8
Iodomethane	<1	<1		<1	<1	<1	<1	<1	<2
Isobutanol									<1
Isodrin									<8
Isophorone									<8
Isosafrole									<8
Kepone									<8
Lead, total	<4	<4		<4	<4	<4	<4	<4	<4
Mercury, Total									<.5
Methacrylonitrile									<1
Methapyrilene									<8
Methoxychlor									<.05
Methyl methacrylate									<1
Methyl methanesulfonate									<8
Methyl parathion									<.4
Methylene chloride	<5	<5		<5	<5	<5	<5	<5	<5
Naphthalene									<8
Nickel, total	116.0	130.0		132.0	113.0	114.0	115.0	110.0	68.0
Nitrobenzene									<8
N-nitrosodiethylamine									<8
N-nitrosodimethylamine									<8
N-nitrosodi-n-butylamine									<8
N-nitroso-di-n-propylamine									<8
N-nitrosodiphenylamine									<8
N-nitrosomethylethylamine									<8
N-nitrosopiperidine									<8
N-nitrosopyrrolidine									<8
O,o,o-triethyl phosphorothioate									<.4
O-toluidine									<8
P-(dimethylamino)azobenzene									<8
Parathion									<.4
Pentachlorobenzene									<8
Pentachloronitrobenzene (pcnb)									<8
Pentachlorophenol									<8
Phenacetin									<8
Phenanthrene									<8
Phenol									<8
Phorate									<.4
Pronamide									<8
Propionitrile									<10
Pyrene									<8
Safrole									<8
Selenium, total	<4	<4		<4	<4	<4	<4	<4	<4
Silver, total	<4	<4		<4	<4	<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1		<1	<1	<1	<1	<1	<1
Sulfide, total	<.1	<.1		<.1					<.1
Tetrachloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Thallium, total	<2	<2		<2	<2	<2	<2	<2	<2
Thionazin									<.4
Tin, Total									<20
Toluene	<1	<1		<1	<1	<1	<1	<1	<1
Toxaphene									<.2
Trans-1,2-dichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1		<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5		<5	<5	<5	<5	<5	<5
Trichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1		<1	<1	<1	<1	<1	<1
Vanadium, total	<20	<20		<20	<20	<20	<20	<20	<20
Vinyl acetate	<5	<5		<5	<5	<5	<5	<5	<5
Vinyl chloride	<1	<1		<1	<1	<1	<1	<1	<1
Xylenes, total	<2	<2		<2	<2	<2	<2	<2	<2
Zinc, total	30.3	62.0	46.4	40.6	37.1	32.6	36.9	29.7	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-17

Constituents	4/11/2023
Hexachlorobutadiene	
Hexachlorocyclopentadiene	
Hexachloroethane	
Hexachloropropene	
Indeno(1,2,3-cd)pyrene	
Iodomethane	<1
Isobutanol	
Isodrin	
Isophorone	
Isosafrole	
Kepone	
Lead, total	<4
Mercury, Total	
Methacrylonitrile	
Methapyrilene	
Methoxychlor	
Methyl methacrylate	
Methyl methanesulfonate	
Methyl parathion	
Methylene chloride	<5
Naphthalene	
Nickel, total	46.9
Nitrobenzene	
N-nitrosodiethylamine	
N-nitrosodimethylamine	
N-nitrosodi-n-butylamine	
N-nitroso-di-n-propylamine	
N-nitrosodiphenylamine	
N-nitrosomethylethylamine	
N-nitrosopiperidine	
N-nitrosopyrrolidine	
O,o,o-triethyl phosphorothioate	
O-toluidine	
P-(dimethylamino)azobenzene	
Parathion	
Pentachlorobenzene	
Pentachloronitrobenzene (pcnb)	
Pentachlorophenol	
Phenacetin	
Phenanthrene	
Phenol	
Phorate	
Pronamide	
Propionitrile	
Pyrene	
Safrole	
Selenium, total	<4
Silver, total	<4
Solids, total suspended	
Styrene	<1
Sulfide, total	
Tetrachloroethene	<1
Thallium, total	<2
Thionazin	
Tin, Total	
Toluene	<1
Toxaphene	
Trans-1,2-dichloroethene	<1
Trans-1,3-dichloropropene	<1
Trans-1,4-dichloro-2-butene	<5
Trichloroethene	<1
Trichlorofluoromethane	<1
Vanadium, total	<20
Vinyl acetate	<5
Vinyl chloride	<1
Xylenes, total	<2
Zinc, total	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	1/5/2018
(3 4)-methylphenol	ug/L							<8	
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1-dichloropropene	ug/L							<1	
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2,4,5-tetrachlorobenzene	ug/L							<8	
1,2,4-trichlorobenzene	ug/L							<1	
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dinitrobenzene	ug/L							<8	
1,3,5-trinitrobenzene	ug/L							<8	
1,3-dichlorobenzene	ug/L							<1	
1,3-dichloropropane	ug/L							<1	
1,3-dinitrobenzene	ug/L							<8	
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,4-naphthoquinone	ug/L							<8	
1,4-phenylenediamine	ug/L							<8	
1-naphthylamine	ug/L							<8	
2,2-dichloropropane	ug/L							<1	
2,3,4,6-tetrachlorophenol	ug/L							<8	
2,4,5-t	ug/L							<.5	
2,4,5-tp (silvex)	ug/L							<.5	
2,4,5-trichlorophenol	ug/L							<8	
2,4,6-trichlorophenol	ug/L							<8	
2,4-d	ug/L							<2	
2,4-dichlorophenol	ug/L							<8	
2,4-dimethylphenol	ug/L							<8	
2,4-dinitrophenol	ug/L							<8	
2,4-dinitrotoluene	ug/L							<8	
2,6-dichlorophenol	ug/L							<8	
2,6-dinitrotoluene	ug/L							<8	
2-acetylaminofluorene	ug/L							<8	
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	
2-chloronaphthalene	ug/L							<8	
2-chlorophenol	ug/L							<8	
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	
2-methylnaphthalene	ug/L							<8	
2-methylphenol (o-cresol)	ug/L							<8	
2-naphthylamine	ug/L							<8	
2-nitroaniline	ug/L							<8	
2-nitrophenol	ug/L							<8	
3,3´-dichlorobenzidine	ug/L							<8	
3,3'-dimethylbenzidine	ug/L							<8	
3-methylcholanthrene	ug/L							<8	
3-nitroaniline	ug/L							<8	
4,4'-ddd	ug/L							<.05	
4,4'-dde	ug/L							<.05	
4,4'-ddt	ug/L							<.05	
4,6-dinitro-2-methylphenol	ug/L							<8	
4-aminobiphenyl	ug/L							<8	
4-bromophenyl phenyl ether	ug/L							<8	
4-chloro-3-methylphenol	ug/L							<8	
4-chloroaniline	ug/L							<8	
4-chlorophenyl phenyl ether	ug/L							<8	
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	
4-nitroaniline	ug/L							<8	
4-nitrophenol	ug/L							<8	
5-nitro-o-toluidine	ug/L							<8	
7,12-dimethylbenz (a) anthracene	ug/L							<8	
Acenaphthene	ug/L							<8	
Acenaphthylene	ug/L							<8	
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	21.1	
Acetonitrile	ug/L							<10	
Acetophenone	ug/L							<8	
Acrolein	ug/L							<10	
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	
Aldrin	ug/L							<.05	
Allyl chloride	ug/L							<1	
Alpha-bhc	ug/L							<.05	
Anthracene	ug/L							<8	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/15/2018	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022
(3 4)-methylphenol									
1,1,1,2-tetrachloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,1-dichloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,1-dichloroethene	<1	<1	<1		<1	<1	<1	<1	<1
1,1-dichloropropene									
1,2,3-trichloropropane	<1	<1	<1		<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene									
1,2,4-trichlorobenzene									
1,2-dibromo-3-chloropropane	<1	<1	<1		<5	<5	<5	<5	<5
1,2-dibromoethane	<1	<1	<1		<1	<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1		<1	<1	<1	<1	<1
1,2-dichloroethane	<1	<1	<1		<1	<1	<1	<1	<1
1,2-dichloropropane	<1	<1	<1		<1	<1	<1	<1	<1
1,2-dinitrobenzene									
1,3,5-trinitrobenzene									
1,3-dichlorobenzene									
1,3-dichloropropane									
1,3-dinitrobenzene									
1,4-dichlorobenzene	<1	<1	<1		<1	<1	<1	<1	<1
1,4-naphthoquinone									
1,4-phenylenediamine									
1-naphthylamine									
2,2-dichloropropane									
2,3,4,6-tetrachlorophenol									
2,4,5-t									
2,4,5-tp (silvex)									
2,4,5-trichlorophenol									
2,4,6-trichlorophenol									
2,4-d									
2,4-dichlorophenol									
2,4-dimethylphenol									
2,4-dinitrophenol									
2,4-dinitrotoluene									
2,6-dichlorophenol									
2,6-dinitrotoluene									
2-acetylaminofluorene									
2-butanone (mek)	<5	<5	<5		<5	<5	<5	<5	<10
2-chloronaphthalene									
2-chlorophenol									
2-hexanone (mbk)	<5	<5	<5		<5	<5	<5	<5	<5
2-methylnaphthalene									
2-methylphenol (o-cresol)									
2-naphthylamine									
2-nitroaniline									
2-nitrophenol									
3,3´-dichlorobenzidine									
3,3'-dimethylbenzidine									
3-methylcholanthrene									
3-nitroaniline									
4,4'-ddd									
4,4'-dde									
4,4'-ddt									
4,6-dinitro-2-methylphenol									
4-aminobiphenyl									
4-bromophenyl phenyl ether									
4-chloro-3-methylphenol									
4-chloroaniline									
4-chlorophenyl phenyl ether									
4-methyl-2-pentanone (mibk)	<5	<5	<5		<5	<5	<5	<5	<5
4-nitroaniline									
4-nitrophenol									
5-nitro-o-toluidine									
7,12-dimethylbenz (a) anthracene									
Acenaphthene									
Acenaphthylene									
Acetone	<10.0	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0	<10.0
Acetonitrile									
Acetophenone									
Acrolein									
Acrylonitrile	<5	<5	<5		<5	<5	<5	<5	<5
Aldrin									
Allyl chloride									
Alpha-bhc									
Anthracene									

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/18/2022	4/11/2023	10/5/2023	12/19/2023	4/23/2024	10/11/2024
(3 4)-methylphenol						
1,1,1,2-tetrachloroethane	<1	<1	<1		<1	<1
1,1,1-trichloroethane	<1	<1	<1		<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1		<1	<1
1,1,2-trichloroethane	<1	<1	<1		<1	<1
1,1-dichloroethane	<1	<1	<1		<1	<1
1,1-dichloroethene	<1	<1	<1		<1	<1
1,1-dichloropropene						
1,2,3-trichloropropane	<1	<1	<1		<1	<1
1,2,4,5-tetrachlorobenzene						
1,2,4-trichlorobenzene						
1,2-dibromo-3-chloropropane	<5	<5	<5		<5	<5
1,2-dibromoethane	<1	<1	<1		<1	<1
1,2-dichlorobenzene	<1	<1	<1		<1	<1
1,2-dichloroethane	<1	<1	<1		<1	<1
1,2-dichloropropane	<1	<1	<1		<1	<1
1,2-dinitrobenzene						
1,3,5-trinitrobenzene						
1,3-dichlorobenzene						
1,3-dichloropropane						
1,3-dinitrobenzene						
1,4-dichlorobenzene	<1	<1	<1		<1	<1
1,4-naphthoquinone						
1,4-phenylenediamine						
1-naphthylamine						
2,2-dichloropropane						
2,3,4,6-tetrachlorophenol						
2,4,5-t						
2,4,5-tp (silvex)						
2,4,5-trichlorophenol						
2,4,6-trichlorophenol						
2,4-d						
2,4-dichlorophenol						
2,4-dimethylphenol						
2,4-dinitrophenol						
2,4-dinitrotoluene						
2,6-dichlorophenol						
2,6-dinitrotoluene						
2-acetylaminofluorene						
2-butanone (mek)	<10	<10	<10		<10	<10
2-chloronaphthalene						
2-chlorophenol						
2-hexanone (mbk)	<5	<5	<5		<5	<5
2-methylnaphthalene						
2-methylphenol (o-cresol)						
2-naphthylamine						
2-nitroaniline						
2-nitrophenol						
3,3´-dichlorobenzidine						
3,3'-dimethylbenzidine						
3-methylcholanthrene						
3-nitroaniline						
4,4'-ddd						
4,4'-dde						
4,4'-ddt						
4,6-dinitro-2-methylphenol						
4-aminobiphenyl						
4-bromophenyl phenyl ether						
4-chloro-3-methylphenol						
4-chloroaniline						
4-chlorophenyl phenyl ether						
4-methyl-2-pentanone (mibk)	<5	<5	<5		<5	<5
4-nitroaniline						
4-nitrophenol						
5-nitro-o-toluidine						
7,12-dimethylbenz (a) anthracene						
Acenaphthene						
Acenaphthylene						
Acetone	<10.0	<10.0	<10.0		<10.0	<10.0
Acetonitrile						
Acetophenone						
Acrolein						
Acrylonitrile	<5	<5	<5		<5	<5
Aldrin						
Allyl chloride						
Alpha-bhc						
Anthracene						

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	1/5/2018
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	
Arochlor 1016	ug/L							2.36	<.10
Arochlor 1221	ug/L							<.2	<.2
Arochlor 1232	ug/L							<.2	<.2
Arochlor 1242	ug/L							<.2	<.2
Arochlor 1248	ug/L							<.2	<.2
Arochlor 1254	ug/L							<.1	<.1
Arochlor 1260	ug/L							.2	<.1
Arsenic, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Azobenzene	ug/L							<8	
Barium, total	ug/L	30.8	25.4	23.5	26.1	26.4	26.9	25.0	
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Benzo(a)anthracene	ug/L							<8	
Benzo(a)pyrene	ug/L							<8	
Benzo(b)fluoranthene	ug/L							<8	
Benzo(g,h,i)perylene	ug/L							<8	
Benzo(k)fluoranthene	ug/L							<8	
Benzyl alcohol	ug/L							<8	
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Beta-bhc	ug/L							<.05	
Bis(2-chloroethoxy)methane	ug/L							<8	
Bis(2-chloroethyl)ether	ug/L							<8	
Bis(2-ethylhexyl)phthalate	ug/L							<6	
Bis[2-chloroisopropyl]ether	ug/L							<8	
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Butyl benzyl phthalate	ug/L							<8	
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chlordane	ug/L							<.1	
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chlorobenzilate	ug/L							<8	
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloroprene	ug/L							<1	
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	
Chrysene	ug/L							<8	
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Cobalt, total	ug/L	57.8	28.9	37.6	37.7	50.8	33.6	39.1	
Copper, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Cyanide, total	mg/L							<.005	
Delta-bhc	ug/L							<.05	
Diallate	ug/L							<8	
Dibenzo(a,h)anthracene	ug/L							<8	
Dibenzofuran	ug/L							<8	
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Dichlorodifluoromethane	ug/L							<1	
Dieldrin	ug/L							<.05	
Diethyl phthalate	ug/L							<8	
Dimethoate	ug/L							<.4	
Dimethylphthalate	ug/L							<8	
Di-n-butyl phthalate	ug/L							<8	
Di-n-octyl phthalate	ug/L							<8	
Dinoseb	ug/L							<.5	
Diphenylamine	ug/L							<8	
Disulfoton	ug/L							<.4	
Endosulfan i	ug/L							<.05	
Endosulfan ii	ug/L							<.05	
Endosulfan sulfate	ug/L							<.05	
Endrin	ug/L							<.05	
Endrin aldehyde	ug/L							<.05	
Ethyl methacrylate	ug/L							<10	
Ethyl methanesulfonate	ug/L							<8	
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Famphur	ug/L							<.4	
Fluoranthene	ug/L							<8	
Fluorene	ug/L							<8	
Gamma-bhc [lindane]	ug/L							<.05	
Heptachlor	ug/L							<.05	
Heptachlor epoxide	ug/L							<.05	
Hexachlorobenzene	ug/L							<.05	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/15/2018	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022
Antimony, total	<2	<2	<2		<2	<2	<2	<2	<2
Arochlor 1016									
Arochlor 1221									
Arochlor 1232									
Arochlor 1242									
Arochlor 1248									
Arochlor 1254									
Arochlor 1260									
Arsenic, total	<4	<4	<4		<4	<4	<4	<4	<4
Azobenzene									
Barium, total	19.1	27.6	30.2		24.4	26.7	24.2	25.6	28.2
Benzene	<1	<1	<1		<1	<1	<1	<1	<1
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Benzyl alcohol									
Beryllium, total	<4	<4	<4		<4	<4	<4	<4	<4
Beta-bhc									
Bis(2-chloroethoxy)methane									
Bis(2-chloroethyl)ether									
Bis(2-ethylhexyl)phthalate									
Bis[2-chloroisopropyl]ether									
Bromochloromethane	<1	<1	<1		<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1		<1	<1	<1	<1	<1
Bromoform	<1	<1	<1		<1	<1	<1	<1	<1
Bromomethane	<1	<1	<1		<1	<1	<1	<1	<1
Butyl benzyl phthalate									
Cadmium, total	<.8	<.8	<.8		<.8	<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1		<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1		<1	<1	<1	<1	<1
Chlordane									
Chlorobenzene	<1	<1	<1		<1	<1	<1	<1	<1
Chlorobenzilate									
Chloroethane	<1	<1	<1		<1	<1	<1	<1	<1
Chloroform	<1	<1	<1		<1	<1	<1	<1	<1
Chloromethane	<1	<1	<1		<1	<1	<1	<1	<1
Chloroprene									
Chromium, total	<8	<8	<8		<8	<8	<8	<8	<8
Chrysene									
Cis-1,2-dichloroethene	<1	<1	<1		<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1		<1	<1	<1	<1	<1
Cobalt, total	9.0	48.6	30.7		29.8	57.5	42.8	53.9	46.7
Copper, total	<4	<4	<4		<4	<4	<4	<4	<4
Cyanide, total									
Delta-bhc									
Diallate									
Dibenzo(a,h)anthracene									
Dibenzofuran									
Dibromochloromethane	<1	<1	<1		<1	<1	<1	<1	<1
Dibromomethane	<1	<1	<1		<1	<1	<1	<1	<1
Dichlorodifluoromethane									
Dieldrin									
Diethyl phthalate									
Dimethoate									
Dimethylphthalate									
Di-n-butyl phthalate									
Di-n-octyl phthalate									
Dinoseb									
Diphenylamine									
Disulfoton									
Endosulfan i									
Endosulfan ii									
Endosulfan sulfate									
Endrin									
Endrin aldehyde									
Ethyl methacrylate									
Ethyl methanesulfonate									
Ethylbenzene	<1	<1	<1		<1	<1	<1	<1	<1
Famphur									
Fluoranthene									
Fluorene									
Gamma-bhc [lindane]									
Heptachlor									
Heptachlor epoxide									
Hexachlorobenzene									

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/18/2022	4/11/2023	10/5/2023	12/19/2023	4/23/2024	10/11/2024
Antimony, total	<2	<2	<2		<2	<2
Arochlor 1016						
Arochlor 1221						
Arochlor 1232						
Arochlor 1242						
Arochlor 1248						
Arochlor 1254						
Arochlor 1260						
Arsenic, total	<4	<4	<4		<4	<4
Azobenzene						
Barium, total	32.1	32.9	25.8		24.0	27.2
Benzene	<1	<1	<1		<1	<1
Benzo(a)anthracene						
Benzo(a)pyrene						
Benzo(b)fluoranthene						
Benzo(g,h,i)perylene						
Benzo(k)fluoranthene						
Benzyl alcohol						
Beryllium, total	<4	<4	<4		<4	<4
Beta-bhc						
Bis(2-chloroethoxy)methane						
Bis(2-chloroethyl)ether						
Bis(2-ethylhexyl)phthalate						
Bis[2-chloroisopropyl]ether						
Bromochloromethane	<1	<1	<1		<1	<1
Bromodichloromethane	<1	<1	<1		<1	<1
Bromoform	<1	<1	<1		<1	<1
Bromomethane	<1	<1	<1		<1	<1
Butyl benzyl phthalate						
Cadmium, total	<.8	<.8	<.8		<.8	<.8
Carbon disulfide	<1	<1	<1		<1	<1
Carbon tetrachloride	<1	<1	<1		<1	<1
Chlordane						
Chlorobenzene	<1	<1	<1		<1	<1
Chlorobenzilate						
Chloroethane	<1	<1	<1		<1	<1
Chloroform	<1	<1	<1		<1	<1
Chloromethane	<1	<1	<1		<1	<1
Chloroprene						
Chromium, total	<8	<8	<8		<8	<8
Chrysene						
Cis-1,2-dichloroethene	<1	<1	<1		<1	<1
Cis-1,3-dichloropropene	<1	<1	<1		<1	<1
Cobalt, total	61.1	56.5	62.7	66.2	39.8	68.3
Copper, total	<4	<4	<4		<4	<4
Cyanide, total						
Delta-bhc						
Diallate						
Dibenzo(a,h)anthracene						
Dibenzofuran						
Dibromochloromethane	<1	<1	<1		<1	<1
Dibromomethane	<1	<1	<1		<1	<1
Dichlorodifluoromethane						
Dieldrin						
Diethyl phthalate						
Dimethoate						
Dimethylphthalate						
Di-n-butyl phthalate						
Di-n-octyl phthalate						
Dinoseb						
Diphenylamine						
Disulfoton						
Endosulfan i						
Endosulfan ii						
Endosulfan sulfate						
Endrin						
Endrin aldehyde						
Ethyl methacrylate						
Ethyl methanesulfonate						
Ethylbenzene	<1	<1	<1		<1	<1
Famphur						
Fluoranthene						
Fluorene						
Gamma-bhc [lindane]						
Heptachlor						
Heptachlor epoxide						
Hexachlorobenzene						

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	1/5/2018
Hexachlorobutadiene	ug/L							<8	
Hexachlorocyclopentadiene	ug/L							<8	
Hexachloroethane	ug/L							<8	
Hexachloropropene	ug/L							<8	
Indeno(1,2,3-cd)pyrene	ug/L							<8	
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Isobutanol	mg/L							<1	
Isodrin	ug/L							<8	
Isophorone	ug/L							<8	
Isosafrole	ug/L							<8	
Kepone	ug/L							<8	
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Mercury, Total	ug/L							<.5	
Methacrylonitrile	ug/L							<1	
Methapyrilene	ug/L							<8	
Methoxychlor	ug/L							<.05	
Methyl methacrylate	ug/L							<1	
Methyl methanesulfonate	ug/L							<8	
Methyl parathion	ug/L							<.4	
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	
Naphthalene	ug/L							<8	
Nickel, total	ug/L	52.8	36.1	38.8	46.8	46.9	31.5	36.1	
Nitrobenzene	ug/L							<8	
N-nitrosodiethylamine	ug/L							<8	
N-nitrosodimethylamine	ug/L							<8	
N-nitrosodi-n-butylamine	ug/L							<8	
N-nitroso-di-n-propylamine	ug/L							<8	
N-nitrosodiphenylamine	ug/L							<8	
N-nitrosomethylethylamine	ug/L							<8	
N-nitrosopiperidine	ug/L							<8	
N-nitrosopyrrolidine	ug/L							<8	
O,o,o-triethyl phosphorothioate	ug/L							<.4	
O-toluidine	ug/L							<8	
P-(dimethylamino)azobenzene	ug/L							<8	
Parathion	ug/L							<.4	
Pentachlorobenzene	ug/L							<8	
Pentachloronitrobenzene (pcnb)	ug/L							<8	
Pentachlorophenol	ug/L							<8	
Phenacetin	ug/L							<8	
Phenanthrene	ug/L							<8	
Phenol	ug/L							<8	
Phorate	ug/L							<.4	
Pronamide	ug/L							<8	
Propionitrile	ug/L							<10	
Pyrene	ug/L							<8	
Safrole	ug/L							<8	
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Solids, total suspended	mg/L	788	125						
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Sulfide, total	mg/L							<.3	
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Thallium, total	ug/L	<4	<4	<1	<4	<4	<4	<4	
Thionazin	ug/L							<.4	
Tin, Total	ug/L	<20	<20	<20	<20	<20		<20	
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Toxaphene	ug/L							<.2	
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	
Zinc, total	ug/L	20.9	13.1	22.8	16.6	17.5	12.5	<20.0	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/15/2018	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022
Hexachlorobutadiene									
Hexachlorocyclopentadiene									
Hexachloroethane									
Hexachloropropene									
Indeno(1,2,3-cd)pyrene									
Iodomethane	<1	<1	<1		<1	<1	<1	<1	<1
Isobutanol									
Isodrin									
Isophorone									
Isosafrole									
Kepone									
Lead, total	<4	<4	<4		<4	<4	<4	<4	<4
Mercury, Total									
Methacrylonitrile									
Methapyrilene									
Methoxychlor									
Methyl methacrylate									
Methyl methanesulfonate									
Methyl parathion									
Methylene chloride	<5	<5	<5		<5	<5	<5	<5	<5
Naphthalene									
Nickel, total	13.0	38.4	30.9		30.0	43.3	35.6	41.7	38.2
Nitrobenzene									
N-nitrosodiethylamine									
N-nitrosodimethylamine									
N-nitrosodi-n-butylamine									
N-nitroso-di-n-propylamine									
N-nitrosodiphenylamine									
N-nitrosomethylethylamine									
N-nitrosopiperidine									
N-nitrosopyrrolidine									
O,o,o-triethyl phosphorothioate									
O-toluidine									
P-(dimethylamino)azobenzene									
Parathion									
Pentachlorobenzene									
Pentachloronitrobenzene (pcnb)									
Pentachlorophenol									
Phenacetin									
Phenanthrene									
Phenol									
Phorate									
Pronamide									
Propionitrile									
Pyrene									
Safrole									
Selenium, total	<4	<4	<4		<4	<4	<4	<4	<4
Silver, total	<4	<4	<4		<4	<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1	<1		<1	<1	<1	<1	<1
Sulfide, total									
Tetrachloroethene	<1	<1	<1		<1	<1	<1	<1	<1
Thallium, total	<4	<2	<2		<2	<2	<2	<2	<2
Thionazin									
Tin, Total									
Toluene	<1	<1	<1		<1	<1	<1	<1	<1
Toxaphene									
Trans-1,2-dichloroethene	<1	<1	<1		<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1		<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5		<5	<5	<5	<5	<5
Trichloroethene	<1	<1	<1		<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1		<1	<1	<1	<1	<1
Vanadium, total	<20	<20	<20		<20	<20	<20	<20	<20
Vinyl acetate	<5	<5	<5		<5	<5	<5	<5	<5
Vinyl chloride	<1	<1	<1		<1	<1	<1	<1	<1
Xylenes, total	<2	<2	<2		<2	<2	<2	<2	<2
Zinc, total	<8.0	17.9	62.7	21.6	<20.0	<20.0	22.9	21.8	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-18

Constituents	10/18/2022	4/11/2023	10/5/2023	12/19/2023	4/23/2024	10/11/2024
Hexachlorobutadiene						
Hexachlorocyclopentadiene						
Hexachloroethane						
Hexachloropropene						
Indeno(1,2,3-cd)pyrene						
Iodomethane	<1	<1	<1		<1	<1
Isobutanol						
Isodrin						
Isophorone						
Isosafrole						
Kepone						
Lead, total	<4	<4	<4		<4	<4
Mercury, Total						
Methacrylonitrile						
Methapyrilene						
Methoxychlor						
Methyl methacrylate						
Methyl methanesulfonate						
Methyl parathion						
Methylene chloride	<5	<5	<5		<5	<5
Naphthalene						
Nickel, total	44.1	43.1	47.7		37.2	50.1
Nitrobenzene						
N-nitrosodiethylamine						
N-nitrosodimethylamine						
N-nitrosodi-n-butylamine						
N-nitroso-di-n-propylamine						
N-nitrosodiphenylamine						
N-nitrosomethylethylamine						
N-nitrosopiperidine						
N-nitrosopyrrolidine						
O,o,o-triethyl phosphorothioate						
O-toluidine						
P-(dimethylamino)azobenzene						
Parathion						
Pentachlorobenzene						
Pentachloronitrobenzene (pcnb)						
Pentachlorophenol						
Phenacetin						
Phenanthrene						
Phenol						
Phorate						
Pronamide						
Propionitrile						
Pyrene						
Safrole						
Selenium, total	<4	<4	<4		<4	<4
Silver, total	<4	<4	<4		<4	<4
Solids, total suspended						
Styrene	<1	<1	<1		<1	<1
Sulfide, total						
Tetrachloroethene	<1	<1	<1		<1	<1
Thallium, total	<2	<2	<2		<2	<2
Thionazin						
Tin, Total						
Toluene	<1	<1	<1		<1	<1
Toxaphene						
Trans-1,2-dichloroethene	<1	<1	<1		<1	<1
Trans-1,3-dichloropropene	<1	<1	<1		<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5		<5	<5
Trichloroethene	<1	<1	<1		<1	<1
Trichlorofluoromethane	<1	<1	<1		<1	<1
Vanadium, total	<20	<20	<20		<20	<20
Vinyl acetate	<5	<5	<5		<5	<5
Vinyl chloride	<1	<1	<1		<1	<1
Xylenes, total	<2	<2	<2		<2	<2
Zinc, total	20.1	23.1	25.5		<20.0	27.3

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
(3 4)-methylphenol	ug/L							<8	
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene	ug/L							<1	
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene	ug/L							<8	
1,2,4-trichlorobenzene	ug/L							<1	
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene	ug/L							<8	
1,3,5-trinitrobenzene	ug/L							<8	
1,3-dichlorobenzene	ug/L							<1	
1,3-dichloropropane	ug/L							<1	
1,3-dinitrobenzene	ug/L							<8	
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-naphthoquinone	ug/L							<8	
1,4-phenylenediamine	ug/L							<8	
1-naphthylamine	ug/L							<8	
2,2-dichloropropane	ug/L							<1	
2,3,4,6-tetrachlorophenol	ug/L							<8	
2,4,5-t	ug/L							<.5	
2,4,5-tp (silvex)	ug/L							<.5	
2,4,5-trichlorophenol	ug/L							<8	
2,4,6-trichlorophenol	ug/L							<8	
2,4-d	ug/L							<2	
2,4-dichlorophenol	ug/L							<8	
2,4-dimethylphenol	ug/L							<8	
2,4-dinitrophenol	ug/L							<8	
2,4-dinitrotoluene	ug/L							<8	
2,6-dichlorophenol	ug/L							<8	
2,6-dinitrotoluene	ug/L							<8	
2-acetylaminofluorene	ug/L							<8	
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-chloronaphthalene	ug/L							<8	
2-chlorophenol	ug/L							<8	
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
2-methylnaphthalene	ug/L							<8	
2-methylphenol (o-cresol)	ug/L							<8	
2-naphthylamine	ug/L							<8	
2-nitroaniline	ug/L							<8	
2-nitrophenol	ug/L							<8	
3,3´-dichlorobenzidine	ug/L							<8	
3,3'-dimethylbenzidine	ug/L							<8	
3-methylcholanthrene	ug/L							<8	
3-nitroaniline	ug/L							<8	
4,4'-ddd	ug/L							<.05	
4,4'-dde	ug/L							<.05	
4,4'-ddt	ug/L							<.05	
4,6-dinitro-2-methylphenol	ug/L							<8	
4-aminobiphenyl	ug/L							<8	
4-bromophenyl phenyl ether	ug/L							<8	
4-chloro-3-methylphenol	ug/L							<8	
4-chloroaniline	ug/L							<8	
4-chlorophenyl phenyl ether	ug/L							<8	
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-nitroaniline	ug/L							<8	
4-nitrophenol	ug/L							<8	
5-nitro-o-toluidine	ug/L							<8	
7,12-dimethylbenz (a) anthracene	ug/L							<8	
Acenaphthene	ug/L							<8	
Acenaphthylene	ug/L							<8	
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	19.5	<10.0
Acetonitrile	ug/L							<10	
Acetophenone	ug/L							<8	
Acrolein	ug/L							<10	
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Aldrin	ug/L							<.05	
Allyl chloride	ug/L							<1	
Alpha-bhc	ug/L							<.05	
Anthracene	ug/L							<8	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	4/9/2019	10/9/2019	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022	4/11/2023
(3 4)-methylphenol									
1,1,1,2-tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloropropene									
1,2,3-trichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene									
1,2,4-trichlorobenzene									
1,2-dibromo-3-chloropropane	<1	<1	<5	<5	<5	<5	<5	<5	<5
1,2-dibromoethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene									
1,3,5-trinitrobenzene									
1,3-dichlorobenzene									
1,3-dichloropropane									
1,3-dinitrobenzene									
1,4-dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-naphthoquinone									
1,4-phenylenediamine									
1-naphthylamine									
2,2-dichloropropane									
2,3,4,6-tetrachlorophenol									
2,4,5-t									
2,4,5-tp (silvex)									
2,4,5-trichlorophenol									
2,4,6-trichlorophenol									
2,4-d									
2,4-dichlorophenol									
2,4-dimethylphenol									
2,4-dinitrophenol									
2,4-dinitrotoluene									
2,6-dichlorophenol									
2,6-dinitrotoluene									
2-acetylaminofluorene									
2-butanone (mek)	<5	<5	<5	<5	<5	<5	<10	<10	<10
2-chloronaphthalene									
2-chlorophenol									
2-hexanone (mbk)	<5	<5	<5	<5	<5	<5	<5	<5	<5
2-methylnaphthalene									
2-methylphenol (o-cresol)									
2-naphthylamine									
2-nitroaniline									
2-nitrophenol									
3,3´-dichlorobenzidine									
3,3'-dimethylbenzidine									
3-methylcholanthrene									
3-nitroaniline									
4,4'-ddd									
4,4'-dde									
4,4'-ddt									
4,6-dinitro-2-methylphenol									
4-aminobiphenyl									
4-bromophenyl phenyl ether									
4-chloro-3-methylphenol									
4-chloroaniline									
4-chlorophenyl phenyl ether									
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-nitroaniline									
4-nitrophenol									
5-nitro-o-toluidine									
7,12-dimethylbenz (a) anthracene									
Acenaphthene									
Acenaphthylene									
Acetone	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acetonitrile									
Acetophenone									
Acrolein									
Acrylonitrile	<5	<5	<5	<5	<5	<5	<5	<5	<5
Aldrin									
Allyl chloride									
Alpha-bhc									
Anthracene									

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Table 9

Analytical Data Summary for MW-19

Constituents	10/5/2023	4/23/2024
(3 4)-methylphenol		
1,1,1,2-tetrachloroethane	<1	<1
1,1,1-trichloroethane	<1	<1
1,1,2,2-tetrachloroethane	<1	<1
1,1,2-trichloroethane	<1	<1
1,1-dichloroethane	<1	<1
1,1-dichloroethene	<1	<1
1,1-dichloropropene		
1,2,3-trichloropropane	<1	<1
1,2,4,5-tetrachlorobenzene		
1,2,4-trichlorobenzene		
1,2-dibromo-3-chloropropane	<5	<5
1,2-dibromoethane	<1	<1
1,2-dichlorobenzene	<1	<1
1,2-dichloroethane	<1	<1
1,2-dichloropropane	<1	<1
1,2-dinitrobenzene		
1,3,5-trinitrobenzene		
1,3-dichlorobenzene		
1,3-dichloropropane		
1,3-dinitrobenzene		
1,4-dichlorobenzene	<1	<1
1,4-naphthoquinone		
1,4-phenylenediamine		
1-naphthylamine		
2,2-dichloropropane		
2,3,4,6-tetrachlorophenol		
2,4,5-t		
2,4,5-tp (silvex)		
2,4,5-trichlorophenol		
2,4,6-trichlorophenol		
2,4-d		
2,4-dichlorophenol		
2,4-dimethylphenol		
2,4-dinitrophenol		
2,4-dinitrotoluene		
2,6-dichlorophenol		
2,6-dinitrotoluene		
2-acetylaminofluorene		
2-butanone (mek)	<10	<10
2-chloronaphthalene		
2-chlorophenol		
2-hexanone (mbk)	<5	<5
2-methylnaphthalene		
2-methylphenol (o-cresol)		
2-naphthylamine		
2-nitroaniline		
2-nitrophenol		
3,3´-dichlorobenzidine		
3,3'-dimethylbenzidine		
3-methylcholanthrene		
3-nitroaniline		
4,4'-ddd		
4,4'-dde		
4,4'-ddt		
4,6-dinitro-2-methylphenol		
4-aminobiphenyl		
4-bromophenyl phenyl ether		
4-chloro-3-methylphenol		
4-chloroaniline		
4-chlorophenyl phenyl ether		
4-methyl-2-pentanone (mibk)	<5	<5
4-nitroaniline		
4-nitrophenol		
5-nitro-o-toluidine		
7,12-dimethylbenz (a) anthracene		
Acenaphthene		
Acenaphthylene		
Acetone	<10.0	<10.0
Acetonitrile		
Acetophenone		
Acrolein		
Acrylonitrile	<5	<5
Aldrin		
Allyl chloride		
Alpha-bhc		
Anthracene		

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arochlor 1016	ug/L							<.1	
Arochlor 1221	ug/L							<.2	
Arochlor 1232	ug/L							<.2	
Arochlor 1242	ug/L							<.2	
Arochlor 1248	ug/L							<.2	
Arochlor 1254	ug/L							<.1	
Arochlor 1260	ug/L							<.1	
Arsenic, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Azobenzene	ug/L							<8	
Barium, total	ug/L	42.8	42.3	32.3	37.6	34.4	40.7	37.6	36.0
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/L							<8	
Benzo(a)pyrene	ug/L							<8	
Benzo(b)fluoranthene	ug/L							<8	
Benzo(g,h,i)perylene	ug/L							<8	
Benzo(k)fluoranthene	ug/L							<8	
Benzyl alcohol	ug/L							<8	
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Beta-bhc	ug/L							<.05	
Bis(2-chloroethoxy)methane	ug/L							<8	
Bis(2-chloroethyl)ether	ug/L							<8	
Bis(2-ethylhexyl)phthalate	ug/L							<6	
Bis[2-chloroisopropyl]ether	ug/L							<8	
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate	ug/L							<8	
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlordane	ug/L							<.1	
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzilate	ug/L							<8	
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroprene	ug/L							<1	
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	<8
Chrysene	ug/L							<8	
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	32.3	47.9	18.1	19.3	13.4	36.8	24.8	19.8
Copper, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Cyanide, total	mg/L							<.005	
Delta-bhc	ug/L							<.05	
Diallate	ug/L							<8	
Dibenzo(a,h)anthracene	ug/L							<8	
Dibenzofuran	ug/L							<8	
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L							<1	
Dieldrin	ug/L							<.05	
Diethyl phthalate	ug/L							<8	
Dimethoate	ug/L							<.4	
Dimethylphthalate	ug/L							<8	
Di-n-butyl phthalate	ug/L							<8	
Di-n-octyl phthalate	ug/L							<8	
Dinoseb	ug/L							<.5	
Diphenylamine	ug/L							<8	
Disulfoton	ug/L							<.4	
Endosulfan i	ug/L							<.05	
Endosulfan ii	ug/L							<.05	
Endosulfan sulfate	ug/L							<.05	
Endrin	ug/L							<.05	
Endrin aldehyde	ug/L							<.05	
Ethyl methacrylate	ug/L							<10	
Ethyl methanesulfonate	ug/L							<8	
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Famphur	ug/L							<.4	
Fluoranthene	ug/L							<8	
Fluorene	ug/L							<8	
Gamma-bhc [lindane]	ug/L							<.05	
Heptachlor	ug/L							<.05	
Heptachlor epoxide	ug/L							<.05	
Hexachlorobenzene	ug/L							<.05	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	4/9/2019	10/9/2019	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022	4/11/2023
Antimony, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arochlor 1016									
Arochlor 1221									
Arochlor 1232									
Arochlor 1242									
Arochlor 1248									
Arochlor 1254									
Arochlor 1260									
Arsenic, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Azobenzene									
Barium, total	40.7	39.2	39.4	21.4	21.6	20.7	22.7	33.9	28.9
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Benzo(a)anthracene									
Benzo(a)pyrene									
Benzo(b)fluoranthene									
Benzo(g,h,i)perylene									
Benzo(k)fluoranthene									
Benzyl alcohol									
Beryllium, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Beta-bhc									
Bis(2-chloroethoxy)methane									
Bis(2-chloroethyl)ether									
Bis(2-ethylhexyl)phthalate									
Bis[2-chloroisopropyl]ether									
Bromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate									
Cadmium, total	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlordane									
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzilate									
Chloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroprene									
Chromium, total	<8	<8	<8	<8	<8	<8	<8	<8	<8
Chrysene									
Cis-1,2-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	35.4	15.8	9.2	.8	.6	1.1	.7	10.9	4.1
Copper, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Cyanide, total									
Delta-bhc									
Diallate									
Dibenzo(a,h)anthracene									
Dibenzofuran									
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane									
Dieldrin									
Diethyl phthalate									
Dimethoate									
Dimethylphthalate									
Di-n-butyl phthalate									
Di-n-octyl phthalate									
Dinoseb									
Diphenylamine									
Disulfoton									
Endosulfan i									
Endosulfan ii									
Endosulfan sulfate									
Endrin									
Endrin aldehyde									
Ethyl methacrylate									
Ethyl methanesulfonate									
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Famphur									
Fluoranthene									
Fluorene									
Gamma-bhc [lindane]									
Heptachlor									
Heptachlor epoxide									
Hexachlorobenzene									

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	10/5/2023	4/23/2024
Antimony, total	<2	<2
Arochlor 1016		
Arochlor 1221		
Arochlor 1232		
Arochlor 1242		
Arochlor 1248		
Arochlor 1254		
Arochlor 1260		
Arsenic, total	<4	<4
Azobenzene		
Barium, total	17.4	17.8
Benzene	<1	<1
Benzo(a)anthracene		
Benzo(a)pyrene		
Benzo(b)fluoranthene		
Benzo(g,h,i)perylene		
Benzo(k)fluoranthene		
Benzyl alcohol		
Beryllium, total	<4	<4
Beta-bhc		
Bis(2-chloroethoxy)methane		
Bis(2-chloroethyl)ether		
Bis(2-ethylhexyl)phthalate		
Bis[2-chloroisopropyl]ether		
Bromochloromethane	<1	<1
Bromodichloromethane	<1	<1
Bromoform	<1	<1
Bromomethane	<1	<1
Butyl benzyl phthalate		
Cadmium, total	<.8	<.8
Carbon disulfide	<1	<1
Carbon tetrachloride	<1	<1
Chlordane		
Chlorobenzene	<1	<1
Chlorobenzilate		
Chloroethane	<1	<1
Chloroform	<1	<1
Chloromethane	<1	<1
Chloroprene		
Chromium, total	<8	<8
Chrysene		
Cis-1,2-dichloroethene	<1	<1
Cis-1,3-dichloropropene	<1	<1
Cobalt, total	.8	.7
Copper, total	<4	<4
Cyanide, total		
Delta-bhc		
Diallate		
Dibenzo(a,h)anthracene		
Dibenzofuran		
Dibromochloromethane	<1	<1
Dibromomethane	<1	<1
Dichlorodifluoromethane		
Dieldrin		
Diethyl phthalate		
Dimethoate		
Dimethylphthalate		
Di-n-butyl phthalate		
Di-n-octyl phthalate		
Dinoseb		
Diphenylamine		
Disulfoton		
Endosulfan i		
Endosulfan ii		
Endosulfan sulfate		
Endrin		
Endrin aldehyde		
Ethyl methacrylate		
Ethyl methanesulfonate		
Ethylbenzene	<1	<1
Famphur		
Fluoranthene		
Fluorene		
Gamma-bhc [lindane]		
Heptachlor		
Heptachlor epoxide		
Hexachlorobenzene		

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/19/2017	10/15/2018
Hexachlorobutadiene	ug/L							<8	
Hexachlorocyclopentadiene	ug/L							<8	
Hexachloroethane	ug/L							<8	
Hexachloropropene	ug/L							<8	
Indeno(1,2,3-cd)pyrene	ug/L							<8	
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Isobutanol	mg/L							<1	
Isodrin	ug/L							<8	
Isophorone	ug/L							<8	
Isosafrole	ug/L							<8	
Kepone	ug/L							<8	
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Mercury, Total	ug/L							<.5	
Methacrylonitrile	ug/L							<1	
Methapyrilene	ug/L							<8	
Methoxychlor	ug/L							<.05	
Methyl methacrylate	ug/L							<1	
Methyl methanesulfonate	ug/L							<8	
Methyl parathion	ug/L							<.4	
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Naphthalene	ug/L							<8	
Nickel, total	ug/L	29.5	42.5	18.6	23.2	13.3	31.4	23.2	18.8
Nitrobenzene	ug/L							<8	
N-nitrosodiethylamine	ug/L							<8	
N-nitrosodimethylamine	ug/L							<8	
N-nitrosodi-n-butylamine	ug/L							<8	
N-nitroso-di-n-propylamine	ug/L							<8	
N-nitrosodiphenylamine	ug/L							<8	
N-nitrosomethylethylamine	ug/L							<8	
N-nitrosopiperidine	ug/L							<8	
N-nitrosopyrrolidine	ug/L							<8	
O,o,o-triethyl phosphorothioate	ug/L							<.4	
O-toluidine	ug/L							<8	
P-(dimethylamino)azobenzene	ug/L							<8	
Parathion	ug/L							<.4	
Pentachlorobenzene	ug/L							<8	
Pentachloronitrobenzene (pcnb)	ug/L							<8	
Pentachlorophenol	ug/L							<8	
Phenacetin	ug/L							<8	
Phenanthrene	ug/L							<8	
Phenol	ug/L							<8	
Phorate	ug/L							<.4	
Pronamide	ug/L							<8	
Propionitrile	ug/L							<10	
Pyrene	ug/L							<8	
Safrole	ug/L							<8	
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Solids, total suspended	mg/L	498	15						
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Sulfide, total	mg/L							<.1	
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<4	<4	<1	<4	<4	<4	<4	<4
Thionazin	ug/L							<.4	
Tin, Total	ug/L	<20	<20	<20	<20	<20		<20	
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Toxaphene	ug/L							<.2	
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	<8.0	<8.0	<8.0	15.0	<8.0	<8.0	<20.0	<8.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	4/9/2019	10/9/2019	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022	4/11/2023
Hexachlorobutadiene									
Hexachlorocyclopentadiene									
Hexachloroethane									
Hexachloropropene									
Indeno(1,2,3-cd)pyrene									
Iodomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Isobutanol									
Isodrin									
Isophorone									
Isosafrole									
Kepone									
Lead, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Mercury, Total									
Methacrylonitrile									
Methapyrilene									
Methoxychlor									
Methyl methacrylate									
Methyl methanesulfonate									
Methyl parathion									
Methylene chloride	<5	<5	<5	<5	<5	<5	<5	<5	<5
Naphthalene									
Nickel, total	29.8	15.8	14.5	18.3	11.8	4.4	<4.0	27.1	22.4
Nitrobenzene									
N-nitrosodiethylamine									
N-nitrosodimethylamine									
N-nitrosodi-n-butylamine									
N-nitroso-di-n-propylamine									
N-nitrosodiphenylamine									
N-nitrosomethylethylamine									
N-nitrosopiperidine									
N-nitrosopyrrolidine									
O,o,o-triethyl phosphorothioate									
O-toluidine									
P-(dimethylamino)azobenzene									
Parathion									
Pentachlorobenzene									
Pentachloronitrobenzene (pcnb)									
Pentachlorophenol									
Phenacetin									
Phenanthrene									
Phenol									
Phorate									
Pronamide									
Propionitrile									
Pyrene									
Safrole									
Selenium, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	<4	<4	<4	<4	<4	<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulfide, total									
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Thionazin									
Tin, Total									
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Toxaphene									
Trans-1,2-dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	<20	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	<8.0	28.8	<20.0	30.9	<20.0	<20.0	<20.0	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-19

Constituents	10/5/2023	4/23/2024
Hexachlorobutadiene		
Hexachlorocyclopentadiene		
Hexachloroethane		
Hexachloropropene		
Indeno(1,2,3-cd)pyrene		
Iodomethane	<1	<1
Isobutanol		
Isodrin		
Isophorone		
Isosafrole		
Kepone		
Lead, total	<4	<4
Mercury, Total		
Methacrylonitrile		
Methapyrilene		
Methoxychlor		
Methyl methacrylate		
Methyl methanesulfonate		
Methyl parathion		
Methylene chloride	<5	<5
Naphthalene		
Nickel, total	<4.0	<4.0
Nitrobenzene		
N-nitrosodiethylamine		
N-nitrosodimethylamine		
N-nitrosodi-n-butylamine		
N-nitroso-di-n-propylamine		
N-nitrosodiphenylamine		
N-nitrosomethylethylamine		
N-nitrosopiperidine		
N-nitrosopyrrolidine		
O,o,o-triethyl phosphorothioate		
O-toluidine		
P-(dimethylamino)azobenzene		
Parathion		
Pentachlorobenzene		
Pentachloronitrobenzene (pcnb)		
Pentachlorophenol		
Phenacetin		
Phenanthrene		
Phenol		
Phorate		
Pronamide		
Propionitrile		
Pyrene		
Safrole		
Selenium, total	<4	<4
Silver, total	<4	<4
Solids, total suspended		
Styrene	<1	<1
Sulfide, total		
Tetrachloroethene	<1	<1
Thallium, total	<2	<2
Thionazin		
Tin, Total		
Toluene	<1	<1
Toxaphene		
Trans-1,2-dichloroethene	<1	<1
Trans-1,3-dichloropropene	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5
Trichloroethene	<1	<1
Trichlorofluoromethane	<1	<1
Vanadium, total	<20	<20
Vinyl acetate	<5	<5
Vinyl chloride	<1	<1
Xylenes, total	<2	<2
Zinc, total	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-20

Constituents	Units	10/28/2014	3/30/2015	9/24/2015	4/14/2016	9/29/2016	4/20/2017	10/18/2017	1/5/2018
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<5	<5	
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	20.2	
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	
Arsenic, total	ug/L	34.5	17.6	40.1	66.1	31.8	6.2	21.1	
Barium, total	ug/L	45.2	54.9	51.3	97.0	66.2	32.4	69.1	
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Cobalt, total	ug/L	11.6	7.9	5.3	5.9	4.1	1.2	7.4	6.6
Copper, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Mercury, Total	ug/L	<.5	<.5	<.5	<.5	<.5			
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	
Nickel, total	ug/L	15.0	10.3	8.0	9.6	<4.0	8.6	9.1	
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	
Solids, total suspended	mg/L	1010	117						
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Thallium, total	ug/L	<4	<4	<1	<4	<4	<4	<4	
Tin, Total	ug/L	<20	<20	<20	<20	<20			
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	
Zinc, total	ug/L	9.2	<8.0	8.3	9.4	<8.0	<8.0	<20.0	

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-20

Constituents	10/15/2018	4/9/2019	5/16/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021
1,1,1,2-tetrachloroethane	<1	<1		<1		<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1		<1		<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1		<1		<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1		<1		<1	<1	<1	<1
1,1-dichloroethane	<1	<1		<1		<1	<1	<1	<1
1,1-dichloroethene	<1	<1		<1		<1	<1	<1	<1
1,2,3-trichloropropane	<1	<1		<1		<1	<1	<1	<1
1,2-dibromo-3-chloropropane	<1	<1		<1		<5	<5	<5	<5
1,2-dibromoethane	<1	<1		<1		<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1		<1		<1	<1	<1	<1
1,2-dichloroethane	<1	<1		<1		<1	<1	<1	<1
1,2-dichloropropane	<1	<1		<1		<1	<1	<1	<1
1,4-dichlorobenzene	<1	<1		<1		<1	<1	<1	<1
2-butanone (mek)	<5	<5		<5		<5	<5	<5	<5
2-hexanone (mbk)	<5	<5		<5		<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5		<5		<5	<5	<5	<5
Acetone	<10.0	22.2	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0
Acrylonitrile	<5	<5		<5		<5	<5	<5	<5
Antimony, total	<2	<2		<2		<2	<2	<2	<2
Arsenic, total	32.9	4.3		31.3		19.9	10.8	11.2	10.8
Barium, total	34.4	59.2		92.7		52.6	116.0	108.0	99.5
Benzene	<1	<1		<1		<1	<1	<1	<1
Beryllium, total	<4	<4		<4		<4	<4	<4	<4
Bromochloromethane	<1	<1		<1		<1	<1	<1	<1
Bromodichloromethane	<1	<1		<1		<1	<1	<1	<1
Bromoform	<1	<1		<1		<1	<1	<1	<1
Bromomethane	<1	<1		<1		<1	<1	<1	<1
Cadmium, total	<.8	<.8		<.8		<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1		<1		<1	<1	<1	<1
Carbon tetrachloride	<1	<1		<1		<1	<1	<1	<1
Chlorobenzene	<1	<1		<1		<1	<1	<1	<1
Chloroethane	<1	<1		<1		<1	<1	<1	<1
Chloroform	<1	<1		<1		<1	<1	<1	<1
Chloromethane	<1	<1		<1		<1	<1	<1	<1
Chromium, total	<8	<8		<8		<8	<8	<8	<8
Cis-1,2-dichloroethene	<1	<1		<1		<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1		<1		<1	<1	<1	<1
Cobalt, total	6.9	3.9		4.3		6.0	3.3	3.9	2.7
Copper, total	<4.0	<4.0		<4.0		<4.0	<4.0	<4.0	10.2
Dibromochloromethane	<1	<1		<1		<1	<1	<1	<1
Dibromomethane	<1	<1		<1		<1	<1	<1	<1
Ethylbenzene	<1	<1		<1		<1	<1	<1	<1
Iodomethane	<1	<1		<1		<1	<1	<1	<1
Lead, total	<4	<4		<4		<4	<4	<4	<4
Mercury, Total									
Methylene chloride	<5	<5		<5		<5	<5	<5	<5
Nickel, total	10.1	8.8		7.3		6.7	6.2	6.4	10.3
Selenium, total	<4	<4		<4		<4	<4	<4	<4
Silver, total	<4	<4		<4		<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1		<1		<1	<1	<1	<1
Tetrachloroethene	<1	<1		<1		<1	<1	<1	<1
Thallium, total	<4	<2		<2		<2	<2	<2	<2
Tin, Total									
Toluene	<1	<1		<1		<1	<1	<1	<1
Trans-1,2-dichloroethene	<1	<1		<1		<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1		<1		<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5		<5		<5	<5	<5	<5
Trichloroethene	<1	<1		<1		<1	<1	<1	<1
Trichlorofluoromethane	<1	<1		<1		<1	<1	<1	<1
Vanadium, total	<20	<20		<20		<20	<20	<20	<20
Vinyl acetate	<5	<5		<5		<5	<5	<5	<5
Vinyl chloride	<1	<1		<1		<1	<1	<1	<1
Xylenes, total	<2	<2		<2		<2	<2	<2	<2
Zinc, total	<20.0	<8.0		79.7	13.5	<20.0	<20.0	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-20

Constituents	4/19/2022	10/18/2022	4/11/2023	10/5/2023	12/19/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	<1	<1	<1	<1		<1	<1
1,1,1-trichloroethane	<1	<1	<1	<1		<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1	<1		<1	<1
1,1,2-trichloroethane	<1	<1	<1	<1		<1	<1
1,1-dichloroethane	<1	<1	<1	<1		<1	<1
1,1-dichloroethene	<1	<1	<1	<1		<1	<1
1,2,3-trichloropropane	<1	<1	<1	<1		<1	<1
1,2-dibromo-3-chloropropane	<5	<5	<5	<5		<5	<5
1,2-dibromoethane	<1	<1	<1	<1		<1	<1
1,2-dichlorobenzene	<1	<1	<1	<1		<1	<1
1,2-dichloroethane	<1	<1	<1	<1		<1	<1
1,2-dichloropropane	<1	<1	<1	<1		<1	<1
1,4-dichlorobenzene	<1	<1	<1	<1		<1	<1
2-butanone (mek)	<10	<10	<10	<10		<10	<10
2-hexanone (mbk)	<5	<5	<5	<5		<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5		<5	<5
Acetone	<10.0	<10.0	<10.0	<10.0		<10.0	<10.0
Acrylonitrile	<5	<5	<5	<5		<5	<5
Antimony, total	<2	<2	<2	<2		<2	<2
Arsenic, total	11.2	16.7	25.9	10.8		8.0	26.2
Barium, total	125.0	139.0	80.0	45.1		39.0	61.8
Benzene	<1	<1	<1	<1		<1	<1
Beryllium, total	<4	<4	<4	<4		<4	<4
Bromochloromethane	<1	<1	<1	<1		<1	<1
Bromodichloromethane	<1	<1	<1	<1		<1	<1
Bromoform	<1	<1	<1	<1		<1	<1
Bromomethane	<1	<1	<1	<1		<1	<1
Cadmium, total	<.8	<.8	<.8	<.8		<.8	<.8
Carbon disulfide	<1	<1	<1	<1		<1	<1
Carbon tetrachloride	<1	<1	<1	<1		<1	<1
Chlorobenzene	<1	<1	<1	<1		<1	<1
Chloroethane	<1	<1	<1	<1		<1	<1
Chloroform	<1	<1	<1	<1		<1	<1
Chloromethane	<1	<1	<1	<1		<1	<1
Chromium, total	<8	<8	<8	<8		<8	<8
Cis-1,2-dichloroethene	<1	<1	<1	<1		<1	<1
Cis-1,3-dichloropropene	<1	<1	<1	<1		<1	<1
Cobalt, total	3.2	3.7	4.0	1.8		2.4	2.1
Copper, total	<4.0	<4.0	<4.0	5.0	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1	<1		<1	<1
Dibromomethane	<1	<1	<1	<1		<1	<1
Ethylbenzene	<1	<1	<1	<1		<1	<1
Iodomethane	<1	<1	<1	<1		<1	<1
Lead, total	<4	<4	<4	<4		<4	<4
Mercury, Total							
Methylene chloride	<5	<5	<5	<5		<5	<5
Nickel, total	5.7	5.1	7.2	5.0		4.0	4.0
Selenium, total	<4	<4	<4	<4		<4	<4
Silver, total	<4	<4	<4	<4		<4	<4
Solids, total suspended							
Styrene	<1	<1	<1	<1		<1	<1
Tetrachloroethene	<1	<1	<1	<1		<1	<1
Thallium, total	<2	<2	<2	<2		<2	<2
Tin, Total							
Toluene	<1	<1	<1	<1		<1	<1
Trans-1,2-dichloroethene	<1	<1	<1	<1		<1	<1
Trans-1,3-dichloropropene	<1	<1	<1	<1		<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5		<5	<5
Trichloroethene	<1	<1	<1	<1		<1	<1
Trichlorofluoromethane	<1	<1	<1	<1		<1	<1
Vanadium, total	<20	<20	<20	<20		<20	<20
Vinyl acetate	<5	<5	<5	<5		<5	<5
Vinyl chloride	<1	<1	<1	<1		<1	<1
Xylenes, total	<2	<2	<2	<2		<2	<2
Zinc, total	<20.0	<20.0	<20.0	<20.0		<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	Units	4/20/2017	7/17/2017	10/19/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020	10/6/2020
(3 4)-methylphenol	ug/L			<8					
1,1,1,2-tetrachloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1		<1	<1	<1	<1	<1	<1
1,1-dichloropropene	ug/L			<1					
1,2,3-trichloropropane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene	ug/L			<8					
1,2,4-trichlorobenzene	ug/L			<1					
1,2-dibromo-3-chloropropane	ug/L	<1		<1	<1	<1	<1	<5	<5
1,2-dibromoethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1		<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1		<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene	ug/L			<8					
1,3,5-trinitrobenzene	ug/L			<8					
1,3-dichlorobenzene	ug/L			<1					
1,3-dichloropropane	ug/L			<1					
1,3-dinitrobenzene	ug/L			<8					
1,4-dichlorobenzene	ug/L	<1		<1	<1	<1	<1	<1	<1
1,4-naphthoquinone	ug/L			<8					
1,4-phenylenediamine	ug/L			<8					
1-naphthylamine	ug/L			<8					
2,2-dichloropropane	ug/L			<1					
2,3,4,6-tetrachlorophenol	ug/L			<8					
2,4,5-t	ug/L			<.5					
2,4,5-tp (silvex)	ug/L			<.5					
2,4,5-trichlorophenol	ug/L			<8					
2,4,6-trichlorophenol	ug/L			<8					
2,4-d	ug/L			<2					
2,4-dichlorophenol	ug/L			<8					
2,4-dimethylphenol	ug/L			<8					
2,4-dinitrophenol	ug/L			<8					
2,4-dinitrotoluene	ug/L			<8					
2,6-dichlorophenol	ug/L			<8					
2,6-dinitrotoluene	ug/L			<8					
2-acetylaminofluorene	ug/L			<8					
2-butanone (mek)	ug/L	<5		<5	<5	<5	<5	<5	<5
2-chloronaphthalene	ug/L			<8					
2-chlorophenol	ug/L			<8					
2-hexanone (mbk)	ug/L	<5		<5	<5	<5	<5	<5	<5
2-methylnaphthalene	ug/L			<8					
2-methylphenol (o-cresol)	ug/L			<8					
2-naphthylamine	ug/L			<8					
2-nitroaniline	ug/L			<8					
2-nitrophenol	ug/L			<8					
3,3´-dichlorobenzidine	ug/L			<8					
3,3'-dimethylbenzidine	ug/L			<8					
3-methylcholanthrene	ug/L			<8					
3-nitroaniline	ug/L			<8					
4,4'-ddd	ug/L			<.05					
4,4'-dde	ug/L			<.05					
4,4'-ddt	ug/L			<.05					
4,6-dinitro-2-methylphenol	ug/L			<8					
4-aminobiphenyl	ug/L			<8					
4-bromophenyl phenyl ether	ug/L			<8					
4-chloro-3-methylphenol	ug/L			<8					
4-chloroaniline	ug/L			<8					
4-chlorophenyl phenyl ether	ug/L			<8					
4-methyl-2-pentanone (mibk)	ug/L	<5		<5	<5	<5	<5	<5	<5
4-nitroaniline	ug/L			<8					
4-nitrophenol	ug/L			<8					
5-nitro-o-toluidine	ug/L			<8					
7,12-dimethylbenz (a) anthracene	ug/L			<8					
Acenaphthene	ug/L			<8					
Acenaphthylene	ug/L			<8					
Acetone	ug/L	<10.0		21.5	<10.0	<10.0	<10.0	<10.0	<10.0
Acetonitrile	ug/L			<10					
Acetophenone	ug/L			<8					
Acrolein	ug/L			<10					
Acrylonitrile	ug/L	<5		<5	<5	<5	<5	<5	<5
Aldrin	ug/L			<.05					
Allyl chloride	ug/L			<1					
Alpha-bhc	ug/L			<.05					
Anthracene	ug/L			<8					

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	4/13/2021	10/21/2021	1/10/2022	4/19/2022	10/18/2022	4/11/2023	10/5/2023	4/23/2024	10/11/2024
(3 4)-methylphenol				<8		<8			
1,1,1,2-tetrachloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1-dichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,1-dichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
1,1-dichloropropene				<1		<1			
1,2,3-trichloropropane	<1	<1		<1	<1	<1	<1	<1	<1
1,2,4,5-tetrachlorobenzene				<8		<8			
1,2,4-trichlorobenzene				<1		<1			
1,2-dibromo-3-chloropropane	<5	<5		<1	<5	<1	<5	<5	<5
1,2-dibromoethane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichloroethane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dichloropropane	<1	<1		<1	<1	<1	<1	<1	<1
1,2-dinitrobenzene				<8		<8			
1,3,5-trinitrobenzene				<8		<8			
1,3-dichlorobenzene				<1		<1			
1,3-dichloropropane				<1		<1			
1,3-dinitrobenzene				<8		<8			
1,4-dichlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
1,4-naphthoquinone				<8		<8			
1,4-phenylenediamine				<8		<8			
1-naphthylamine				<8		<8			
2,2-dichloropropane				<1		<1			
2,3,4,6-tetrachlorophenol				<8		<8			
2,4,5-t				<.5		<.5			
2,4,5-tp (silvex)				<.5		<.5			
2,4,5-trichlorophenol				<8		<8			
2,4,6-trichlorophenol				<8		<8			
2,4-d				<2		<2			
2,4-dichlorophenol				<8		<8			
2,4-dimethylphenol				<8		<8			
2,4-dinitrophenol				<8		<8			
2,4-dinitrotoluene				<8		<8			
2,6-dichlorophenol				<8		<8			
2,6-dinitrotoluene				<8		<8			
2-acetylaminofluorene				<8		<8			
2-butanone (mek)	<5	<5		<5	<10	<5	<10	<10	<10
2-chloronaphthalene				<8		<8			
2-chlorophenol				<8		<8			
2-hexanone (mbk)	<5	<5		<5	<5	<5	<5	<5	<5
2-methylnaphthalene				<8		<8			
2-methylphenol (o-cresol)				<8		<8			
2-naphthylamine				<8		<8			
2-nitroaniline				<8		<8			
2-nitrophenol				<8		<8			
3,3´-dichlorobenzidine				<8		<8			
3,3'-dimethylbenzidine				<8		<8			
3-methylcholanthrene				<8		<8			
3-nitroaniline				<8		<8			
4,4'-ddd				<.05		<.05			
4,4'-dde				<.05		<.05			
4,4'-ddt				<.05		<.05			
4,6-dinitro-2-methylphenol				<8		<8			
4-aminobiphenyl				<8		<8			
4-bromophenyl phenyl ether				<8		<8			
4-chloro-3-methylphenol				<8		<8			
4-chloroaniline				<8		<8			
4-chlorophenyl phenyl ether				<8		<8			
4-methyl-2-pentanone (mibk)	<5	<5		<5	<5	<5	<5	<5	<5
4-nitroaniline				<8		<8			
4-nitrophenol				<8		<8			
5-nitro-o-toluidine				<8		<8			
7,12-dimethylbenz (a) anthracene				<8		<8			
Acenaphthene				<8		<8			
Acenaphthylene				<8		<8			
Acetone	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Acetonitrile				<10		<10			
Acetophenone				<8		<8			
Acrolein				<10		<10			
Acrylonitrile	<5	<5		<5	<5	<5	<5	<5	<5
Aldrin				<.05		<.05			
Allyl chloride				<1		<1			
Alpha-bhc				<.05		<.05			
Anthracene				<8		<8			

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	Units	4/20/2017	7/17/2017	10/19/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020	10/6/2020
Antimony, total	ug/L	<2		<2	<2	<2	<2	<2	<2
Arochlor 1016	ug/L			<.10					
Arochlor 1221	ug/L			<.20					
Arochlor 1232	ug/L			<.20					
Arochlor 1242	ug/L			<.20					
Arochlor 1248	ug/L			<.20					
Arochlor 1254	ug/L			<.10					
Arochlor 1260	ug/L			<.10					
Arsenic, total	ug/L	4.5		4.5	<4.0	<4.0	<4.0	<4.0	<4.0
Azobenzene	ug/L			<8					
Barium, total	ug/L	60.3		35.9	30.3	21.1	35.4	23.9	24.3
Benzene	ug/L	<1		<1	<1	<1	<1	<1	<1
Benzo(a)anthracene	ug/L			<8					
Benzo(a)pyrene	ug/L			<8					
Benzo(b)fluoranthene	ug/L			<8					
Benzo(g,h,i)perylene	ug/L			<8					
Benzo(k)fluoranthene	ug/L			<8					
Benzyl alcohol	ug/L			<8					
Beryllium, total	ug/L	<4		<4	<4	<4	<4	<4	<4
Beta-bhc	ug/L			<.05					
Bis(2-chloroethoxy)methane	ug/L			<8					
Bis(2-chloroethyl)ether	ug/L			<8					
Bis(2-ethylhexyl)phthalate	ug/L			7					
Bis[2-chloroisopropyl]ether	ug/L			<8					
Bromochloromethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1		<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate	ug/L			<8					
Cadmium, total	ug/L	<.8		<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1		<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1		<1	<1	<1	<1	<1	<1
Chlordane	ug/L			<.1					
Chlorobenzene	ug/L	<1		<1	<1	<1	<1	<1	<1
Chlorobenzilate	ug/L			<8					
Chloroethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1		<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Chloroprene	ug/L			<1					
Chromium, total	ug/L	<8		<8	<8	<8	<8	<8	<8
Chrysene	ug/L			<8					
Cis-1,2-dichloroethene	ug/L	<1		<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1		<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	25.2	20.9	19.4	15.7	12.0	16.5	8.1	21.1
Copper, total	ug/L	<4.0		<4.0	5.2	<4.0	<4.0	<4.0	<4.0
Cyanide, total	mg/L			<.005					
Delta-bhc	ug/L			<.05					
Diallate	ug/L			<8					
Dibenzo(a,h)anthracene	ug/L			<8					
Dibenzofuran	ug/L			<8					
Dibromochloromethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane	ug/L			<1					
Dieldrin	ug/L			<.05					
Diethyl phthalate	ug/L			<8					
Dimethoate	ug/L			<.4					
Dimethylphthalate	ug/L			<8					
Di-n-butyl phthalate	ug/L			<8					
Di-n-octyl phthalate	ug/L			<8					
Dinoseb	ug/L			<.5					
Diphenylamine	ug/L			<8					
Disulfoton	ug/L			<.4					
Endosulfan i	ug/L			<.05					
Endosulfan ii	ug/L			<.05					
Endosulfan sulfate	ug/L			<.05					
Endrin	ug/L			<.05					
Endrin aldehyde	ug/L			<.05					
Ethyl methacrylate	ug/L			<10					
Ethyl methanesulfonate	ug/L			<8					
Ethylbenzene	ug/L	<1		<1	<1	<1	<1	<1	<1
Famphur	ug/L			<.4					
Fluoranthene	ug/L			<8					
Fluorene	ug/L			<8					
Gamma-bhc [lindane]	ug/L			<.05					
Heptachlor	ug/L			<.05					
Heptachlor epoxide	ug/L			<.05					
Hexachlorobenzene	ug/L			<.05					

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	4/13/2021	10/21/2021	1/10/2022	4/19/2022	10/18/2022	4/11/2023	10/5/2023	4/23/2024	10/11/2024
Antimony, total	<2	<2		<2	<2	<2	<2	<2	<2
Arochlor 1016				<.14		<.10			
Arochlor 1221				<.29		<.20			
Arochlor 1232				<.29		<.20			
Arochlor 1242				<.29		<.20			
Arochlor 1248				<.29		<.20			
Arochlor 1254				<.14		<.10			
Arochlor 1260				<.14		<.10			
Arsenic, total	<4.0	16.2	15.2	17.1	9.8	14.7	10.9	5.2	12.6
Azobenzene				<8		<8			
Barium, total	23.2	32.2		35.2	32.6	28.1	24.2	19.6	25.2
Benzene	<1	<1		<1	<1	<1	<1	<1	<1
Benzo(a)anthracene				<8		<8			
Benzo(a)pyrene				<8		<8			
Benzo(b)fluoranthene				<8		<8			
Benzo(g,h,i)perylene				<8		<8			
Benzo(k)fluoranthene				<8		<8			
Benzyl alcohol				<8		<8			
Beryllium, total	<4	<4		<4	<4	<4	<4	<4	<4
Beta-bhc				<.05		<.05			
Bis(2-chloroethoxy)methane				<8		<8			
Bis(2-chloroethyl)ether				<8		<8			
Bis(2-ethylhexyl)phthalate				<6		<6			
Bis[2-chloroisopropyl]ether				<8		<8			
Bromochloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Bromodichloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Bromoform	<1	<1		<1	<1	<1	<1	<1	<1
Bromomethane	<1	<1		<1	<1	<1	<1	<1	<1
Butyl benzyl phthalate				<8		<8			
Cadmium, total	<.8	<.8		<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1		<1	<1	<1	<1	<1	<1
Carbon tetrachloride	<1	<1		<1	<1	<1	<1	<1	<1
Chlordane				<.1		<.1			
Chlorobenzene	<1	<1		<1	<1	<1	<1	<1	<1
Chlorobenzilate				<8		<8			
Chloroethane	<1	<1		<1	<1	<1	<1	<1	<1
Chloroform	<1	<1		<1	<1	<1	<1	<1	<1
Chloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Chloroprene				<1		<1			
Chromium, total	<8	<8		<8	<8	<8	<8	<8	<8
Chrysene				<8		<8			
Cis-1,2-dichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1		<1	<1	<1	<1	<1	<1
Cobalt, total	21.4	24.4		23.6	23.6	16.7	12.0	9.1	6.8
Copper, total	<4.0	<4.0		<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Cyanide, total				<.005		<.005			
Delta-bhc				<.05		<.05			
Diallate				<8		<8			
Dibenzo(a,h)anthracene				<8		<8			
Dibenzofuran				<8		<8			
Dibromochloromethane	<1	<1		<1	<1	<1	<1	<1	<1
Dibromomethane	<1	<1		<1	<1	<1	<1	<1	<1
Dichlorodifluoromethane				<1		<1			
Dieldrin				<.05		<.05			
Diethyl phthalate				<8		<8			
Dimethoate				<.4		<.4			
Dimethylphthalate				<8		<8			
Di-n-butyl phthalate				<8		<8			
Di-n-octyl phthalate				<8		<8			
Dinoseb				<.5		<.5			
Diphenylamine				<8		<8			
Disulfoton				<.4		<.4			
Endosulfan i				<.05		<.05			
Endosulfan ii				<.05		<.05			
Endosulfan sulfate				<.05		<.05			
Endrin				<.05		<.05			
Endrin aldehyde				<.05		<.05			
Ethyl methacrylate				<10		<10			
Ethyl methanesulfonate				<8		<8			
Ethylbenzene	<1	<1		<1	<1	<1	<1	<1	<1
Famphur				<.4		<.4			
Fluoranthene				<8		<8			
Fluorene				<8		<8			
Gamma-bhc [lindane]				<.05		<.05			
Heptachlor				<.05		<.05			
Heptachlor epoxide				<.05		<.05			
Hexachlorobenzene				<.05		<.05			

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	Units	4/20/2017	7/17/2017	10/19/2017	10/15/2018	4/9/2019	10/9/2019	4/1/2020	10/6/2020
Hexachlorobutadiene	ug/L			<8					
Hexachlorocyclopentadiene	ug/L			<8					
Hexachloroethane	ug/L			<8					
Hexachloropropene	ug/L			<8					
Indeno(1,2,3-cd)pyrene	ug/L			<8					
Iodomethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Isobutanol	mg/L			<1					
Isodrin	ug/L			<8					
Isophorone	ug/L			<8					
Isosafrole	ug/L			<8					
Kepone	ug/L			<8					
Lead, total	ug/L	<4		<4	<4	<4	<4	<4	<4
Mercury, Total	ug/L			<.5					
Methacrylonitrile	ug/L			<1					
Methapyrilene	ug/L			<8					
Methoxychlor	ug/L			<.05					
Methyl methacrylate	ug/L			<1					
Methyl methanesulfonate	ug/L			<8					
Methyl parathion	ug/L			<.4					
Methylene chloride	ug/L	<5		<5	<5	<5	<5	<5	<5
Naphthalene	ug/L			<8					
Nickel, total	ug/L	55.8	50.7	53.1	44.7	21.5	24.2	13.1	27.9
Nitrobenzene	ug/L			<8					
N-nitrosodiethylamine	ug/L			<8					
N-nitrosodimethylamine	ug/L			<8					
N-nitrosodi-n-butylamine	ug/L			<8					
N-nitroso-di-n-propylamine	ug/L			<8					
N-nitrosodiphenylamine	ug/L			<8					
N-nitrosomethylethylamine	ug/L			<8					
N-nitrosopiperidine	ug/L			<8					
N-nitrosopyrrolidine	ug/L			<8					
O,o,o-triethyl phosphorothioate	ug/L			<.4					
O-toluidine	ug/L			<8					
P-(dimethylamino)azobenzene	ug/L			<8					
Parathion	ug/L			<.4					
Pentachlorobenzene	ug/L			<8					
Pentachloronitrobenzene (pcnb)	ug/L			<8					
Pentachlorophenol	ug/L			<8					
Phenacetin	ug/L			<8					
Phenanthrene	ug/L			<8					
Phenol	ug/L			<8					
Phorate	ug/L			<.4					
Pronamide	ug/L			<8					
Propionitrile	ug/L			<10					
Pyrene	ug/L			<8					
Safrole	ug/L			<8					
Selenium, total	ug/L	<4		<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4		<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1		<1	<1	<1	<1	<1	<1
Sulfide, total	mg/L			<.1					
Tetrachloroethene	ug/L	<1		<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<4		<4	<4	<2	<2	<2	<2
Thionazin	ug/L			<.4					
Tin, Total	ug/L			<20					
Toluene	ug/L	<1		<1	<1	<1	<1	<1	<1
Toxaphene	ug/L			<.2					
Trans-1,2-dichloroethene	ug/L	<1		<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1		<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5		<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1		<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1		<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20		<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5		<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1		<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2		<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	9.8		<20.0	<20.0	<8.0	53.1	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-21R

Constituents	4/13/2021	10/21/2021	1/10/2022	4/19/2022	10/18/2022	4/11/2023	10/5/2023	4/23/2024	10/11/2024
Hexachlorobutadiene				<8		<8			
Hexachlorocyclopentadiene				<8		<8			
Hexachloroethane				<8		<8			
Hexachloropropene				<8		<8			
Indeno(1,2,3-cd)pyrene				<8		<8			
Iodomethane	<1	<1		<2	<1	<2	<1	<1	<1
Isobutanol				<1		<1			
Isodrin				<8		<8			
Isophorone				<8		<8			
Isosafrole				<8		<8			
Kepone				<8		<8			
Lead, total	<4	<4		<4	<4	<4	<4	<4	<4
Mercury, Total				<.5		<.5			
Methacrylonitrile				<1		<1			
Methapyrilene				<8		<8			
Methoxychlor				<.05		<.05			
Methyl methacrylate				<1		<1			
Methyl methanesulfonate				<8		<8			
Methyl parathion				<.4		<.4			
Methylene chloride	<5	<5		<5	<5	<5	<5	<5	<5
Naphthalene				<8		<8			
Nickel, total	28.4	32.4		28.3	26.0	24.8	19.4	13.6	9.5
Nitrobenzene				<8		<8			
N-nitrosodiethylamine				<8		<8			
N-nitrosodimethylamine				<8		<8			
N-nitrosodi-n-butylamine				<8		<8			
N-nitroso-di-n-propylamine				<8		<8			
N-nitrosodiphenylamine				<8		<8			
N-nitrosomethylethylamine				<8		<8			
N-nitrosopiperidine				<8		<8			
N-nitrosopyrrolidine				<8		<8			
O,o,o-triethyl phosphorothioate				<.4		<.4			
O-toluidine				<8		<8			
P-(dimethylamino)azobenzene				<8		<8			
Parathion				<.4		<.4			
Pentachlorobenzene				<8		<8			
Pentachloronitrobenzene (pcnb)				<8		<8			
Pentachlorophenol				<8		<8			
Phenacetin				<8		<8			
Phenanthrene				<8		<8			
Phenol				<8		<8			
Phorate				<.4		<.4			
Pronamide				<8		<8			
Propionitrile				<10		<10			
Pyrene				<8		<8			
Safrole				<8		<8			
Selenium, total	<4	<4		<4	<4	<4	<4	<4	<4
Silver, total	<4	<4		<4	<4	<4	<4	<4	<4
Styrene	<1	<1		<1	<1	<1	<1	<1	<1
Sulfide, total				<.1		<.1			
Tetrachloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Thallium, total	<2	<2		<2	<2	<2	<2	<2	<2
Thionazin				<.4		<.4			
Tin, Total				<20		<20			
Toluene	<1	<1		<1	<1	<1	<1	<1	<1
Toxaphene				<.2		<.2			
Trans-1,2-dichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1		<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5		<5	<5	<5	<5	<5	<5
Trichloroethene	<1	<1		<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	<1	<1		<1	<1	<1	<1	<1	<1
Vanadium, total	<20	<20		<20	<20	<20	<20	<20	<20
Vinyl acetate	<5	<5		<5	<5	<5	<5	<5	<5
Vinyl chloride	<1	<1		<1	<1	<1	<1	<1	<1
Xylenes, total	<2	<2		<2	<2	<2	<2	<2	<2
Zinc, total	<20.0	<20.0		<20.0	<20.0	<20.0	<20.0	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-22

Constituents	Units	10/28/2014	3/30/2015	9/22/2015	4/13/2016	9/29/2016	12/28/2016	4/20/2017	7/17/2017
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1		<1	
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1		<1	
1,2-dibromo-3-chloropropane	ug/L	<1	<1	<1	<1	<1		<1	
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1		<1	
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1		<1	
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1		<1	
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1		<1	
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1		<1	
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5		<5	
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5		<5	
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5		<5	
Acetone	ug/L	<10.0	<10.0	<10.0	<10.0	<10.0		<10.0	
Acrylonitrile	ug/L	<5	<5	<5	<5	<5		<5	
Antimony, total	ug/L	<2	<2	<2	<2	<2		<2	
Arsenic, total	ug/L	<4	<4	<4	<4	<4		<4	
Barium, total	ug/L	17.5	20.3	22.2	29.2	15.7		19.2	
Benzene	ug/L	<1	<1	<1	<1	<1		<1	
Beryllium, total	ug/L	<4	<4	<4	<4	<4		<4	
Bromochloromethane	ug/L	<1	<1	<1	<1	<1		<1	
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1		<1	
Bromoform	ug/L	<1	<1	<1	<1	<1		<1	
Bromomethane	ug/L	<1	<1	<1	<1	<1		<1	
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8		<.8	
Carbon disulfide	ug/L	<1	<1	<1	<1	<1		<1	
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1		<1	
Chlorobenzene	ug/L	<1	<1	<1	<1	<1		<1	
Chloroethane	ug/L	<1	<1	<1	<1	<1		<1	
Chloroform	ug/L	<1	<1	<1	<1	<1		<1	
Chloromethane	ug/L	<1	<1	<1	<1	<1		<1	
Chromium, total	ug/L	<8	<8	<8	<8	<8		<8	
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1		<1	
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1		<1	
Cobalt, total	ug/L	<.8	<.8	<.8	<.8	<.8		<.8	
Copper, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0		<4.0	
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1		<1	
Dibromomethane	ug/L	<1	<1	<1	<1	<1		<1	
Ethylbenzene	ug/L	<1	<1	<1	<1	<1		<1	
Iodomethane	ug/L	<1	<1	<1	<1	<1		<1	
Lead, total	ug/L	<4	<4	<4	<4	<4		<4	
Methylene chloride	ug/L	<5	<5	<5	<5	<5		<5	
Nickel, total	ug/L	16.0	5.4	41.3	8.8	41.5	10.6	<4.0	
Selenium, total	ug/L	<4	<4	<4	<4	<4		<4	
Silver, total	ug/L	<4	<4	<4	<4	<4		<4	
Solids, total suspended	mg/L	84	5						
Styrene	ug/L	<1	<1	<1	<1	<1		<1	
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1		<1	
Thallium, total	ug/L	<4	<4	<1	<4	<4		<4	
Toluene	ug/L	<1	<1	<1	<1	<1		<1	
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1		<1	
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1		<1	
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5		<5	
Trichloroethene	ug/L	<1	<1	<1	<1	<1		<1	
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1		<1	
Vanadium, total	ug/L	<20	<20	<20	<20	<20		<20	
Vinyl acetate	ug/L	<5	<5	<5	<5	<5		<5	
Vinyl chloride	ug/L	<1	<1	<1	<1	<1		<1	
Xylenes, total	ug/L	<2	<2	<2	<2	<2		<2	
Zinc, total	ug/L	15.6	<8.0	16.3	<8.0	22.0		<8.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-22

Constituents	10/18/2017	10/15/2018	4/9/2019	10/9/2019	1/8/2020	4/1/2020	10/6/2020	4/13/2021	10/21/2021
1,1,1,2-tetrachloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,1-dichloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,1-dichloroethene	<1	<1	<1	<1		<1	<1	<1	<1
1,2,3-trichloropropane	<1	<1	<1	<1		<1	<1	<1	<1
1,2-dibromo-3-chloropropane	<1	<1	<1	<1		<5	<5	<5	<5
1,2-dibromoethane	<1	<1	<1	<1		<1	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1	<1		<1	<1	<1	<1
1,2-dichloroethane	<1	<1	<1	<1		<1	<1	<1	<1
1,2-dichloropropane	<1	<1	<1	<1		<1	<1	<1	<1
1,4-dichlorobenzene	<1	<1	<1	<1		<1	<1	<1	<1
2-butanone (mek)	<5	<5	<5	<5		<5	<5	<5	<5
2-hexanone (mbk)	<5	<5	<5	<5		<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5		<5	<5	<5	<5
Acetone	21.1	<10.0	<10.0	<10.0		<10.0	<10.0	<10.0	<10.0
Acrylonitrile	<5	<5	<5	<5		<5	<5	<5	<5
Antimony, total	<2	<2	<2	<2		<2	<2	<2	<2
Arsenic, total	<4	<4	<4	<4		<4	<4	<4	<4
Barium, total	15.2	13.3	18.7	15.9		18.2	14.4	16.0	10.1
Benzene	<1	<1	<1	<1		<1	<1	<1	<1
Beryllium, total	<4	<4	<4	<4		<4	<4	<4	<4
Bromochloromethane	<1	<1	<1	<1		<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1		<1	<1	<1	<1
Bromoform	<1	<1	<1	<1		<1	<1	<1	<1
Bromomethane	<1	<1	<1	<1		<1	<1	<1	<1
Cadmium, total	<.8	<.8	<.8	<.8		<.8	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1	<1		<1	<1	<1	<1
Carbon tetrachloride	<1	<1	<1	<1		<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1		<1	<1	<1	<1
Chloroethane	<1	<1	<1	<1		<1	<1	<1	<1
Chloroform	<1	<1	<1	<1		<1	<1	<1	<1
Chloromethane	<1	<1	<1	<1		<1	<1	<1	<1
Chromium, total	<8	<8	<8	<8		<8	<8	<8	<8
Cis-1,2-dichloroethene	<1	<1	<1	<1		<1	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1	<1		<1	<1	<1	<1
Cobalt, total	<.8	<.8	<.8	<.8		<.8	.4	<.4	.8
Copper, total	<4.0	<4.0	<4.0	<4.0		<4.0	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1	<1		<1	<1	<1	<1
Dibromomethane	<1	<1	<1	<1		<1	<1	<1	<1
Ethylbenzene	<1	<1	<1	<1		<1	<1	<1	<1
Iodomethane	<1	<1	<1	<1		<1	<1	<1	<1
Lead, total	<4	<4	<4	<4		<4	<4	<4	<4
Methylene chloride	<5	<5	<5	<5		<5	<5	<5	<5
Nickel, total	37.6	30.6	5.3	16.6		5.6	35.8	<4.0	12.5
Selenium, total	<4	<4	<4	<4		<4	<4	<4	<4
Silver, total	<4	<4	<4	<4		<4	<4	<4	<4
Solids, total suspended									
Styrene	<1	<1	<1	<1		<1	<1	<1	<1
Tetrachloroethene	<1	<1	<1	<1		<1	<1	<1	<1
Thallium, total	<4	<4	<2	<2		<2	<2	<2	<2
Toluene	<1	<1	<1	<1		<1	<1	<1	<1
Trans-1,2-dichloroethene	<1	<1	<1	<1		<1	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1	<1		<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5		<5	<5	<5	<5
Trichloroethene	<1	<1	<1	<1		<1	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1	<1		<1	<1	<1	<1
Vanadium, total	<20	<20	<20	<20		<20	<20	<20	<20
Vinyl acetate	<5	<5	<5	<5		<5	<5	<5	<5
Vinyl chloride	<1	<1	<1	<1		<1	<1	<1	<1
Xylenes, total	<2	<2	<2	<2		<2	<2	<2	<2
Zinc, total	<20.0	<20.0	<8.0	71.1	10.6	<20.0	<20.0	<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-22

Constituents	4/19/2022	10/18/2022	4/11/2023	10/5/2023	12/19/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	<1	<1	<1	<1		<1	<1
1,1,1-trichloroethane	<1	<1	<1	<1		<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1	<1		<1	<1
1,1,2-trichloroethane	<1	<1	<1	<1		<1	<1
1,1-dichloroethane	<1	<1	<1	<1		<1	<1
1,1-dichloroethene	<1	<1	<1	<1		<1	<1
1,2,3-trichloropropane	<1	<1	<1	<1		<1	<1
1,2-dibromo-3-chloropropane	<5	<5	<5	<5		<5	<5
1,2-dibromoethane	<1	<1	<1	<1		<1	<1
1,2-dichlorobenzene	<1	<1	<1	<1		<1	<1
1,2-dichloroethane	<1	<1	<1	<1		<1	<1
1,2-dichloropropane	<1	<1	<1	<1		<1	<1
1,4-dichlorobenzene	<1	<1	<1	<1		<1	<1
2-butanone (mek)	<10	<10	<10	<10		<10	<10
2-hexanone (mbk)	<5	<5	<5	<5		<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5	<5		<5	<5
Acetone	<10.0	<10.0	<10.0	<10.0		<10.0	<10.0
Acrylonitrile	<5	<5	<5	<5		<5	<5
Antimony, total	<2	<2	<2	<2		<2	<2
Arsenic, total	<4	<4	<4	<4		<4	<4
Barium, total	15.8	12.7	13.1	9.3		13.3	9.9
Benzene	<1	<1	<1	<1		<1	<1
Beryllium, total	<4	<4	<4	<4		<4	<4
Bromochloromethane	<1	<1	<1	<1		<1	<1
Bromodichloromethane	<1	<1	<1	<1		<1	<1
Bromoform	<1	<1	<1	<1		<1	<1
Bromomethane	<1	<1	<1	<1		<1	<1
Cadmium, total	<.8	<.8	<.8	<.8		<.8	<.8
Carbon disulfide	<1	<1	<1	<1		<1	<1
Carbon tetrachloride	<1	<1	<1	<1		<1	<1
Chlorobenzene	<1	<1	<1	<1		<1	<1
Chloroethane	<1	<1	<1	<1		<1	<1
Chloroform	<1	<1	<1	<1		<1	<1
Chloromethane	<1	<1	<1	<1		<1	<1
Chromium, total	<8	<8	<8	<8		<8	<8
Cis-1,2-dichloroethene	<1	<1	<1	<1		<1	<1
Cis-1,3-dichloropropene	<1	<1	<1	<1		<1	<1
Cobalt, total	.4	1.5	.4	.4		<.4	<.4
Copper, total	<4.0	<4.0	<4.0	8.6	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1	<1		<1	<1
Dibromomethane	<1	<1	<1	<1		<1	<1
Ethylbenzene	<1	<1	<1	<1		<1	<1
Iodomethane	<1	<1	<1	<1		<1	<1
Lead, total	<4	<4	<4	<4		<4	<4
Methylene chloride	<5	<5	<5	<5		<5	<5
Nickel, total	<4.0	10.6	<4.0	76.0		<4.0	11.7
Selenium, total	<4	<4	<4	<4		<4	<4
Silver, total	<4	<4	<4	<4		<4	<4
Solids, total suspended							
Styrene	<1	<1	<1	<1		<1	<1
Tetrachloroethene	<1	<1	<1	<1		<1	<1
Thallium, total	<2	<2	<2	<2		<2	<2
Toluene	<1	<1	<1	<1		<1	<1
Trans-1,2-dichloroethene	<1	<1	<1	<1		<1	<1
Trans-1,3-dichloropropene	<1	<1	<1	<1		<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5	<5		<5	<5
Trichloroethene	<1	<1	<1	<1		<1	<1
Trichlorofluoromethane	<1	<1	<1	<1		<1	<1
Vanadium, total	<20	<20	<20	<20		<20	<20
Vinyl acetate	<5	<5	<5	<5		<5	<5
Vinyl chloride	<1	<1	<1	<1		<1	<1
Xylenes, total	<2	<2	<2	<2		<2	<2
Zinc, total	<20.0	<20.0	<20.0	29.2		<20.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-25

Constituents	Units	10/18/2017	5/18/2023	7/7/2023	10/5/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<1	<5	<5	<5	<5	<5
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<5	<10	<10	<10	<10	<10
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5
Acetone	ug/L	<10.0	25.5	<10.0	<10.0	<10.0	<10.0
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	15.2	9.4	5.7	6.9
Barium, total	ug/L	59.0	51.9	69.3	55.7	48.3	62.0
Benzene	ug/L	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	10.2	8.9	8.8	7.1	4.7	3.7
Copper, total	ug/L	<4	<4	<4	<4	<4	<4
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	<4	<4	<4	<4	<4	<4
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	22.3	13.2	15.8	13.8	7.9	6.5
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2	<2
Toluene	ug/L	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	<20	<20	<20	<20	<20	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-28

Constituents	Units	5/18/2023	7/7/2023	10/5/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<5	<5	<5	<5	<5
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<10	<10	<10	<10	<10
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5
Acetone	ug/L	<10	<10	<10	<10	<10
Acrylonitrile	ug/L	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4	<4	<4	<4	<4
Barium, total	ug/L	17.4	18.8	20.5	17.8	19.9
Benzene	ug/L	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1
Cobalt, total	ug/L	<.4	<.4	<.4	<.4	<.4
Copper, total	ug/L	<4	<4	<4	<4	<4
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1
Lead, total	ug/L	<4	<4	<4	<4	<4
Methylene chloride	ug/L	<5	<5	<5	<5	<5
Nickel, total	ug/L	5.8	8.1	8.9	7.1	7.6
Selenium, total	ug/L	4.7	<4.0	4.8	<4.0	<4.0
Silver, total	ug/L	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2
Toluene	ug/L	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2
Zinc, total	ug/L	<20	<20	<20	<20	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-30

Constituents	Units	10/9/2019	4/1/2020	10/6/2020	4/13/2021	10/21/2021	4/19/2022	10/18/2022	4/11/2023
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<1	<5	<5	<5	<5	<5	<5	<5
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<5	<5	<5	<5	<5	<10	<10	<10
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	9.1	<4.0
Barium, total	ug/L	39.5	22.5	22.8	19.4	23.9	20.9	44.7	20.7
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	43	<8
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	11.3	3.5	2.9	2.9	3.0	4.7	24.2	6.5
Copper, total	ug/L	<4.0	<4.0	<4.0	5.7	<4.0	5.9	71.2	<4.0
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	12.7	<4.0
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	11.0	4.3	5.4	7.0	6.3	10.7	51.0	29.0
Selenium, total	ug/L	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	5.7	<4.0
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20.0	<20.0	<20.0	<20.0	<20.0	<20.0	21.4	<20.0
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	49.5	<20.0	<20.0	<20.0	<20.0	<20.0	138.0	<20.0

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-30

Constituents	10/5/2023	4/23/2024	10/11/2024
1,1,1,2-tetrachloroethane	<1	<1	<1
1,1,1-trichloroethane	<1	<1	<1
1,1,2,2-tetrachloroethane	<1	<1	<1
1,1,2-trichloroethane	<1	<1	<1
1,1-dichloroethane	<1	<1	<1
1,1-dichloroethene	<1	<1	<1
1,2,3-trichloropropane	<1	<1	<1
1,2-dibromo-3-chloropropane	<5	<5	<5
1,2-dibromoethane	<1	<1	<1
1,2-dichlorobenzene	<1	<1	<1
1,2-dichloroethane	<1	<1	<1
1,2-dichloropropane	<1	<1	<1
1,4-dichlorobenzene	<1	<1	<1
2-butanone (mek)	<10	<10	<10
2-hexanone (mbk)	<5	<5	<5
4-methyl-2-pentanone (mibk)	<5	<5	<5
Acetone	<10	<10	<10
Acrylonitrile	<5	<5	<5
Antimony, total	<2	<2	<2
Arsenic, total	<4.0	<4.0	<4.0
Barium, total	21.0	14.2	24.5
Benzene	<1	<1	<1
Beryllium, total	<4	<4	<4
Bromochloromethane	<1	<1	<1
Bromodichloromethane	<1	<1	<1
Bromoform	<1	<1	<1
Bromomethane	<1	<1	<1
Cadmium, total	<.8	<.8	<.8
Carbon disulfide	<1	<1	<1
Carbon tetrachloride	<1	<1	<1
Chlorobenzene	<1	<1	<1
Chloroethane	<1	<1	<1
Chloroform	<1	<1	<1
Chloromethane	<1	<1	<1
Chromium, total	<8	<8	<8
Cis-1,2-dichloroethene	<1	<1	<1
Cis-1,3-dichloropropene	<1	<1	<1
Cobalt, total	4.1	3.0	7.4
Copper, total	<4.0	<4.0	<4.0
Dibromochloromethane	<1	<1	<1
Dibromomethane	<1	<1	<1
Ethylbenzene	<1	<1	<1
Iodomethane	<1	<1	<1
Lead, total	<4.0	<4.0	<4.0
Methylene chloride	<5	<5	<5
Nickel, total	19.0	12.7	29.6
Selenium, total	<4.0	<4.0	<4.0
Silver, total	<4	<4	<4
Styrene	<1	<1	<1
Tetrachloroethene	<1	<1	<1
Thallium, total	<2	<2	<2
Toluene	<1	<1	<1
Trans-1,2-dichloroethene	<1	<1	<1
Trans-1,3-dichloropropene	<1	<1	<1
Trans-1,4-dichloro-2-butene	<5	<5	<5
Trichloroethene	<1	<1	<1
Trichlorofluoromethane	<1	<1	<1
Vanadium, total	<20.0	<20.0	<20.0
Vinyl acetate	<5	<5	<5
Vinyl chloride	<1	<1	<1
Xylenes, total	<2	<2	<2
Zinc, total	<20.0	<20.0	29.3

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-31

Constituents	Units	10/16/2024
1,1,1,2-tetrachloroethane	ug/L	<1
1,1,1-trichloroethane	ug/L	<1
1,1,2,2-tetrachloroethane	ug/L	<1
1,1,2-trichloroethane	ug/L	<1
1,1-dichloroethane	ug/L	<1
1,1-dichloroethene	ug/L	<1
1,2,3-trichloropropane	ug/L	<1
1,2-dibromo-3-chloropropane	ug/L	<5
1,2-dibromoethane	ug/L	<1
1,2-dichlorobenzene	ug/L	<1
1,2-dichloroethane	ug/L	<1
1,2-dichloropropane	ug/L	<1
1,4-dichlorobenzene	ug/L	<1
2-butanone (mek)	ug/L	<10
2-hexanone (mbk)	ug/L	<5
4-methyl-2-pentanone (mibk)	ug/L	<5
Acetone	ug/L	<10
Acrylonitrile	ug/L	<5
Antimony, total	ug/L	<2
Arsenic, total	ug/L	<4
Barium, total	ug/L	63.5
Benzene	ug/L	<1
Beryllium, total	ug/L	<4
Bromochloromethane	ug/L	<1
Bromodichloromethane	ug/L	<1
Bromoform	ug/L	<1
Bromomethane	ug/L	<1
Cadmium, total	ug/L	<.8
Carbon disulfide	ug/L	<1
Carbon tetrachloride	ug/L	<1
Chlorobenzene	ug/L	<1
Chloroethane	ug/L	<1
Chloroform	ug/L	<1
Chloromethane	ug/L	<1
Chromium, total	ug/L	<8
Cis-1,2-dichloroethene	ug/L	<1
Cis-1,3-dichloropropene	ug/L	<1
Cobalt, total	ug/L	7
Copper, total	ug/L	<4
Dibromochloromethane	ug/L	<1
Dibromomethane	ug/L	<1
Ethylbenzene	ug/L	<1
Iodomethane	ug/L	<1
Lead, total	ug/L	<4
Methylene chloride	ug/L	<5
Nickel, total	ug/L	22.8
Selenium, total	ug/L	<4
Silver, total	ug/L	<4
Styrene	ug/L	<1
Tetrachloroethene	ug/L	<1
Thallium, total	ug/L	<2
Toluene	ug/L	<1
Trans-1,2-dichloroethene	ug/L	<1
Trans-1,3-dichloropropene	ug/L	<1
Trans-1,4-dichloro-2-butene	ug/L	<5
Trichloroethene	ug/L	<1
Trichlorofluoromethane	ug/L	<1
Vanadium, total	ug/L	<20
Vinyl acetate	ug/L	<5
Vinyl chloride	ug/L	<1
Xylenes, total	ug/L	<2
Zinc, total	ug/L	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Table 9

Analytical Data Summary for MW-32

Constituents	Units	10/16/2024
1,1,1,2-tetrachloroethane	ug/L	<1
1,1,1-trichloroethane	ug/L	<1
1,1,2,2-tetrachloroethane	ug/L	<1
1,1,2-trichloroethane	ug/L	<1
1,1-dichloroethane	ug/L	<1
1,1-dichloroethene	ug/L	<1
1,2,3-trichloropropane	ug/L	<1
1,2-dibromo-3-chloropropane	ug/L	<5
1,2-dibromoethane	ug/L	<1
1,2-dichlorobenzene	ug/L	<1
1,2-dichloroethane	ug/L	<1
1,2-dichloropropane	ug/L	<1
1,4-dichlorobenzene	ug/L	<1
2-butanone (mek)	ug/L	<10
2-hexanone (mbk)	ug/L	<5
4-methyl-2-pentanone (mibk)	ug/L	<5
Acetone	ug/L	<10
Acrylonitrile	ug/L	<5
Antimony, total	ug/L	<2
Arsenic, total	ug/L	<4
Barium, total	ug/L	72.1
Benzene	ug/L	<1
Beryllium, total	ug/L	<4
Bromochloromethane	ug/L	<1
Bromodichloromethane	ug/L	<1
Bromoform	ug/L	<1
Bromomethane	ug/L	<1
Cadmium, total	ug/L	<.8
Carbon disulfide	ug/L	<1
Carbon tetrachloride	ug/L	<1
Chlorobenzene	ug/L	<1
Chloroethane	ug/L	<1
Chloroform	ug/L	<1
Chloromethane	ug/L	<1
Chromium, total	ug/L	<8
Cis-1,2-dichloroethene	ug/L	<1
Cis-1,3-dichloropropene	ug/L	<1
Cobalt, total	ug/L	30.7
Copper, total	ug/L	<4
Dibromochloromethane	ug/L	<1
Dibromomethane	ug/L	<1
Ethylbenzene	ug/L	<1
Iodomethane	ug/L	<1
Lead, total	ug/L	<4
Methylene chloride	ug/L	<5
Nickel, total	ug/L	51.5
Selenium, total	ug/L	<4
Silver, total	ug/L	<4
Styrene	ug/L	<1
Tetrachloroethene	ug/L	<1
Thallium, total	ug/L	<2
Toluene	ug/L	<1
Trans-1,2-dichloroethene	ug/L	<1
Trans-1,3-dichloropropene	ug/L	<1
Trans-1,4-dichloro-2-butene	ug/L	<5
Trichloroethene	ug/L	<1
Trichlorofluoromethane	ug/L	<1
Vanadium, total	ug/L	<20
Vinyl acetate	ug/L	<5
Vinyl chloride	ug/L	<1
Xylenes, total	ug/L	<2
Zinc, total	ug/L	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Table 10 – Historic SSI and SSL

(**Not Required**)

Table 11 – Corrective Action Trend Analysis
(**Not Required**)

Table 12 – Leachate Summary

Table 12
Leachate Level Summary
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

	1/30/2024		2/15/2024		3/12/2024		4/23/2024	
Existing Well ID	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)
LH-6	3.1	0.00	3.1	0.00	3.1	0.00	3.1	0.00
LH-7	10.3	0.00	10.30	0.00	10.30	0.00	10.30	0.00
LH-8	5.15	0.20	5.18	0.17	5.2	0.15	5.35	0.00
GUH-1	5.57	0.68	5.65	0.60	4.88	1.37	6.25	0.00
GUH-2	11.98	1.22	11.83	1.37	11.95	1.25	13.2	0.00
GUH-3	9.1	2.05	9.35	1.80	9.3	1.85	9.7	1.45

NR - Not Recorded

	5/15/2024		6/21/2024		7/2/2024		8/26/2024	
Existing Well ID	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)
LH-6	3.1	0.00	3.1	0.00	3.1	0.00	3.1	0.00
LH-7	10.3	0.00	10.3	0.00	10.3	0.00	10.3	0.00
LH-8	5.22	0.13	5.35	0.00	5.35	0.00	5.35	0.00
GUH-1	5.5	0.75	5.5	0.75	5.55	0.70	5.7	0.55
GUH-2	11.88	1.32	11.88	1.32	11.9	1.30	11.88	1.32
GUH-3	9.22	0.48	9.22	0.48	9.24	0.46	9.12	0.58

NR - Not Recorded

	9/16/2024		10/3/2024		11/22/2024		12/10/2024	
Existing Well ID	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)	Depth to Leachate (ft)	Leachate Thickness (ft)
LH-6	3.1	0.00	3.1	0.00	3.1	0.00	3.1	0.00
LH-7	10.3	0.00	10.3	0.00	10.3	0.00	10.25	0.05
LH-8	5.35	0.00	5.35	0.00	5.2	0.15	5.3	0.05
GUH-1	5.81	0.44	5.6	0.65	6	0.25	5.76	0.49
GUH-2	11.9	1.30	11.9	1.30	11.9	1.30	11.88	1.32
GUH-3	9.17	0.53	9.2	0.50	9.2	0.50	9.18	0.52

Table 13 – Gas Monitoring Summary

Table 13
Explosive Gas Monitoring
Annual Water Quality Report
NCIRSWA Sanitary Landfill
Permit No. 94-SDP-01-75P

Readings are % LEL

Location/Date	30-Jan-24 1st Q	23-Apr-24 2nd Q	31-Jul-24 3rd Q	11-Oct-24 4th Q
Shop	0	0	0	0
Office	0	0	0	0
SG-1	**50**	**OL**	**4.6**	**20.96**
SG-2	0	0	0	0
SG-3	0	0	0	0
MW-8	0	0	0	0
MW-10A	0	0	0	0
MW-13	0	0	0	0
LB-4	0	0	0	0
GU-1 Manhole	0	0	0	0
GU-2	NR(1)	0	0	0
GU-3	0	0	0	0
GU-4	NR(2)	NR(2)	NR(2)	0
GU-5	NR(2)	NR(2)	NR(2)	0
GU-6	NR(2)	NR(2)	NR(2)	0
GP-4	NR(2)	0	0	0

NR = No Reading
(1) Buried in snow
(2) Did not exist

Appendix A

Field Sampling Forms

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

4/23/2024 Sampled by: Todd Whipple Weather conditions: Overcast, windy, 50-60 degrees

IDNR Form 542-1322

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

Monitoring Well: MW 10A (dg)

GENERAL INFORMATION

TOC	1038.04
Well Depth	29.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1038.04
Well Depth	29.20
Top Screen	1018.59
Bottom Screen	1008.59
Bottom Well	1008.59
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	24.00
Top sample	1014.04
Bottom sample	1010.04
Turbidity(NTU)	4.92

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	9:23	24.15	1013.89	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		4.92
Appendix I	Metals	150	150		4.92
Appendix I	VOC	240	240		4.92
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1038.04	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	29.45	Before purging	4/23/2024	9:23	24.15	1013.89	2	2.3	yes
		After purging				1038.04			
		Top of Screen after construction				1018.59			
						19.45	feet above (+) or below (-) top screen		
		Bottom of Well after construction				1008.59			
		Bottom of Well	4/23/2024		29.20	1008.84			
						0.25	feet sedimentation		
		Before Sampling				1038.04			
		Recovery	4/23/2024	9:31	26.95	1011.09			
		Recovery	4/23/2024	14:40	25.24	1012.80			
		Recovery				1038.04			
		Recovery				1038.04			

IDNR Form 542-1322

Monitoring Well: MW 10B (ug)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1036.57
Well Depth	48.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1036.57
Well Depth	48.70
Top Screen	998.77
Bottom Screen	988.77
Bottom Well	986.77
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	43.00
Top sample	993.57
Bottom sample	989.57
Turbidity(NTU)	2.62

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	9:14	19.86	1016.71	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.62
Appendix I	Metals	150	150		2.62
Appendix I	VOC	240	240		2.62
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1036.57
Well Depth	48.70

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	4/23/2024	9:14	19.86	1016.71	5	1.1	No
After purging				1036.57			
Top of Screen after construction				998.77			
				37.80	feet above (+) or below (-) top screen		
Bottom of Well after construction				986.77			
Bottom of Well	4/23/2024		48.70	987.87			
				1.10	feet sedimentation		
Before Sampling				1036.57			
Recovery	4/23/2024	9:23	40.75	995.82			
Recovery	4/23/2024	14:39	27.43	1009.14			
Recovery				1036.57			
Recovery				1036.57			

IDNR Form 542-1322

Monitoring Well: MW-25 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1031.96
Well Depth	31.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1031.96
Well Depth	31.50
Top Screen	1011.56
Bottom Screen	1001.56
Bottom Well	998.75
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	25.00
Top sample	1006.96
Bottom sample	1002.96
Turbidity(NTU)	35.27

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	8:36	13.34	1018.62	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		35.27
Appendix I	Metals	150	150		35.27
Appendix I	VOC	240	240		35.27
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

		2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
TOC	1031.96								
Well Depth	31.50	Before purging	4/23/2024	8:36	13.34	1018.62	3	1.0	no
		After purging				1031.96			
		Top of Screen after construction				1011.56			
						7.06	feet above (+) or below (-) top screen		
		Bottom of Well after construction				1001.56			
		Bottom of Well	4/23/2024		30.40	1001.56			
						0.00	feet sedimentation		
		Before Sampling				1031.96			
		Recovery	4/23/2024	8:46	23.60	1008.36			
		Recovery	4/23/2024	14:18	15.30	1016.66			
		Recovery				1031.96			
		Recovery				1031.96			

IDNR Form 542-1322

Monitoring Well: MW-28 (dg)

Primary Sampling Method: No-Purge for Appendix I

Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1035.16
Well Depth	13.31
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1035.16
Well Depth	13.31
Top Screen	1027.42
Bottom Screen	1022.16
Bottom Well	1021.85
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	11.00
Top sample	1024.16
Bottom sample	1020.16
Turbidity(NTU)	4.92

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	9:55	10.81	1024.35	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		4.92
Appendix I	Metals	150	150		4.92
Appendix I	VOC	240	240		4.92
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1035.16
Well Depth	13.31

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	4/23/2024	9:55	10.81	1024.35	1	2.5	yes
After purging				1035.16			
Top of Screen after construction				1027.42			
				-3.07	feet above (+) or below (-) top screen		
Bottom of Well after construction				1022.16			
Bottom of Well	4/23/2024		13.00	1022.16			
				0.00	feet sedimentation		
Before Sampling				1035.16			
Recovery	4/23/2024	9:02	11.90	1023.26			
Recovery	4/23/2024	14:38	11.48	1023.68			
Recovery				1035.16			
Recovery				1035.16			

IDNR Form 542-1322

Monitoring Well: MW-18 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1032.06
Well Depth	25.40
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1032.06
Well Depth	25.40
Top Screen	1016.66
Bottom Screen	1006.66
Bottom Well	1006.66
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	1012.06
Bottom sample	1008.06
Turbidity(NTU)	3.13

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	9:40	17.85	1014.21	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		3.13
Appendix I	Metals	150	150		3.13
Appendix I	VOC	240	240		3.13
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1032.06
Well Depth	25.40

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	4/23/2024	9:40	17.85	1014.21	3	2.4	No
After purging				1032.06			
Top of Screen after construction				1016.66			
				15.40	feet above (+) or below (-) top screen		
Bottom of Well after construction				1006.66			
Bottom of Well	4/23/2024		25.60	1006.46			
				-0.20	feet sedimentation		
Before Sampling				1032.06			
Recovery	4/23/2024	9:47	19.91	1012.15			
Recovery	4/23/2024	14:43	17.64	1014.42			
Recovery				1032.06			
Recovery				1032.06			

IDNR Form 542-1322

Monitoring Well: MW-19 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1028.21
Well Depth	35.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1028.21
Well Depth	35.60
Top Screen	1002.61
Bottom Screen	992.61
Bottom Well	992.61
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	30.00
Top sample	998.21
Bottom sample	994.21
Turbidity(NTU)	3.02

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	9:55	14.73	1013.48	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		3.02
Appendix I	Metals	150	150		3.02
Appendix I	VOC	240	240		3.02
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1028.21
Well Depth	35.60

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	4/23/2024	9:55	14.73	1013.48	4	1.2	No
After purging				1028.21			
Top of Screen after construction				1002.61			
				25.60	feet above (+) or below (-) top screen		
Bottom of Well after construction				992.61			
Bottom of Well	4/23/2024		35.50	992.71			
				0.10	feet sedimentation		
Before Sampling				1028.21			
Recovery	4/23/2024	10:06	25.85	1002.36			
Recovery	4/23/2024	14:47	15.28	1012.93			
Recovery				1028.21			
Recovery				1028.21			

IDNR Form 542-1322

Monitoring Well: MW-20 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1026.08
Well Depth	30.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1028.08
Well Depth	30.00
Top Screen	1002.61
Bottom Screen	992.61
Bottom Well	992.61
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	24.00
Top sample	1004.08
Bottom sample	1000.08
Turbidity(NTU)	4.32

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	10:14	14.82	1011.26	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		4.32
Appendix I	Metals	150	150		4.32
Appendix I	VOC	240	240		4.32
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1026.08
Well Depth	30.00

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	4/23/2024	10:14	14.82	1011.26	3	1.2	No
After purging				1026.08			
Top of Screen after construction				1006.08			
				20.00	feet above (+) or below (-) top screen		
Bottom of Well after construction				996.08			
Bottom of Well	4/23/2024		29.80	996.28			
				0.20	feet sedimentation		
Before Sampling				1026.08			
Recovery	4/23/2024	10:25	18.30	1007.78			
Recovery	4/23/2024	14:50	14.90	1011.18			
Recovery				1026.08			
Recovery				1026.08			

IDNR Form 542-1322

Monitoring Well: MW-21R (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1033.51
Well Depth	45.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1033.51
Well Depth	45.50
Top Screen	998.01
Bottom Screen	988.01
Bottom Well	988.01
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	39.00
Top sample	994.51
Bottom sample	990.51
Turbidity(NTU)	23.34

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	10:35	23.05	1010.46	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		23.34
Appendix I	Metals	150	150		23.34
Appendix I	VOC	240	240		23.34
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1033.51	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	45.50	Before purging	4/23/2024	10:35	23.05	1010.46	3	0.8	No
		After purging				1033.51			
		Top of Screen after construction				998.01			
						35.50	feet above (+) or below (-) top screen		
		Bottom of Well after construction				988.01			
		Bottom of Well	4/23/2024		45.50	988.01			
						0.00	feet sedimentation		
		Before Sampling				1033.51	App I		
		Recovery	4/23/2024	10:48	32.48	1001.03	App II		
		Recovery	4/23/2024	14:52	32.45	1001.06			
		Recovery				1033.51			
		Recovery				1033.51			

IDNR Form 542-1322

Monitoring Well: MW-22 (dg)

Primary Sampling Method: No-Purge for Appendix I

Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1079.15
Well Depth	32.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1079.15
Well Depth	32.70
Top Screen	1056.45
Bottom Screen	1046.45
Bottom Well	1046.45
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	27.00
Top sample	1052.15
Bottom sample	1048.15
Turbidity(NTU)	3.26

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	10:56	9.53	1069.62	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		3.26
Appendix I	Metals	150	150		3.26
Appendix I	VOC	240	240		3.26
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1079.15	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	32.70	Before purging	4/23/2024	10:56	9.53	1069.62	4	1.1	No
		After purging				1079.15			
		Top of Screen after construction				1056.45			
						22.70	feet above (+) or below (-) top screen		
		Bottom of Well after construction				1046.45			
		Bottom of Well	4/23/2024		32.50	1046.65			
						0.20	feet sedimentation		
		Before Sampling				1079.15			
		Recovery	4/23/2024	11:09	23.88	1055.27			
		Recovery	4/23/2024	15:00	21.85	1057.30			
		Recovery				1079.15			
		Recovery				1079.15			

IDNR Form 542-1322

Primary Sampling Method: No-Purge for Appendix I

Monitoring Well: MW-30 (dg) **Secondary Sampling Method:** Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1042.84
Well Depth	20.45
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1042.84
Well Depth	20.45
Top Screen	1032.39
Bottom Screen	1022.39
Bottom Well	1021.55
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	17.00
Top sample	1025.84
Bottom sample	1021.84
Turbidity(NTU)	7.58

Date	Time	Water Level	Water Elevation	Notes
4/23/2024	7:55	17.14	1025.7	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		7.58
Appendix I	Metals	150	150		7.58
Appendix I	VOC	240	240		7.58
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1042.84	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.45	Before purging	4/23/2024	7:55	17.14	1025.70	2	3.7	yes
		After purging				1042.84			
		Top of Screen after construction				1032.39			
						10.45	feet above (+) or below (-) top screen		
		Bottom of Well after construction				1022.39			
		Bottom of Well	4/23/2024		20.45	1022.39			
						0.00	feet sedimentation		
		Before Sampling				1042.84			
		Recovery	4/23/2024	8:04	19.35	1023.49			
		Recovery	4/23/2024	14:35	17.21	1025.63			
		Recovery				1042.84			
		Recovery				1042.84			

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

4/23/2024 Sampled by: Todd Whipple Weather conditions: Sunny, breeezy, 70 degrees

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-2	4/23/2024		Underdrain tile	no	dry			No	No
									Turbidity (NTU)

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-3	4/23/2024	12:35	Underdrain tile	no	dry		No	No	No
									Turbidity (NTU)
									muddy in pipe

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

9/27/2024 Sampled by: Todd Whipple Weather conditions: Sunny Calm 87 degrees

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-4	9/27/2024	15:10	Underdrain tile	yes	250 mL/2 min			No	No
									Turbidity (NTU)
									2.02

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-5	9/27/2024	15:14	Underdrain tile	yes	250 mL/10 min		No	No	No
									Turbidity (NTU)
									2.26

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-6	9/27/2024		Underdrain tile	no	dry		No	No	No
									Turbidity (NTU)

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

10/11/2024 Sampled by: Todd Whipple Weather conditions: Sunny, calm, 60-85 degrees

IDNR Form 542-1322

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

Monitoring Well: MW 10A (dg)

GENERAL INFORMATION

TOC	1038.04
Well Depth	29.20
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1038.04
Well Depth	29.20
Top Screen	1018.59
Bottom Screen	1008.59
Bottom Well	1008.59
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	25.00
Top sample	1013.04
Bottom sample	1009.04
Turbidity(NTU)	48.57

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	10:47	25.09	1012.95	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		48.57
Appendix I	Metals	150	150		48.57
Appendix I	VOC	240	240		48.57
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1038.04
Well Depth	29.45

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	10:47	25.09	1012.95		0.0	
After purging				1038.04			
Top of Screen after construction				1018.59			
				19.45	feet above (+) or below (-) top screen		
Bottom of Well after construction				1008.59			
Bottom of Well	10/11/2024		29.20	1008.84			
				0.25	feet sedimentation		
Before Sampling				1038.04			
Recovery				1038.04			
Recovery				1038.04			
Recovery				1038.04			
Recovery				1038.04			

IDNR Form 542-1322

Monitoring Well: MW 10B (ug)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1036.57
Well Depth	48.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1036.57
Well Depth	48.70
Top Screen	998.77
Bottom Screen	988.77
Bottom Well	986.77
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	42.00
Top sample	994.57
Bottom sample	990.57
Turbidity(NTU)	4.63

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	10:56	19.94	1016.63	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		4.63
Appendix I	Metals	150	150		4.63
Appendix I	VOC	240	240		4.63
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1036.57
Well Depth	48.70

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	10:56	19.94	1016.63		0.0	
After purging				1036.57			
Top of Screen after construction				998.77			
				37.80	feet above (+) or below (-) top screen		
Bottom of Well after construction				986.77			
Bottom of Well	10/11/2024		48.70	987.87			
				1.10	feet sedimentation		
Before Sampling				1036.57			
Recovery				1036.57			
Recovery				1036.57			
Recovery				1036.57			
Recovery				1036.57			

IDNR Form 542-1322

Monitoring Well: MW-25 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1031.96
Well Depth	31.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1031.96
Well Depth	31.50
Top Screen	1011.56
Bottom Screen	1001.56
Bottom Well	998.75
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	24.50
Top sample	1007.46
Bottom sample	1003.46
Turbidity(NTU)	9.42

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	9:44	15.18	1016.78	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		9.42
Appendix I	Metals	150	150		9.42
Appendix I	VOC	240	240		9.42
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1031.96
Well Depth	31.50

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	9:44	15.18	1016.78		0.0	
After purging				1031.96			
Top of Screen after construction				1011.56			
				5.22	feet above (+) or below (-) top screen		
Bottom of Well after construction				1001.56			
Bottom of Well	10/11/2024		30.40	1001.56			
				0.00	feet sedimentation		
Before Sampling				1031.96			
Recovery				1031.96			
Recovery				1031.96			
Recovery				1031.96			
Recovery				1031.96			

IDNR Form 542-1322

Monitoring Well: MW-28 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1035.16
Well Depth	13.31
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1035.16
Well Depth	13.31
Top Screen	1027.42
Bottom Screen	1022.16
Bottom Well	1021.85
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	10.00
Top sample	1025.16
Bottom sample	1021.16
Turbidity(NTU)	2.01

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	9:57	11.01	1024.15	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.01
Appendix I	Metals	150	150		2.01
Appendix I	VOC	240	240		2.01
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1035.16	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	13.31	Before purging	10/11/2024	9:57	11.01	1024.15		0.0	
		After purging				1035.16			
		Top of Screen after construction				1027.42			
						-3.27	feet above (+) or below (-) top screen		
		Bottom of Well after construction				1022.16			
		Bottom of Well	10/11/2024		13.00	1022.16			
						0.00	feet sedimentation		
		Before Sampling				1035.16			
		Recovery				1035.16			
		Recovery				1035.16			
		Recovery				1035.16			
		Recovery				1035.16			

IDNR Form 542-1322

Monitoring Well: MW-18 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1032.06
Well Depth	25.40
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1032.06
Well Depth	25.40
Top Screen	1016.66
Bottom Screen	1006.66
Bottom Well	1006.66
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	1012.06
Bottom sample	1008.06
Turbidity(NTU)	2.10

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	11:10	17.88	1014.18	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.10
Appendix I	Metals	150	150		2.10
Appendix I	VOC	240	240		2.10
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1032.06
Well Depth	25.40

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	11:10	17.88	1014.18		0.0	
After purging				1032.06			
Top of Screen after construction				1016.66			
				15.40	feet above (+) or below (-) top screen		
Bottom of Well after construction				1006.66			
Bottom of Well	10/11/2024		25.60	1006.46			
				-0.20	feet sedimentation		
Before Sampling				1032.06			
Recovery				1032.06			
Recovery				1032.06			
Recovery				1032.06			
Recovery				1032.06			

IDNR Form 542-1322

Monitoring Well:	MW-19 (dg)
Primary Sampling Method:	No-Purge for Appendix I
Secondary Sampling Method:	Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1028.21
Well Depth	35.60
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1028.21
Well Depth	35.60
Top Screen	1002.61
Bottom Screen	992.61
Bottom Well	992.61
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	
Top sample	1028.21
Bottom sample	1024.21
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation	Notes
10/11/2024			1028.21	

Note : Well head was missing or buried.

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		0.00
Appendix I	Metals	150	150		0.00
Appendix I	VOC	240	240		0.00
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1028.21
Well Depth	35.60

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	0:00	0	1028.21		0.0	
After purging				1028.21			
Top of Screen after construction				1002.61			
				25.60	feet above (+) or below (-) top screen		
Bottom of Well after construction				992.61			
Bottom of Well				1028.21			
				35.60	feet sedimentation		
Before Sampling				1028.21			
Recovery				1028.21			
Recovery				1028.21			
Recovery				1028.21			
Recovery				1028.21			

IDNR Form 542-1322

Monitoring Well: MW-20 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1026.08
Well Depth	30.00
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1028.08
Well Depth	30.00
Top Screen	1002.61
Bottom Screen	992.61
Bottom Well	992.61
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	24.00
Top sample	1004.08
Bottom sample	1000.08
Turbidity(NTU)	8.10

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	11:33	15.01	1011.07	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		8.10
Appendix I	Metals	150	150		8.10
Appendix I	VOC	240	240		8.10
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1026.08
Well Depth	30.00

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	11:33	15.01	1011.07		0.0	
After purging				1026.08			
Top of Screen after construction				1006.08			
				20.00	feet above (+) or below (-) top screen		
Bottom of Well after construction				996.08			
Bottom of Well	10/11/2024		29.80	996.28			
				0.20	feet sedimentation		
Before Sampling				1026.08			
Recovery				1026.08			
Recovery				1026.08			
Recovery				1026.08			
Recovery				1026.08			

IDNR Form 542-1322

Monitoring Well: MW-21R (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1033.51
Well Depth	45.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1033.51
Well Depth	45.50
Top Screen	998.01
Bottom Screen	988.01
Bottom Well	988.01
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	40.00
Top sample	993.51
Bottom sample	989.51
Turbidity(NTU)	19.05

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	11:47	24.03	1009.48	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		19.05
Appendix I	Metals	150	150		19.05
Appendix I	VOC	240	240		19.05
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1033.51
Well Depth	45.50

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	11:47	24.03	1009.48		0.0	
After purging				1033.51			
Top of Screen after construction				998.01			
				35.50	feet above (+) or below (-) top screen		
Bottom of Well after construction				988.01			
Bottom of Well	10/11/2024		45.50	988.01			
				0.00	feet sedimentation		
Before Sampling				1033.51	App I		
Recovery				1033.51	App II		
Recovery				1033.51			
Recovery				1033.51			
Recovery				1033.51			

IDNR Form 542-1322

Monitoring Well: MW-22 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1079.15
Well Depth	32.70
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1079.15
Well Depth	32.70
Top Screen	1056.45
Bottom Screen	1046.45
Bottom Well	1046.45
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	27.00
Top sample	1052.15
Bottom sample	1048.15
Turbidity(NTU)	2.24

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	11:58	8.30	1070.85	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.24
Appendix I	Metals	150	150		2.24
Appendix I	VOC	240	240		2.24
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1079.15
Well Depth	32.70

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	11:58	8.30	1070.85		0.0	
After purging				1079.15			
Top of Screen after construction				1056.45			
				22.70	feet above (+) or below (-) top screen		
Bottom of Well after construction				1046.45			
Bottom of Well	10/11/2024		32.50	1046.65			
				0.20	feet sedimentation		
Before Sampling				1079.15			
Recovery				1079.15			
Recovery				1079.15			
Recovery				1079.15			
Recovery				1079.15			

IDNR Form 542-1322

Monitoring Well: MW-30 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1042.84
Well Depth	20.45
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1042.84
Well Depth	20.45
Top Screen	1032.39
Bottom Screen	1022.39
Bottom Well	1021.55
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	18.00
Top sample	1024.84
Bottom sample	1020.84
Turbidity(NTU)	3.65

Date	Time	Water Level	Water Elevation	Notes
10/11/2024	8:01	17.81	1025.03	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		3.65
Appendix I	Metals	150	150		3.65
Appendix I	VOC	240	240		3.65
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1042.84
Well Depth	20.45

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/11/2024	8:01	17.81	1025.03		0.0	
After purging				1042.84			
Top of Screen after construction				1032.39			
				10.45	feet above (+) or below (-) top screen		
Bottom of Well after construction				1022.39			
Bottom of Well	10/11/2024		20.45	1022.39			
				0.00	feet sedimentation		
Before Sampling				1042.84			
Recovery				1042.84			
Recovery				1042.84			
Recovery				1042.84			
Recovery				1042.84			

IDNR Form 542-1322

Monitoring Well: MW-31 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1043.75
Well Depth	25.96
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1043.75
Well Depth	25.96
Top Screen	1028.09
Bottom Screen	1018.09
Bottom Well	1017.79
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	1023.75
Bottom sample	1019.75
Turbidity(NTU)	2.30

Date	Time	Water Level	Water Elevation	Notes
10/16/2024	7:25	17.61	1026.14	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.30
Appendix I	Metals	150	150		2.30
Appendix I	VOC	240	240		2.30
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1043.75
Well Depth	25.96

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/16/2024	7:25	17.61	1026.14		0.0	
After purging				1043.75			
Top of Screen after construction				1028.09			
				-1.95	feet above (+) or below (-) top screen		
Bottom of Well after construction				1017.79			
Bottom of Well	10/16/2024		25.96	1017.79			
				0.00	feet sedimentation		
Before Sampling				1043.75			
Recovery				1043.75			
Recovery				1043.75			
Recovery				1043.75			
Recovery				1043.75			

IDNR Form 542-1322

Monitoring Well: MW-32 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1049.25
Well Depth	19.40
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1049.25
Well Depth	19.40
Top Screen	1035.15
Bottom Screen	1030.15
Bottom Well	1029.85
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	14.00
Top sample	1035.25
Bottom sample	1031.25
Turbidity(NTU)	5.25

Date	Time	Water Level	Water Elevation	Notes
10/16/2024	7:37	12.52	1036.73	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		5.25
Appendix I	Metals	150	150		5.25
Appendix I	VOC	240	240		5.25
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1049.25
Well Depth	19.40

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	10/16/2024	7:37	12.52	1036.73		0.0	
After purging				1049.25			
Top of Screen after construction				1035.15			
				1.58	feet above (+) or below (-) top screen		
Bottom of Well after construction				1029.85			
Bottom of Well	10/16/2024		19.40	1029.85			
				0.00	feet sedimentation		
Before Sampling				1049.25			
Recovery				1049.25			
Recovery				1049.25			
Recovery				1049.25			
Recovery				1049.25			

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

10/11/2024 Sampled by: Todd Whipple Weather conditions: Sunny, calm, 60-85 degrees

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-2	10/11/2024		Underdrain tile	no	dry			No	No
									Turbidity (NTU)

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-3	10/11/2024		Underdrain tile	no	dry		No	No	No
									Turbidity (NTU)

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-4	10/11/2024	8:26	Underdrain tile	yes	100 mL/3 min			No	No
									Turbidity (NTU)
									1.89

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-5	10/11/2024	9:05	Underdrain tile	yes	170 mL/15 min		No	No	No
									Turbidity (NTU)
									1.89

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity		Discolored	Odor	Litter
GU-6	10/11/2024		Underdrain tile	no	dry		No	No	No
									Turbidity (NTU)

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

11/22/2024 Sampled by: Glenn Hunter Weather conditions: Cloudy 29 degrees

IDNR Form 542-1322

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

Monitoring Well: MW-31 (dg)

GENERAL INFORMATION

TOC	1043.75
Well Depth	25.96
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1043.75
Well Depth	25.96
Top Screen	1028.09
Bottom Screen	1018.09
Bottom Well	1017.79
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	1023.75
Bottom sample	1019.75
Turbidity(NTU)	2.24

Date	Time	Water Level	Water Elevation	Notes
11/22/2024	9:54	17.21	1026.54	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.24
Appendix I	Metals	150	150		2.24
Appendix I	VOC	240	240		2.24
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1043.75
Well Depth	25.96

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	11/22/2024	9:54	17.21	1026.54		0.0	
After purging				1043.75			
Top of Screen after construction				1028.09			
				-1.55	feet above (+) or below (-) top screen		
Bottom of Well after construction				1017.79			
Bottom of Well	11/22/2024		25.96	1017.79			
				0.00	feet sedimentation		
Before Sampling				1043.75			
Recovery				1043.75			
Recovery				1043.75			
Recovery				1043.75			
Recovery				1043.75			

IDNR Form 542-1322

Monitoring Well: MW-32 (dg)

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

GENERAL INFORMATION

TOC	1049.25
Well Depth	19.40
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1049.25
Well Depth	19.40
Top Screen	1035.15
Bottom Screen	1030.15
Bottom Well	1029.85
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	13.00
Top sample	1036.25
Bottom sample	1032.25
Turbidity(NTU)	8.60

Date	Time	Water Level	Water Elevation	Notes
11/22/2024	9:42	11.62	1037.63	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		8.60
Appendix I	Metals	150	150		8.60
Appendix I	VOC	240	240		8.60
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1049.25
Well Depth	19.40

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	11/22/2024	9:42	11.62	1037.63		0.0	
After purging				1049.25			
Top of Screen after construction				1035.15			
				2.48	feet above (+) or below (-) top screen		
Bottom of Well after construction				1029.85			
Bottom of Well	11/22/2024		19.40	1029.85			
				0.00	feet sedimentation		
Before Sampling				1049.25			
Recovery				1049.25			
Recovery				1049.25			
Recovery				1049.25			
Recovery				1049.25			

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

11/22/2024 Sampled by: Glenn Hunter Weather conditions: Cloudy 29 degrees

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity	Discolored	Odor	Litter
GU-4	11/22/2024	10:02	Underdrain tile	yes	10 mL/30 sec		No	No
								Turbidity (NTU)
								0.57

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity	Discolored	Odor	Litter
GU-5	11/22/2024		Underdrain tile	no	dry	No	No	No
								Turbidity (NTU)

IDNR Form 542-1324

	Date	Time	Type	Flowing	Quantity	Discolored	Odor	Litter
GU-6	11/22/2024	9:22	Underdrain tile	yes	250 mL/4 min	No	No	No
								Turbidity (NTU)
								3.87

North Central Iowa Regional Sanitary Landfill
PERMIT # 94-SDP-01-75P

12/10/2024 Sampled by: Glenn Hunter Weather conditions: Overcast 30 degrees

IDNR Form 542-1322

Primary Sampling Method: No-Purge for Appendix I
Secondary Sampling Method: Purge & Sample for all analytes beyond Appendix I

Monitoring Well: MW-25 (dg)

GENERAL INFORMATION

TOC	1031.96
Well Depth	31.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	1031.96
Well Depth	31.50
Top Screen	1011.56
Bottom Screen	1001.56
Bottom Well	998.75
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	24.00
Top sample	1007.96
Bottom sample	1003.96
Turbidity(NTU)	

Date	Time	Water Level	Water Elevation	Notes
12/10/2024	13:12	15.98	1015.98	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		0.00
Appendix I	Metals	150	150		0.00
Appendix I	VOC	240	240		0.00
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Supplemental					
Supplemental					
Total			400	0	

PURGE & SAMPLE METHOD - Purge by Waterra Inertial Lift Pump, then well rest, then sample collection

TOC	1031.96
Well Depth	31.50

2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Before purging	12/10/2024	13:12	15.98	1015.98		0.0	
After purging				1031.96			
Top of Screen after construction				1011.56			
				4.42	feet above (+) or below (-) top screen		
Bottom of Well after construction				1001.56			
Bottom of Well	12/10/2024		30.40	1001.56			
				0.00	feet sedimentation		
Before Sampling				1031.96			
Recovery				1031.96			
Recovery				1031.96			
Recovery				1031.96			
Recovery				1031.96			

Appendix B

Statistical Report

APPENDIX B.1 –Spring Statistical Evaluation

Results of the Ground Water Statistics

for North Central Iowa Regional Landfill

First Semi-Annual Monitoring Event in 2024

Prepared for:
North Central Iowa Regional Solid Waste Agency (NCIRSWA)
Fort Dodge, Iowa

Prepared by:
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INTRODUCTION

This report contains the results of the statistical analyses used to evaluate the ground water data obtained during the first semi-annual monitoring event in 2024 at North Central Iowa Regional Landfill in Fort Dodge, Iowa. The ground water at North Central Iowa Regional Landfill is currently monitored by wells MW-10A, MW-10B, MW-18, MW-19, MW-20, MW-21R, MW-22, MW-25, MW-28, MW-30, and GU-2. Monitoring wells MW-10A, MW-10B, MW-18, MW-19, MW-20, MW-21R, MW-22, MW-25, MW-28, and MW-30 were sampled on April 23, 2024 and analyzed for the parameters required by permit.

The statistical plan is designed to detect a release from the facility at the earliest indication so that it is protective of human health and the environment. The intrawell methodology is described and then applied to the North Central Iowa Regional Landfill data. The statistical plan conforms with IAC 567, Chapter 113.10 and the USEPA guidance document ("*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance"*, March 2009).

Ground Water Monitoring Program

The groundwater monitoring network for North Central Iowa Regional Landfill includes well MW-10B in the shale zone and MW-10A, MW-18, MW-19, MW-20, MW-21R, and MW-22 in the glacial till zone. Each of the groundwater monitoring wells is to be sampled at least semiannually and analyzed for the detection monitoring parameters listed in 113.10(5), which includes 15 inorganic constituents and 47 organic compounds, summarized below.

Detection monitoring constituents listed in Appendix I of IAC 567, Chapter 113.

Organic Compounds:

Acetone	*trans*-1,4-Dichloro-2-butene	Iodomethane
Acrylonitrile	1,1-Dichloroethane	4-Methyl-2-pentanone
Benzene	1,2-Dichloroethane	Styrene
Bromochloromethane	1,1-Dichloroethene	1,1,1,2-Tetrachloroethane
Bromodichloromethane	*cis*-1,2-Dichloroethene	1,1,2,2-Tetrachloroethane
Bromoform	*trans*-1,2-Dichloroethene	Tetrachloroethene
Carbon disulfide	1,2-Dichloropropane	Toluene
Carbon tetrachloride	*cis*-1,3-Dichloropropene	1,1,1-Trichloroethane
Chlorobenzene	*trans*-1,3-Dichloropropene	1,1,2-Trichloroethane
Chloroethane	Ethylbenzene	Trichloroethene
Chloroform	2-Hexanone	Trichlorofluoromethane
Dibromochloromethane	Bromomethane	1,2,3-Trichloropropane
1,2-Dibromo-3-chloropropane	Chloromethane	Vinyl acetate
1,2-Dibromoethane	Dibromomethane	Vinyl chloride
1,2-Dichlorobenzene	Methylene chloride	Xylenes (Total)
1,4-Dichlorobenzene	2-Butanone	

Inorganic constituents:

Antimony, Total	Chromium, Total	Selenium, Total
Arsenic, Total	Cobalt, Total	Silver, Total
Barium, Total	Copper, Total	Thallium, Total
Beryllium, Total	Lead, Total	Vanadium, Total
Cadmium, Total	Nickel, Total	Zinc, Total

The ground water data obtained during the first semi-annual monitoring event in 2024 are summarized in Attachment A.

STATISTICAL METHODOLOGIES FOR DETECTION MONITORING

IAC 567, Chapter 113.10(4) provides several options for statistically evaluating the ground water data at those wells that monitor the open cells or contiguous MSWLF units. The preferred methods for comparing ground water data are using either prediction limits or using control charts. The interwell method using site prediction limits was previously applied to the North Central Iowa Regional Landfill data using the DUMPStat® statistical program. DUMPStat® is a program for the statistical analysis of groundwater monitoring data using methods described in "Statistical Methods for Groundwater Monitoring" by Dr. Robert D. Gibbons. The DUMPStat program is completely consistent with all USEPA regulations and guidance and the ASTM D6312-98 guidance. An intrawell method using DUMPStat® was recently approved for the current monitoring network.

Ground water statistics are to be done on the inorganic constituents listed. The organic constituents are compared to maximum contaminant levels (MCLs) or practical quantitation limits (PQLs), in lieu of statistical comparisons to historical concentrations.

Intrawell statistics

Intrawell statistics are appropriate for facilities where the upgradient wells do not accurately characterize the natural ground water conditions downgradient from the facility. This may be due to different hydrogeological conditions where the wells are screened, having too few upgradient wells to account for the spatial variability, or the site exhibiting no definable hydraulic gradient. Intrawell statistics compare new measurements to the historical data at each ground water monitoring well independently. It is recommended that at least eight background samples be obtained prior to performing the statistics.

The most useful technique for intrawell comparisons is the combined Shewhart-CUSUM control chart. This control chart procedure is useful because it will detect releases both in terms of the constituent concentration and cumulative increases. This method is also extremely sensitive to sudden and gradual releases. A requirement for constructing these control charts is that the parameter is detected at a frequency greater than or equal to 25%, otherwise the data variance is not properly defined.

The combined Shewhart-CUSUM control chart assumes that the data are independent and normally distributed with a fixed mean and a constant variance. Independent data is much more critical than the normality assumption. To achieve independence, it is recommended that data are collected no more frequently than quarterly to account for seasonal variation. The combined Shewhart-CUSUM control chart is extremely robust to deviations from normality. Because the control charts do not use a specific multiplier based on a normal distribution, it is more conservative to assume normality.

It is recommended that at least eight rounds of data be available to provide a reliable estimate of the mean and standard deviation of the parameter concentration, although the control charts will be generated with as few as four data points. Having only four data points may produce greater uncertainty in the mean and standard deviation of the background data, leading to higher control limits, thus having a potentially high false negative rate.

Many groundwater monitoring parameters are not detected at a frequency great enough to generate the combined Shewhart-CUSUM control charts. For constituents that are detected less than 25% of the time at a particular well, the data should be plotted as a time series until a sufficient number of data points are available to provide a 99% confidence nonparametric prediction limit. Thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit. Eight independent measurements (for pass 1 of 2 resamples) are necessary to achieve a 99% confidence nonparametric prediction limit. The nonparametric prediction limit is the largest determination out of the data set collected for that well and parameter. If the detection frequency is 0% after thirteen samples have been collected, the practical quantitation limit (PQL) becomes the nonparametric prediction limit.

In developing the statistical background, the historical data must be thoroughly screened for anomalous data due to sampling error, analytical error, or simply by chance alone. An erroneous data point, if not removed prior to the mean and variance computations, would yield a larger control limit thus increasing the false negative rate. The DUMPStat® program screens for outliers using the Dixon test. If the Dixon test indicates an outlier, the value is compared to three times the median value for intrawell analyses. If the value fails both criteria of the two-stage screening, the value is considered a statistical outlier and will not be used in the mean and variance determinations. Anomalous data will still be plotted on the graphs (with a unique symbol) but will not be included in the calculations.

The verification resample plan is an integral function of the statistical plan to reduce the probability that anomalous data obtained after the background has been established, is indicative of a landfill release.

The background data for each well and constituent is tested for existing trends using Sen's nonparametric estimate of trend. If contamination exists prior to completing the background, the control limits could be potentially high and this control chart method would not be able to detect an increasing trend unless the increase is severe.

Results of the Intrawell Statistics

The Appendix I trace metals data from wells MW-10A, MW-10B, MW-18, MW-19, MW-20, MW-21R, and MW-22 were evaluated using the combined Shewhart-CUSUM control chart method.

The background at MW-18, MW-19, MW-20, and MW-22 included the eight rounds of data obtained from October 2014 through 2020. The background at MW-10A included the eight rounds of data obtained from October 2014 through December 2019. The background at MW-10B included the eight rounds of data obtained from October 2014 through June 2019. The background at MW-21R includes the eight rounds of data obtained from October 2014 through April 2021. Ground water wells MW-30 and GU-3 have fewer than eight rounds of data.

Even for wells with eight rounds of background, there is insufficient data to determine control limits given the approved resample program. For constituents that are detected less than 25% of the time at a particular well, thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit.

As ground water monitoring at a municipal solid waste facility proceeds, it is recommended to update background data sets periodically with valid detection monitoring results that are representative of background groundwater quality not affected by leakage from a monitored unit. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences.

Since there have been no statistical failures attributed to the landfill, the background was updated to include data obtained from October 2014 through April 2021 for wells MW-10B, MW-18, MW-19, MW-20, MW-21R, and MW-22. The background was updated to include data obtained from October 2014 through April 2022 for well MW-10A. The initial background at ground water well MW-30 includes the eight rounds of data from 2019 through April 2023.

A summary of the intrawell statistics is included in Attachment B, Table 1 "Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts." The control charts or time series graphs follow the summary table. For the parameters evaluated, there were no control limit exceedances detected.

No increasing trends were detected in the background data.

A control chart factor was selected to provide a balance of the site-wide false positive and false negative rates. A statistical power curve indicates the expected false assessments for the site as a whole. For intrawell analysis, the site-wide false positive rate is 5% and the test becomes sensitive to 4 standard deviation units over background.

The previous verified exceedances at these wells were evaluated against the ground water protection standards (GWPS) using confidence limits calculated in accordance with the Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, USEPA, March 2009 (Attachment C). The analysis was conducted to evaluate whether verified concentrations are significantly above the water quality standard. The 95% lower confidence limit (LCL) for the mean of the historical data was used to evaluate whether the regulated unit is in compliance with the ground-water protection standards under 40 CFR 264 (e.g. whether the verified constituent is detected at a significant level above the GWPS). An exceedance is verified if the LCL is above the Regulatory GWPS.

The 95% LCL for cobalt at MW-18 (42.528 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L. The 95% LCL for cobalt at MW-21R (7.905 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L. The remainder of the calculated 95% LCLs are below the respective ground water quality standards.

Volatile Organic Compounds

Volatile Organic Compounds (VOCs) are generally man-made compounds not present in ambient ground water. If VOCs are detected above their statistical limit (i.e., the laboratory PQL or reporting limit), a verification resample will be conducted at the next scheduled sampling event. A statistical exceedance will be indicated if the VOC detection is confirmed by the subsequent monitoring. There were no VOCs detected in the ground water at North Central Iowa Regional Landfill during the first semi-annual monitoring event in 2024. Historical VOC detections are summarized in Attachment D.

Attachment A

Ground Water Data obtained during the First Semi-Annual Monitoring Event in 2024

Table 1

Analytical Data Summary for 4/23/2024

Constituents	Units	MW-10A	MW-10B	MW-18	MW-19	MW-20	MW-21R	MW-22	MW-25	MW-28	MW-30
1,1,1,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-dibromoethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
2-hexanone (mbk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Acrylonitrile	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	<4.0	<4.0	8.0	5.2	<4.0	5.7	<4.0	<4.0
Barium, total	ug/L	31.0	28.7	24.0	17.8	39.0	19.6	13.3	48.3	17.8	14.2
Benzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	<.4	<.4	39.8	.7	2.4	9.1	<.4	4.7	<.4	3.0
Copper, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Dibromochloromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Methylene chloride	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	<4.0	5.6	37.2	<4.0	4.0	13.6	<4.0	7.9	7.1	12.7
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment B

Summary Tables and Graphs for the Intrawell Comparisons

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Antimony, total	ug/L	MW-10A	13	4	40			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10A	13	5	41	6.8000	3.7354	4.7000	4.0000	6.8000	6.8000	31.0802	normal		
Barium, total	ug/L	MW-10A	11	6	42	37.1000	10.5196	29.7000	31.0000	37.1000	37.1000	105.4774	normal		
Beryllium, total	ug/L	MW-10A	13	4	40			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10A	13	4	40			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10A	13	4	40			8.0000	8.0000			12.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10A	13	4	40	1.4615	1.9894	0.5000	0.4000	1.4615	1.4615	14.3924	normal		
Copper, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			11.4000	nonpar	.99	**
Lead, total	ug/L	MW-10A	13	4	40			4.0000	4.0000			6.9000	nonpar	.99	**
Nickel, total	ug/L	MW-10A	13	4	40	12.4000	14.5913	4.0000	4.0000	12.4000	12.4000	107.2436	normal		
Selenium, total	ug/L	MW-10A	13	4	40			4.0000	4.0000			9.0000	nonpar	.99	**
Silver, total	ug/L	MW-10A	13	4	40			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10A	13	4	40			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10A	13	4	40			20.0000	20.0000			28.4000	nonpar	.99	**
Zinc, total	ug/L	MW-10A	13	4	40	23.1231	14.8627	20.0000	20.0000	23.8829	23.1231	119.7307	normal		
Antimony, total	ug/L	MW-10B	13	5	36			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10B	13	5	36			4.0000	4.0000			4.1000	nonpar	.99	**
Barium, total	ug/L	MW-10B	11	5	36	31.4091	6.2633	26.8000	28.7000	31.4091	31.4091	72.1205	normal		
Beryllium, total	ug/L	MW-10B	13	5	36			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10B	13	5	37			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10B	13	5	36			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10B	13	5	37			0.4000	0.4000			4.1000	nonpar	.99	**
Copper, total	ug/L	MW-10B	13	5	36			4.0000	4.0000			7.4000	nonpar	.99	**
Lead, total	ug/L	MW-10B	13	5	36			4.0000	4.0000			4.6000	nonpar	.99	**
Nickel, total	ug/L	MW-10B	13	5	37	8.6538	4.8541	5.6000	5.6000	8.6538	8.6538	40.2058	normal		
Selenium, total	ug/L	MW-10B	13	5	37			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-10B	13	5	37			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10B	13	5	36			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10B	13	5	36			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-10B	12	5	36	18.2583	8.2091	20.0000	20.0000	18.2583	18.2583	71.6177	normal		
Antimony, total	ug/L	MW-18	13	6	41			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-18	13	6	41	25.8692	2.9652	25.8000	24.0000	32.4968	28.4036	45.1429	normal		
Beryllium, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-18	13	6	41			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-18	13	6	41			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-18	12	7	42	41.2417	10.3115	66.2000	39.8000	94.4901	85.3148	108.2662	normal		
Copper, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-18	13	6	41	36.9385	9.9355	47.7000	37.2000	40.2484	36.9385	101.5192	normal		
Selenium, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-18	13	6	41			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-18	13	6	41			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-18	13	6	41			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-18	13	6	42	18.9077	3.2938	25.5000	20.0000	24.7516	18.9077	40.3174	normal		
Antimony, total	ug/L	MW-19	13	6	40			2.0000	2.0000			2.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Arsenic, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-19	13	6	40	35.8462	7.0326	17.4000	17.8000	35.8462	35.8462	81.5582	normal		
Beryllium, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-19	13	6	40			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-19	13	6	40			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-19	11	6	40	24.8000	11.8350	0.8000	0.7000	24.8000	24.8000	101.7277	normal		
Copper, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-19	13	6	40	22.3615	8.8355	4.0000	4.0000	22.3615	22.3615	79.7922	normal		
Selenium, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-19	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-19	13	6	40			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-19	13	6	40			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-19	13	6	40			20.0000	20.0000			30.9000	nonpar	.99	**
Antimony, total	ug/L	MW-20	13	6	40			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-20	13	6	40	25.2154	16.8948	10.8000	8.0000	25.2154	25.2154	135.0314	normal		
Barium, total	ug/L	MW-20	13	6	40	67.6154	27.4452	45.1000	39.0000	115.2189	67.6154	246.0093	normal		
Beryllium, total	ug/L	MW-20	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-20	13	6	40			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-20	13	6	40			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-20	13	6	41	5.9308	2.2574	1.8000	2.4000	5.9308	5.9308	20.6036	normal		
Copper, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-20	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-20	13	6	40	8.4692	2.6550	5.0000	4.0000	8.4692	8.4692	25.7267	normal		
Selenium, total	ug/L	MW-20	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-20	13	6	40			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-20	13	6	40			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-20	13	6	40			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-20	14	6	41	21.4357	17.4166	20.0000	20.0000	21.4357	21.4357	134.6433	normal		
Antimony, total	ug/L	MW-21R	8	6	14			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-21R	8	7	15	4.1250	0.2315	10.9000	5.2000	10.6685	4.9685	5.6295	normal		
Barium, total	ug/L	MW-21R	8	6	14	31.8000	12.8251	24.2000	19.6000	31.8000	31.8000	115.1631	normal		
Beryllium, total	ug/L	MW-21R	8	6	14			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-21R	8	6	14			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-21R	8	6	14			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-21R	9	6	15	17.8111	5.2987	12.0000	9.1000	17.8111	17.8111	52.2526	normal		
Copper, total	ug/L	MW-21R	8	6	14			4.0000	4.0000			5.2000	nonpar	.99	**
Lead, total	ug/L	MW-21R	8	6	14			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-21R	9	6	15	35.4889	15.6969	19.4000	13.6000	35.4889	35.4889	137.5189	normal		
Selenium, total	ug/L	MW-21R	8	6	14			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-21R	8	6	14			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-21R	8	6	14			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-21R	8	6	14			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-21R	8	6	14	22.8625	12.7285	20.0000	20.0000	22.8625	22.8625	105.5976	normal		
Antimony, total	ug/L	MW-22	13	6	39			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-22	13	6	39			4.0000	4.0000			4.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Barium, total	ug/L	MW-22	13	6	39	18.1385	4.1526	9.3000	13.3000	18.1385	18.1385	45.1305	normal		
Beryllium, total	ug/L	MW-22	13	6	39			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-22	13	6	39			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-22	13	6	39			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-22	13	6	39			0.4000	0.4000			0.8000	nonpar	.99	**
Copper, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-22	13	6	39			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-22	14	6	40	18.7929	15.0825	76.0000	4.0000	64.6881	34.5834	116.8292	normal		
Selenium, total	ug/L	MW-22	13	6	39			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-22	13	6	39			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-22	13	6	39			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-22	13	6	39			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-22	15	6	41	22.3733	13.7636	29.2000	20.0000	22.3733	22.3733	111.8370	normal		
Antimony, total	ug/L	MW-30	8	2	10			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-30	8	2	10			4.0000	4.0000			9.1000	nonpar	.99	**
Barium, total	ug/L	MW-30	8	2	10	26.8000	9.6465	21.0000	14.2000	26.8000	26.8000	89.5020	normal		
Beryllium, total	ug/L	MW-30	8	2	10			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-30	8	2	10			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-30	8	2	10			8.0000	8.0000			43.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-30	8	2	10	7.3750	7.3738	4.1000	3.0000	7.3750	7.3750	55.3050	normal		
Copper, total	ug/L	MW-30	7	2	10	4.5143	0.8802	4.0000	4.0000	4.5143	4.5143	10.2356	normal		
Lead, total	ug/L	MW-30	8	2	10			4.0000	4.0000			12.7000	nonpar	.99	**
Nickel, total	ug/L	MW-30	8	2	10	15.5875	16.3448	19.0000	12.7000	15.5875	15.5875	121.8287	normal		
Selenium, total	ug/L	MW-30	8	2	10			4.0000	4.0000			5.7000	nonpar	.99	**
Silver, total	ug/L	MW-30	8	2	10			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-30	8	2	10			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-30	8	2	10			20.0000	20.0000			21.4000	nonpar	.99	**
Zinc, total	ug/L	MW-30	8	2	10	38.4375	41.5326	20.0000	20.0000	38.4375	38.4375	308.3996	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 4

Dixon's Test Outliers
1% Significance Level

Constituent	Units	Well	Date	Result	ND Qualifier	Date Range	N	Critical Value
Barium, total	ug/L	MW-10A	10/28/2014	143.0000		10/28/2014-04/19/2022	13	0.6425
Barium, total	ug/L	MW-10A	04/19/2022	453.0000		10/28/2014-04/19/2022	13	0.6425
Barium, total	ug/L	MW-10B	10/28/2014	104.0000		10/28/2014-10/21/2021	13	0.6425
Barium, total	ug/L	MW-10B	12/03/2014	97.5000		10/28/2014-10/21/2021	13	0.6425
Zinc, total	ug/L	MW-10B	12/03/2014	158.0000		10/28/2014-10/21/2021	13	0.6174
Cobalt, total	ug/L	MW-18	10/15/2018	9.0000		10/28/2014-04/13/2021	13	0.6174
Zinc, total	ug/L	MW-18	10/09/2019	62.7000		10/28/2014-04/13/2021	14	0.6403
Cobalt, total	ug/L	MW-19	10/06/2020	0.8000		10/28/2014-04/13/2021	13	0.6425
Cobalt, total	ug/L	MW-19	04/13/2021	0.6000		10/28/2014-04/13/2021	13	0.6425
Cobalt, total	ug/L	MW-20	04/20/2017	1.2000		10/28/2014-04/13/2021	14	0.6403
Copper, total	ug/L	MW-30	10/18/2022	71.2000		10/09/2019-04/11/2023	8	0.6808

N = Total number of independent measurements in background at each well.
Date Range = Dates of the first and last measurements included in background at each well.
Critical Value depends on the significance level and on N-1 when the two most extreme values are tested or N for the most extreme value.

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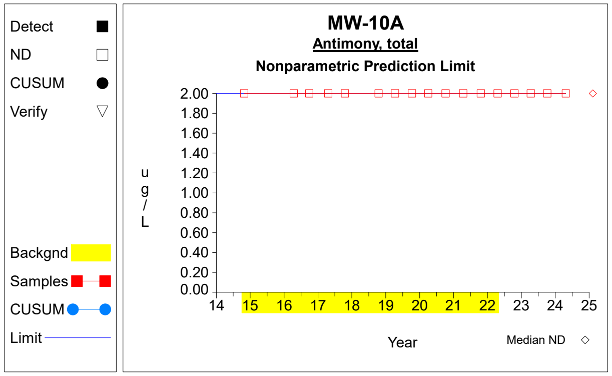
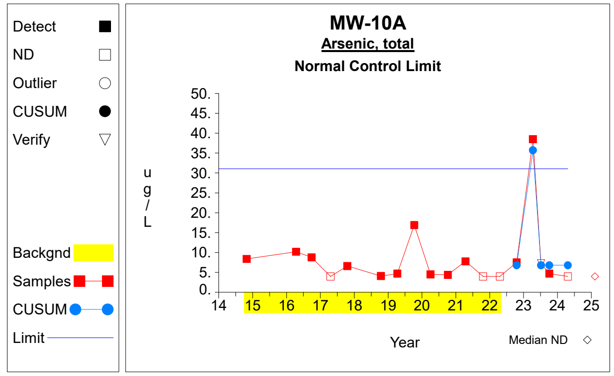
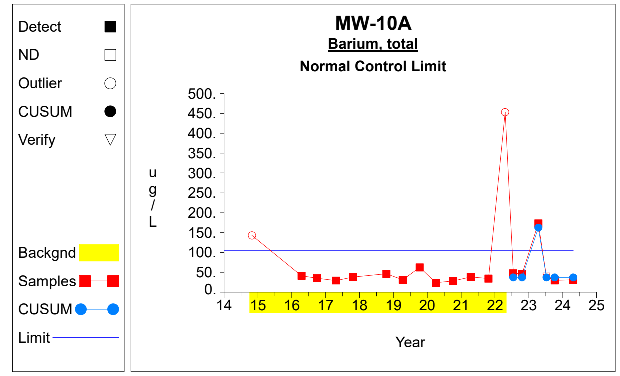
Intra-Well Control Charts / Prediction Limits



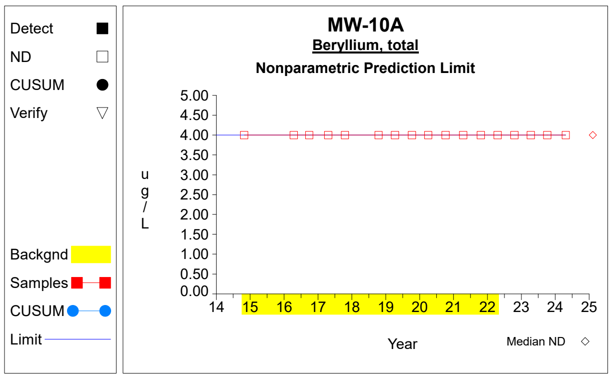
Graph 1



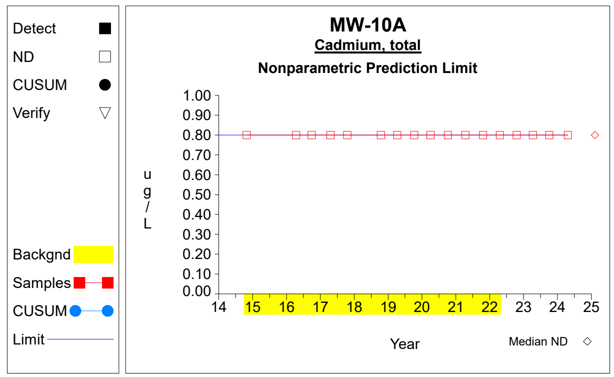
Graph 2



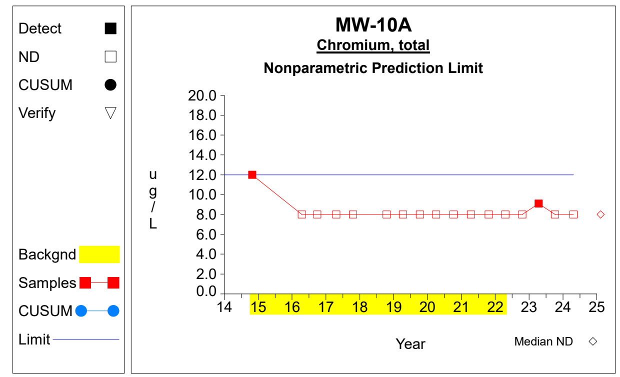
Graph 3



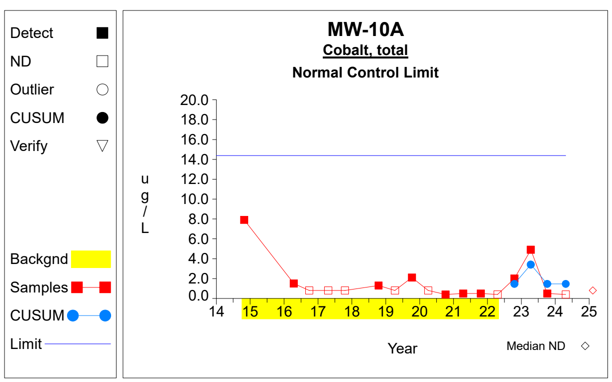
Graph 4



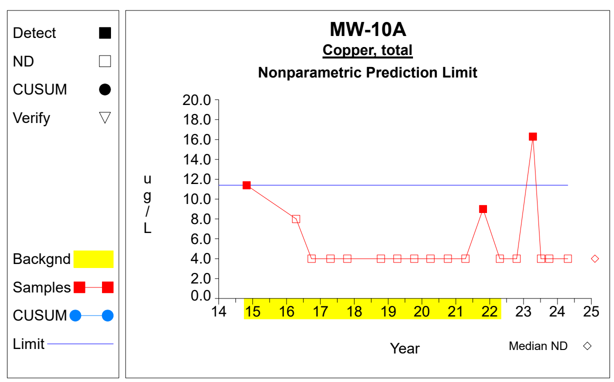
Graph 5



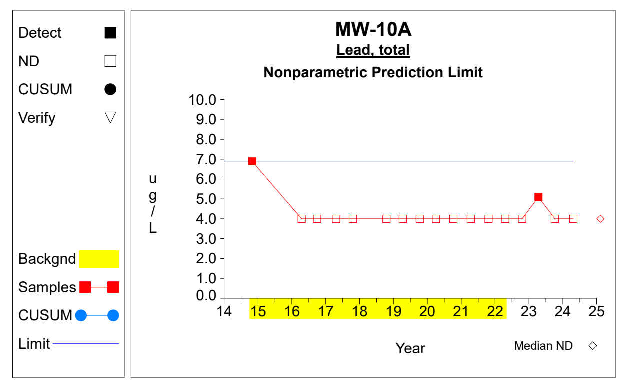
Graph 6



Graph 7



Graph 8



Graph 9

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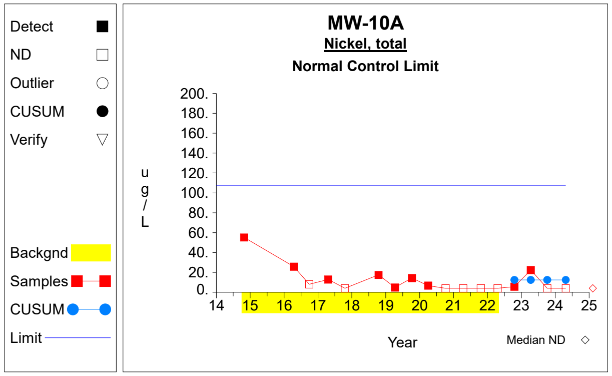
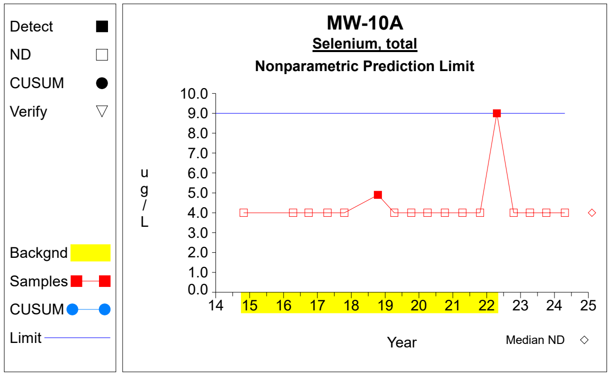
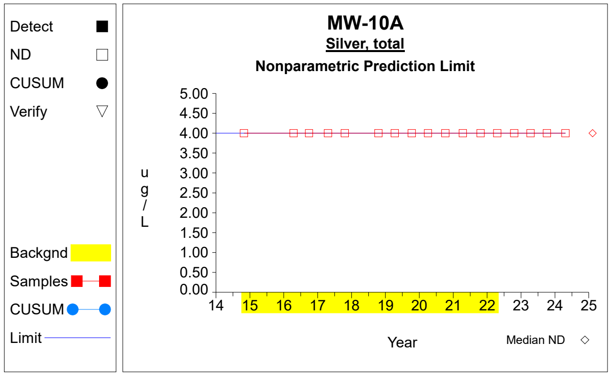
Intra-Well Control Charts / Prediction Limits



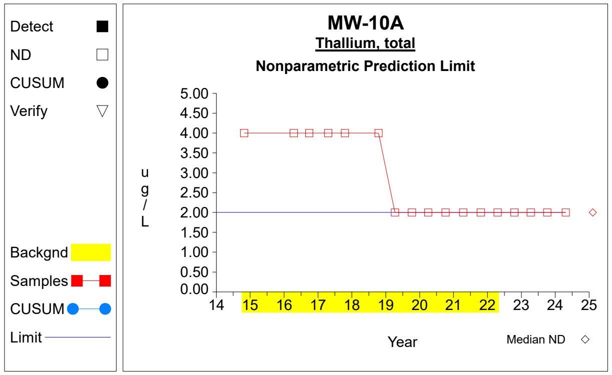
Graph 10



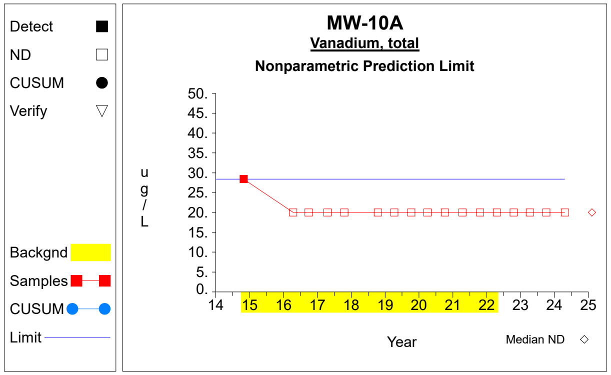
Graph 11



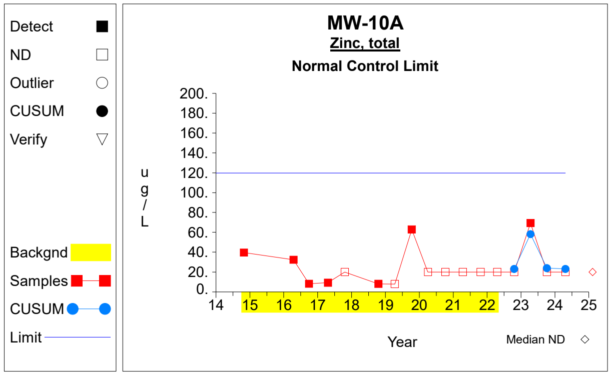
Graph 12



Graph 13



Graph 14



Graph 15

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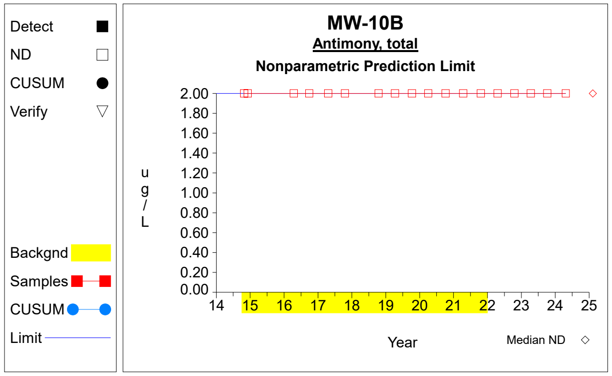
Intra-Well Control Charts / Prediction Limits



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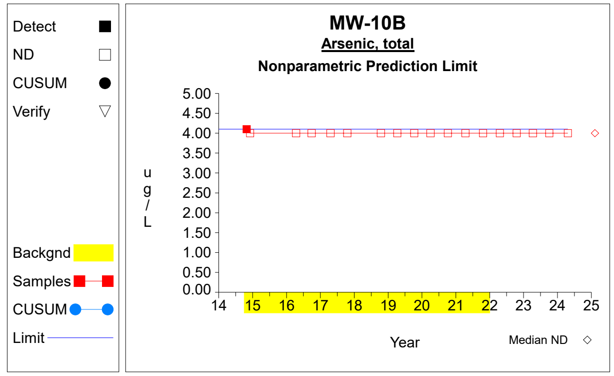
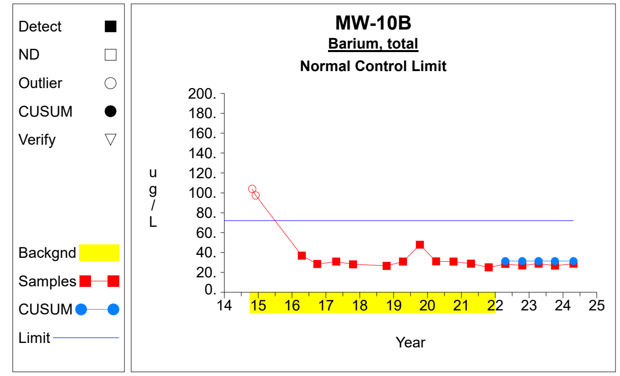
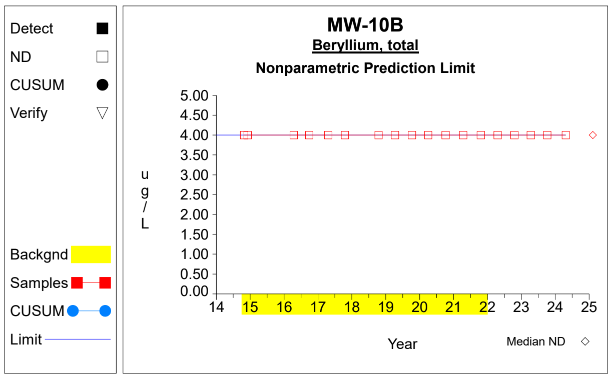


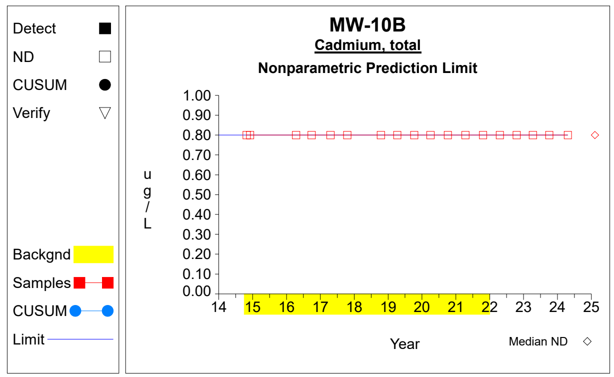
Graph 17



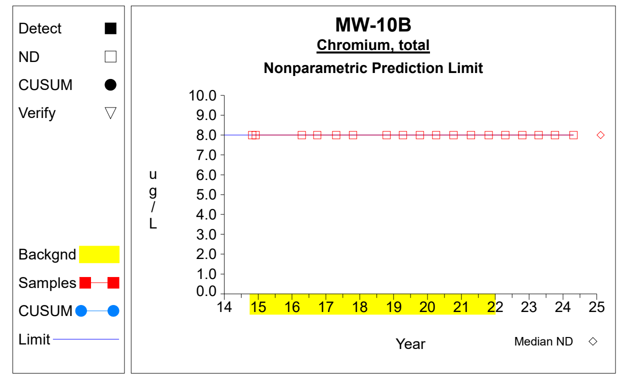
Graph 18



Graph 19



Graph 20



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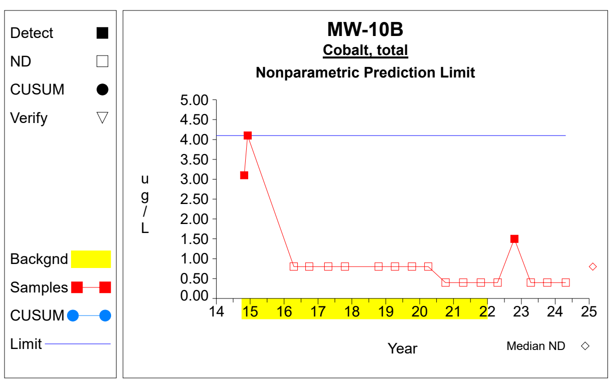
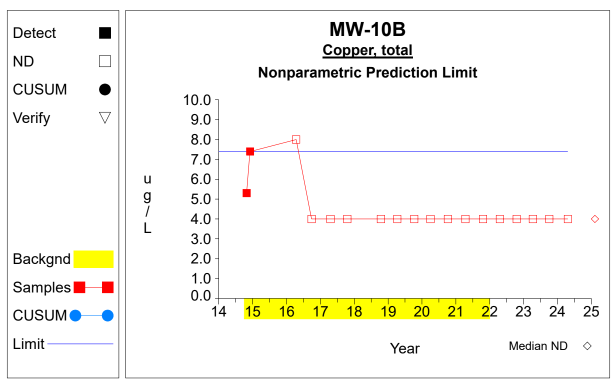
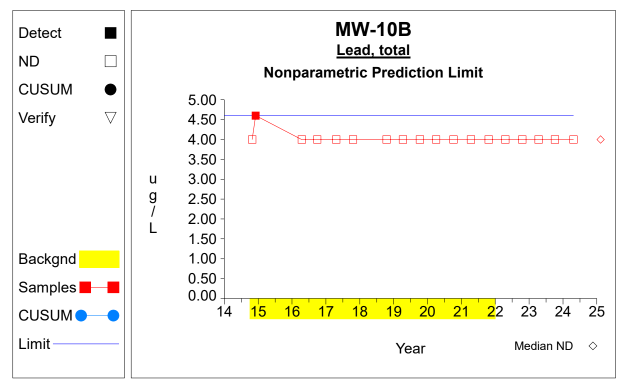


Graph 22



Graph 23



Graph 24

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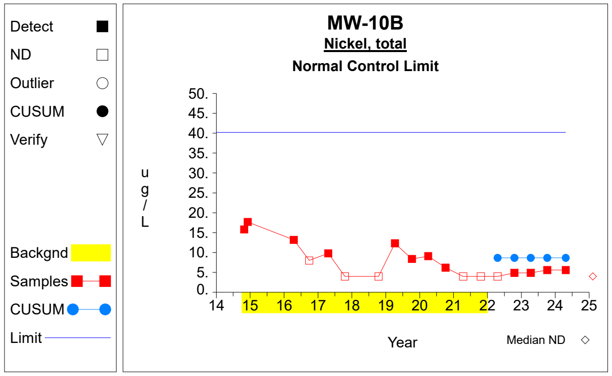
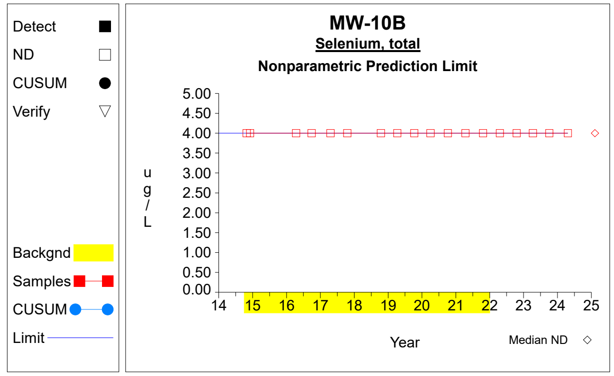
Intra-Well Control Charts / Prediction Limits



Graph 25



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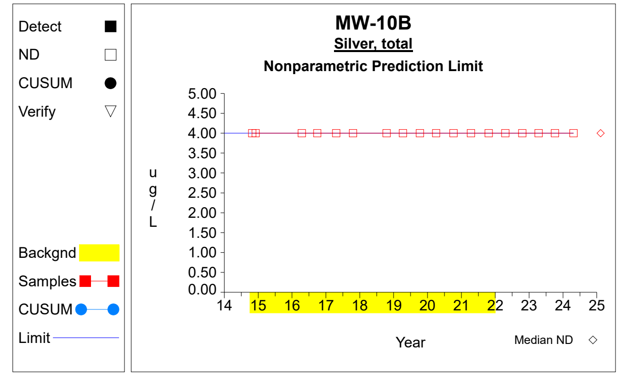

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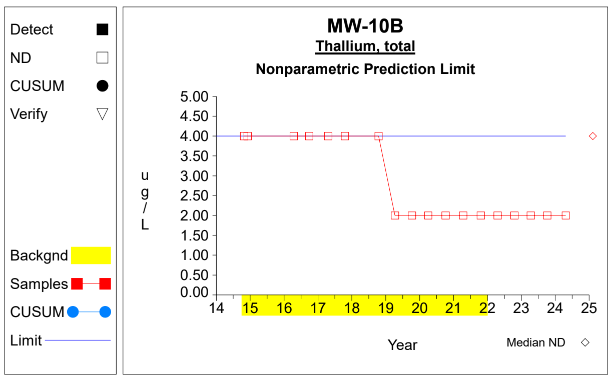

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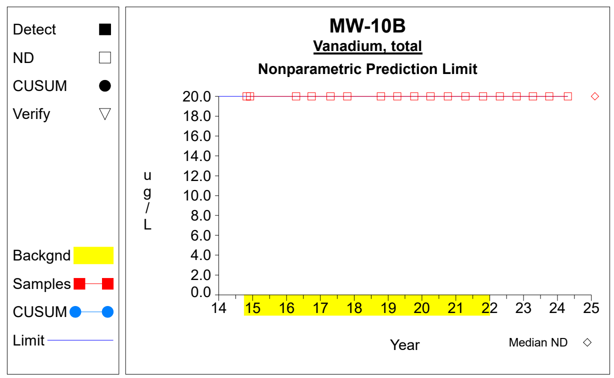

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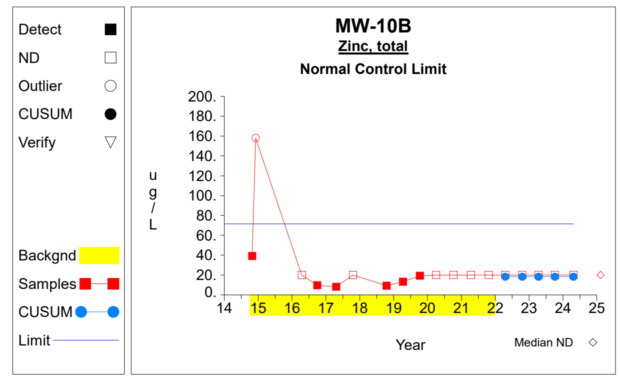

Graph 30

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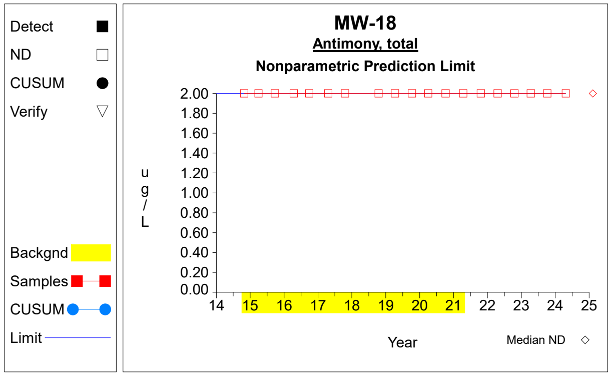
Intra-Well Control Charts / Prediction Limits



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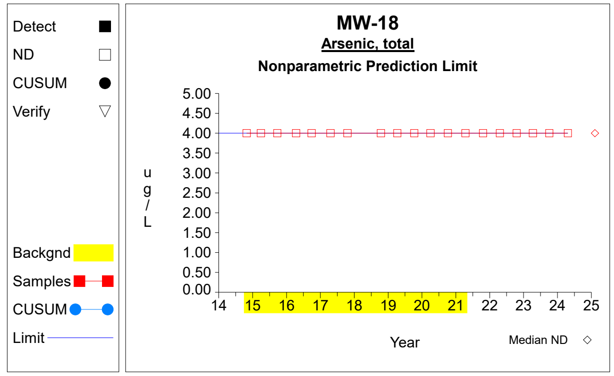

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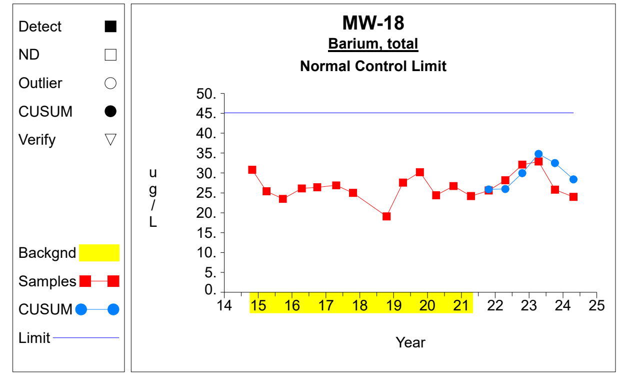
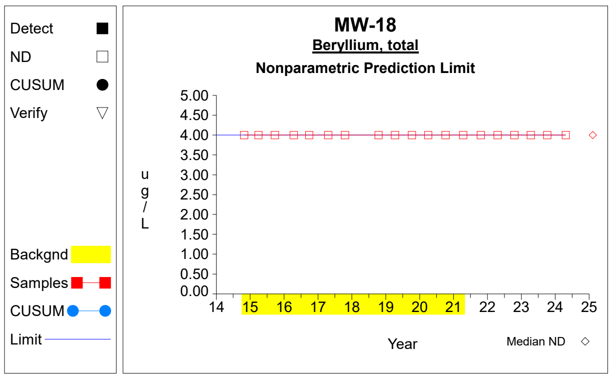
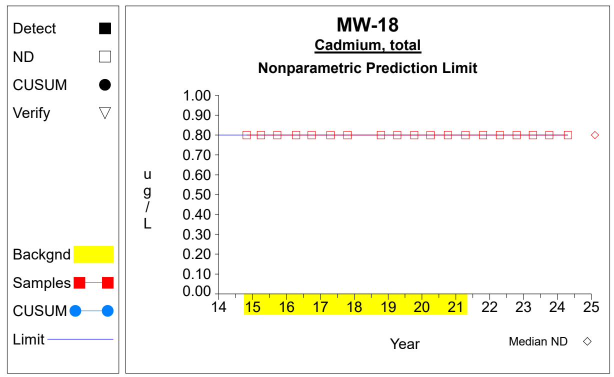


Graph 33



Graph 34



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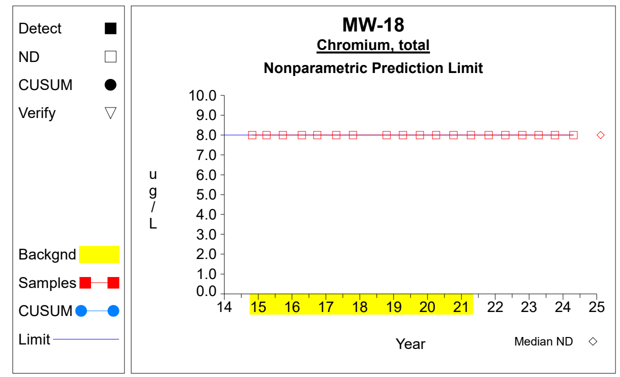

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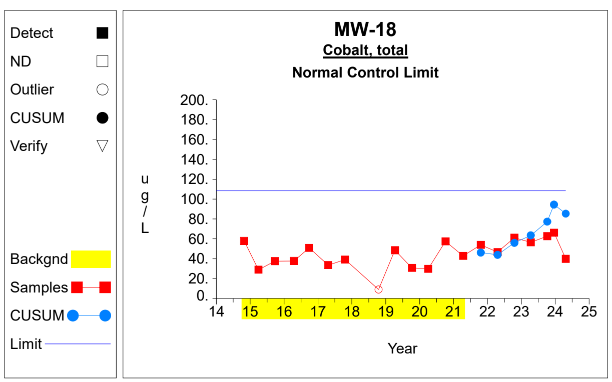

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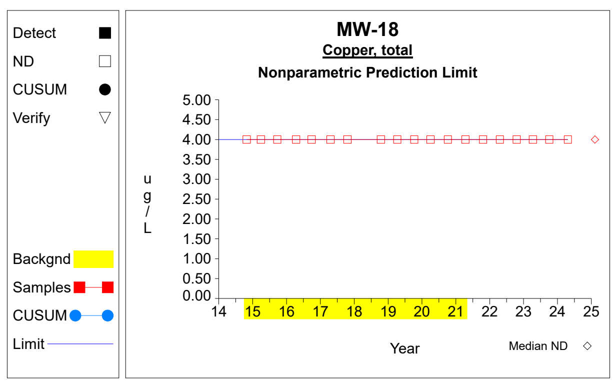

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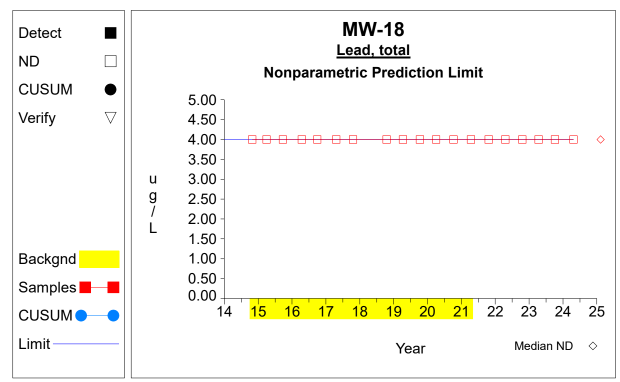

Graph 39

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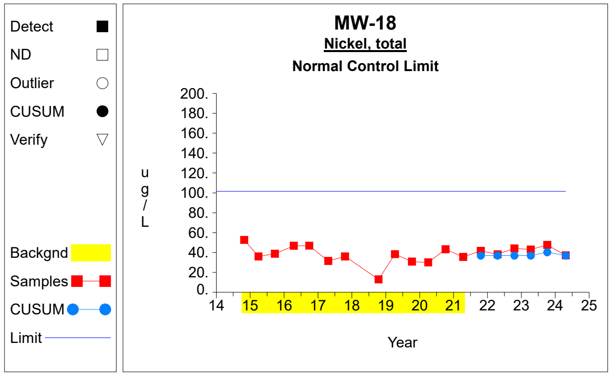
Intra-Well Control Charts / Prediction Limits



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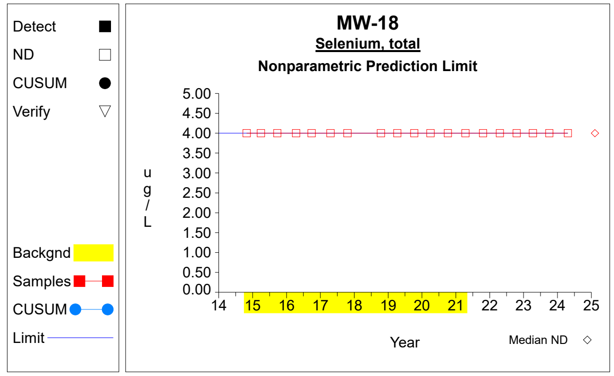

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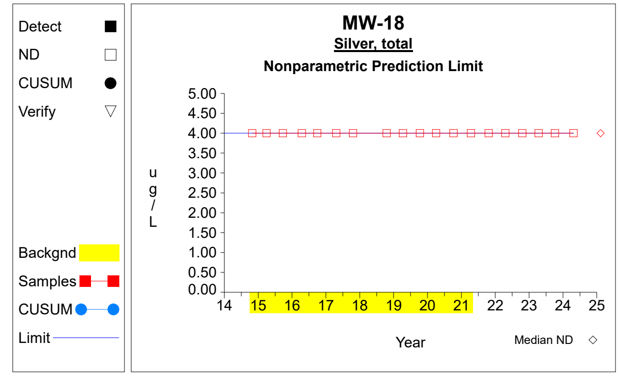

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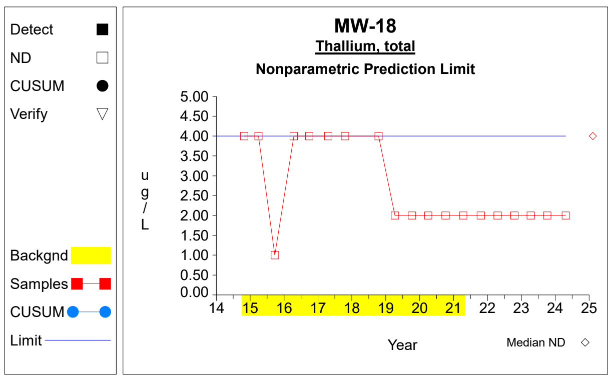

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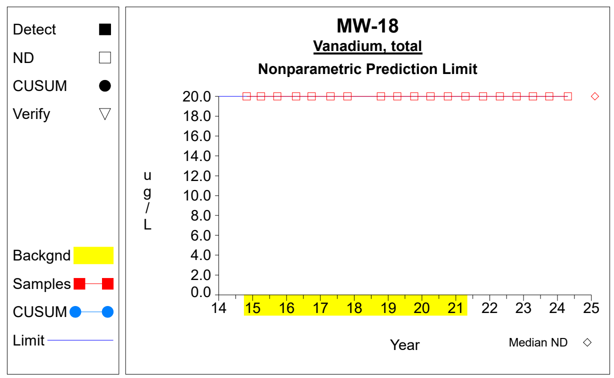

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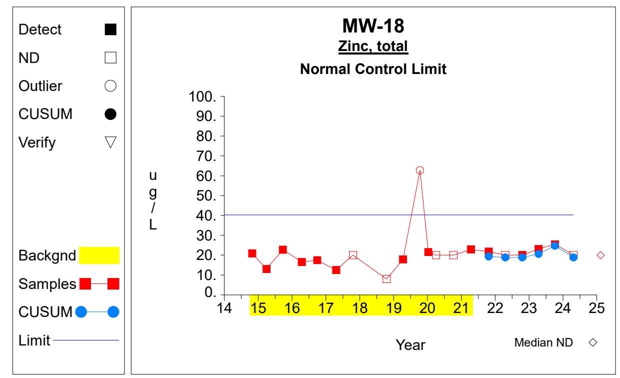

Graph 45

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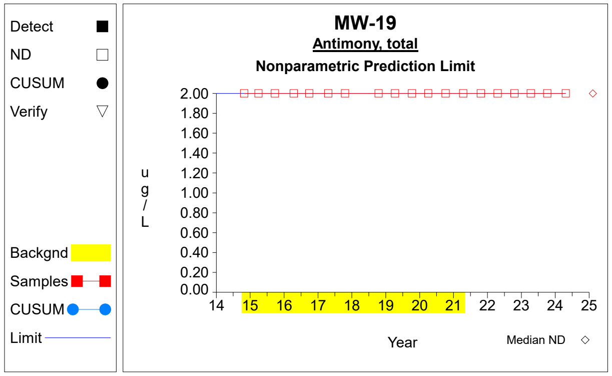
Intra-Well Control Charts / Prediction Limits



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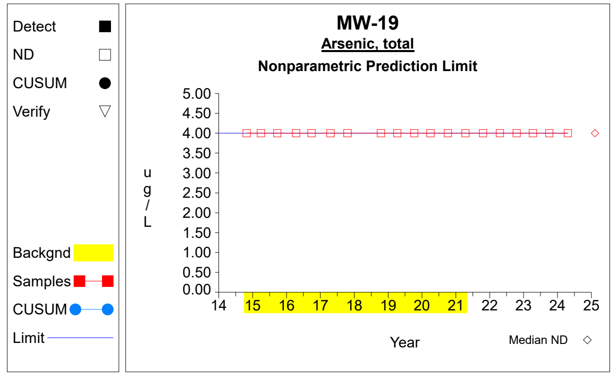

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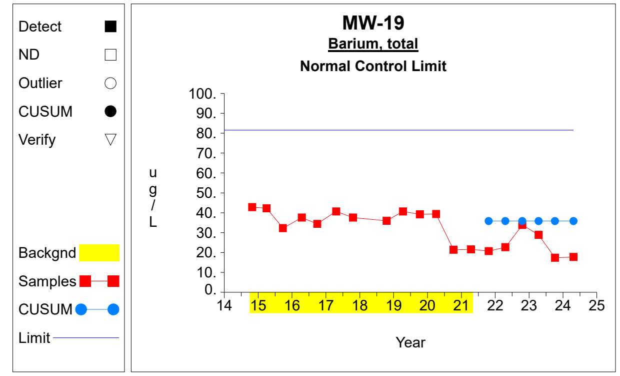

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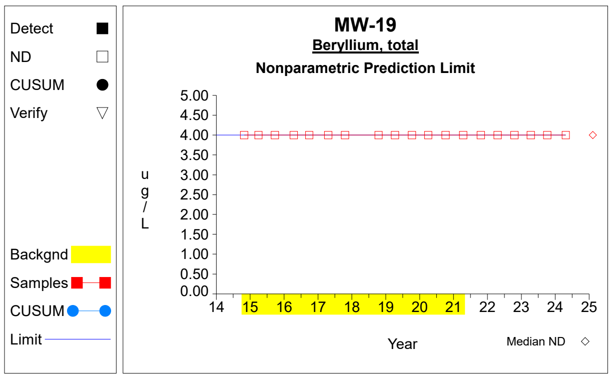

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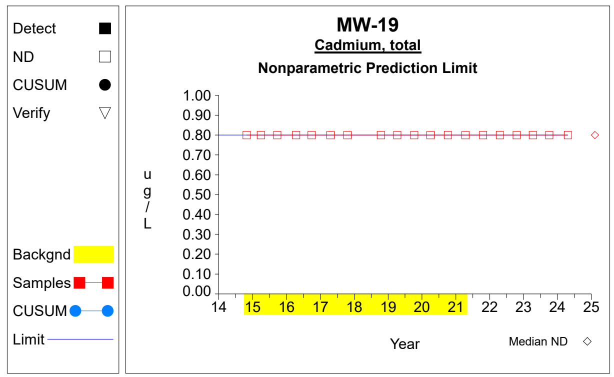

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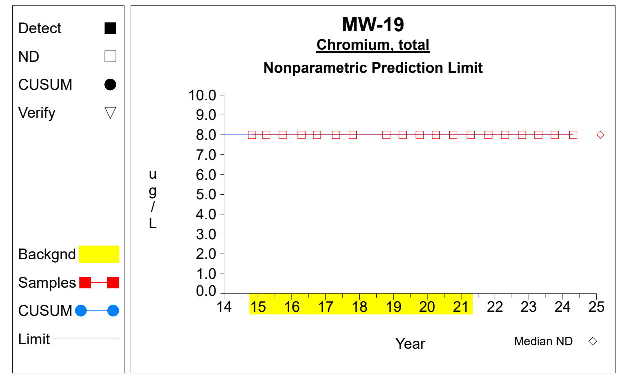

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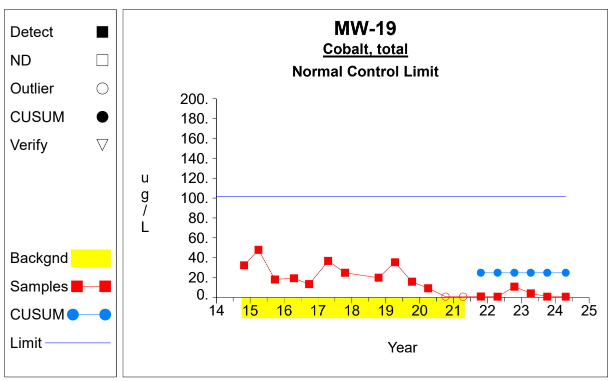

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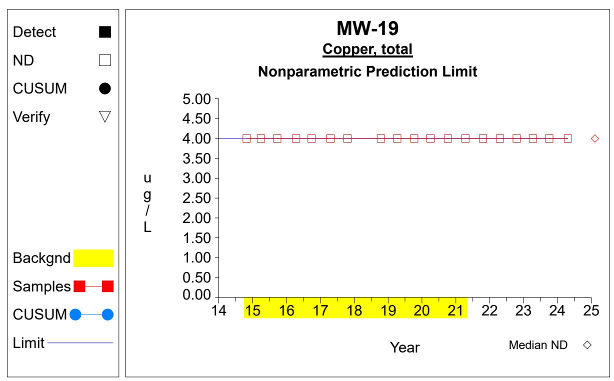

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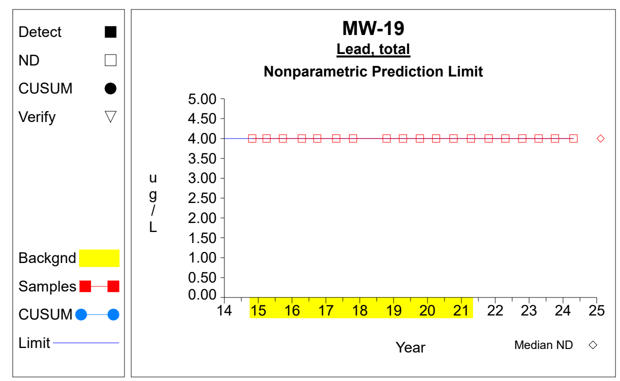

Graph 54

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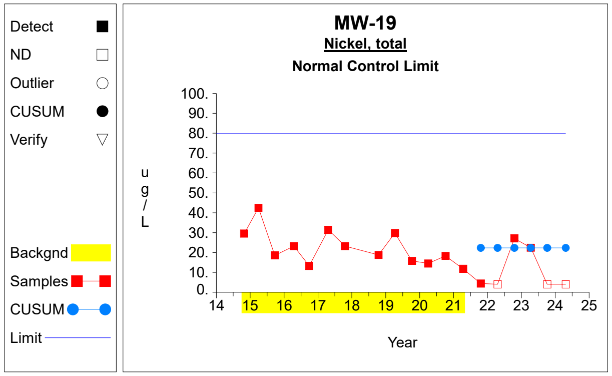
Intra-Well Control Charts / Prediction Limits



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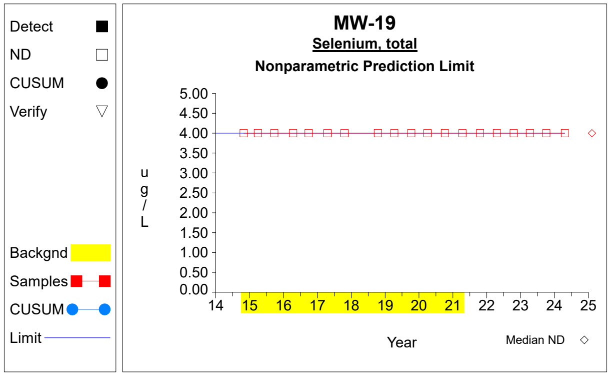
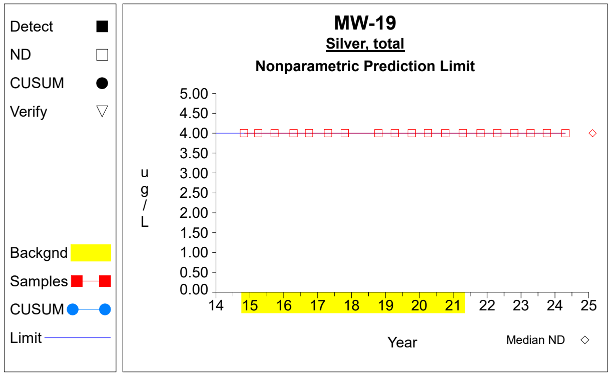


Graph 56



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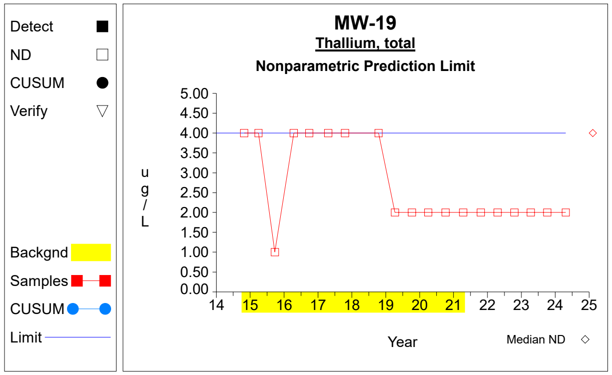

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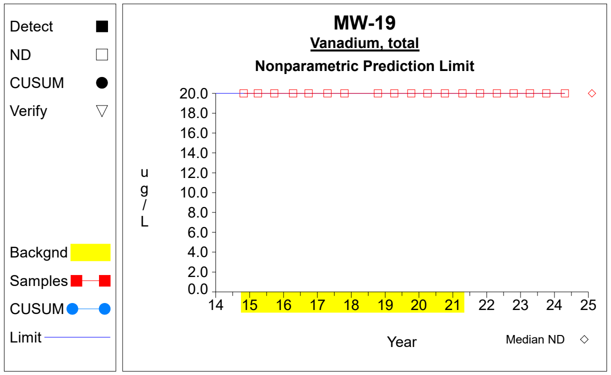

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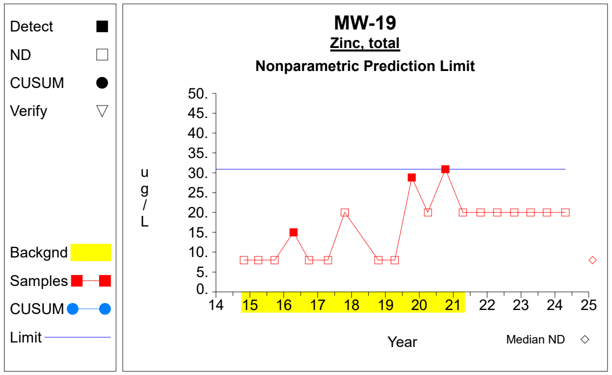
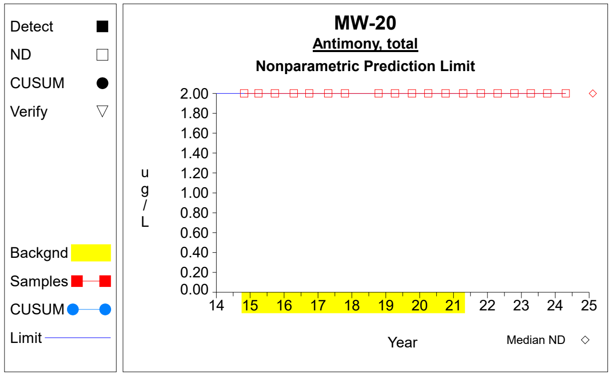


Graph 60

Intra-Well Control Charts / Prediction Limits



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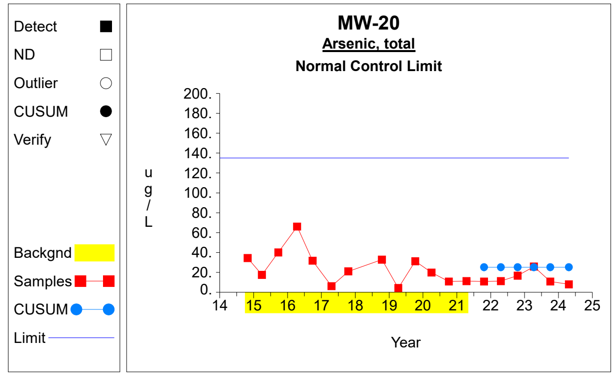

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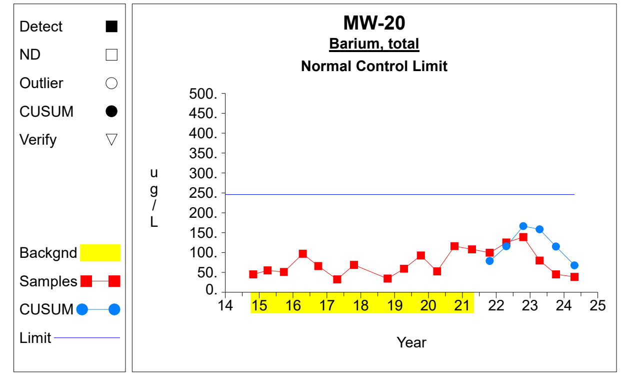

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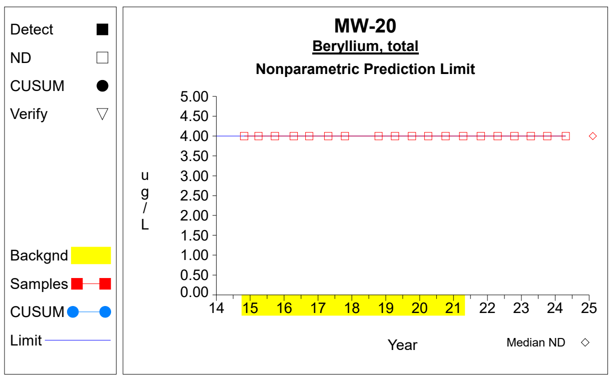

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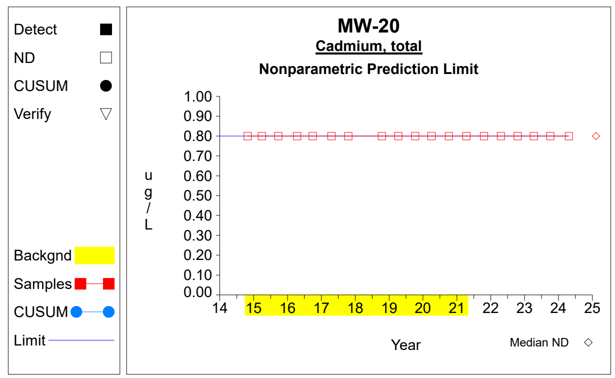

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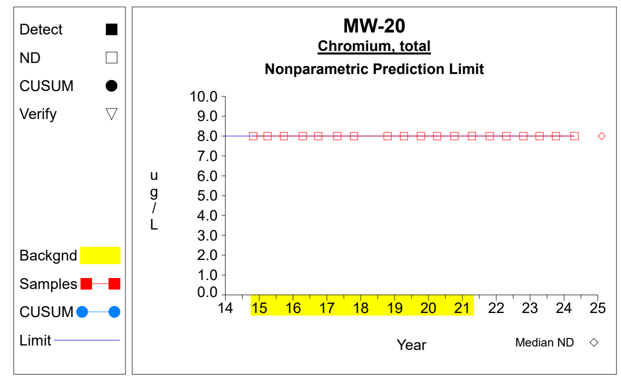

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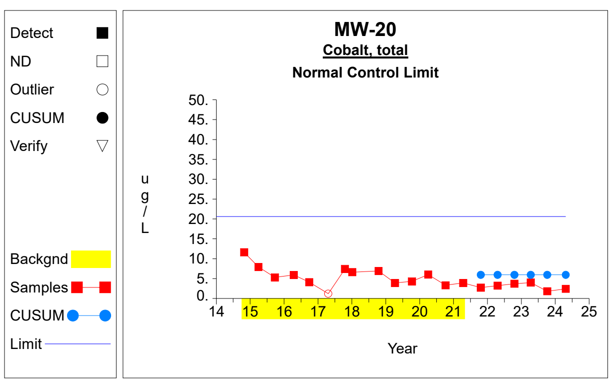

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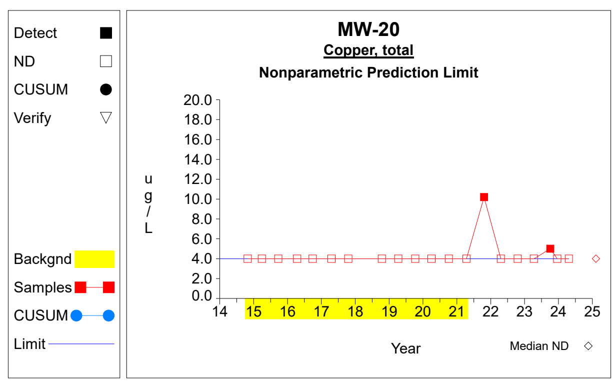

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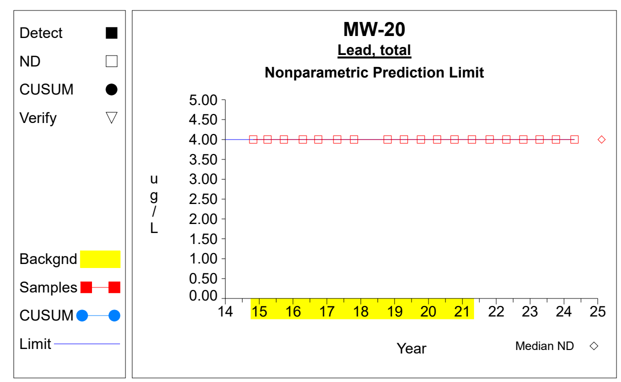

Graph 69

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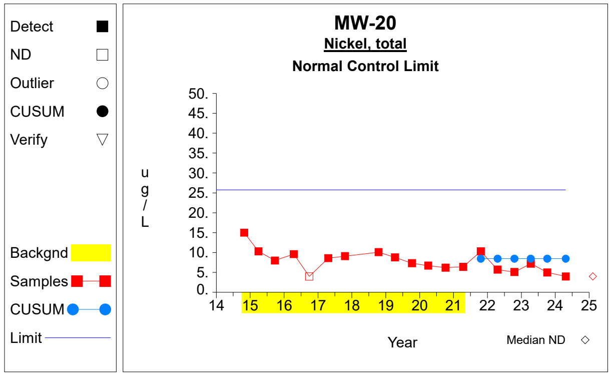
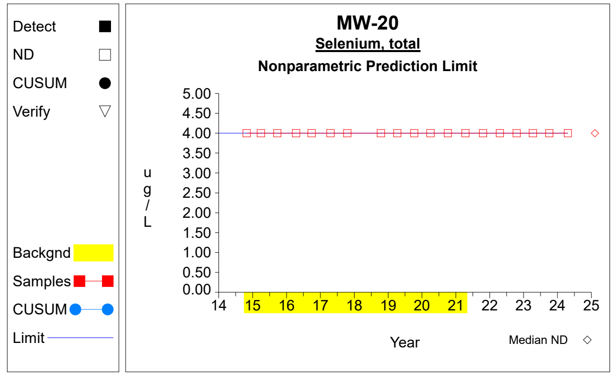
Intra-Well Control Charts / Prediction Limits



Graph 70



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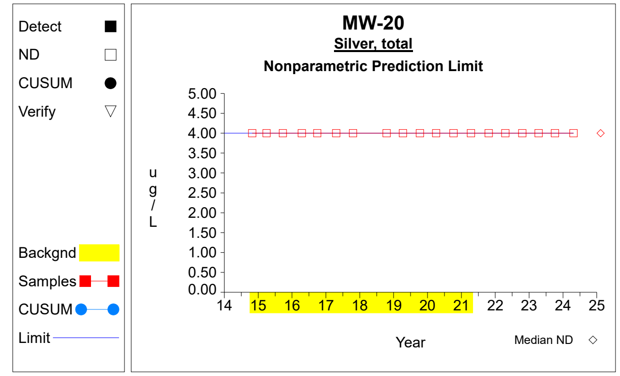
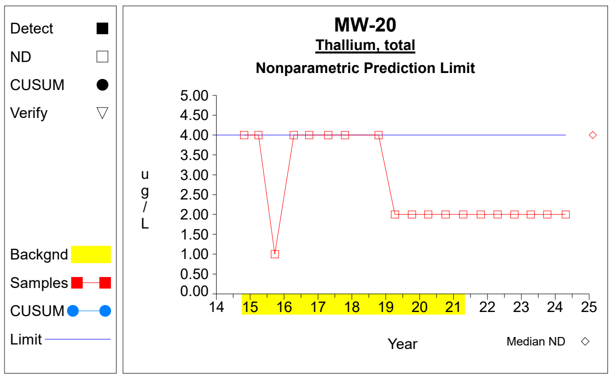
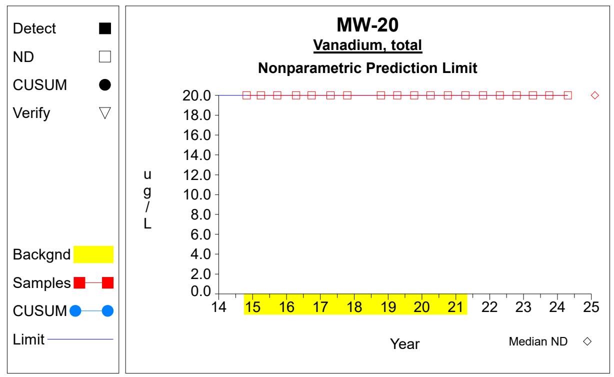


Graph 72



Graph 73



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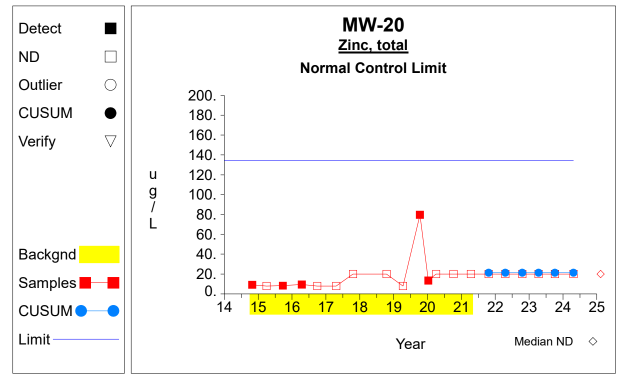

Graph 75

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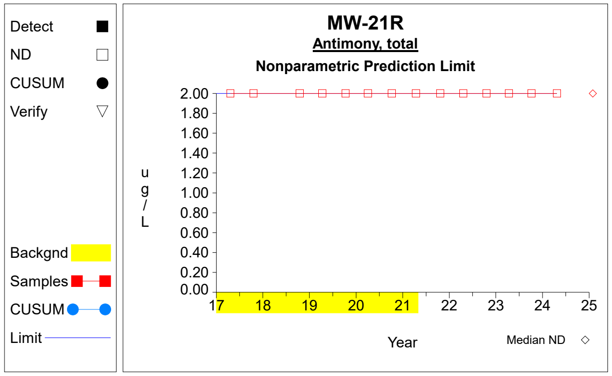
Intra-Well Control Charts / Prediction Limits



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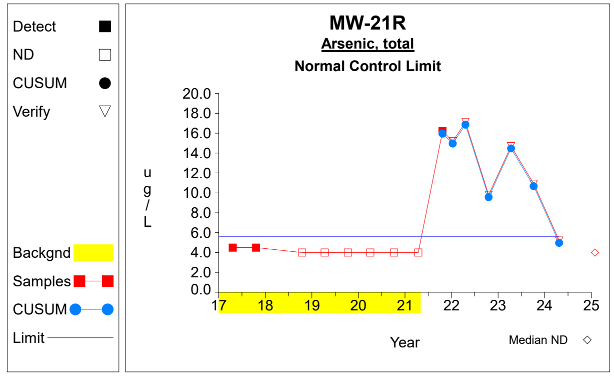
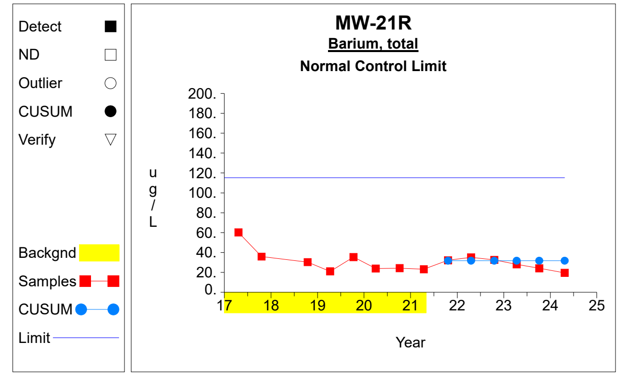


Graph 77



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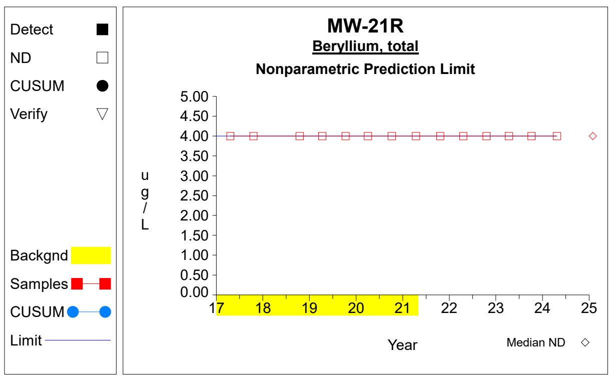

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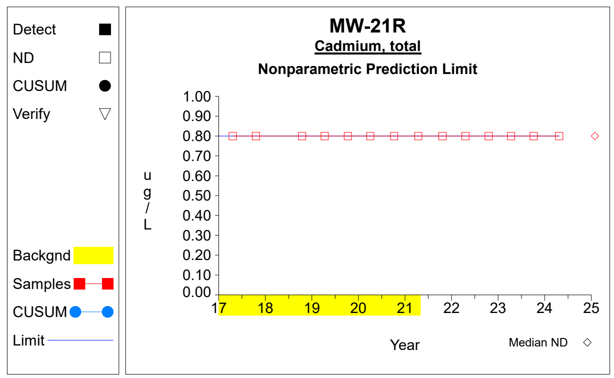

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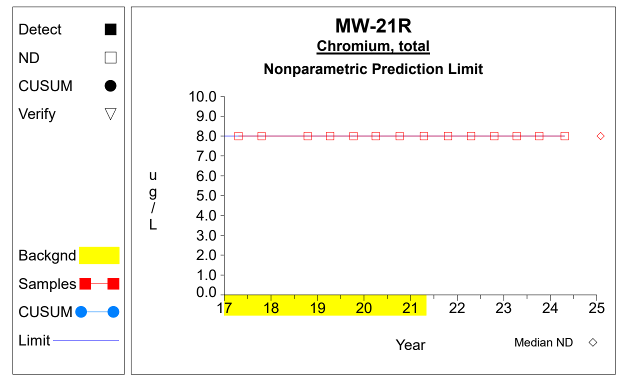

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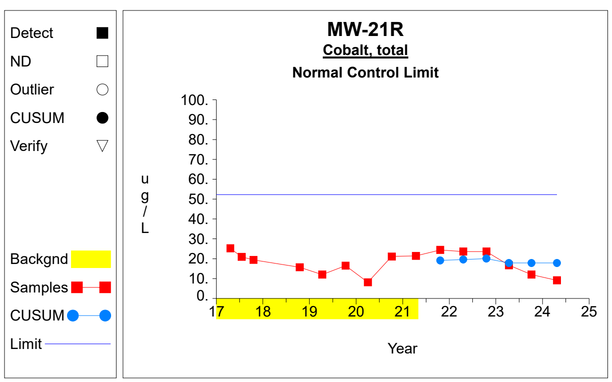

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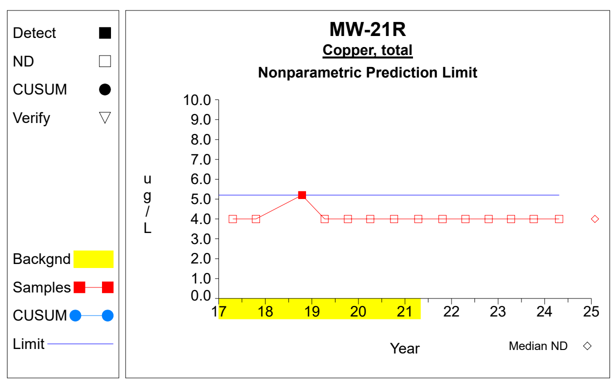

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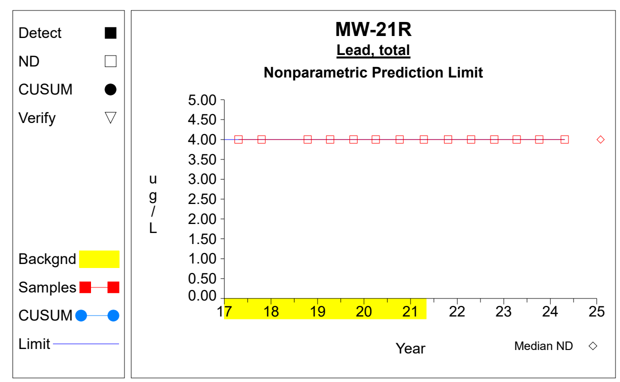

Graph 84

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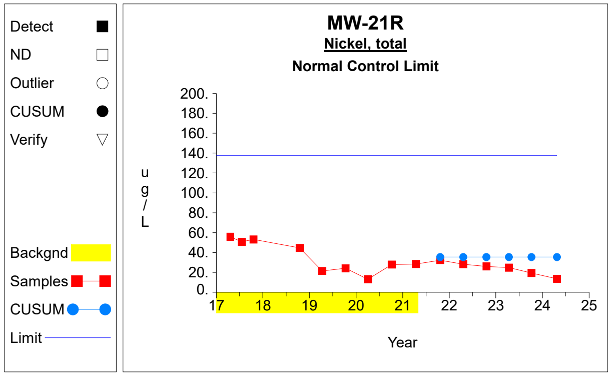
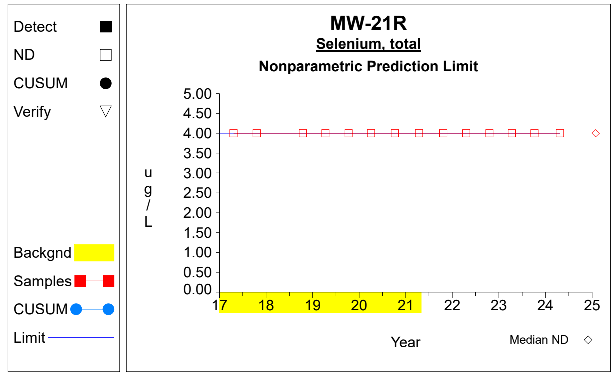
Intra-Well Control Charts / Prediction Limits



Graph 85



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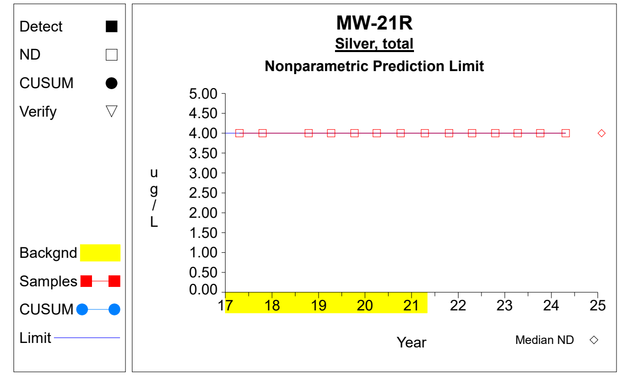
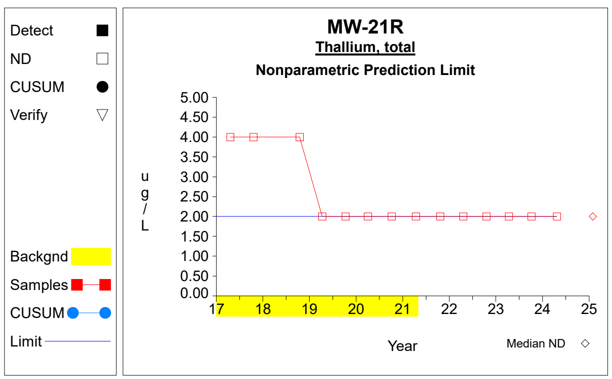
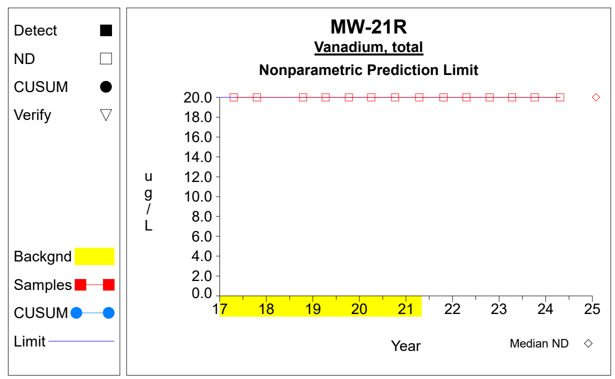


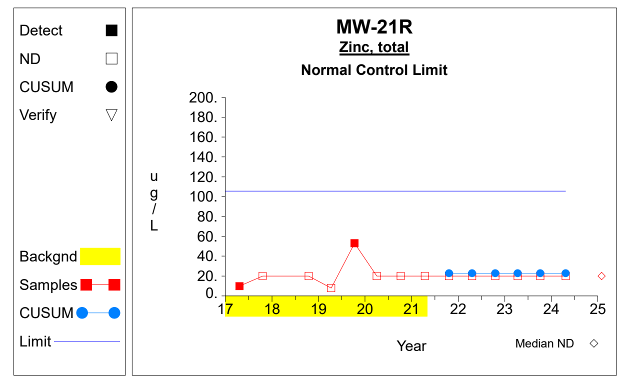
Graph 87



Graph 88



Graph 89



Graph 90

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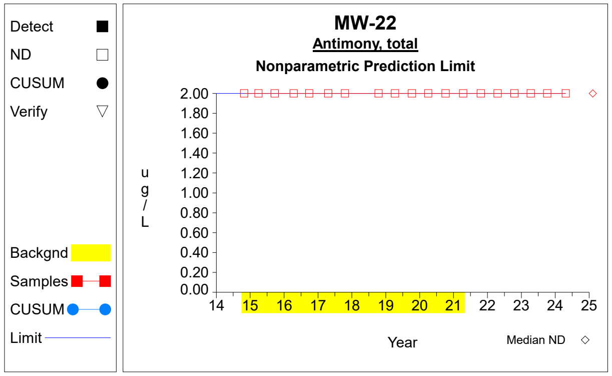
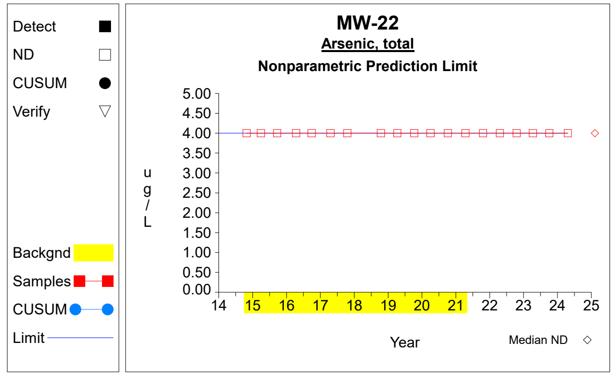
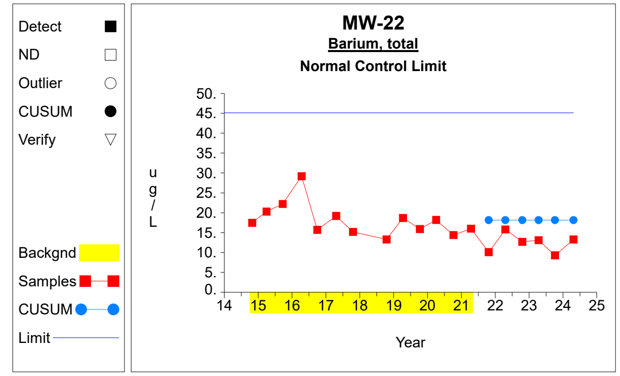
Intra-Well Control Charts / Prediction Limits



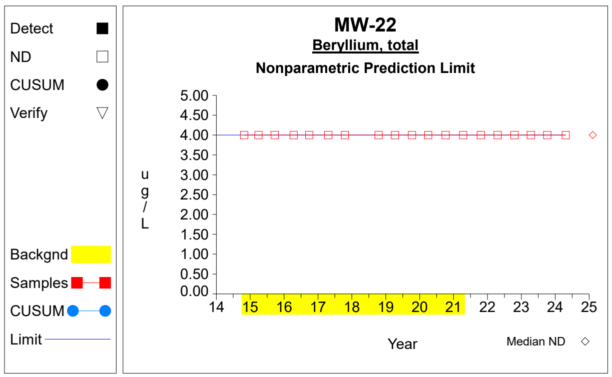
Graph 91



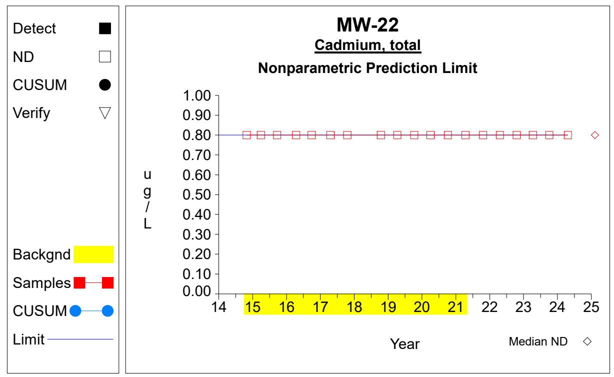
Graph 92



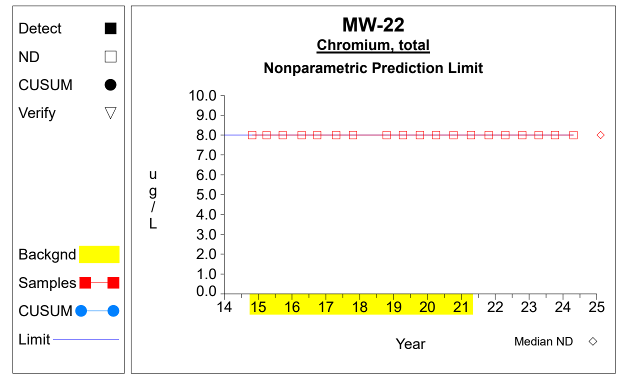
Graph 93



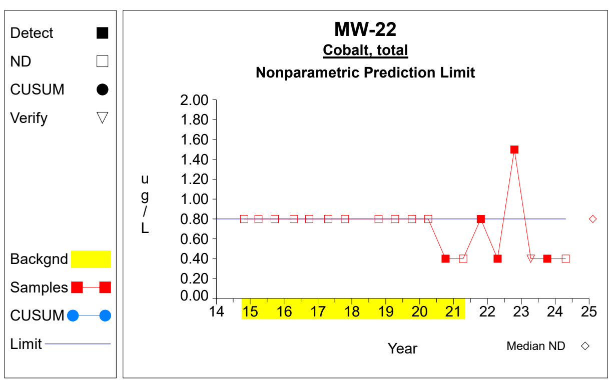
Graph 94



Graph 95



Graph 96



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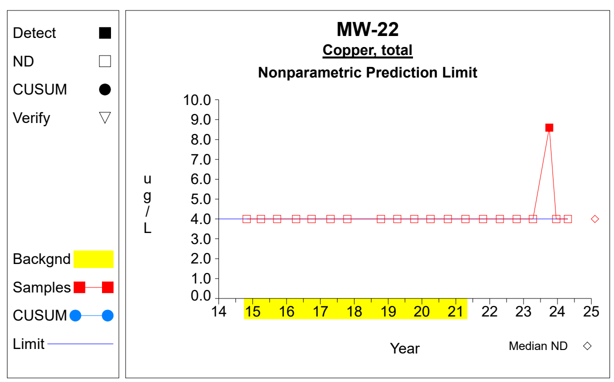

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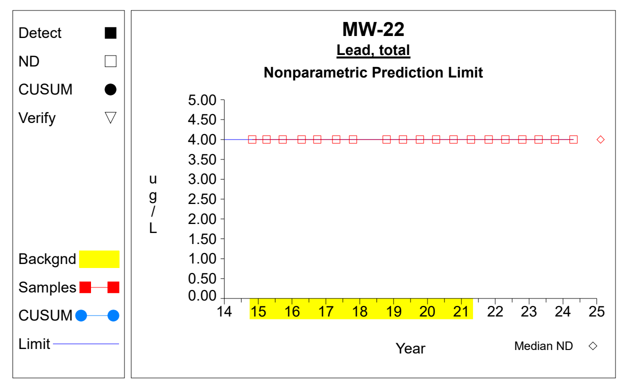

Graph 99

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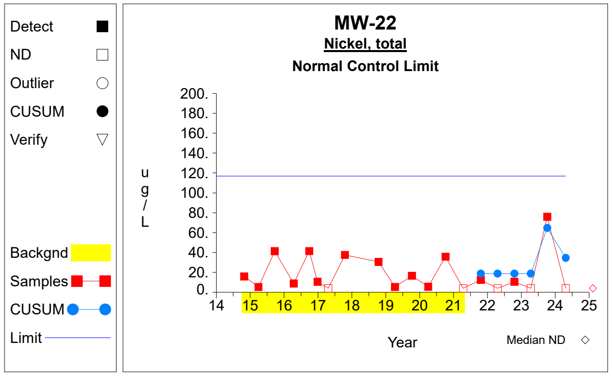
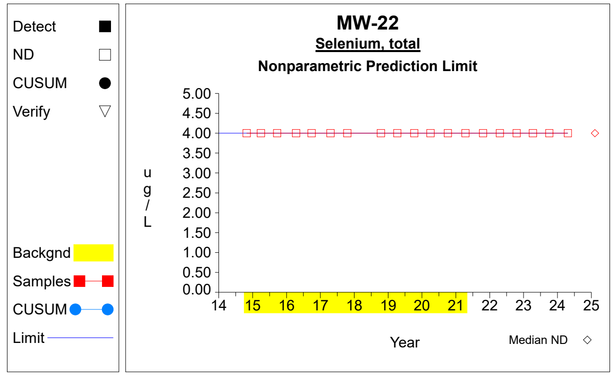
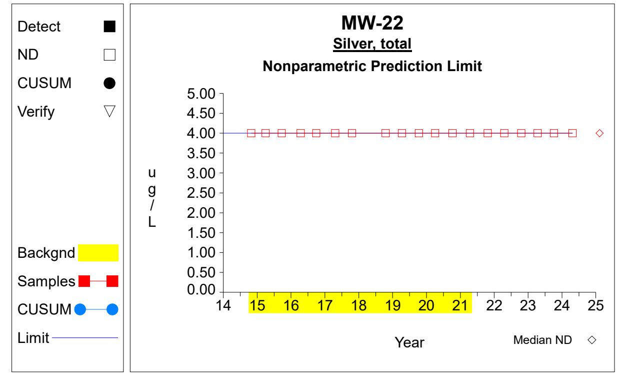
Intra-Well Control Charts / Prediction Limits



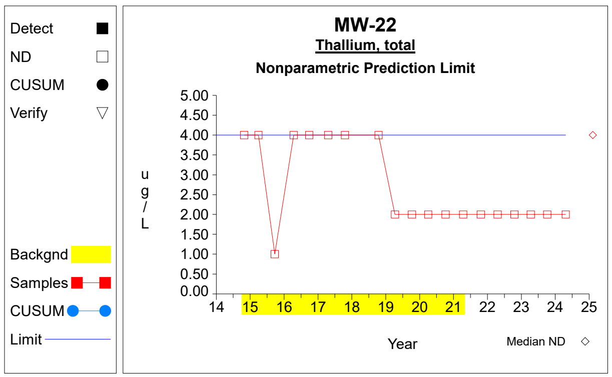
Graph 100



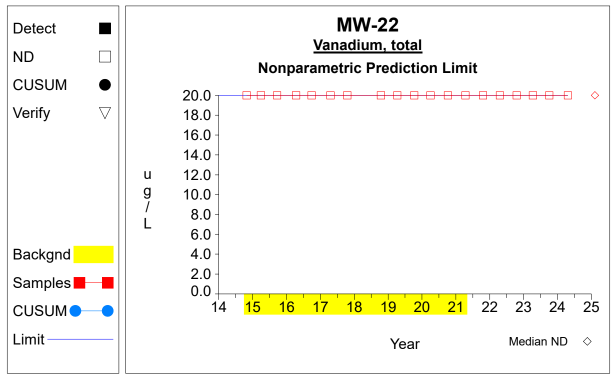
Graph 101



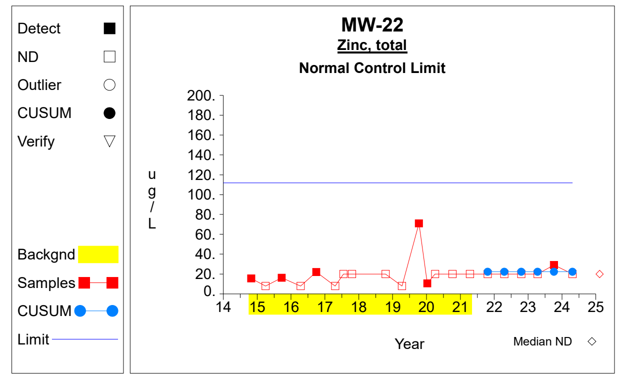
Graph 102



Graph 103



Graph 104



Graph 105

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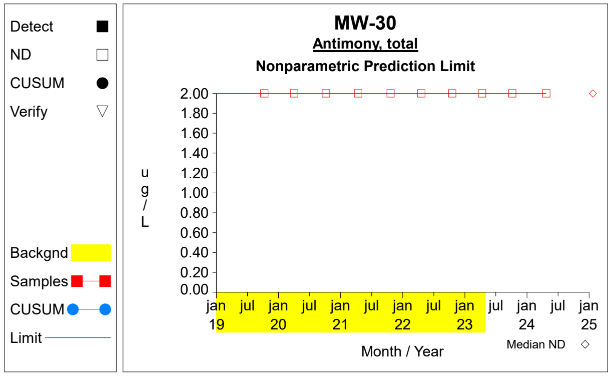
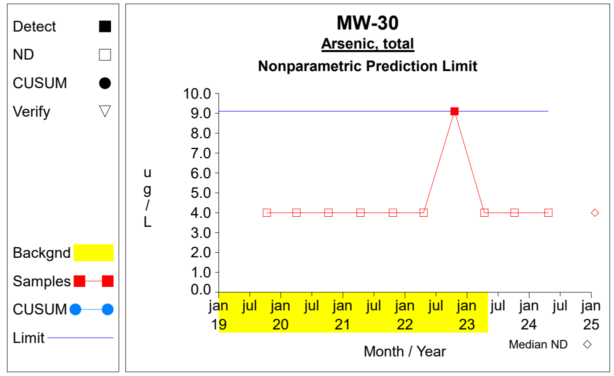
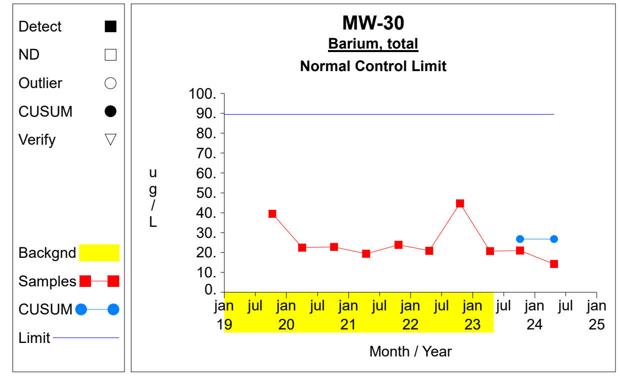
Intra-Well Control Charts / Prediction Limits



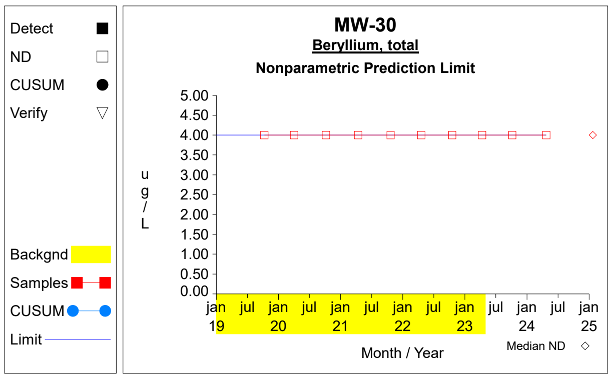
Graph 106



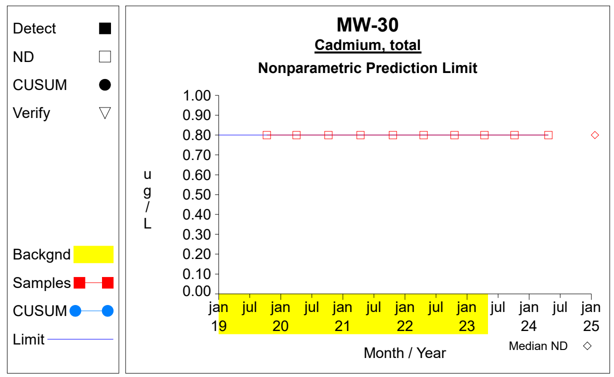
Graph 107



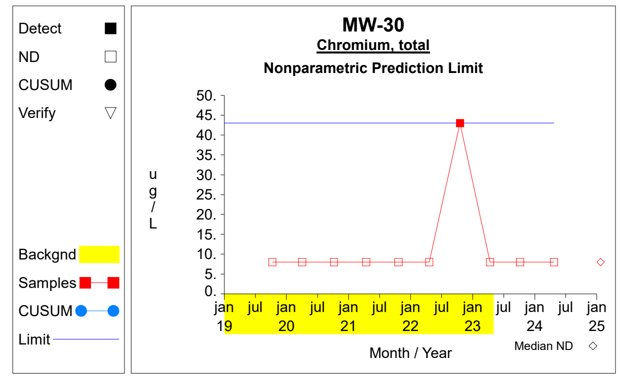
Graph 108



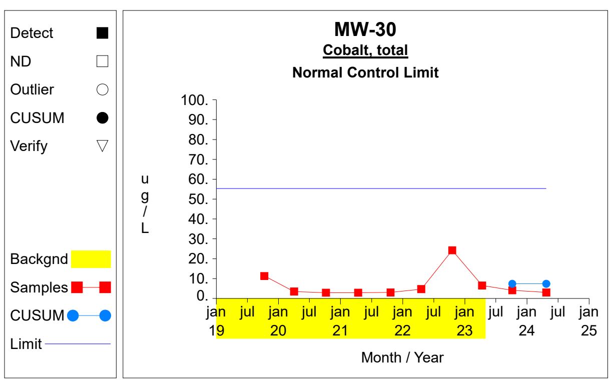
Graph 109



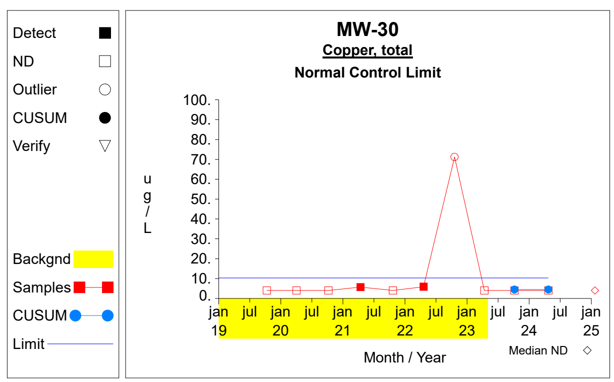
Graph 110



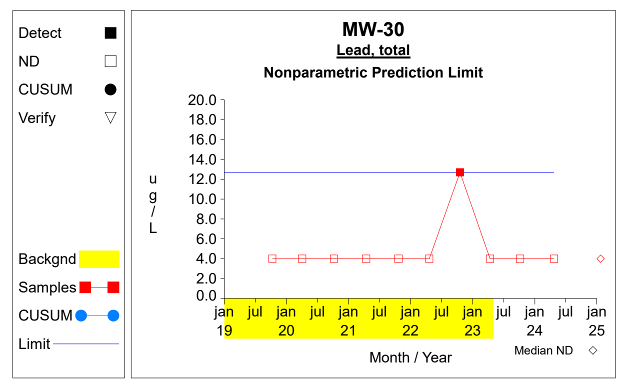
Graph 111



Graph 112



Graph 113



Graph 114

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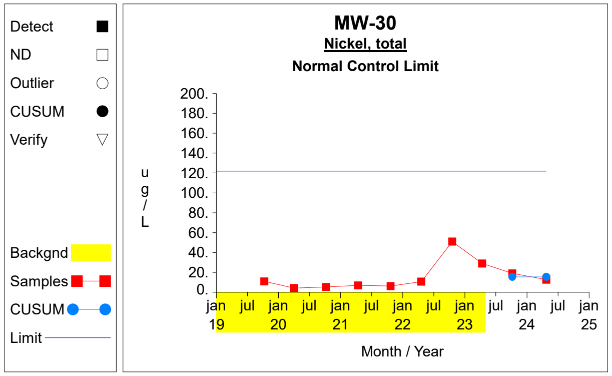
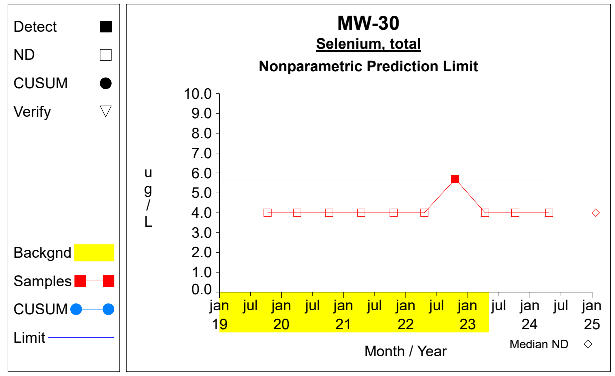
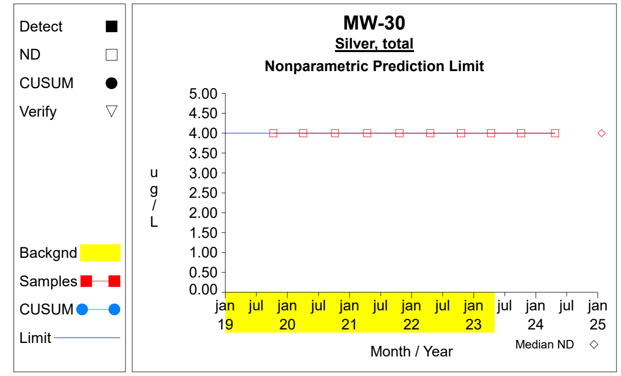
Intra-Well Control Charts / Prediction Limits



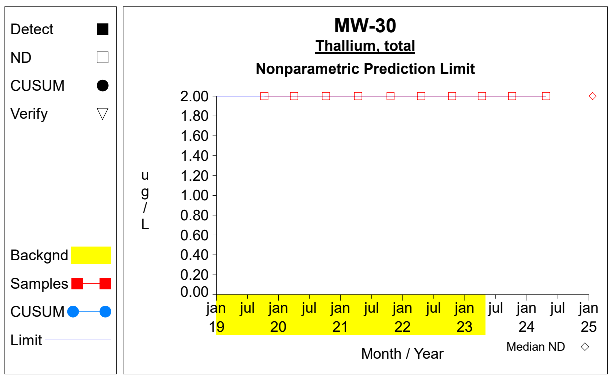
Graph 115



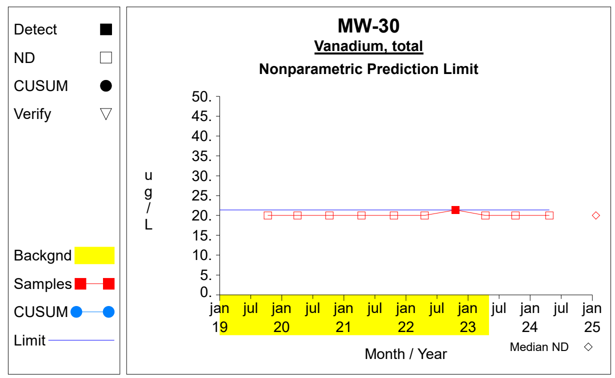
Graph 116



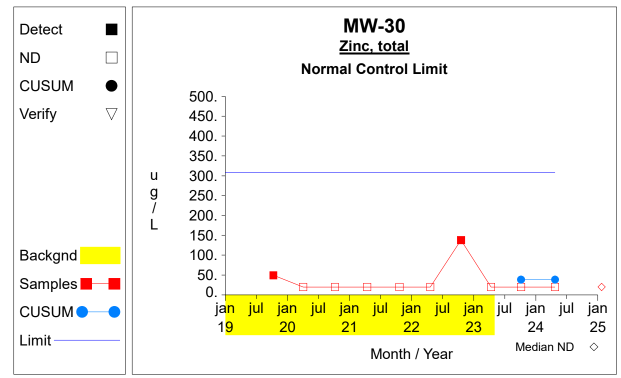
Graph 117



Graph 118

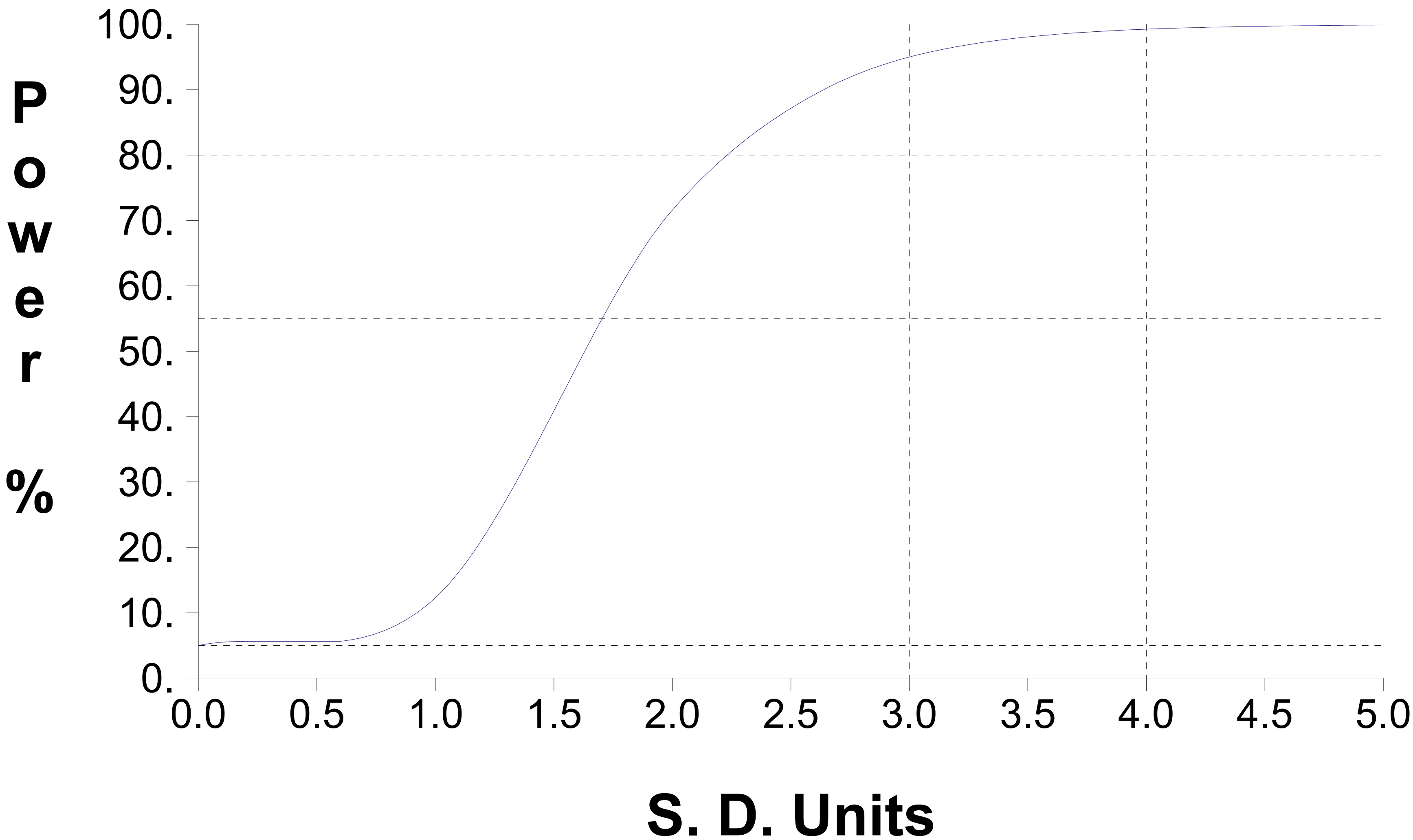


Graph 119



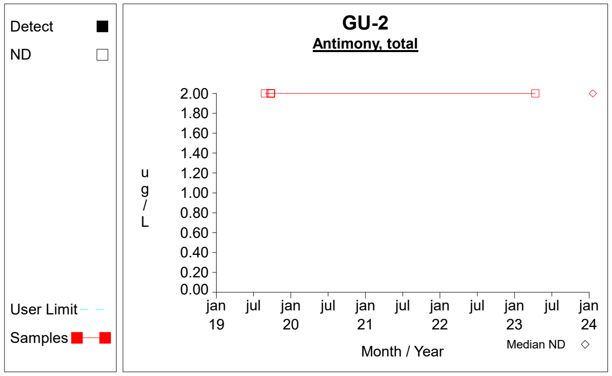
Graph 120

False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program

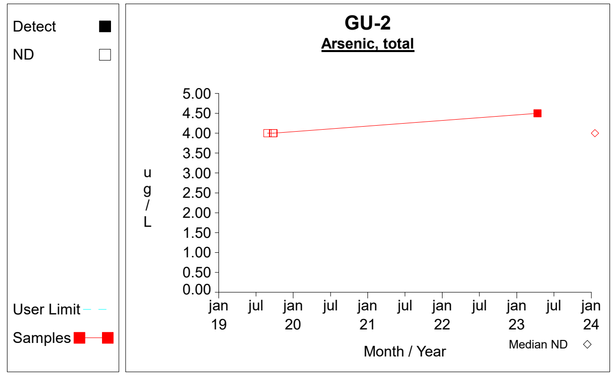


North Central Iowa [GWHIST] May 2024

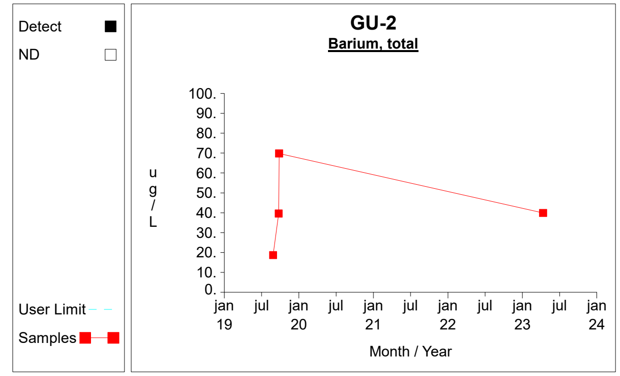
Time Series



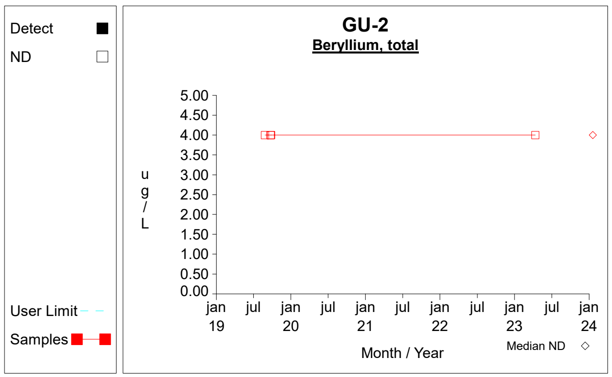
Graph 1



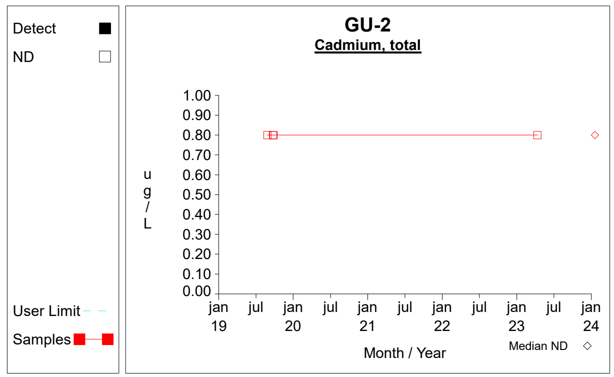
Graph 2



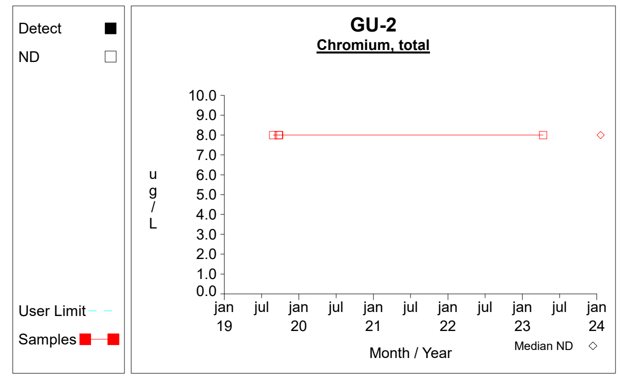
Graph 3



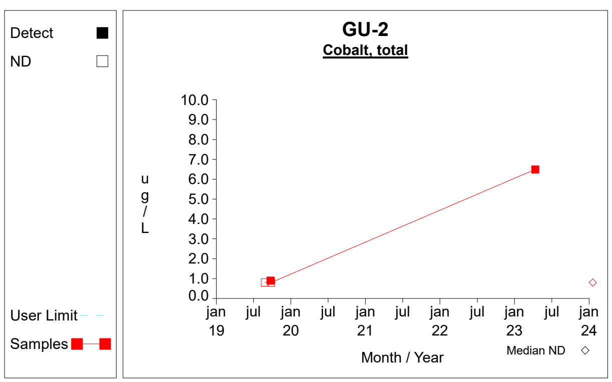
Graph 4



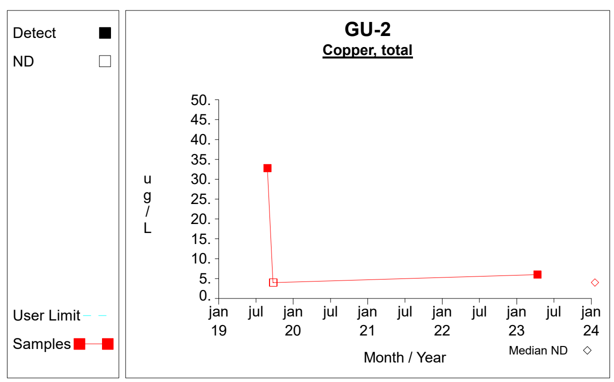
Graph 5



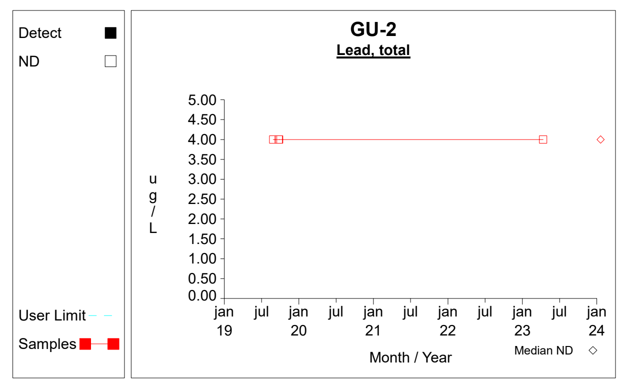
Graph 6



Graph 7



Graph 8



Graph 9

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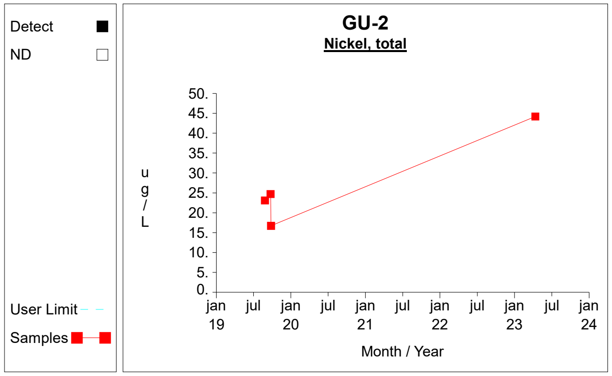
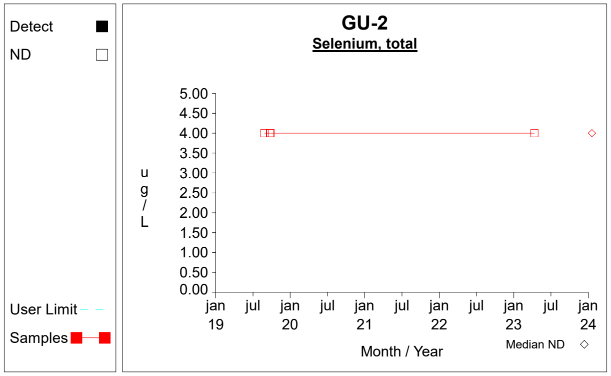
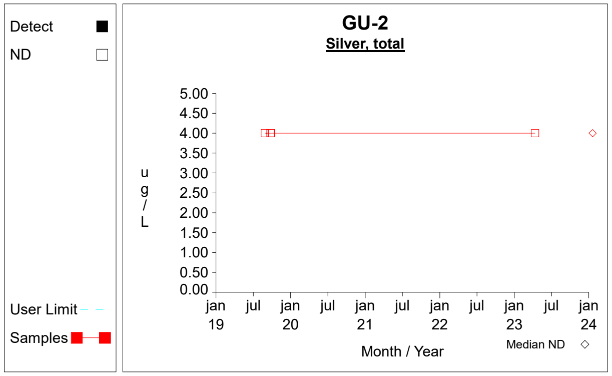
Time Series



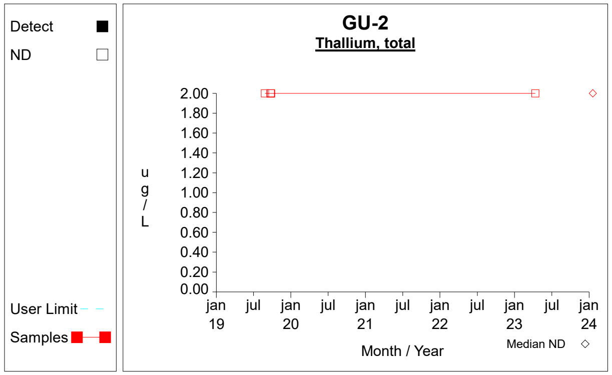
Graph 10



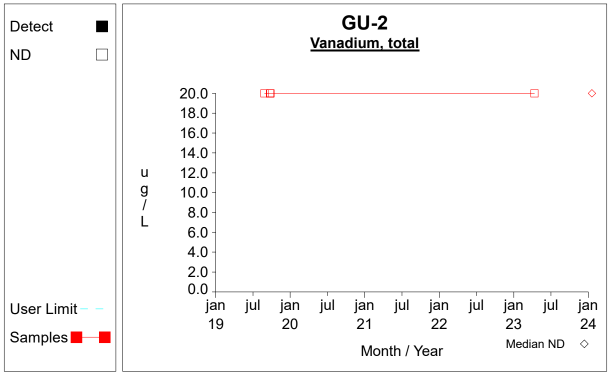
Graph 11



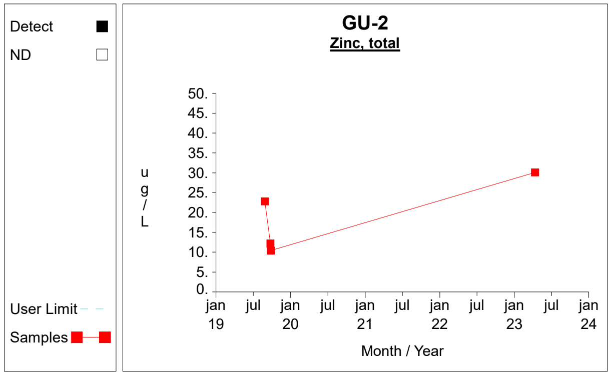
Graph 12



Graph 13

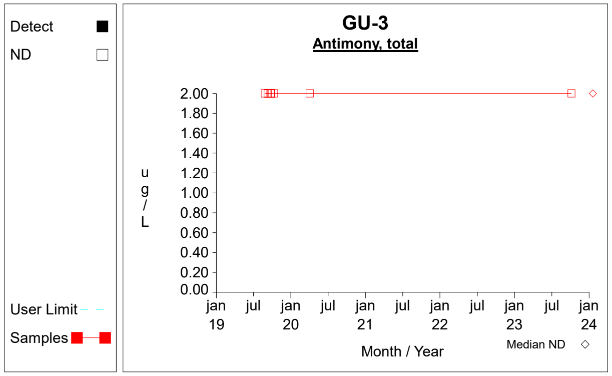


Graph 14

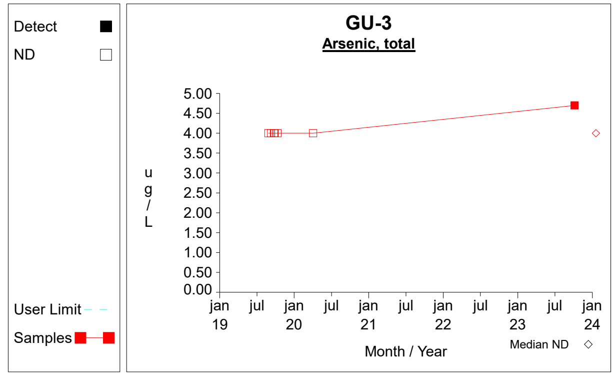


Graph 15

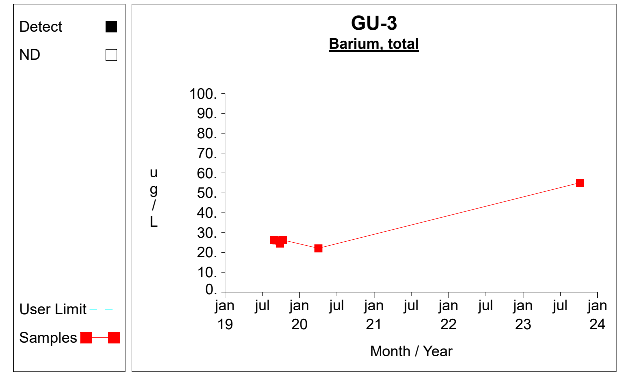
Time Series



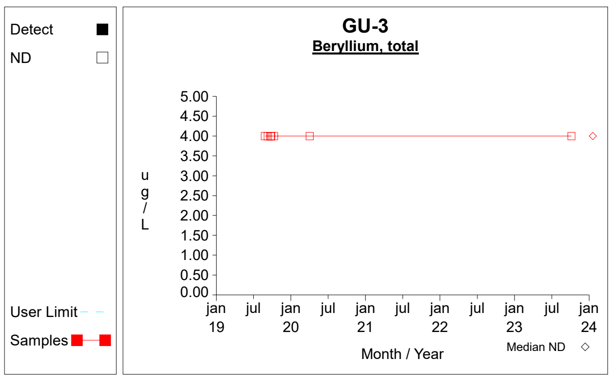
Graph 16



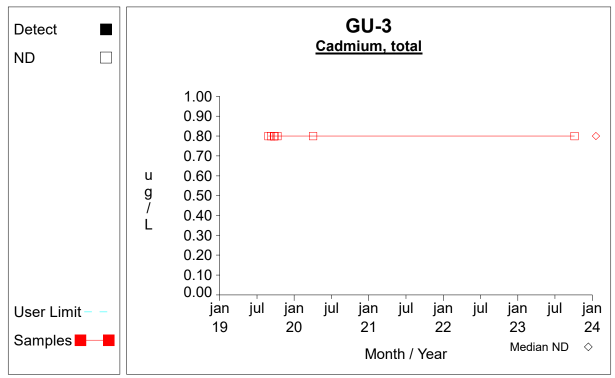
Graph 17



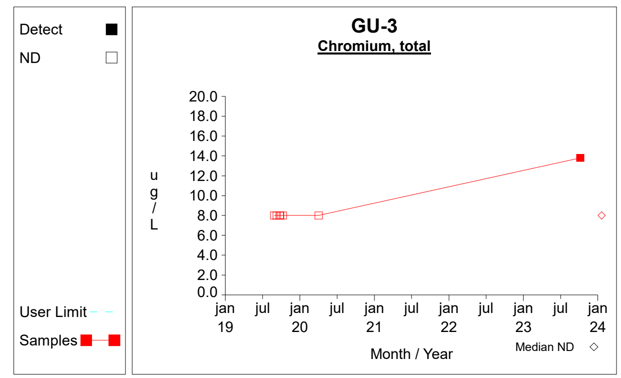
Graph 18



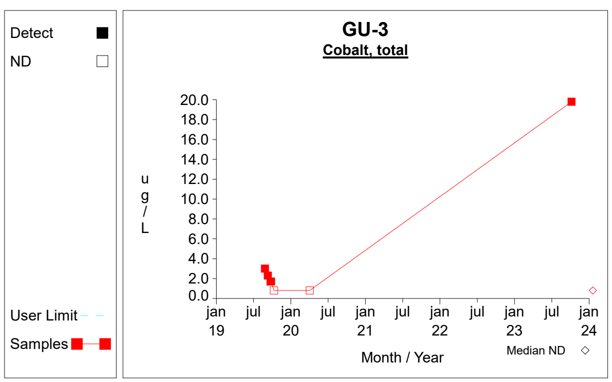
Graph 19



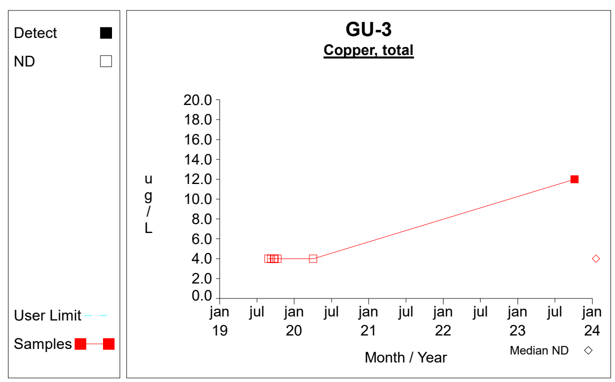
Graph 20



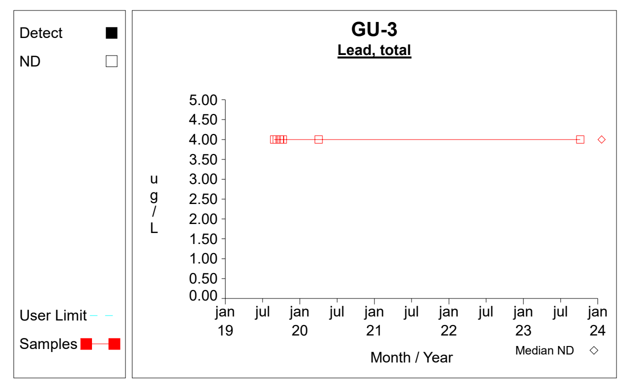
Graph 21



Graph 22

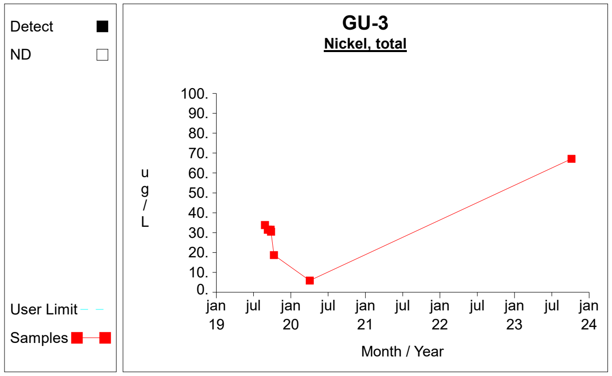


Graph 23

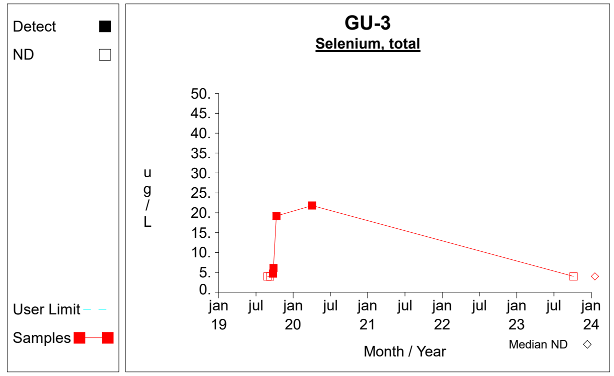


Graph 24

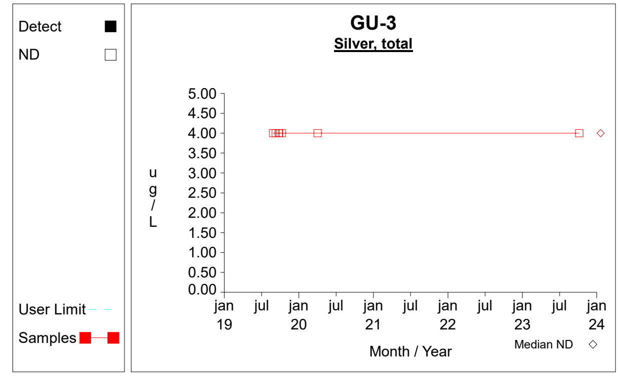
Time Series



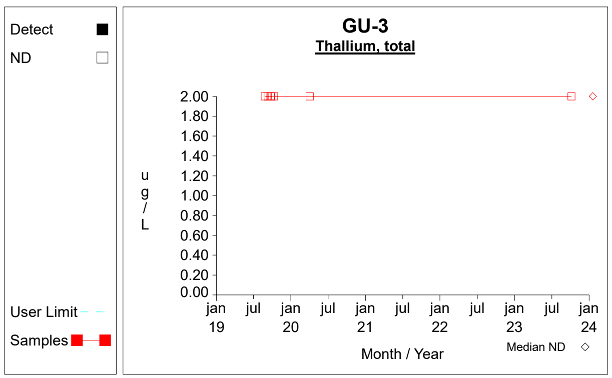
Graph 25



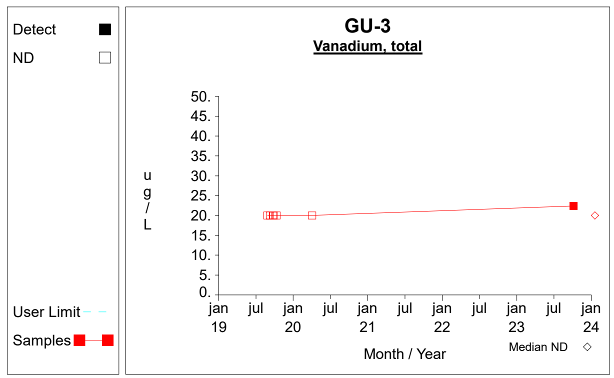
Graph 26



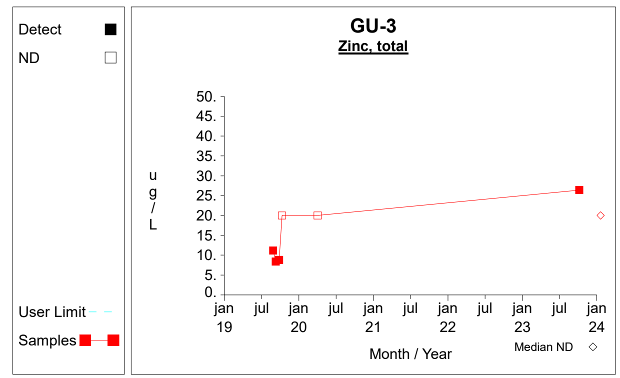
Graph 27



Graph 28

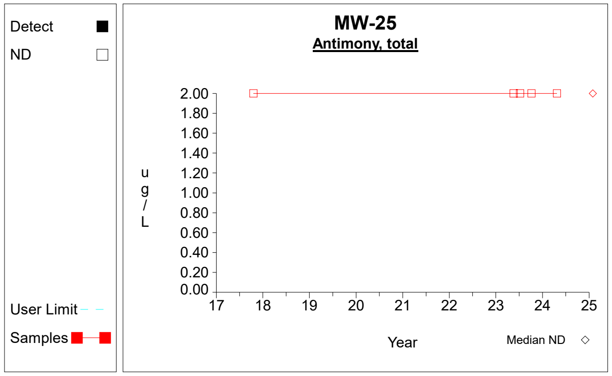


Graph 29

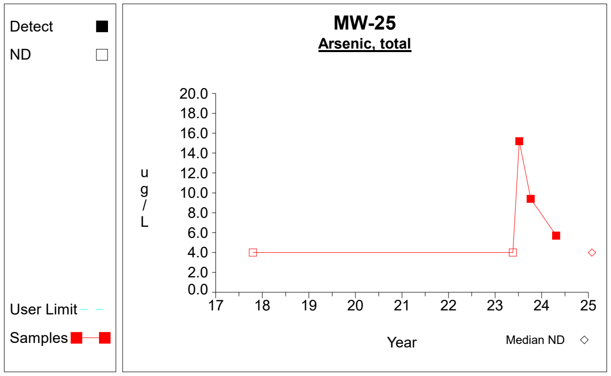


Graph 30

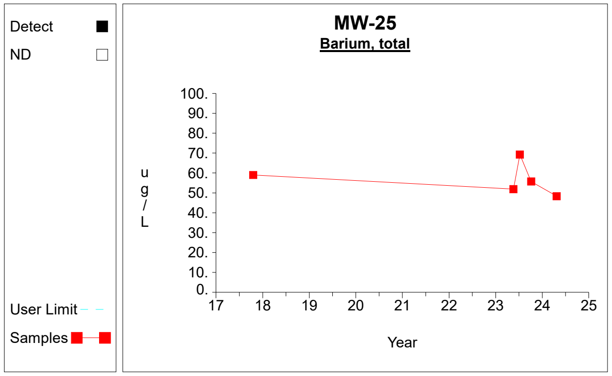
Time Series



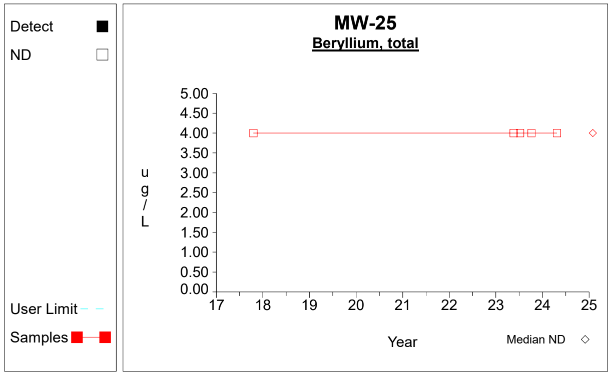
Graph 31



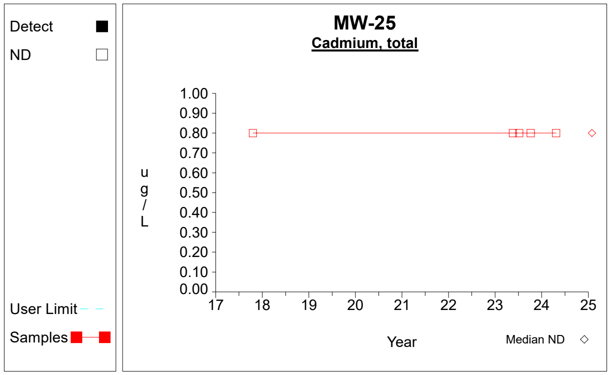
Graph 32



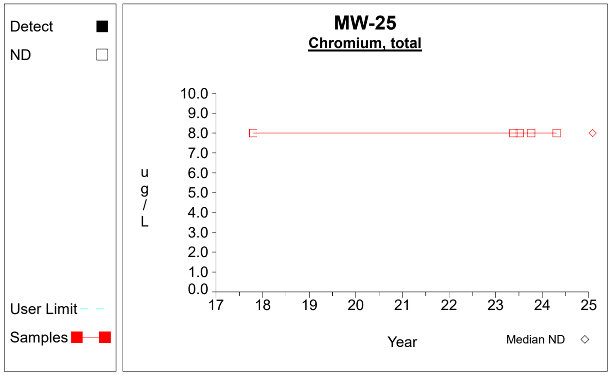
Graph 33



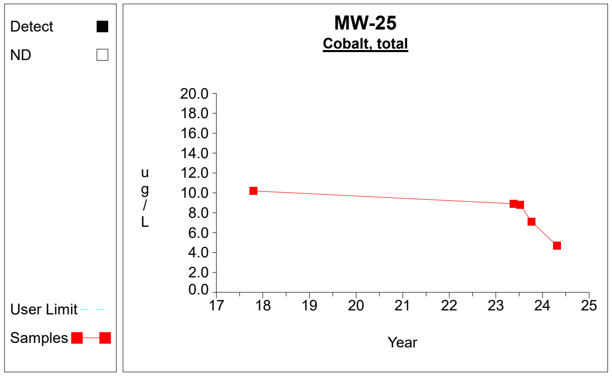
Graph 34



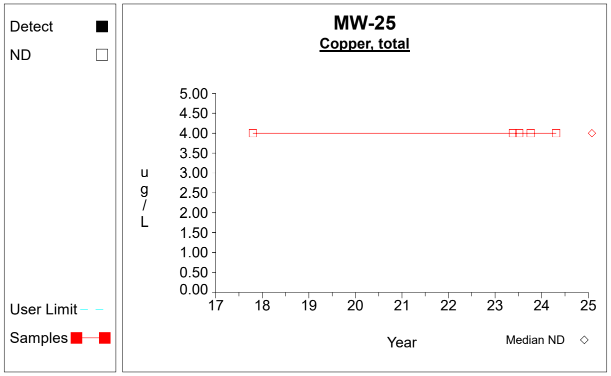
Graph 35



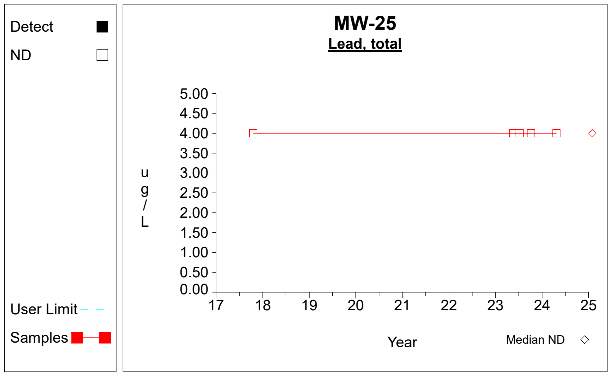
Graph 36



Graph 37

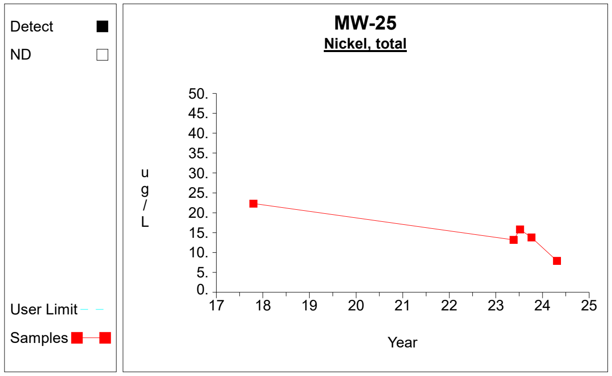


Graph 38

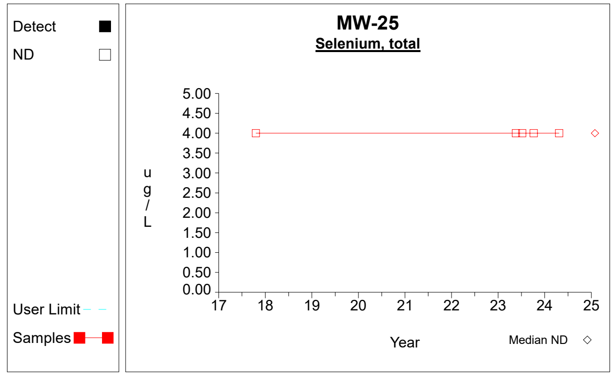


Graph 39

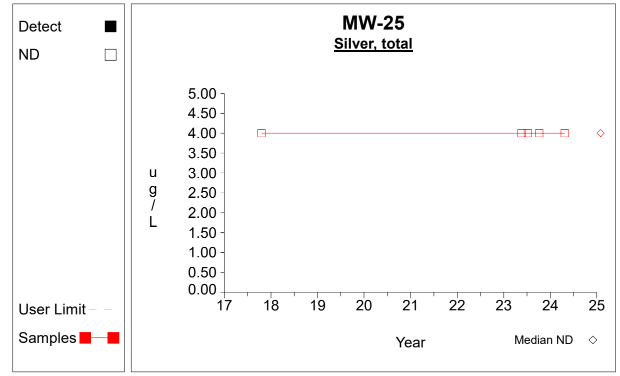
Time Series



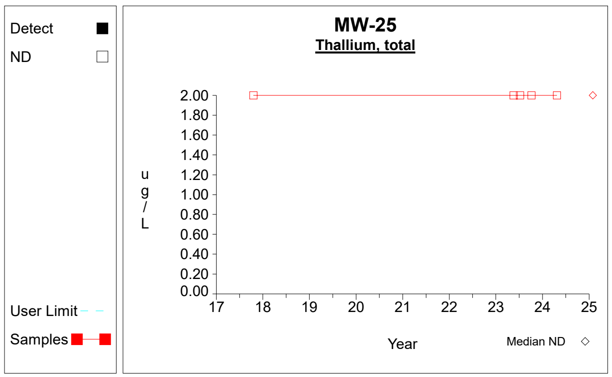
Graph 40



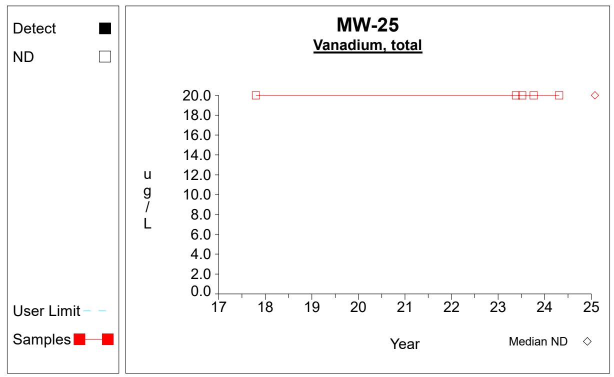
Graph 41



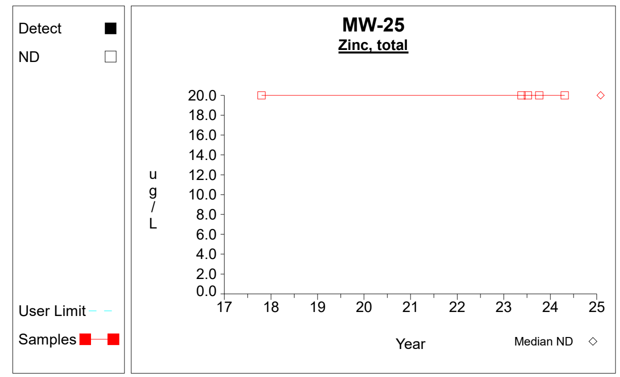
Graph 42



Graph 43

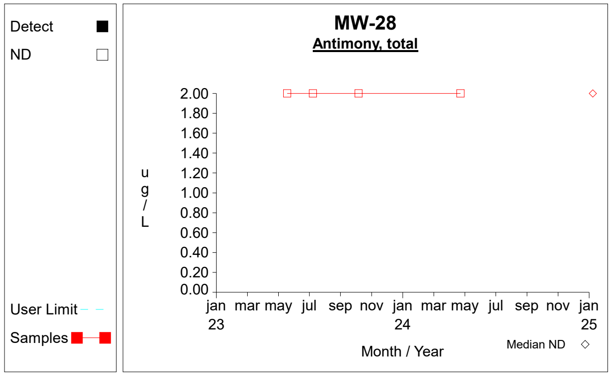


Graph 44

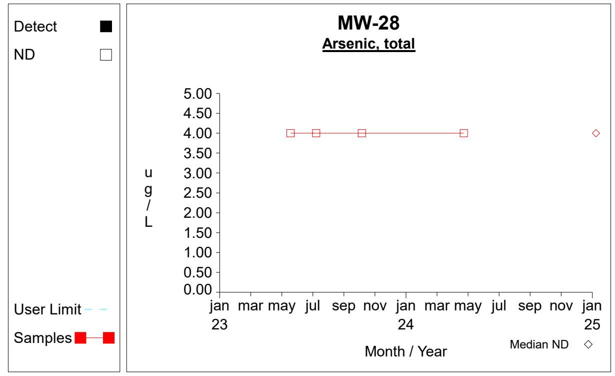


Graph 45

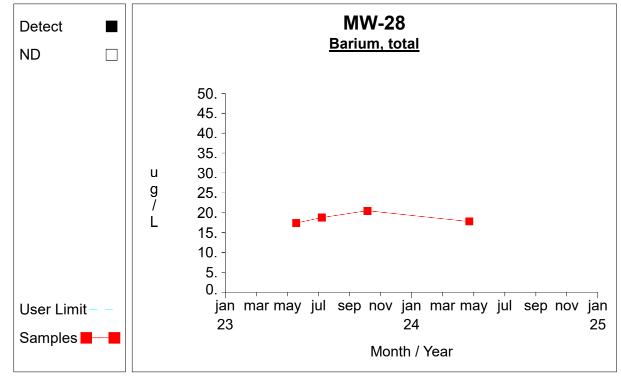
Time Series



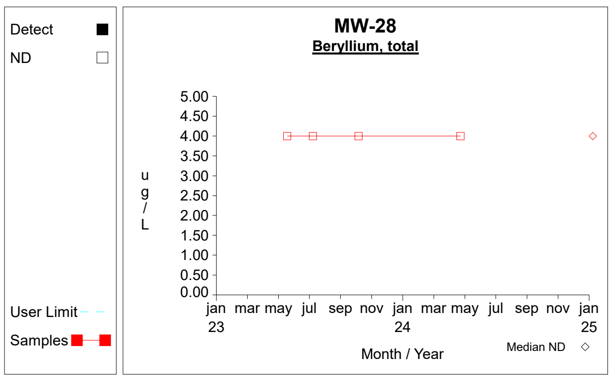
Graph 46



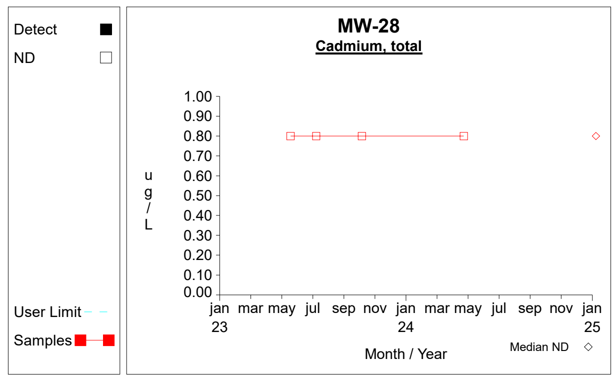
Graph 47



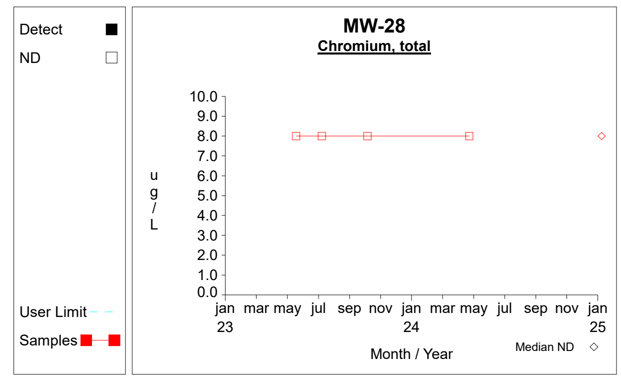
Graph 48



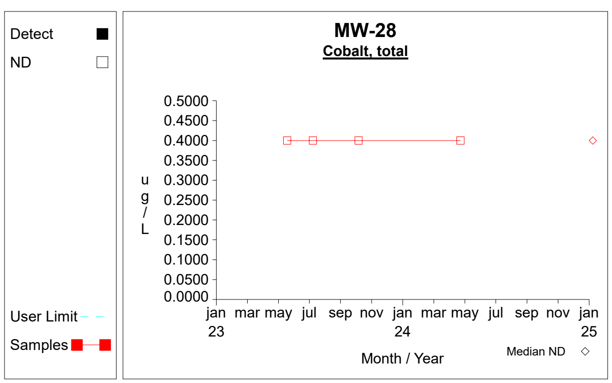
Graph 49



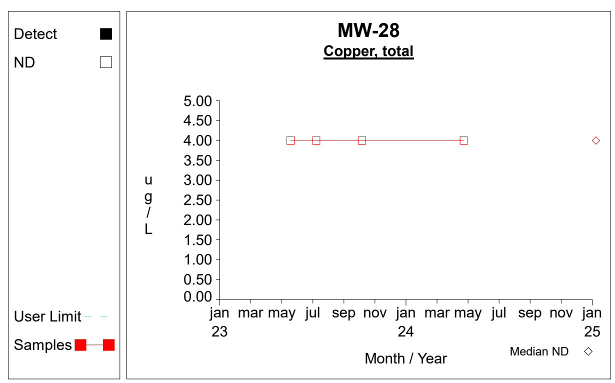
Graph 50



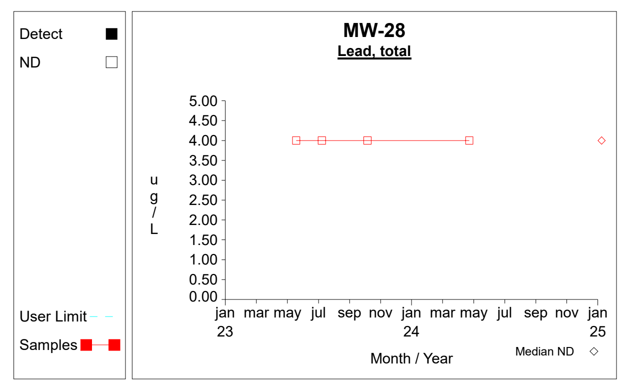
Graph 51



Graph 52



Graph 53



Graph 54

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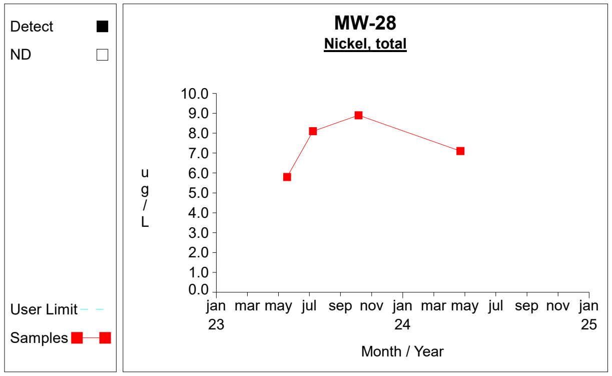
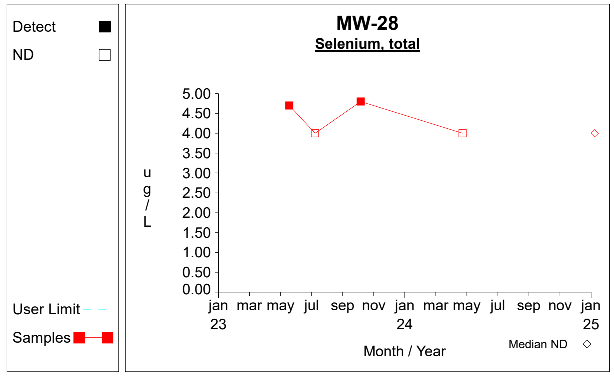
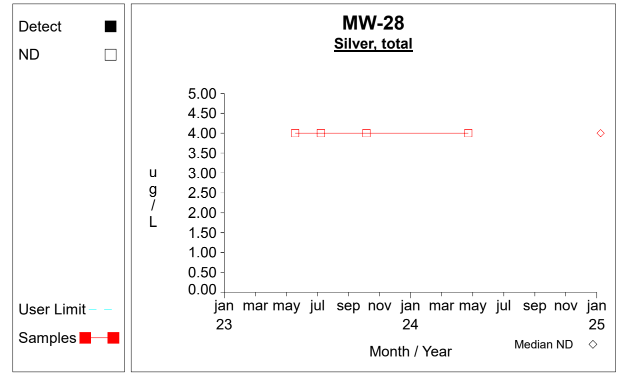
Time Series



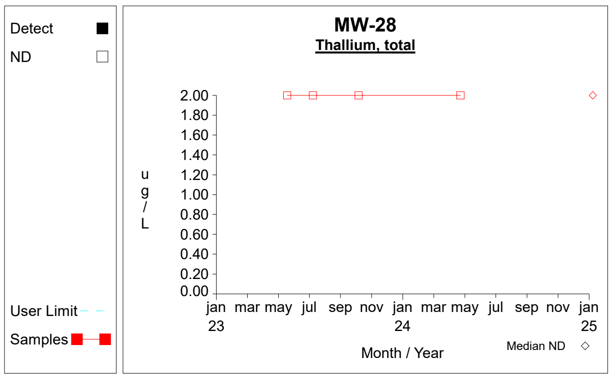
Graph 55



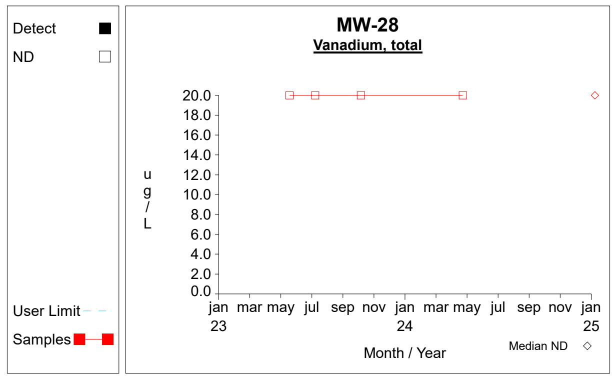
Graph 56



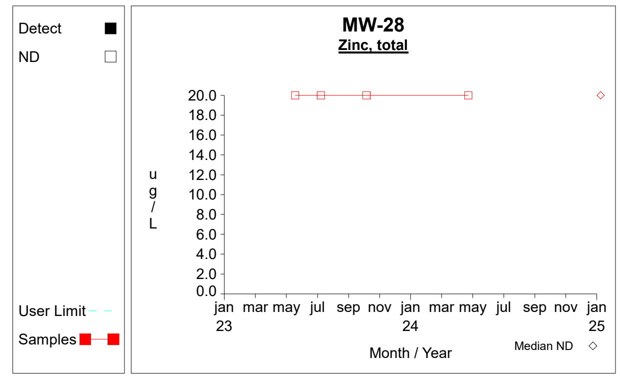
Graph 57



Graph 58



Graph 59



Graph 60

Attachment C

Assessment Statistics for Trace Metals

Table 1

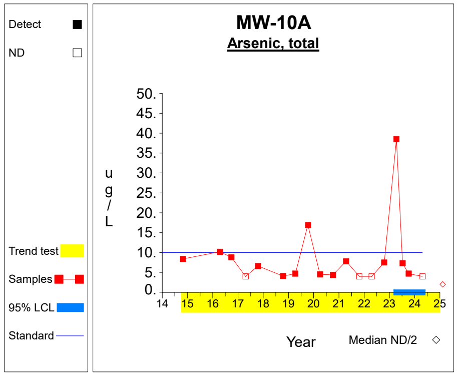
Confidence Intervals for Comparing the Mean of the Last 4 Measurements to an Assessment Monitoring Standard

Constituent	Units	Well	N	Mean	SD	Factor	95% LCL	95% UCL	Standard	Trend	
Arsenic, total	ug/L	MW-10A	4	13.125	17.054	1.176	0.000	33.186	10.000		
Cobalt, total	ug/L	MW-10A	4	1.950	2.098	1.176	0.000	4.418	2.100		
Copper, total	ug/L	MW-10A	4	5.575	7.150	1.176	0.000	13.985	1300.000		
Nickel, total	ug/L	MW-10A	4	8.000	9.749	1.176	0.000	19.467	100.000		
Arsenic, total	ug/L	MW-18	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-18	4	56.300	11.708	1.176	42.528	70.072	2.100		**
Copper, total	ug/L	MW-18	4	2.000	0.000	1.176	2.000	2.000	1300.000		
Nickel, total	ug/L	MW-18	4	43.025	4.357	1.176	37.900	48.150	100.000		
Arsenic, total	ug/L	MW-19	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-19	4	4.125	4.785	1.176	0.000	9.753	2.100	dec	
Copper, total	ug/L	MW-19	4	2.000	0.000	1.176	2.000	2.000	1300.000		
Nickel, total	ug/L	MW-19	4	13.375	13.274	1.176	0.000	28.989	100.000	dec	
Arsenic, total	ug/L	MW-20	4	15.350	7.913	1.176	6.042	24.658	10.000		
Cobalt, total	ug/L	MW-20	4	2.975	1.047	1.176	1.744	4.206	2.100	dec	
Copper, total	ug/L	MW-20	4	2.750	1.500	1.176	0.986	4.514	1300.000		
Nickel, total	ug/L	MW-20	4	5.325	1.345	1.176	3.743	6.907	100.000	dec	
Arsenic, total	ug/L	MW-21R	4	10.150	3.911	1.176	5.549	14.751	10.000		
Cobalt, total	ug/L	MW-21R	4	15.350	6.329	1.176	7.905	22.795	2.100		**
Copper, total	ug/L	MW-21R	4	2.000	0.000	1.176	2.000	2.000	1300.000		
Nickel, total	ug/L	MW-21R	4	20.950	5.679	1.176	14.270	27.630	100.000	dec	
Arsenic, total	ug/L	MW-22	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-22	4	0.675	0.550	1.176	0.028	1.322	2.100		
Copper, total	ug/L	MW-22	4	3.650	3.300	1.176	0.000	7.532	1300.000		
Nickel, total	ug/L	MW-22	4	22.650	35.797	1.176	0.000	64.758	100.000		
Arsenic, total	ug/L	MW-30	4	3.775	3.550	1.176	0.000	7.951	10.000		
Cobalt, total	ug/L	MW-30	4	9.450	9.941	1.176	0.000	21.144	2.100		
Copper, total	ug/L	MW-30	4	19.300	34.600	1.176	0.000	60.000	1300.000		
Nickel, total	ug/L	MW-30	4	27.925	16.784	1.176	8.183	47.667	100.000		

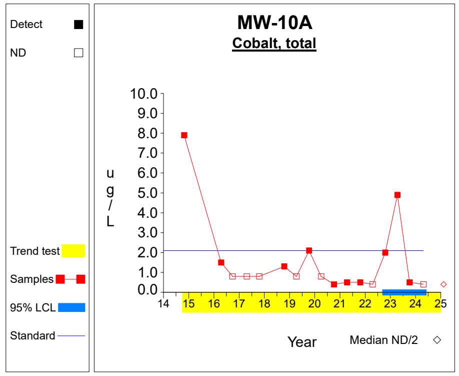
* - Insufficient Data
** - Significant Exceedance
LCL = Lower Confidence Limit
UCL = Upper Confidence Limit

North Central Iowa [GW] May 2024

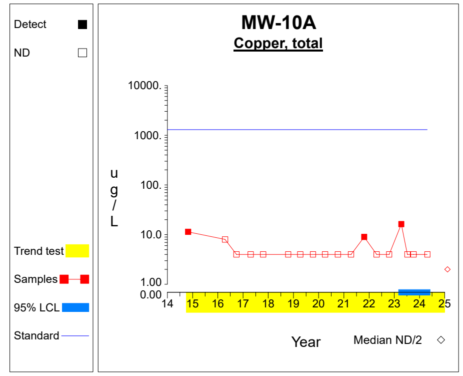
Confidence Limits (Assessment)



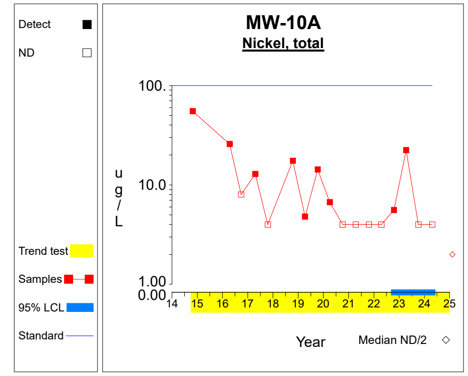
Graph 1



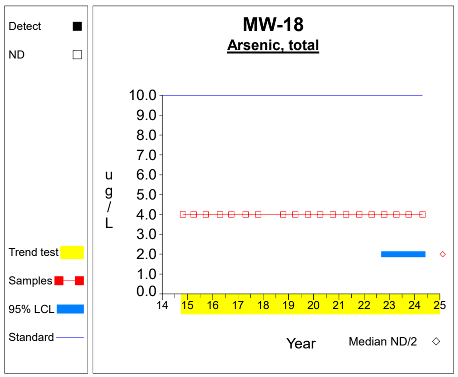
Graph 2



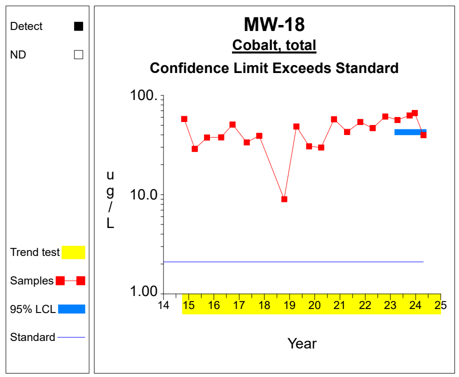
Graph 3



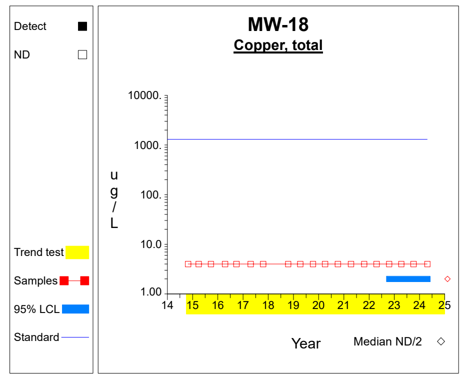
Graph 4



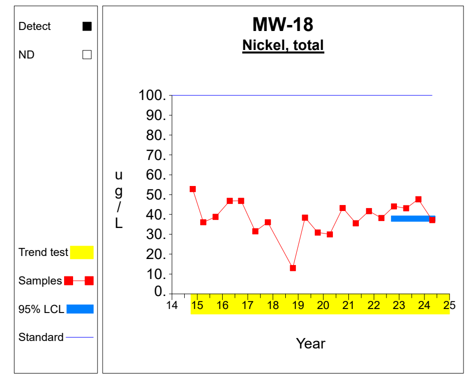
Graph 5



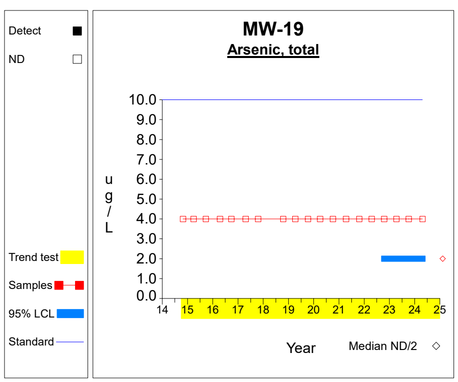
Graph 6



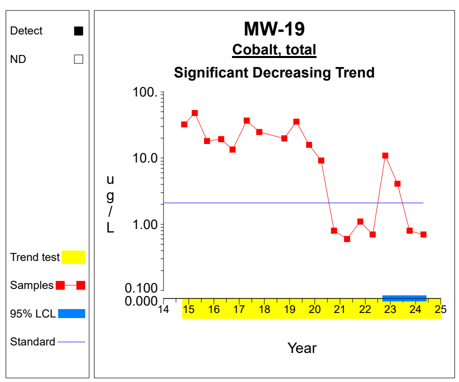
Graph 7



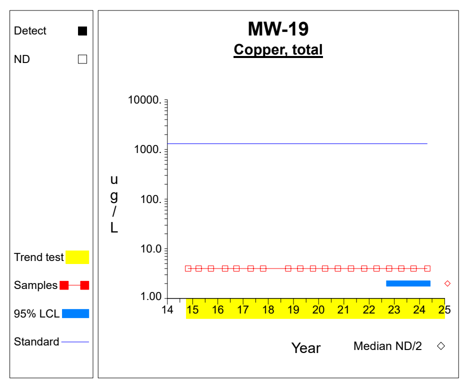
Graph 8



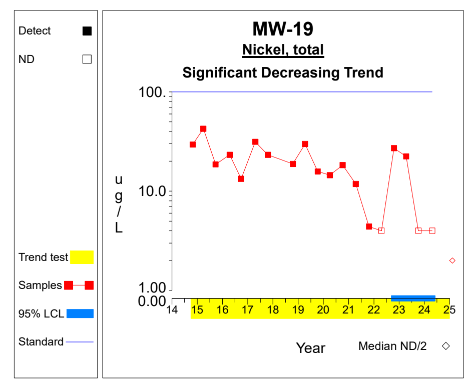
Graph 9



Graph 10



Graph 11



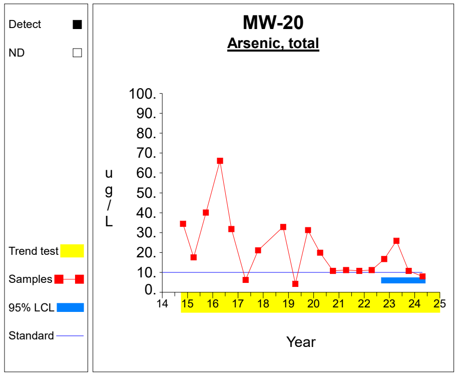
Graph 12

Prepared by: Otter Creek Environmental

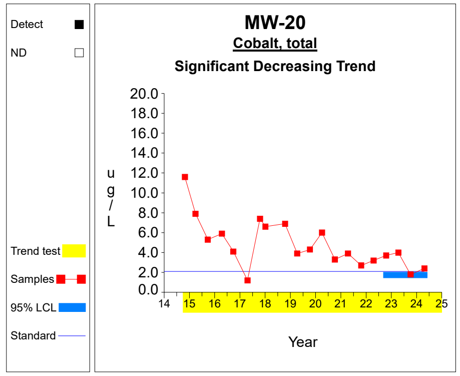
North Central Iowa [GW]

May 2024

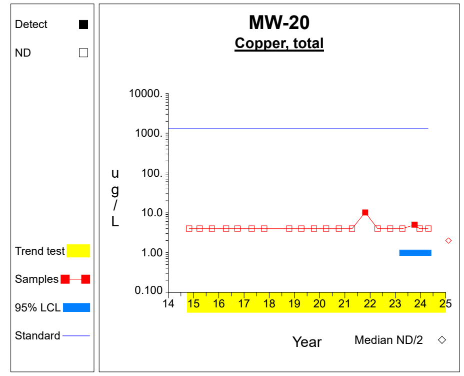
Confidence Limits (Assessment)



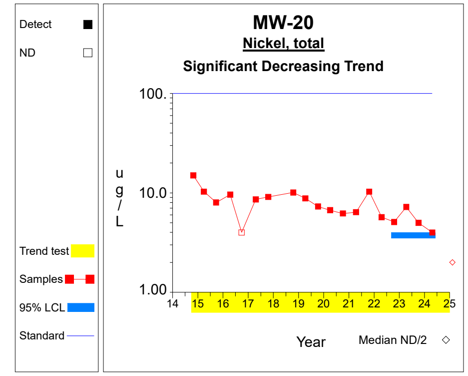
Graph 13



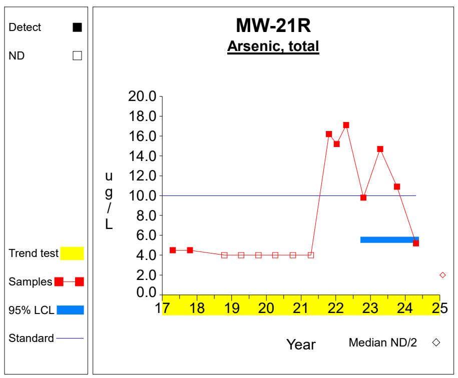
Graph 14



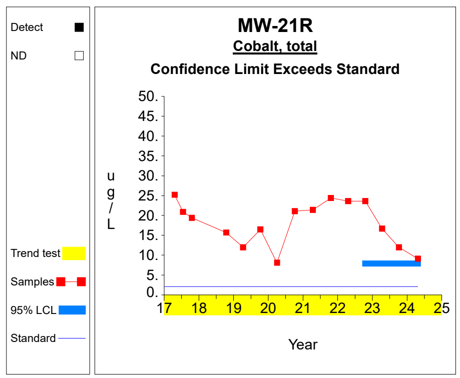
Graph 15



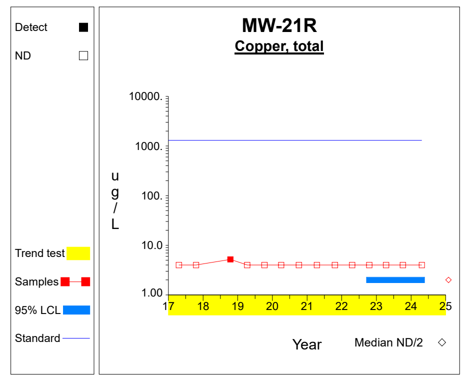
Graph 16



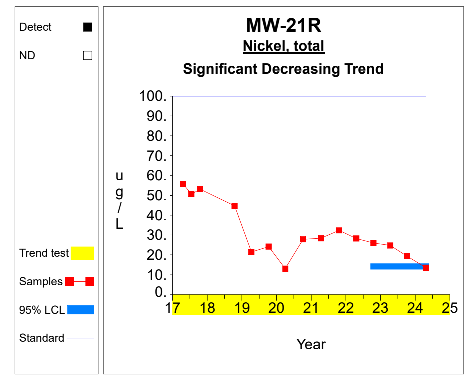
Graph 17



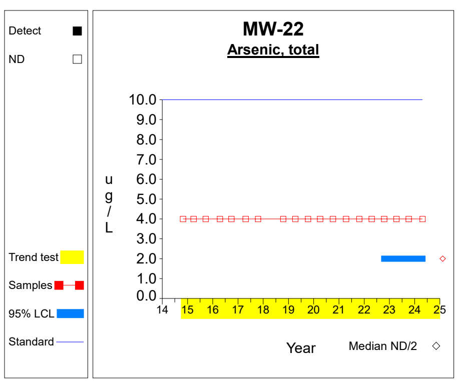
Graph 18



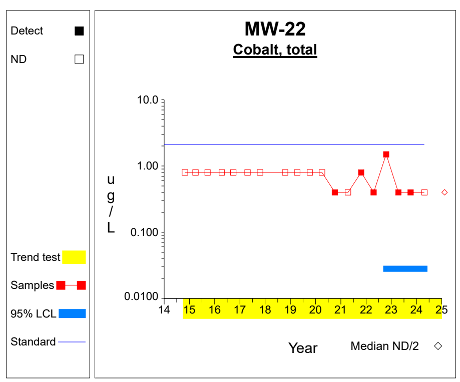
Graph 19



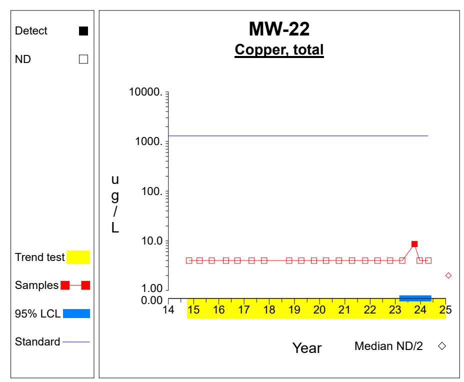
Graph 20



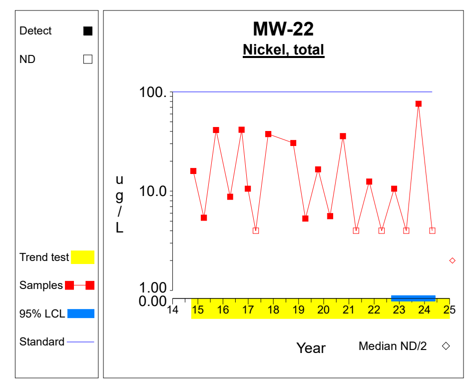
Graph 21



Graph 22



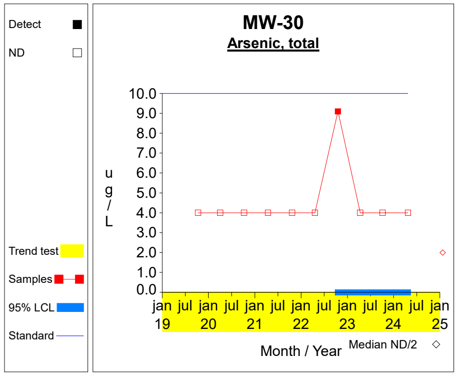
Graph 23



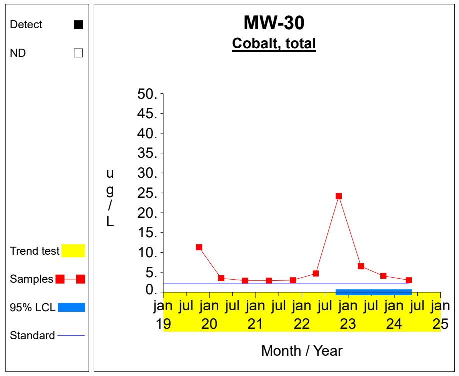
Graph 24

Prepared by: Otter Creek Environmental

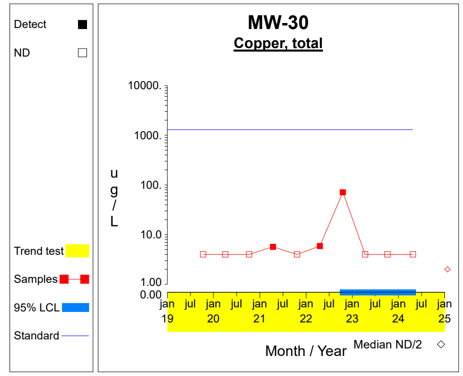
Confidence Limits (Assessment)



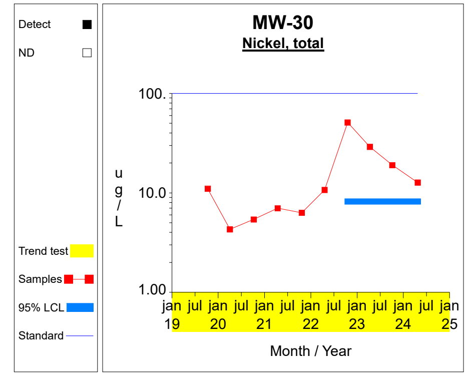
Graph 25



Graph 26



Graph 27



Graph 28

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-10A

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **52.5** / **4** = **13.125**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**1561.63 - 2756.25/4**) / (**4**-1))^{½} = **17.054**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N^{½}** = **13.125** - **2.353** * **17.054/4^{½}** = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N^{½}** = **13.125** + **2.353** * **17.054/4^{½}** = **33.186**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
6	S = **-0.224**	Sen's estimator of trend.
7	var(S) = **687.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **$Z_{.995}$** * **var(S)^{½}**) / 2 = (**153** ± **2.576** * **687.333^{½}**) / 2 = [**42.732**, **110.268**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-1.225**, **0.85**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-10A

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **7.8** / **4** = **1.95**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**28.42 - 60.84/4**) / (**4**-1))^{½} = **2.098**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N^{½}** = **1.95** - **2.353** * **2.098/4^{½}** = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N^{½}** = **1.95** + **2.353** * **2.098/4^{½}** = **4.418**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **17** * (**17**-1) / 2 = **136**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **520.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **$Z_{.995}$** * **var(S)^{½}**) / 2 = (**136** ± **2.576** * **520.333^{½}**) / 2 = [**38.62**, **97.38**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.25**, **0.043**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-10A

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **22.3** / **4** = **5.575**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**277.69** - **497.29/4**) / (**4**-1))$^{1/2}$ = **7.15**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**$^{1/2}$ = **5.575 - 2.353 * 7.15/4**$^{1/2}$ = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N**$^{1/2}$ = **5.575 + 2.353 * 7.15/4**$^{1/2}$ = **13.985**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **288.667**	Variance estimate for slope.
8	M(S) = (**N' ± $Z_{.995}$ * var(S)**$^{1/2}$) / 2 = (**153 ± 2.576 * 288.667**$^{1/2}$) / 2 = [**54.617**, **98.383**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-10A

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **32.0** / **4** = **8.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**541.12** - **1024.0/4**) / (**4**-1))$^{1/2}$ = **9.749**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N$^{1/2}$** = **8.0** - **2.353** * **9.749/4$^{1/2}$** = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS/N$^{1/2}$** = **8.0** + **2.353** * **9.749/4$^{1/2}$** = **19.467**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **17** * (**17**-1) / 2 = **136**	Number of sample pairs during trend detection period.
6	S = **-1.334**	Sen's estimator of trend.
7	var(S) = **524.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z$_{.995}$** * **var(S)$^{1/2}$**) / 2 = (**136** ± **2.576** * **524.0$^{1/2}$**) / 2 = [**38.516**, **97.484**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-4.363**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-18

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **8.0** / **4** = **2.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**16.0** - **64.0/4**) / (**4**-1))^{½} = **0.0**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **2.0** - **2.353** * **0.0/4**^{½} = **2.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N**^{½} = **2.0** + **2.353** * **0.0/4**^{½} = **2.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **0.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**171** ± **2.576** * **0.0**^{½}) / 2 = [**85.5**, **85.5**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-18

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **225.2** / **4** = **56.3**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**13090.02** - **50715.04**/**4**) / (**4**-1))^{½} = **11.708**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N^{½}** = **56.3** - **2.353** * **11.708**/**4**^{½} = **42.528**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS/N^{½}** = **56.3** + **2.353** * **11.708**/**4**^{½} = **70.072**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **2.387**	Sen's estimator of trend.
7	var(S) = **950.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**190** ± **2.576** * **950.0**^{½}) / 2 = [**55.301**, **134.699**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.705**, **4.891**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-18

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **8.0** / **4** = **2.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**16.0** - **64.0/4**) / (**4**-1))^{½} = **0.0**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N^{½}** = **2.0** - **2.353** * **0.0/4^{½}** = **2.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$ + tS/N^{½}** = **2.0** + **2.353** * **0.0/4^{½}** = **2.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **0.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**171** ± **2.576** * **0.0**^{½}) / 2 = [**85.5**, **85.5**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-18

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **172.1** / **4** = **43.025**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**7461.55** - **29618.41**/**4**) / (**4**-1))$^{1/2}$ = **4.357**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**$^{1/2}$ = **43.025** - **2.353** * **4.357**/**4**$^{1/2}$ = **37.9**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**$^{1/2}$ = **43.025** + **2.353** * **4.357**/**4**$^{1/2}$ = **48.15**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.12**	Sen's estimator of trend.
7	var(S) = **816.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**171** ± **2.576** * **816.0**$^{1/2}$) / 2 = [**48.707**, **122.293**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-1.667**, **2.273**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-19

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{8.0} / \mathbf{4}$ $= \mathbf{2.0}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{16.0} - \mathbf{64.0/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{0.0}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{\mathbf{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} - \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{\mathbf{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} + \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{19} * (\mathbf{19}-1) / 2$ $= \mathbf{171}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{0.0}$	Sen's estimator of trend.
7	$var(S) = \mathbf{0.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{171} \pm \mathbf{2.576} * \mathbf{0.0}^{1/2}) / 2$ $= [\ \mathbf{85.5}, \mathbf{85.5}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{0.0}, \mathbf{0.0}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-19

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **16.5** / **4** = **4.125**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X²] - sum[X]²/N**) / (**N**-1))^{½} = ((**136.75** - **272.25/4**) / (**4**-1))^{½} = **4.785**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **4.125** - **2.353** * **4.785/4**^{½} = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS/N**^{½} = **4.125** + **2.353** * **4.785/4**^{½} = **9.753**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **-3.339**	Sen's estimator of trend.
7	var(S) = **815.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**171** ± **2.576** * **815.0**^{½}) / 2 = [**48.73**, **122.27**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-6.452**, **-1.265**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-19

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **8.0** / **4** = **2.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**16.0** - **64.0**/**4**) / (**4**-1))^{½} = **0.0**	Compute sd of the last 4 measurements.
3	LCL = $\overline{X}$ - **tS**/**N**^{½} = **2.0** - **2.353** * **0.0**/**4**^{½} = **2.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{X}$ + **tS**/**N**^{½} = **2.0** + **2.353** * **0.0**/**4**^{½} = **2.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **0.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**171** ± **2.576** * **0.0**^{½}) / 2 = [**85.5**, **85.5**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-19

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **53.5** / **4** = **13.375**	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{1244.17} - \mathbf{2862.25/4}) / (\mathbf{4}-1))^{½}$ = **13.274**	Compute sd of the last 4 measurements.
3	$LCL = \overline{\mathbf{X}} - \mathbf{tS/N}^{½}$ $= \mathbf{13.375 - 2.353 * 13.274/4}^{½}$ = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \overline{\mathbf{X}} + \mathbf{tS/N}^{½}$ $= \mathbf{13.375 + 2.353 * 13.274/4}^{½}$ = **28.989**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **-2.741**	Sen's estimator of trend.
7	var(S) = **812.333**	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{171} \pm \mathbf{2.576} * \mathbf{812.333}^{½}) / 2$ = [**48.79**, **122.21**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-4.759**, **-0.291**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{61.4} / \mathbf{4}$ $= \mathbf{15.35}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{1130.34} - \mathbf{3769.96/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{7.913}$	Compute sd of the last 4 measurements.
3	$LCL = \overline{\mathbf{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{15.35} - \mathbf{2.353} * \mathbf{7.913/4}^{1/2}$ $= \mathbf{6.042}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \overline{\mathbf{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{15.35} + \mathbf{2.353} * \mathbf{7.913/4}^{1/2}$ $= \mathbf{24.658}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{19} * (\mathbf{19}-1) / 2$ $= \mathbf{171}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{-2.199}$	Sen's estimator of trend.
7	$var(S) = \mathbf{812.333}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{171} \pm \mathbf{2.576} * \mathbf{812.333}^{1/2}) / 2$ $= [\ \mathbf{48.79}, \mathbf{122.21}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{-5.153}, \mathbf{0.258}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **11.9** / **4** = **2.975**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**38.69** - **141.61**/**4**) / (**4**-1))^{½} = **1.047**	Compute sd of the last 4 measurements.
3	LCL = $\overline{\mathbf{X}}$ - **tS**/**N**^{½} = **2.975** - **2.353** * **1.047**/**4**^{½} = **1.744**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{\mathbf{X}}$ + **tS**/**N**^{½} = **2.975** + **2.353** * **1.047**/**4**^{½} = **4.206**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **-0.498**	Sen's estimator of trend.
7	var(S) = **949.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**190** ± **2.576** * **949.0**^{½}) / 2 = [**55.322**, **134.678**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.966**, **-0.18**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **11.0** / **4** = **2.75**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**37.0** - **121.0**/**4**) / (**4**-1))^{½} = **1.5**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**^{½} = **2.75** - **2.353** * **1.5**/**4**^{½} = **0.986**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**^{½} = **2.75** + **2.353** * **1.5**/**4**^{½} = **4.514**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **253.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**190** ± **2.576** * **253.0**^{½}) / 2 = [**74.513**, **115.487**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **21.3** / **4** = **5.325**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**118.85** - **453.69/4**) / (**4**-1))^{½} = **1.345**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **5.325** - **2.353** * **1.345/4**^{½} = **3.743**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N**^{½} = **5.325** + **2.353** * **1.345/4**^{½} = **6.907**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **-0.646**	Sen's estimator of trend.
7	var(S) = **816.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **$Z_{.995}$** * **var(S)**^{½}) / 2 = (**171** ± **2.576** * **816.0**^{½}) / 2 = [**48.707**, **122.293**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.977**, **-0.282**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-21R

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **40.6** / **4** = **10.15**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**457.98** - **1648.36**/**4**) / (**4**-1))^{½} = **3.911**	Compute sd of the last 4 measurements.
3	LCL = $\overline{X}$ - **tS**/**N**^{½} = **10.15** - **2.353** * **3.911**/**4**^{½} = **5.549**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{X}$ + **tS**/**N**^{½} = **10.15** + **2.353** * **3.911**/**4**^{½} = **14.751**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **15** * (**15**-1) / 2 = **105**	Number of sample pairs during trend detection period.
6	S = **0.964**	Sen's estimator of trend.
7	var(S) = **379.0**	Variance estimate for slope.
8	M(S) = (**N'** ± $Z_{.995}$ * **var(S)**^{½}) / 2 = (**105** ± **2.576** * **379.0**^{½}) / 2 = [**27.425**, **77.575**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.68**, **3.125**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-21R

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **61.4** / **4** = **15.35**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**1062.66** - **3769.96/4**) / (**4**-1))^{½} = **6.329**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **15.35** - **2.353** * **6.329/4**^{½} = **7.905**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS/N**^{½} = **15.35** + **2.353** * **6.329/4**^{½} = **22.795**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **15** * (**15**-1) / 2 = **105**	Number of sample pairs during trend detection period.
6	S = **-0.732**	Sen's estimator of trend.
7	var(S) = **406.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**105** ± **2.576** * **406.333**^{½}) / 2 = [**26.537**, **78.463**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-4.112**, **1.343**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-21R

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{8.0} / \mathbf{4}$ $= \mathbf{2.0}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{16.0} - \mathbf{64.0/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{0.0}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{\mathbf{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} - \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{\mathbf{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} + \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{14} * (\mathbf{14}-1) / 2$ $= \mathbf{91}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{0.0}$	Sen's estimator of trend.
7	$var(S) = \mathbf{65.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{91} \pm \mathbf{2.576} * \mathbf{65.0}^{1/2}) / 2$ $= [\ \mathbf{35.116}, \mathbf{55.884}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{0.0}, \mathbf{0.0}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-21R

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **83.8** / **4** = **20.95**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**1852.36** - **7022.44**/**4**) / (**4**-1))^{½} = **5.679**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**^{½} = **20.95** - **2.353** * **5.679**/**4**^{½} = **14.27**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**^{½} = **20.95** + **2.353** * **5.679**/**4**^{½} = **27.63**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **15** * (**15**-1) / 2 = **105**	Number of sample pairs during trend detection period.
6	S = **-5.088**	Sen's estimator of trend.
7	var(S) = **408.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**105** ± **2.576** * **408.333**^{½}) / 2 = [**26.473**, **78.527**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-7.386**, **-0.273**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-22

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **8.0** / **4** = **2.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X²] - sum[X]²/N**) / (**N**-1))$^{1/2}$ = ((**16.0** - **64.0/4**) / (**4**-1))$^{1/2}$ = **0.0**	Compute sd of the last 4 measurements.
3	LCL = $\overline{X}$ - **tS/N**$^{1/2}$ = **2.0** - **2.353** * **0.0/4**$^{1/2}$ = **2.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{X}$ + **tS/N**$^{1/2}$ = **2.0** + **2.353** * **0.0/4**$^{1/2}$ = **2.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **0.0**	Variance estimate for slope.
8	M(S) = (**N'** ± $Z_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**171** ± **2.576** * **0.0**$^{1/2}$) / 2 = [**85.5**, **85.5**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-22

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **2.7** / **4** = **0.675**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**2.73** - **7.29**/**4**) / (**4**-1))$^{1/2}$ = **0.55**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**$^{1/2}$ = **0.675** - **2.353** * **0.55**/**4**$^{1/2}$ = **0.028**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**$^{1/2}$ = **0.675** + **2.353** * **0.55**/**4**$^{1/2}$ = **1.322**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **19** * (**19**-1) / 2 = **171**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **227.667**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**171** ± **2.576** * **227.667**$^{1/2}$) / 2 = [**66.066**, **104.934**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-22

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **14.6** / **4** = **3.65**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**85.96** - **213.16**/**4**) / (**4**-1))$^{1/2}$ = **3.3**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**$^{1/2}$ = **3.65** - **2.353** * **3.3**/**4**$^{1/2}$ = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**$^{1/2}$ = **3.65** + **2.353** * **3.3**/**4**$^{1/2}$ = **7.532**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **133.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **$Z_{.995}$** * **var(S)**$^{1/2}$) / 2 = (**190** ± **2.576** * **133.0**$^{1/2}$) / 2 = [**80.146**, **109.854**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-22

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{90.6} / \mathbf{4}$ $= \mathbf{22.65}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$ $= ((\mathbf{5896.36} - \mathbf{8208.36/4}) / (\mathbf{4}-1))^{½}$ $= \mathbf{35.797}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{\mathbf{X}} - \mathbf{tS/N}^{½}$ $= \mathbf{22.65} - \mathbf{2.353} * \mathbf{35.797/4}^{½}$ $= \mathbf{0.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{\mathbf{X}} + \mathbf{tS/N}^{½}$ $= \mathbf{22.65} + \mathbf{2.353} * \mathbf{35.797/4}^{½}$ $= \mathbf{64.758}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{20} * (\mathbf{20}-1) / 2$ $= \mathbf{190}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{-1.031}$	Sen's estimator of trend.
7	$var(S) = \mathbf{932.333}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{½}) / 2$ $= (\mathbf{190} \pm \mathbf{2.576} * \mathbf{932.333}^{½}) / 2$ $= [\ \mathbf{55.672}, \mathbf{134.328}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{-5.187}, \mathbf{2.027}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-30

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **15.1** / **4** = **3.775**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**94.81** - **228.01**/**4**) / (**4**-1))^{½} = **3.55**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**^{½} = **3.775** - **2.353** * **3.55**/**4**^{½} = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**^{½} = **3.775** + **2.353** * **3.55**/**4**^{½} = **7.951**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **10** * (**10**-1) / 2 = **45**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **33.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**45** ± **2.576** * **33.0**^{½}) / 2 = [**15.101**, **29.899**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-30

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **37.8** / **4** = **9.45**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**653.7** - **1428.84/4**) / (**4**-1))$^{1/2}$ = **9.941**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS/N**$^{1/2}$ = **9.45 - 2.353** * **9.941/4**$^{1/2}$ = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS/N**$^{1/2}$ = **9.45** + **2.353** * **9.941/4**$^{1/2}$ = **21.144**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **10** * (**10**-1) / 2 = **45**	Number of sample pairs during trend detection period.
6	S = **0.028**	Sen's estimator of trend.
7	var(S) = **123.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**45** ± **2.576** * **123.0**$^{1/2}$) / 2 = [**8.215**, **36.785**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-3.932**, **1.833**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Copper, total (ug/L) at MW-30

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **77.2** / **4** = **19.3**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**5081.44** - **5959.84/4**) / (**4**-1))^{½} = **34.6**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **19.3** - **2.353** * **34.6/4**^{½} = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS/N**^{½} = **19.3** + **2.353** * **34.6/4**^{½} = **60.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **10** * (**10**-1) / 2 = **45**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **80.667**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**45** ± **2.576** * **80.667**^{½}) / 2 = [**10.932**, **34.068**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.083**, **1.942**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-30

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **111.7** / **4** = **27.925**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**3964.29** - **12476.89**/**4**) / (**4**-1))$^{1/2}$ = **16.784**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**$^{1/2}$ = **27.925** - **2.353** * **16.784**/**4**$^{1/2}$ = **8.183**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**$^{1/2}$ = **27.925** + **2.353** * **16.784**/**4**$^{1/2}$ = **47.667**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **10** * (**10**-1) / 2 = **45**	Number of sample pairs during trend detection period.
6	S = **2.619**	Sen's estimator of trend.
7	var(S) = **125.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**45** ± **2.576** * **125.0**$^{1/2}$) / 2 = [**8.1**, **36.9**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-5.344**, **10.867**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Attachment D

Historical VOC Detections

Table 1

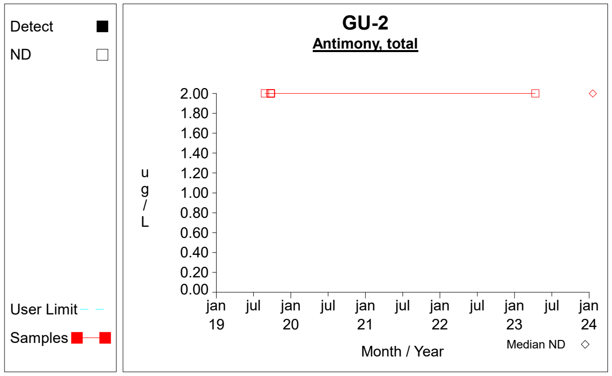
Historical Volatile Organic Compound Detections

Constituent	Well	Date	Identifier	Result	Limit	Units
Acetone	GU-2	4/11/2023		10.7	10.0	ug/L
Acetone	MW-10A	7/29/2009		291.0	1.0	ug/L
Acetone	MW-10A	10/06/2009		164.0	1.0	ug/L
Acetone	MW-10A	5/17/2013		214.0	10.0	ug/L
Acetone	MW-10A	10/28/2014		18.1	10.0	ug/L
Acetone	MW-10A	10/18/2017		20.3	10.0	ug/L
Carbon disulfide	MW-10A	7/29/2009		1.65	1.00	ug/L
Carbon disulfide	MW-10A	7/12/2012		8.79	1.00	ug/L
Carbon disulfide	MW-10A	7/12/2012		8.79	1.00	ug/L
Carbon disulfide	MW-10A	5/17/2013		1.40	1.00	ug/L
Dieldrin	MW-10A	10/02/2012		.00248	.00200	ug/L
Acetone	MW-10B	10/18/2017		19.2	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-10B	10/02/2012		.466	.390	ug/L
Carbon disulfide	MW-10B	12/29/2009		1.04	1.00	ug/L
Phorate	MW-10B	10/02/2012		.171	.170	ug/L
Acetone	MW-18	10/19/2017		21.1	10.0	ug/L
Arochlor 1016	MW-18	10/19/2017		2.36	.10	ug/L
Arochlor 1260	MW-18	10/19/2017		.2	.1	ug/L
Bromomethane	MW-18	10/04/2012		.60	.22	ug/L
Bromomethane	MW-18	10/05/2012		.60	.20	ug/L
Acetone	MW-19	10/19/2017		19.5	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-19	10/03/2012		17.5	10.0	ug/L
Nitrobenzene	MW-19	10/03/2012		.224	.220	ug/L
Acetone	MW-20	4/11/2014		252.0	10.0	ug/L
Acetone	MW-20	10/18/2017		20.2	10.0	ug/L
Acetone	MW-20	4/09/2019		22.2	10.0	ug/L
Acetone	MW-21R	10/19/2017		21.5	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-21R	10/19/2017		7	6	ug/L
Acetone	MW-22	10/18/2017		21.1	10.0	ug/L
Bromomethane	MW-22	10/04/2012		.41	.22	ug/L
Bromomethane	MW-22	10/05/2012		.41	.20	ug/L
Acetone	MW-25	5/18/2023		25.5	10.0	ug/L

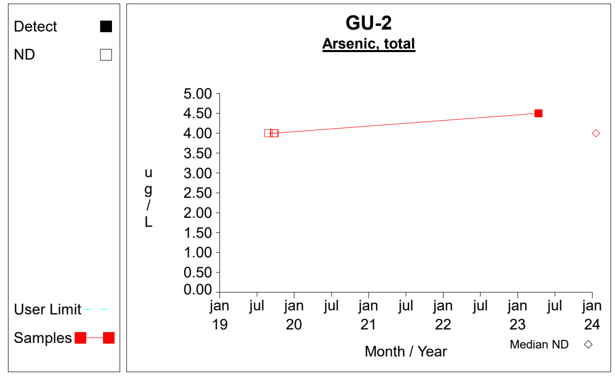
Detections are shown for the constituents and sample points selected for the analysis
The Limit column refers to the laboratory reporting limit

APPENDIX B.2 –Fall Statistical Evaluation

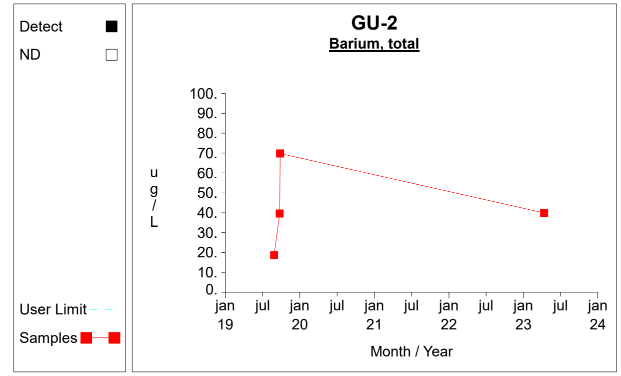
Time Series



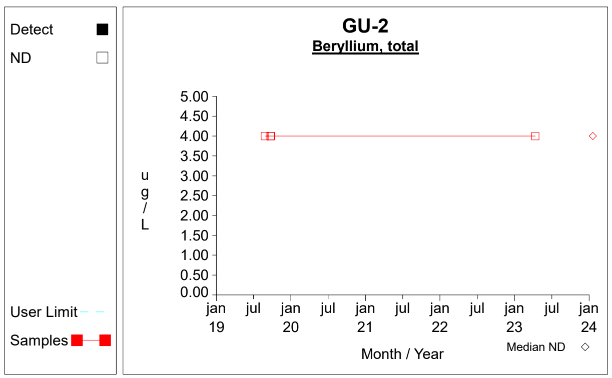
Graph 1



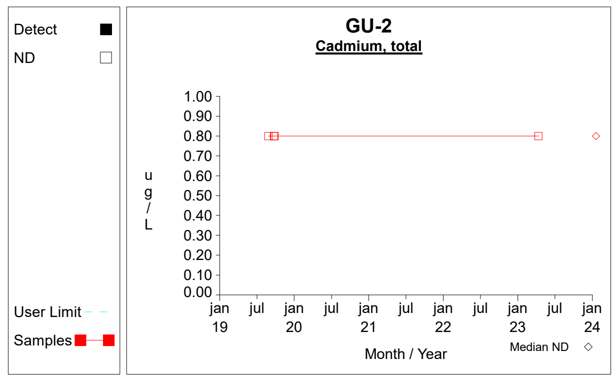
Graph 2



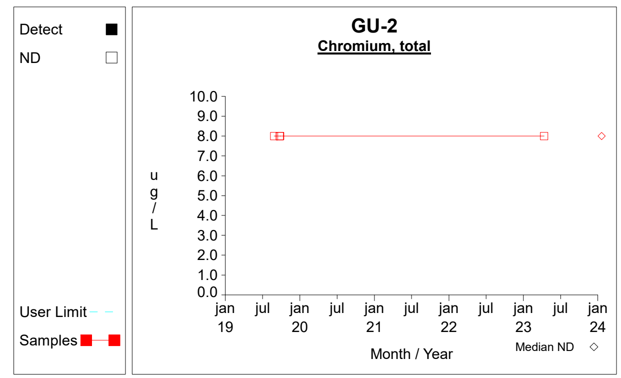
Graph 3



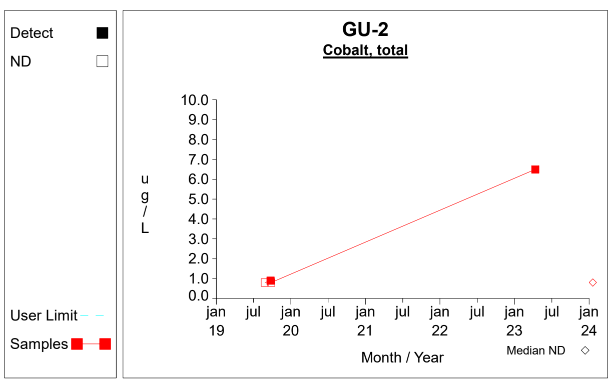
Graph 4



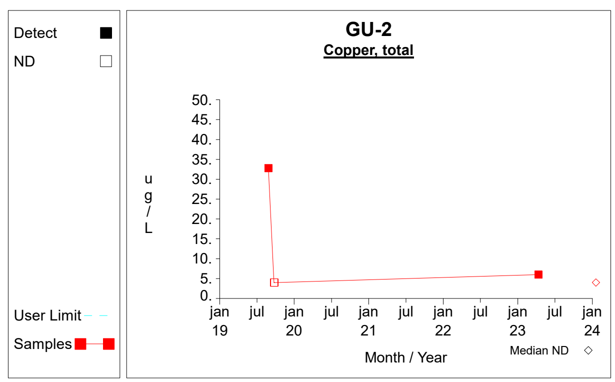
Graph 5



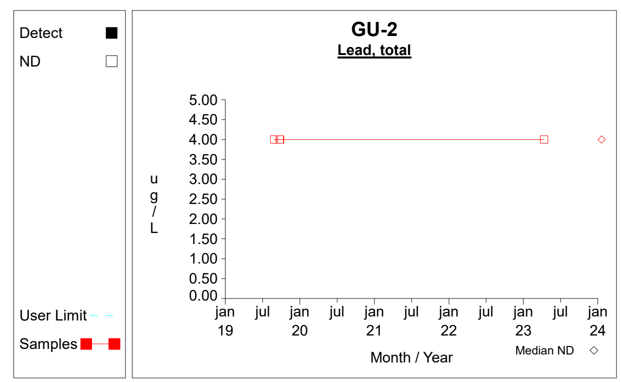
Graph 6



Graph 7



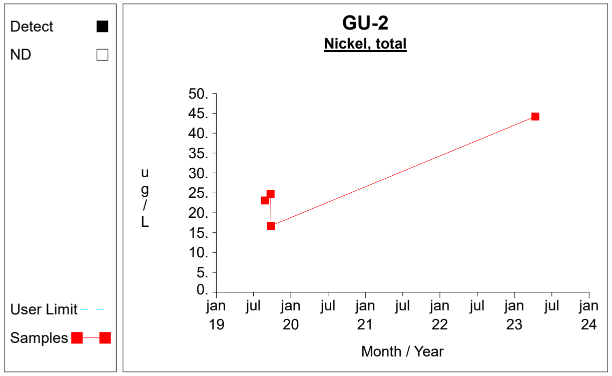
Graph 8



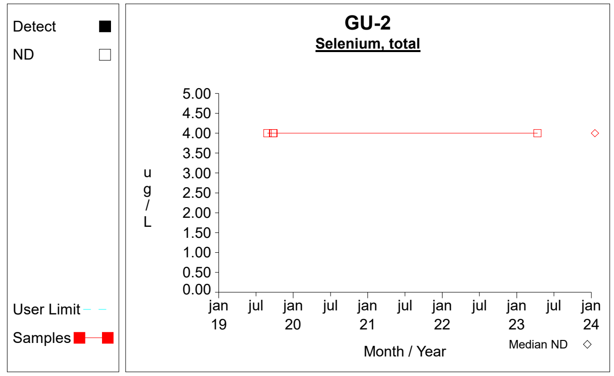
Graph 9

North Central Iowa [GWHIST] December 2024

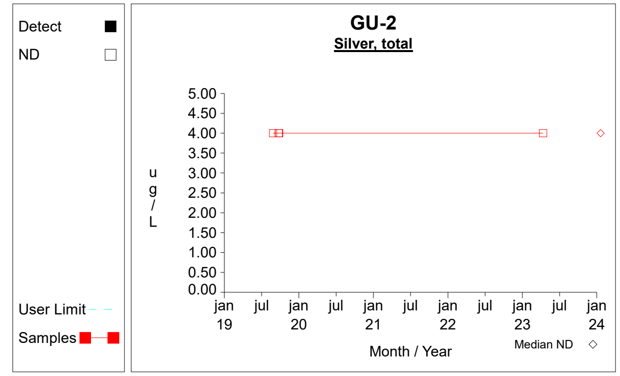
Time Series



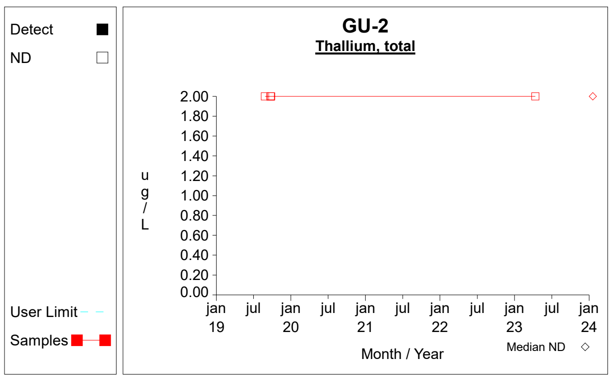
Graph 10



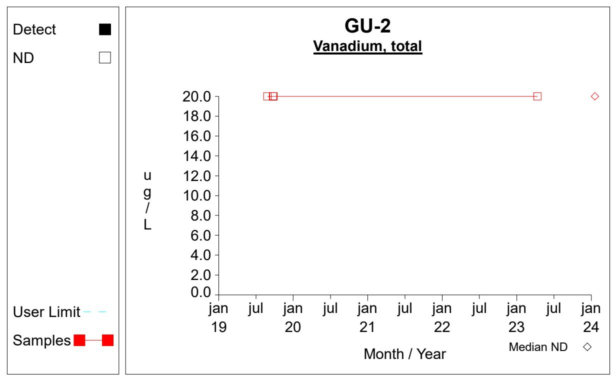
Graph 11



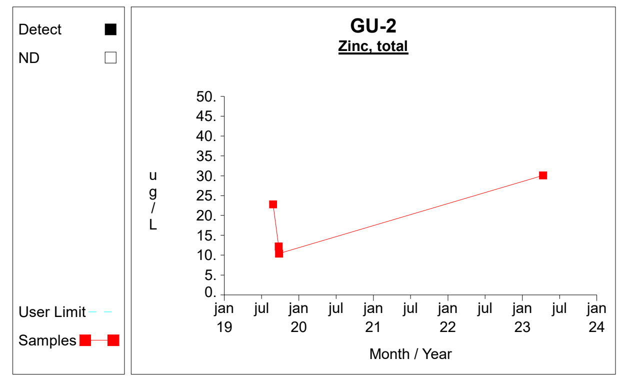
Graph 12



Graph 13



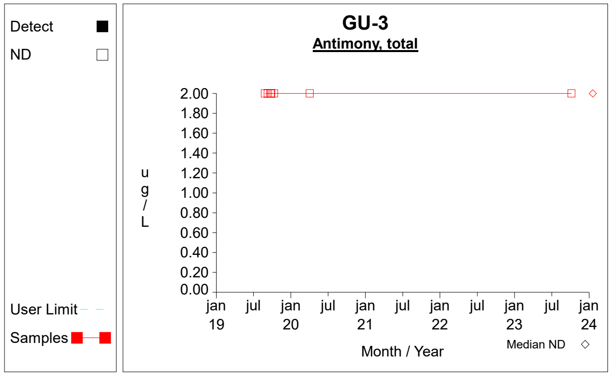
Graph 14



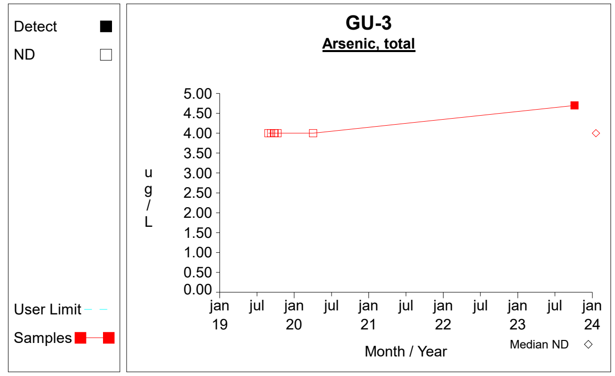
Graph 15

Prepared by: Otter Creek Environmental

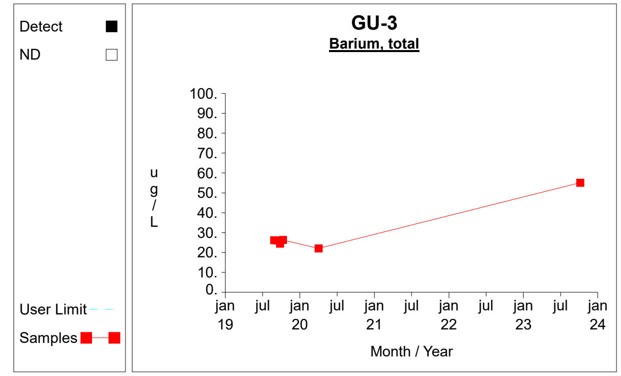
Time Series



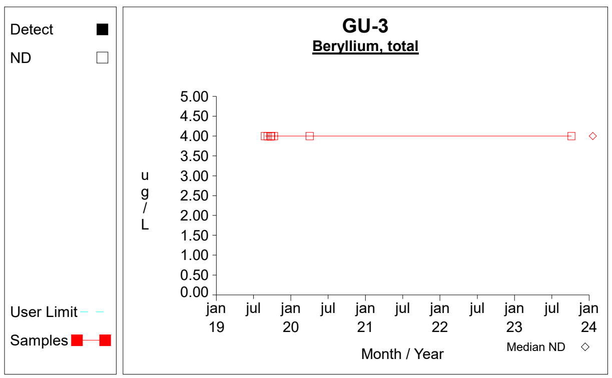
Graph 16



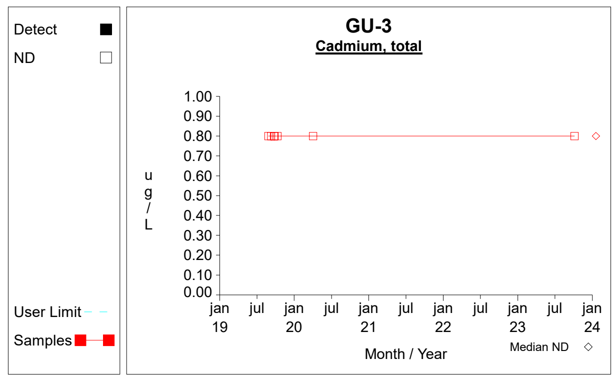
Graph 17



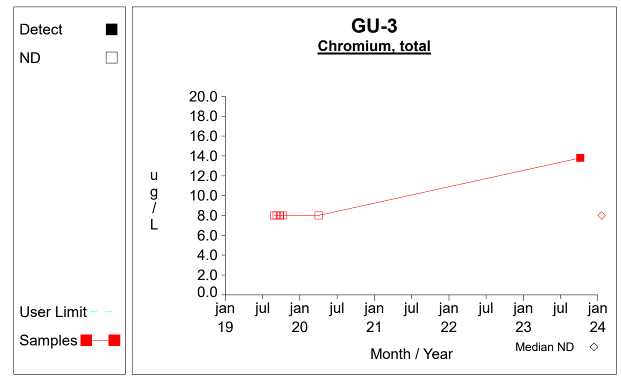
Graph 18



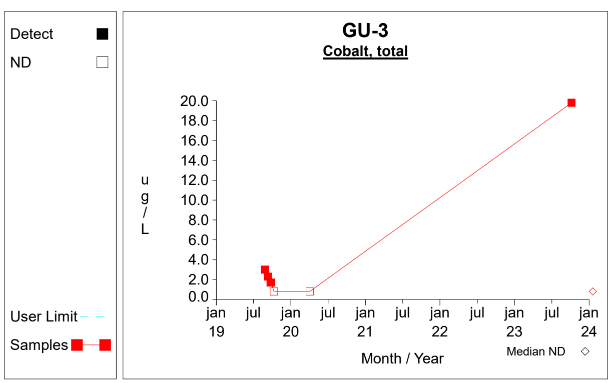
Graph 19



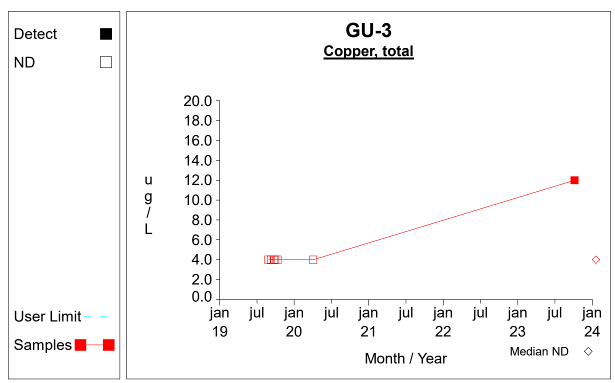
Graph 20



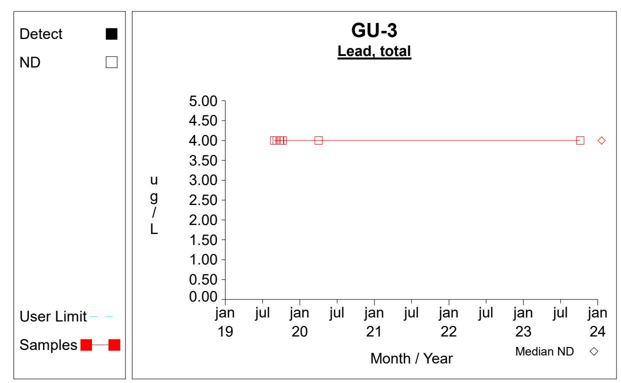
Graph 21



Graph 22

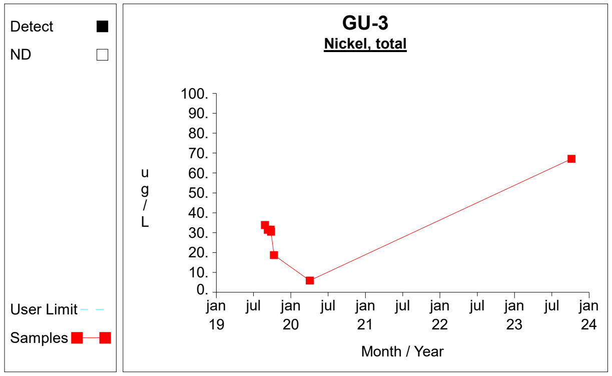


Graph 23

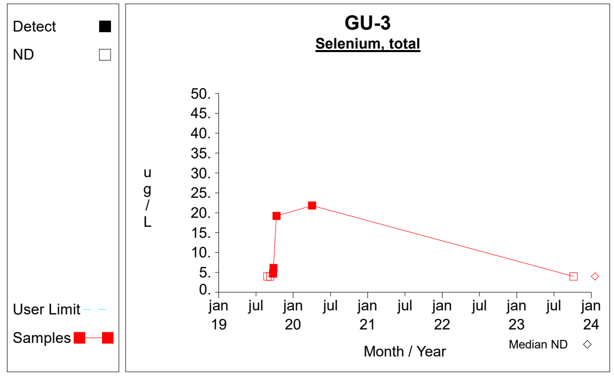


Graph 24

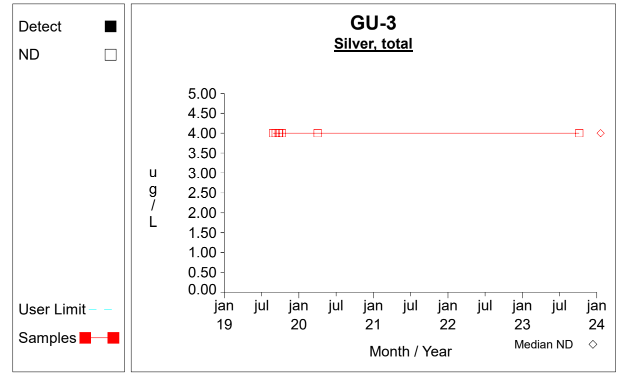
Time Series



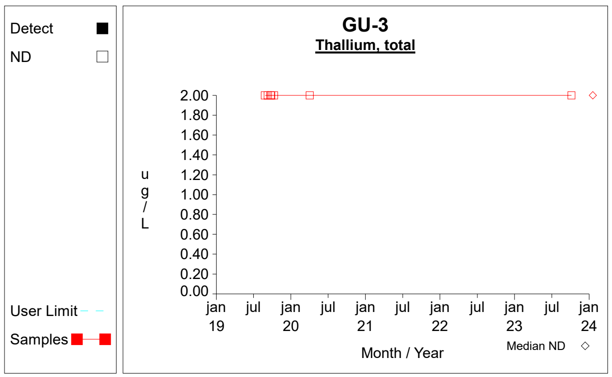
Graph 25



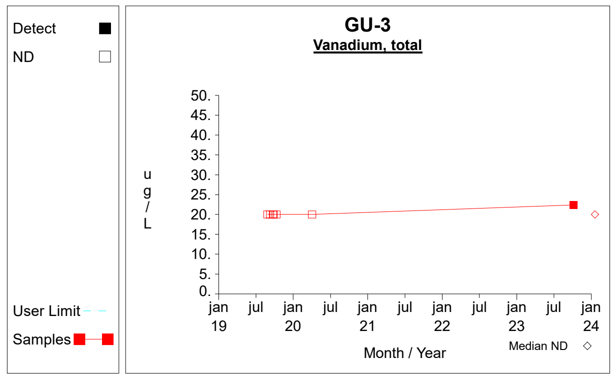
Graph 26



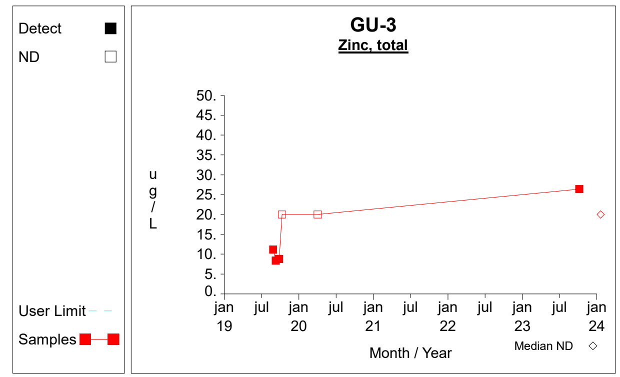
Graph 27



Graph 28

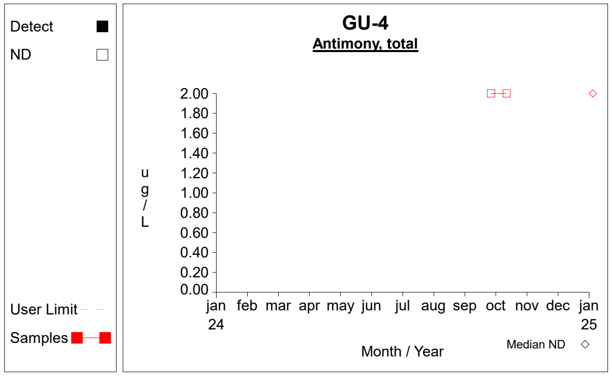


Graph 29

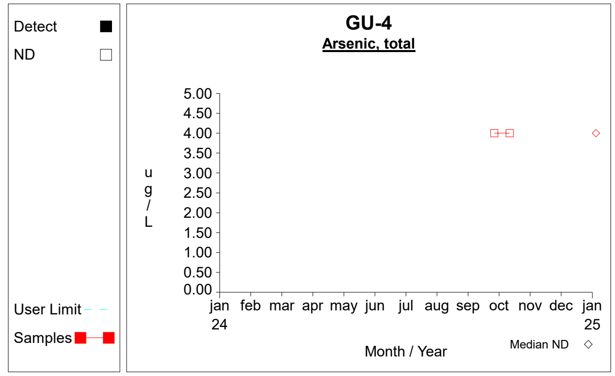


Graph 30

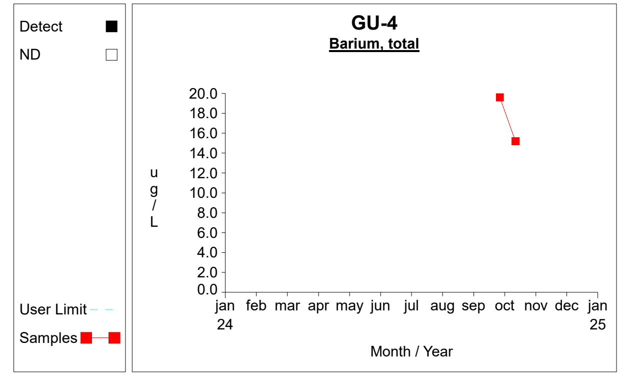
Time Series



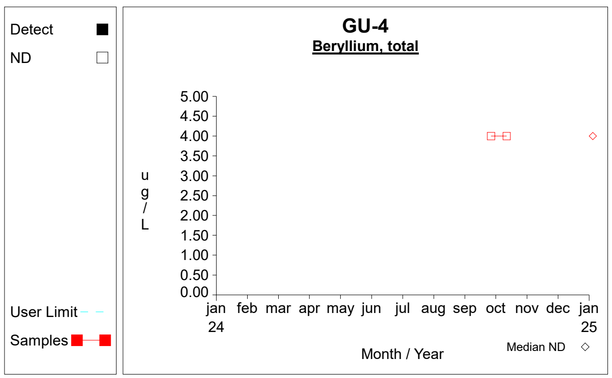
Graph 31



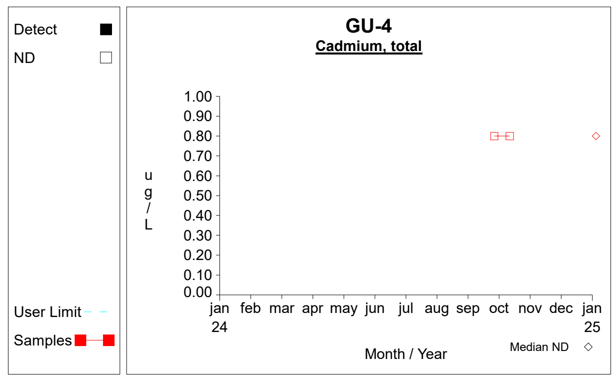
Graph 32



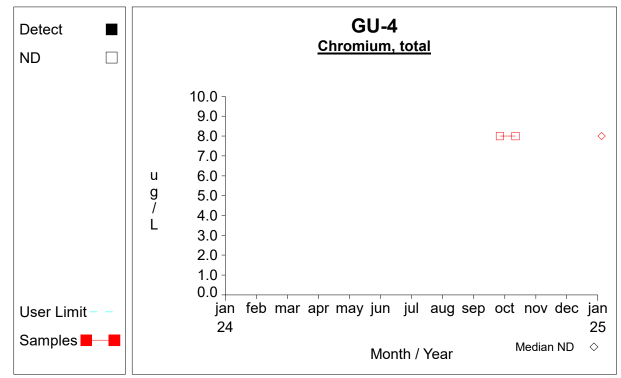
Graph 33



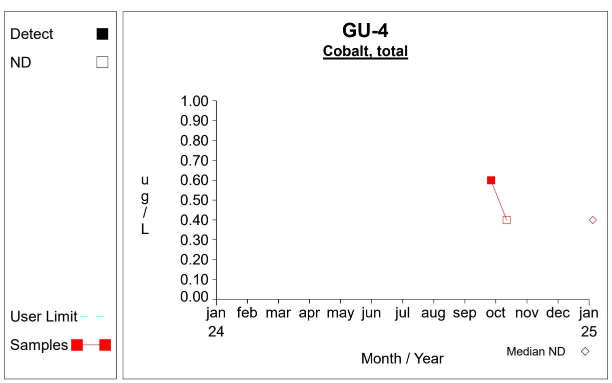
Graph 34



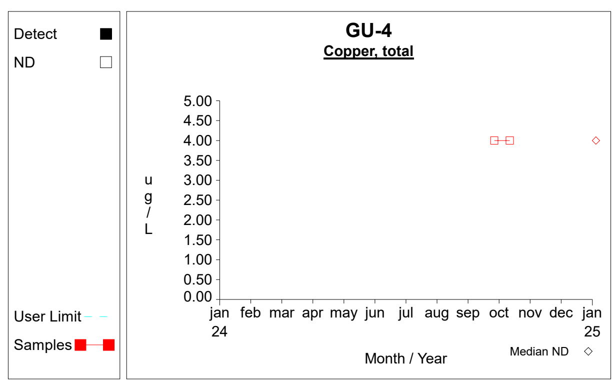
Graph 35



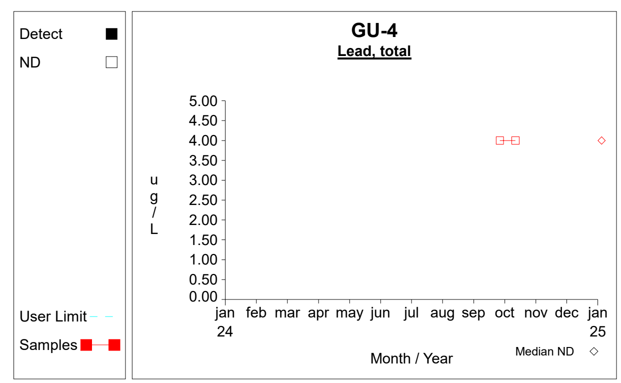
Graph 36



Graph 37

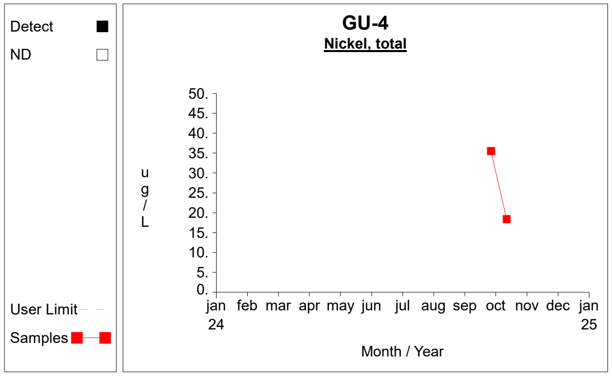


Graph 38

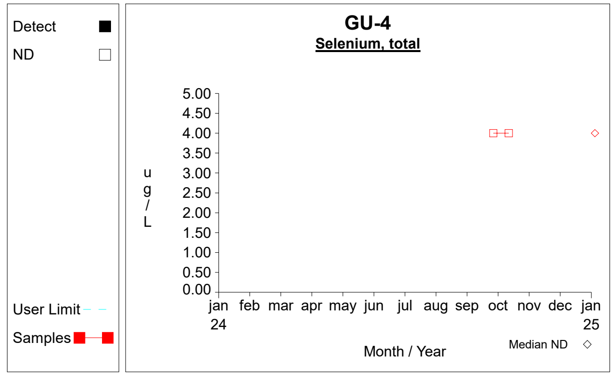


Graph 39

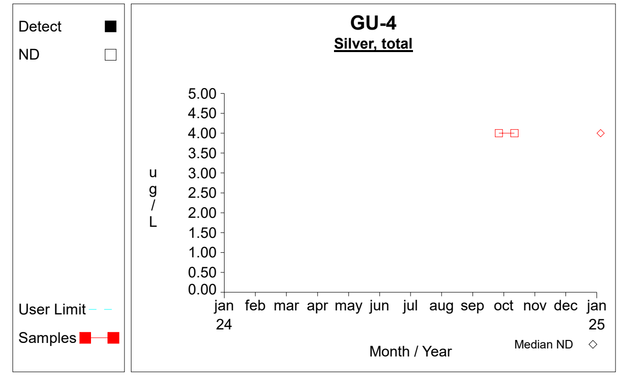
Time Series



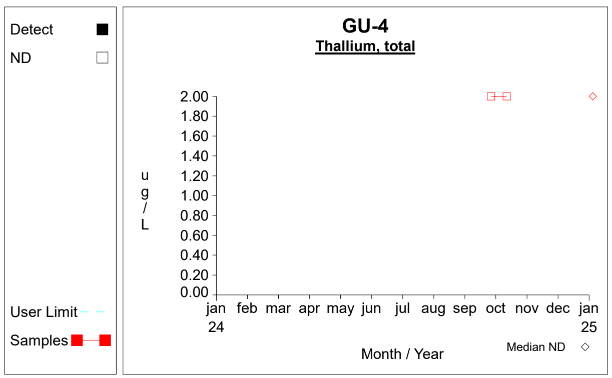
Graph 40



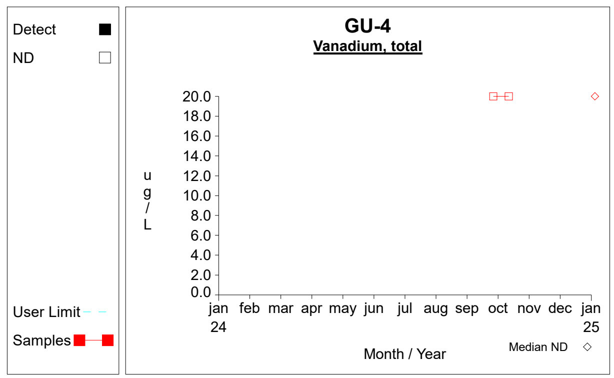
Graph 41



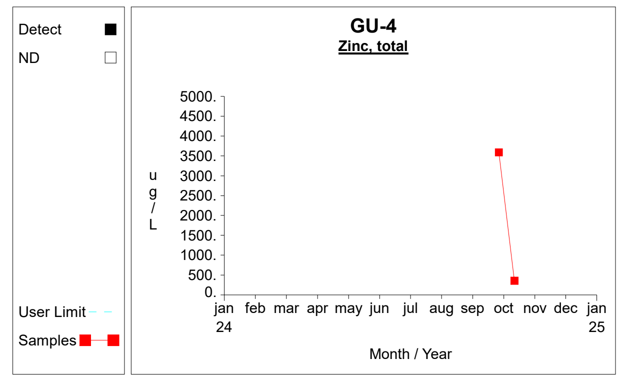
Graph 42



Graph 43

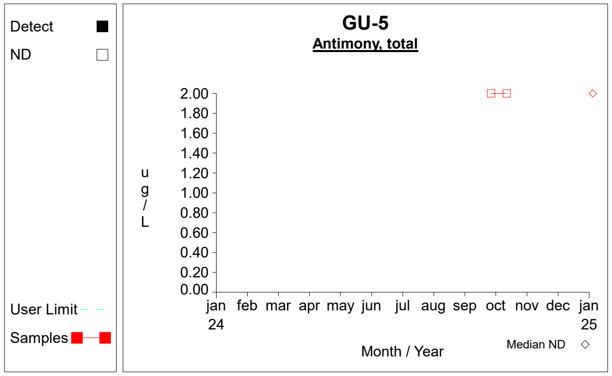


Graph 44



Graph 45

Time Series



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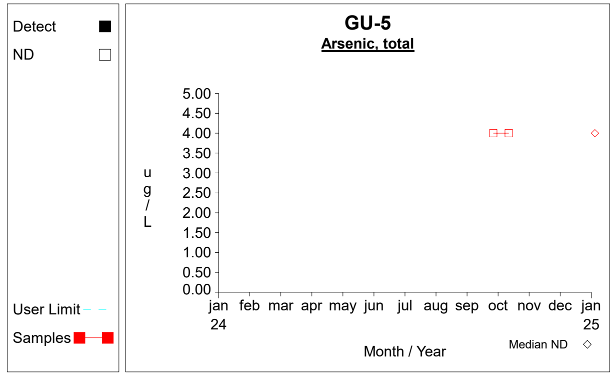

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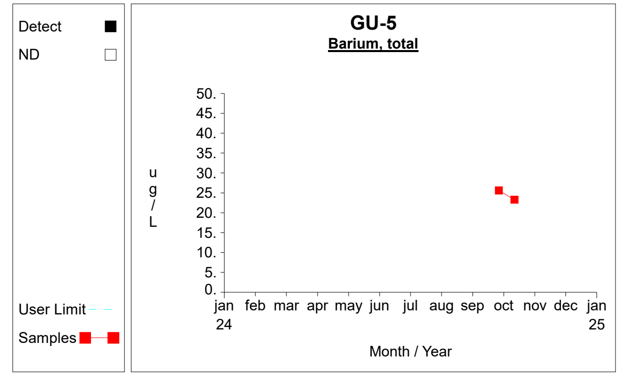
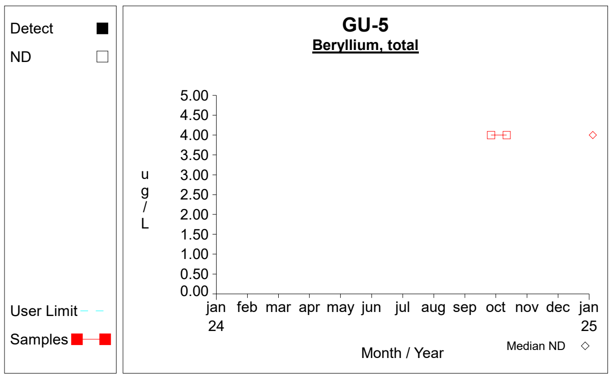
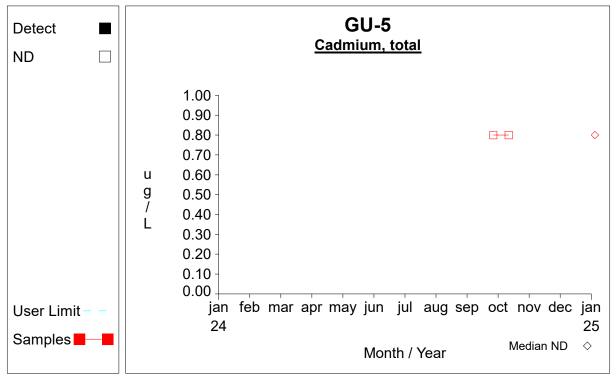


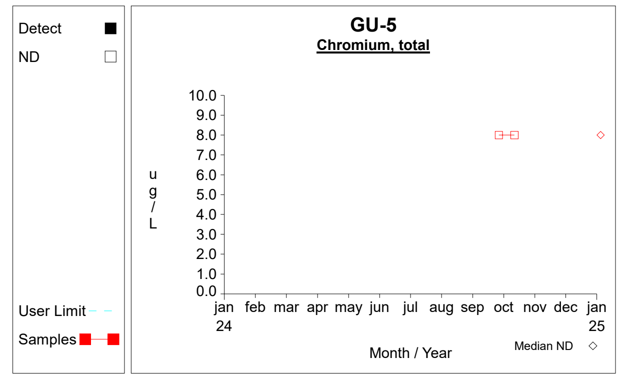
Graph 48



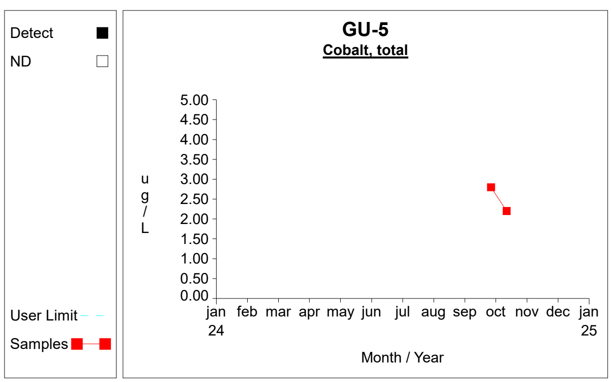
Graph 49



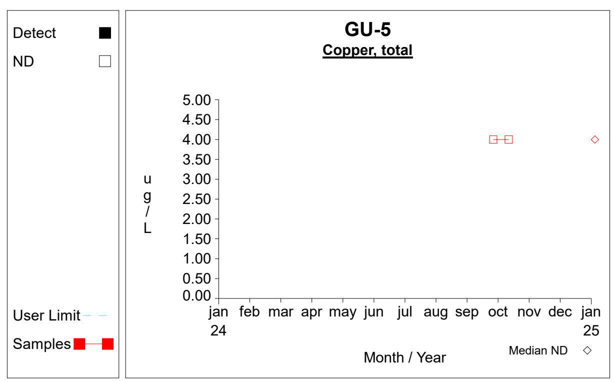
Graph 50



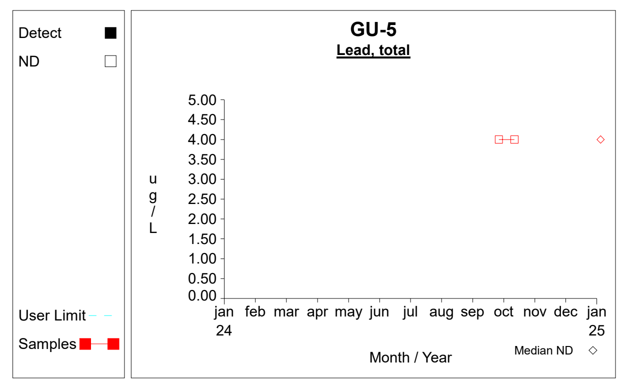
Graph 51



Graph 52

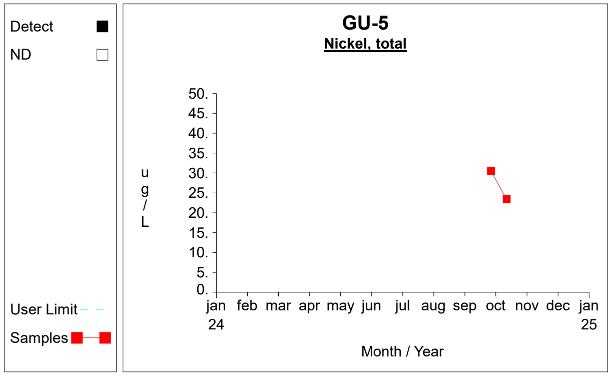


Graph 53

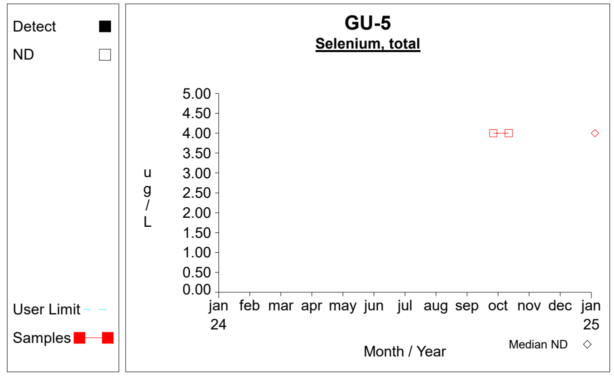


Graph 54

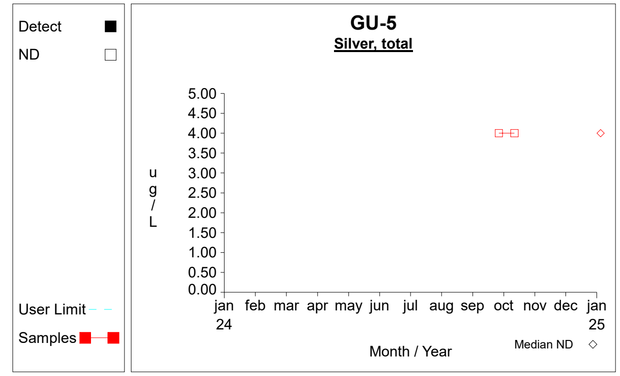
Time Series



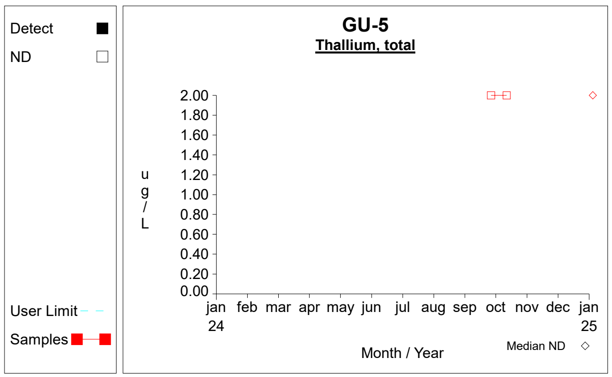
Graph 55



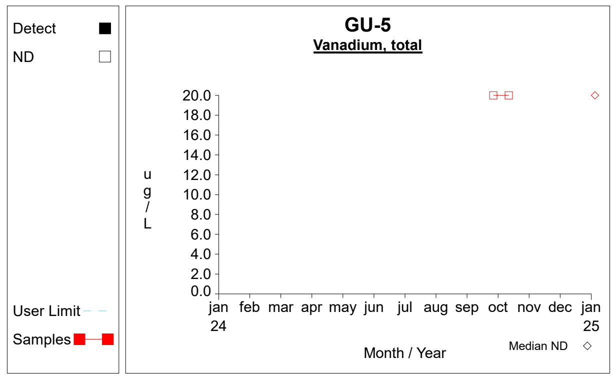
Graph 56



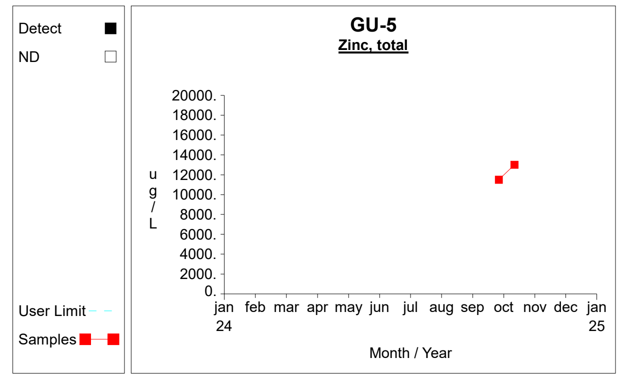
Graph 57



Graph 58

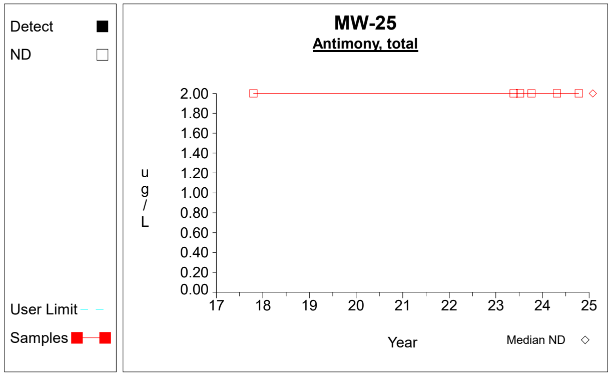


Graph 59

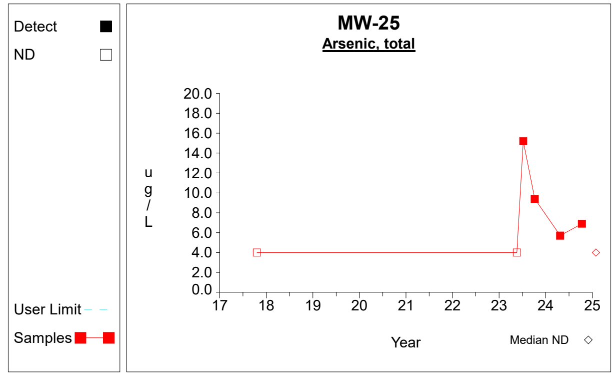


Graph 60

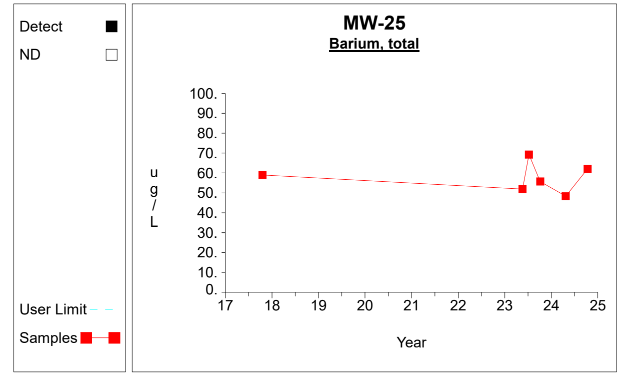
Time Series



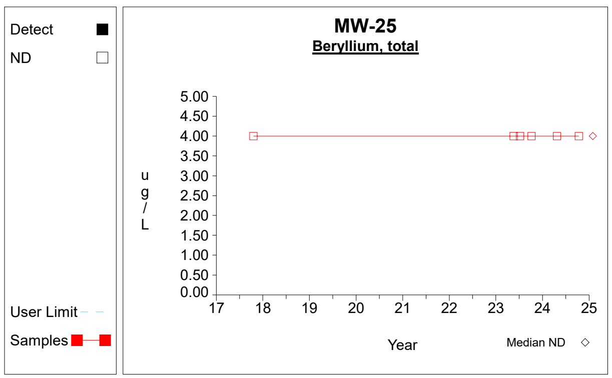
Graph 61



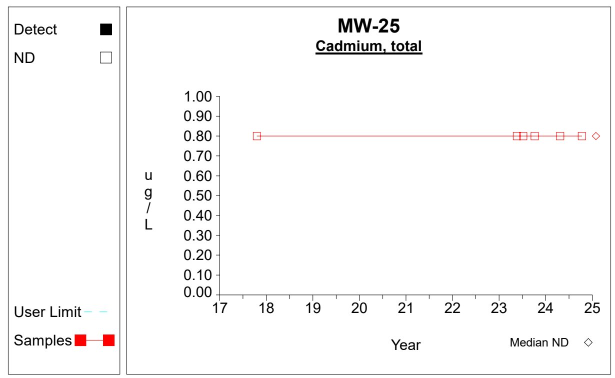
Graph 62



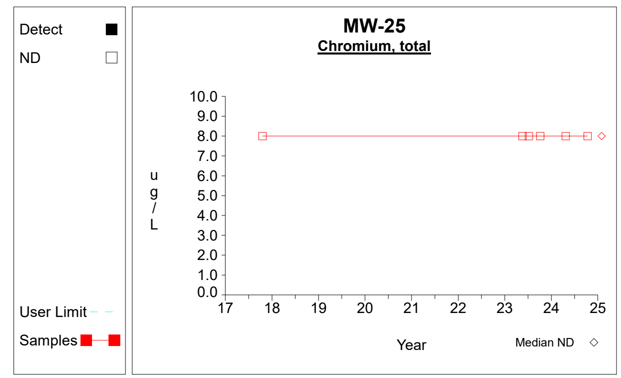
Graph 63



Graph 64



Graph 65



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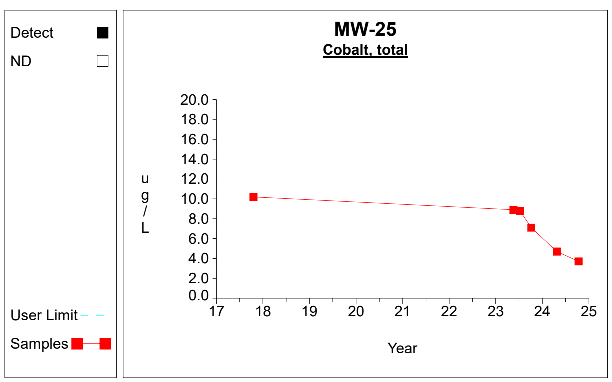
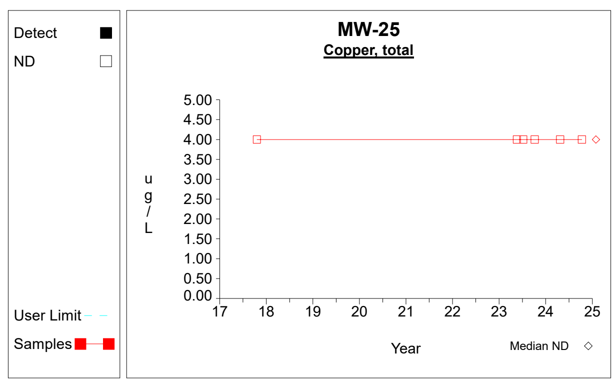
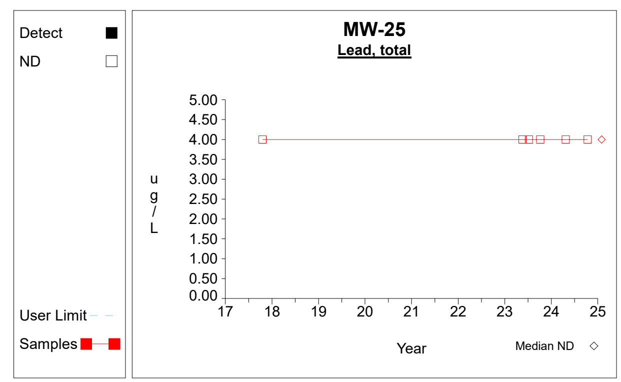


Graph 67

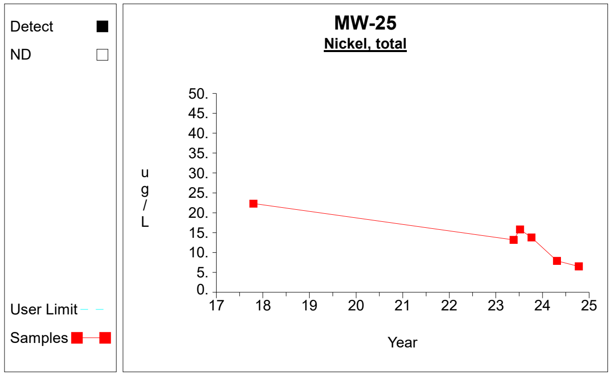


Graph 68

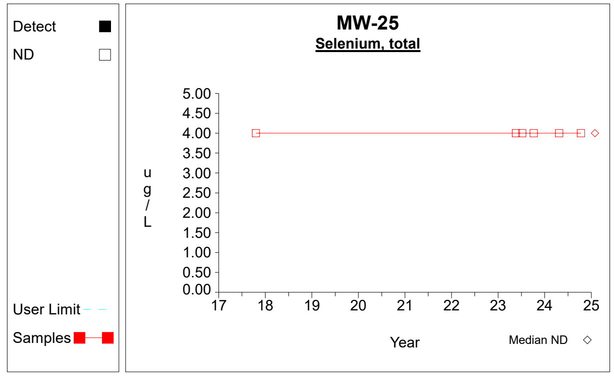


Graph 69

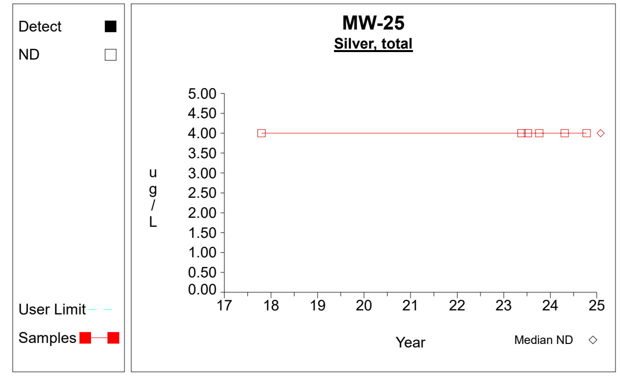
Time Series



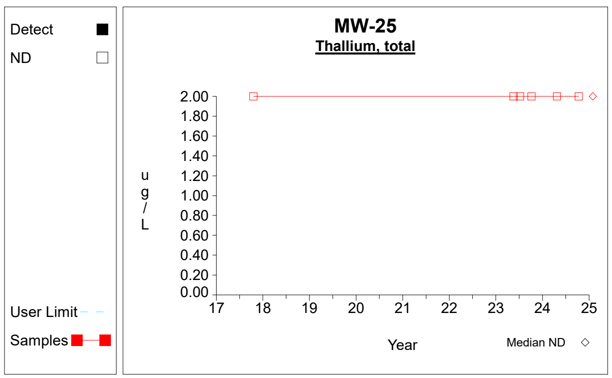
Graph 70



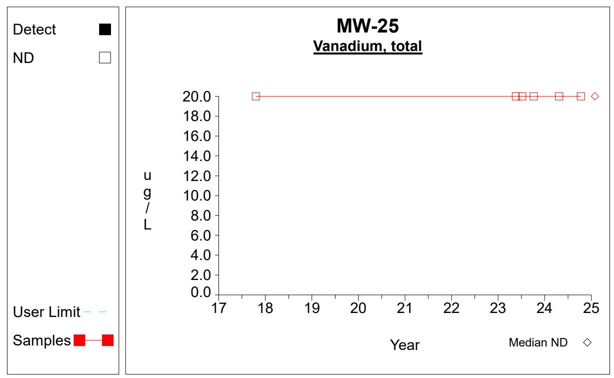
Graph 71



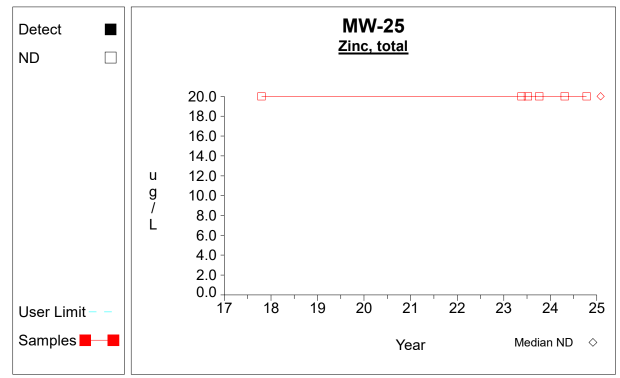
Graph 72



Graph 73

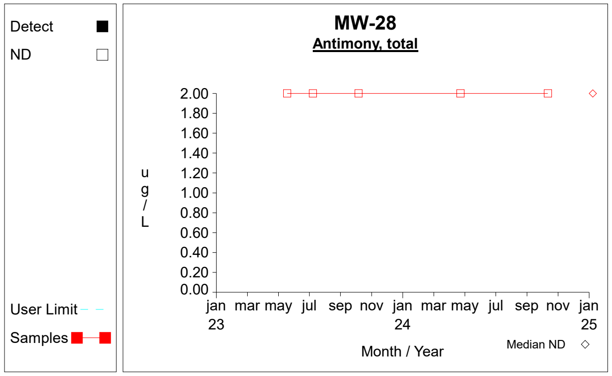


Graph 74

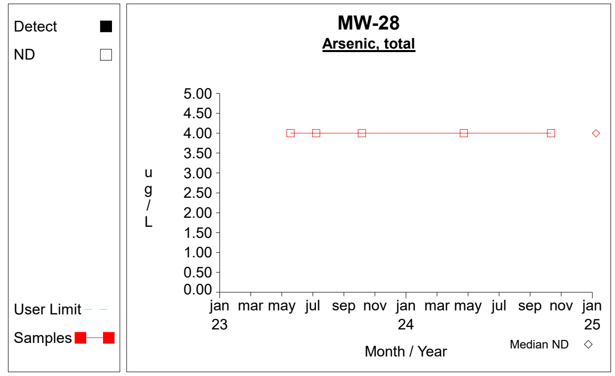


Graph 75

Time Series



Graph 76



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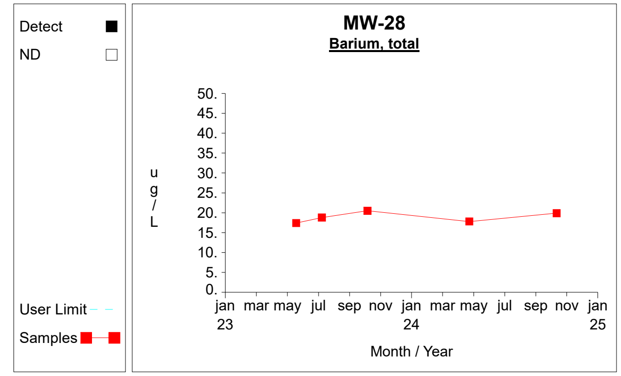
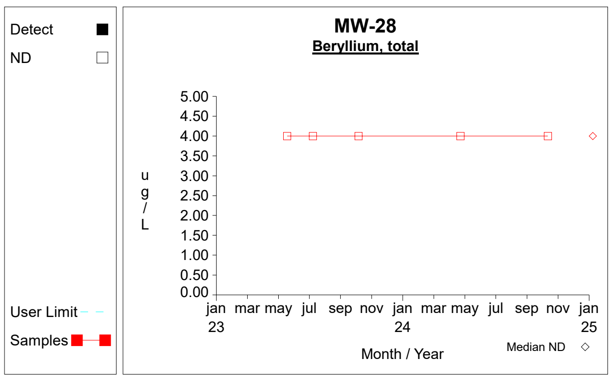


Graph 78



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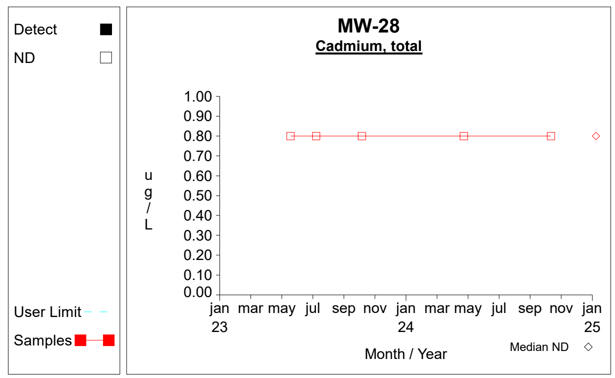
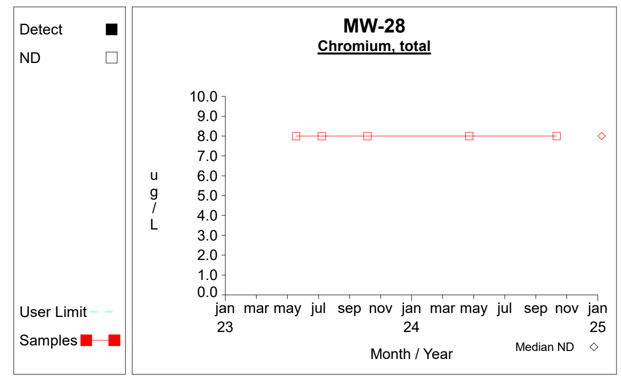
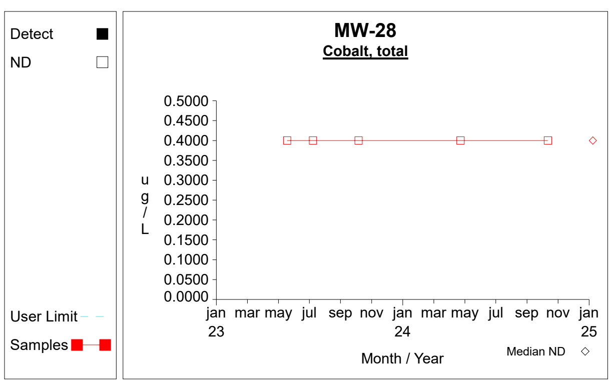


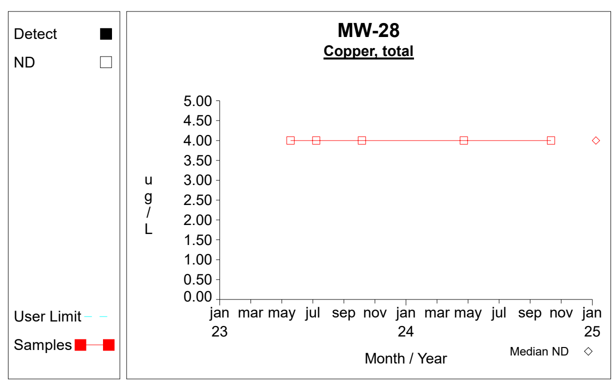
Graph 80



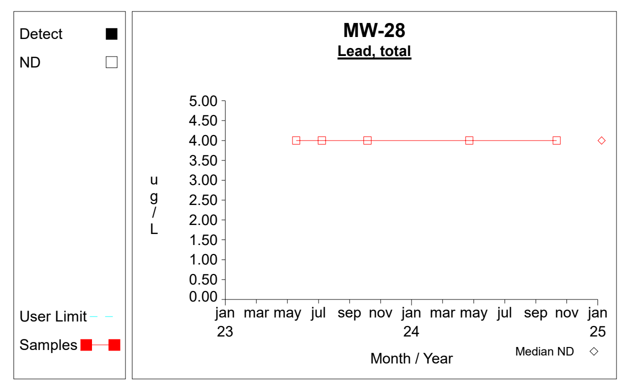
Graph 81



Graph 82



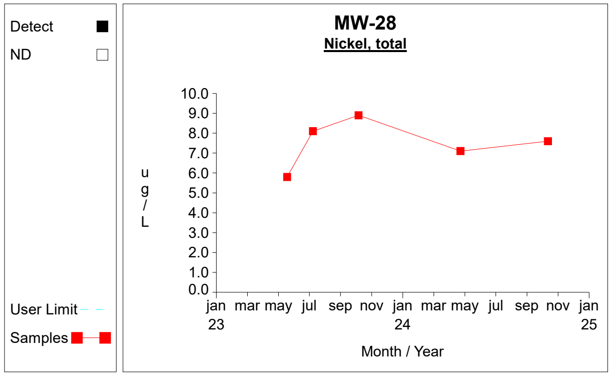
Graph 83



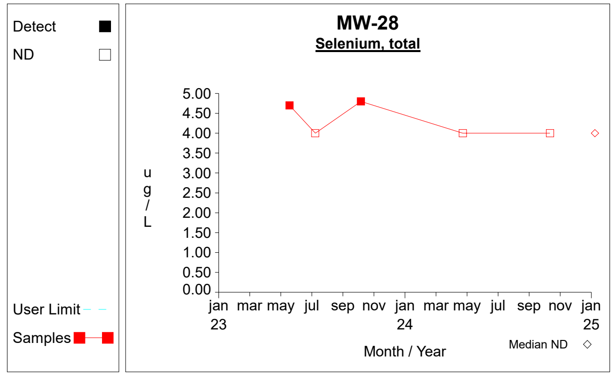
Graph 84

Prepared by: Otter Creek Environmental

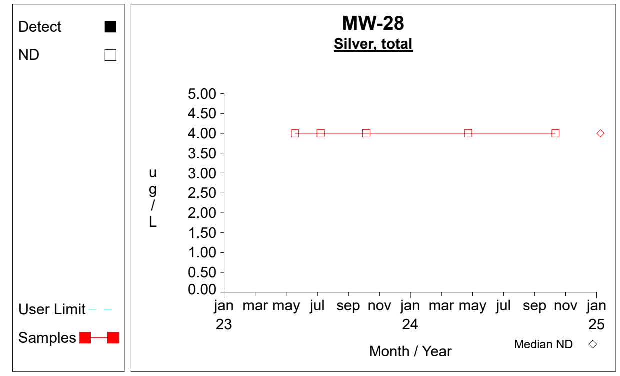
Time Series



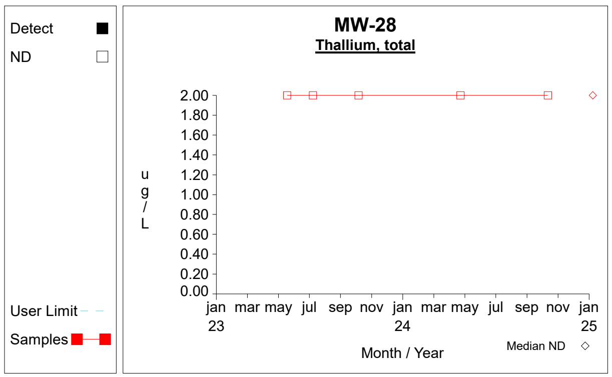
Graph 85



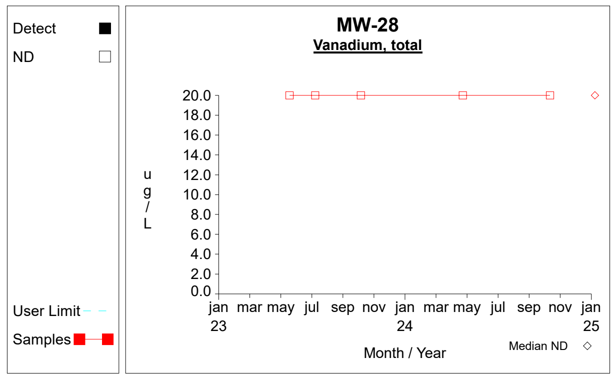
Graph 86



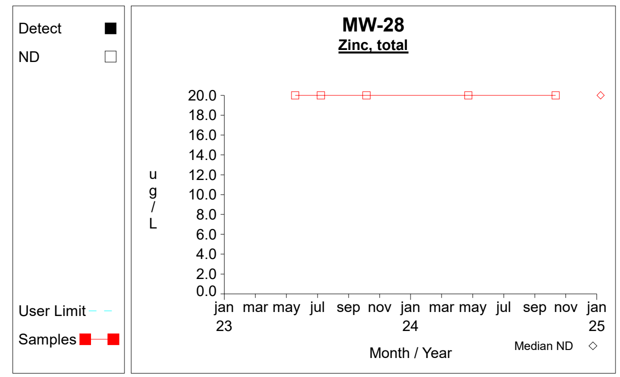
Graph 87



Graph 88

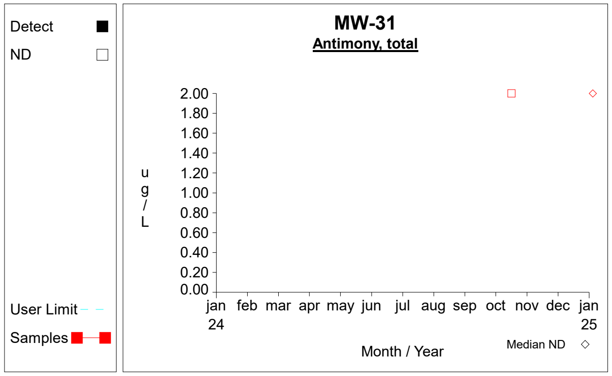


Graph 89

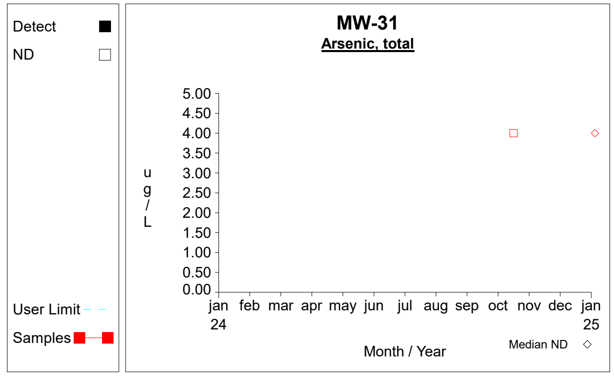


Graph 90

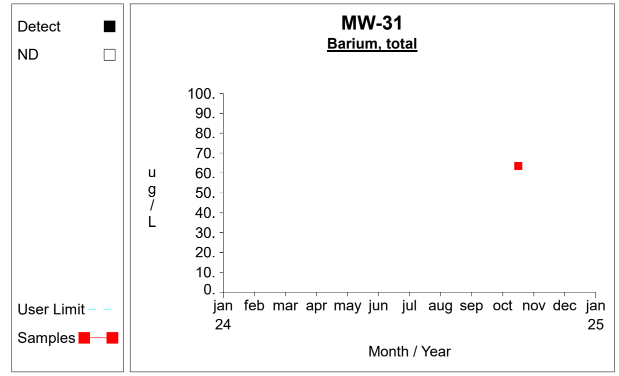
Time Series



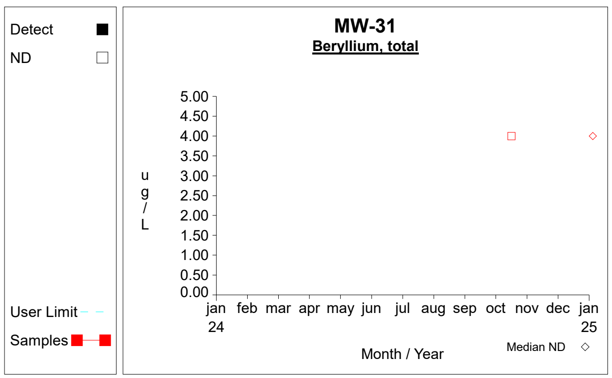
Graph 91



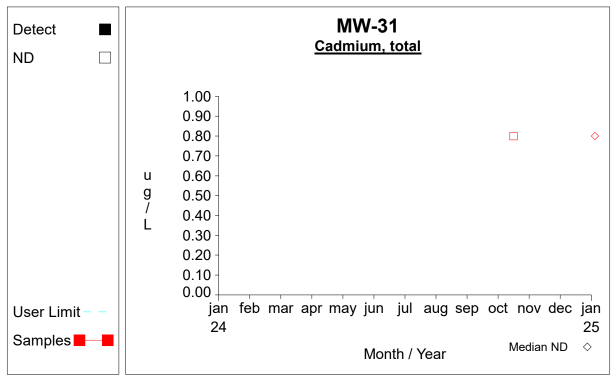
Graph 92



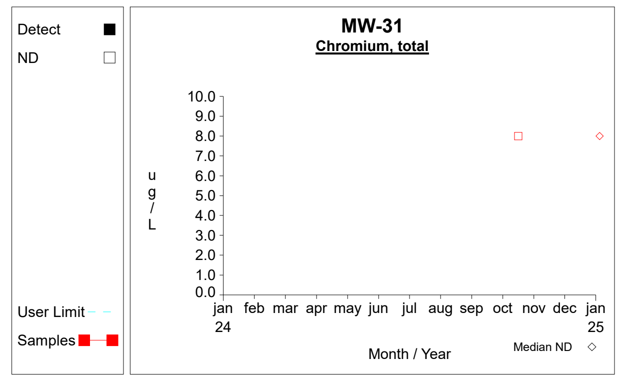
Graph 93



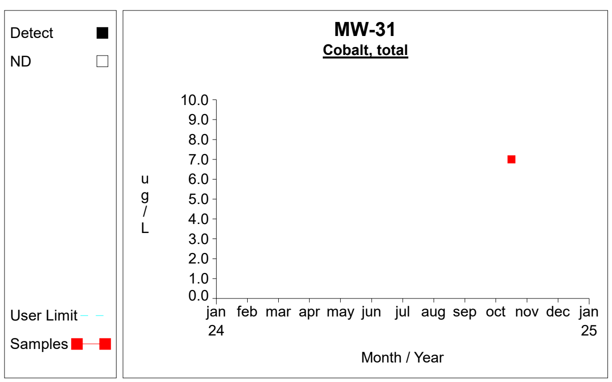
Graph 94



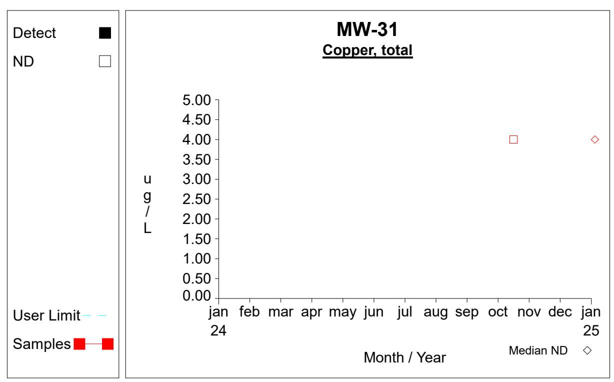
Graph 95



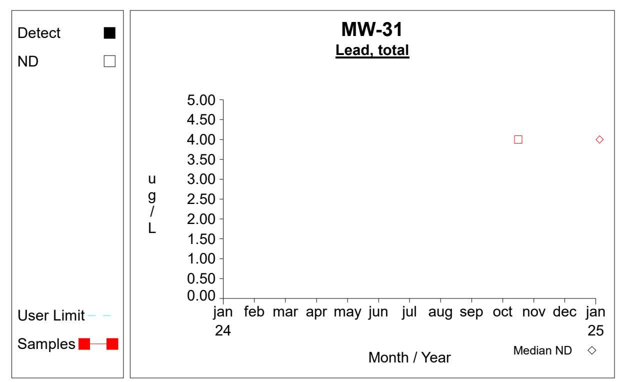
Graph 96



Graph 97

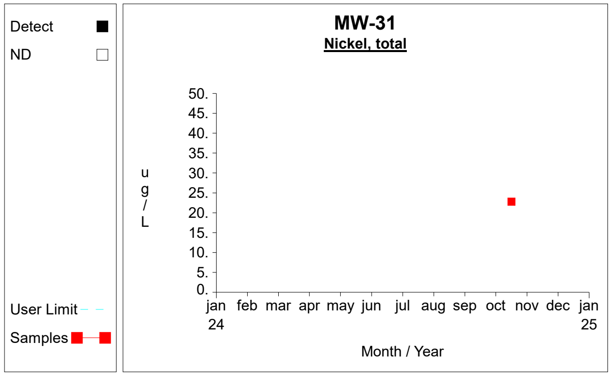


Graph 98

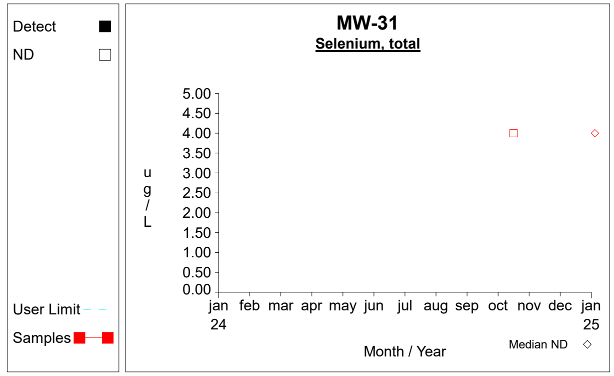


Graph 99

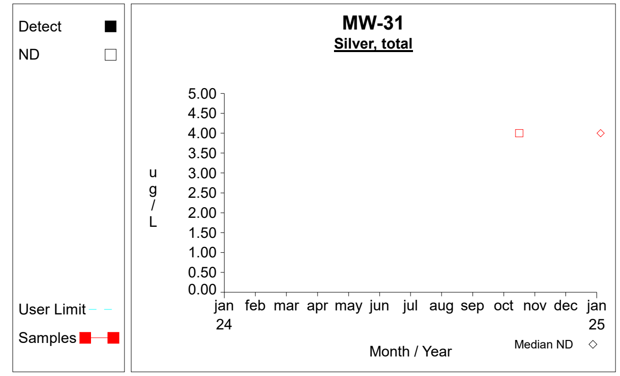
Time Series



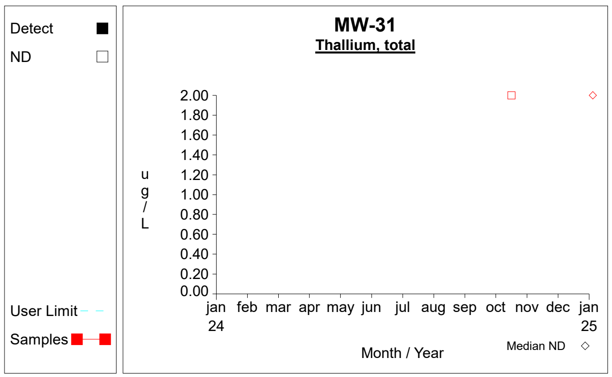
Graph 100



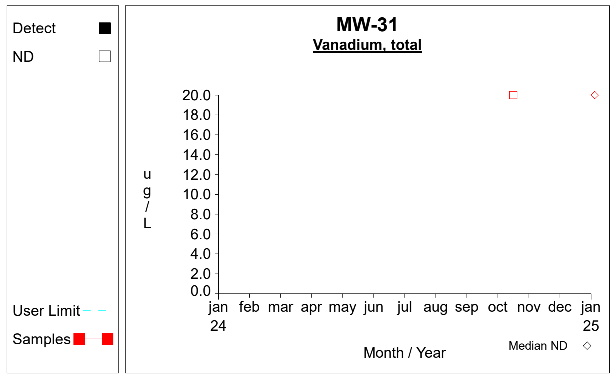
Graph 101



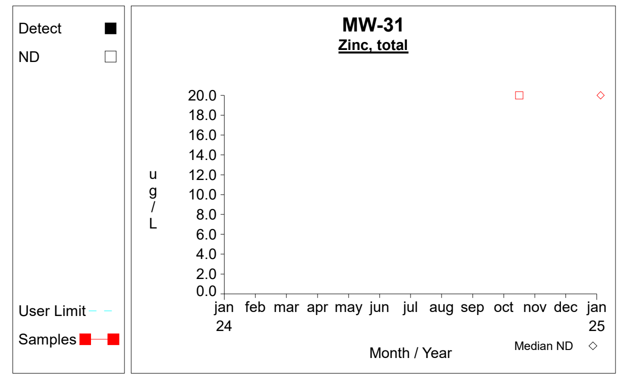
Graph 102



Graph 103



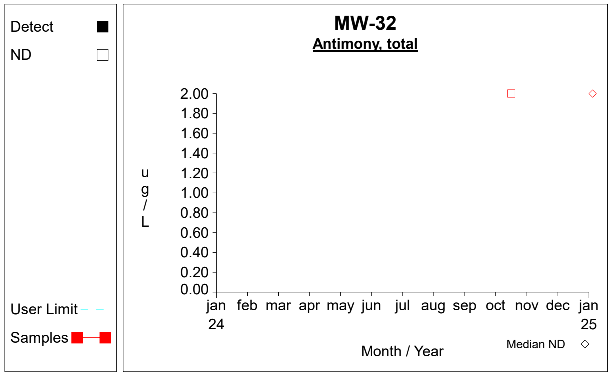
Graph 104



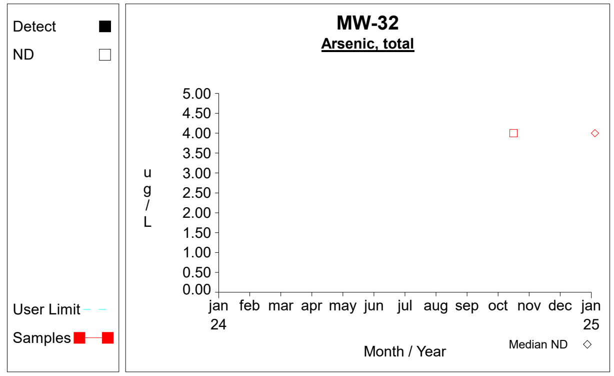
Graph 105

North Central Iowa [GWHIST] December 2024

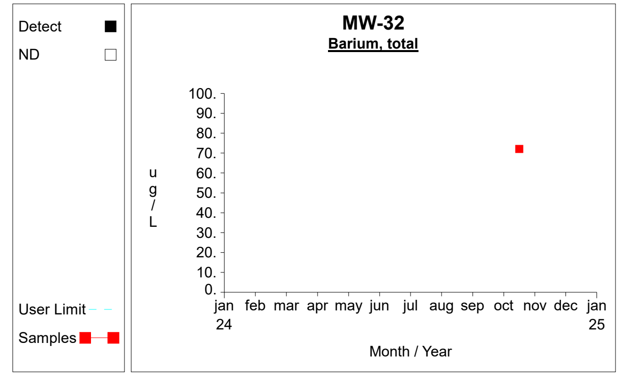
Time Series



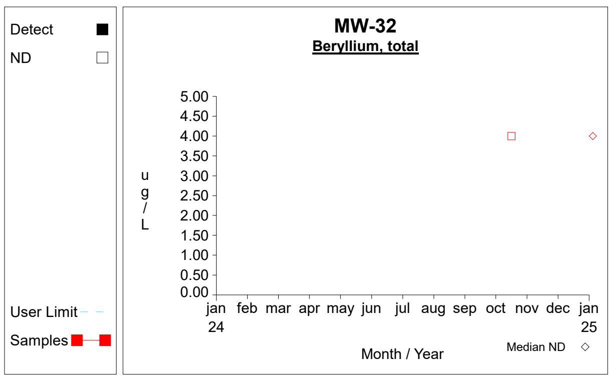
Graph 106



Graph 107



Graph 108



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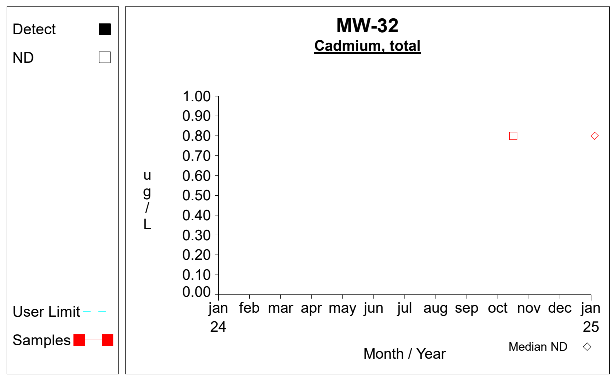

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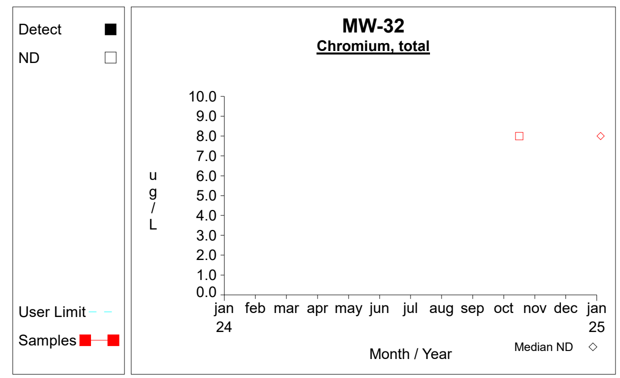
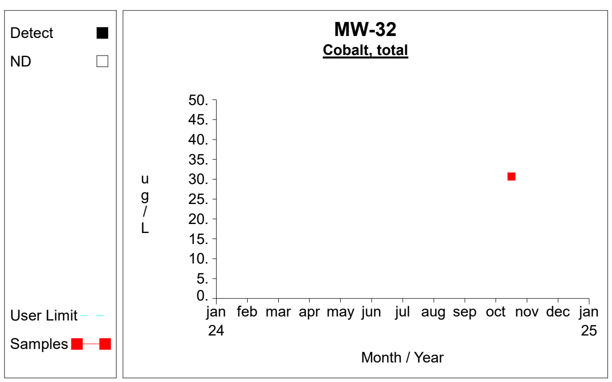
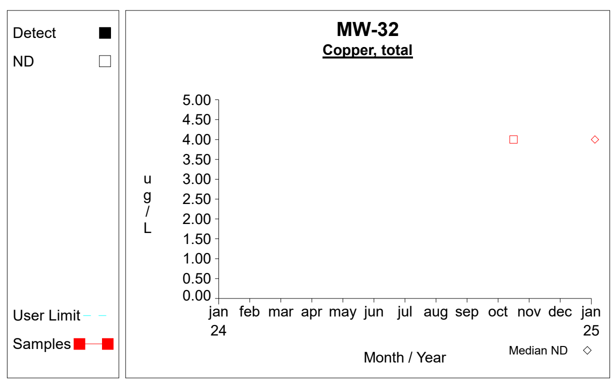


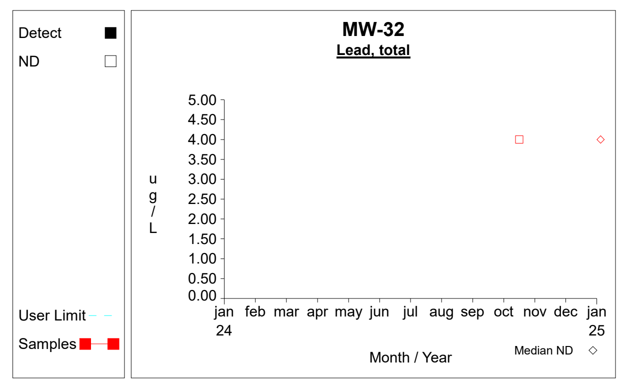
Graph 111



Graph 112



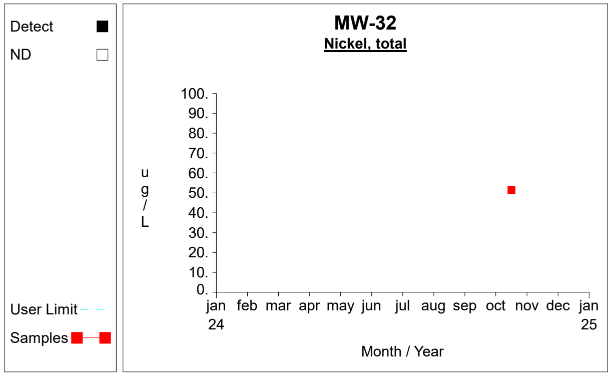
Graph 113



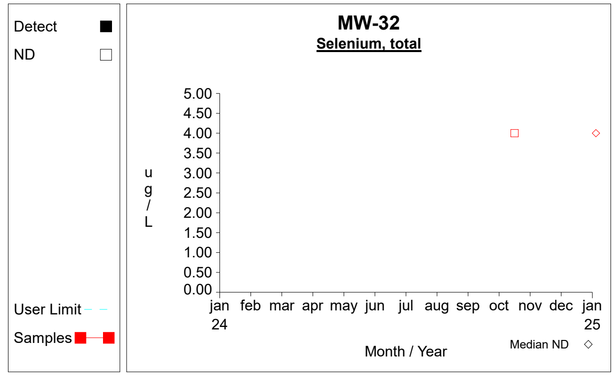
Graph 114

Prepared by: Otter Creek Environmental

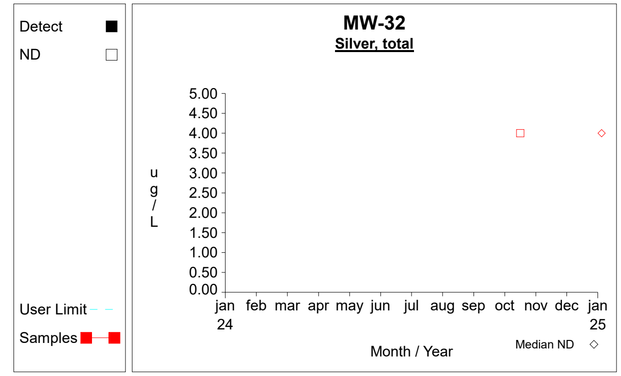
Time Series



Graph 115



Graph 116



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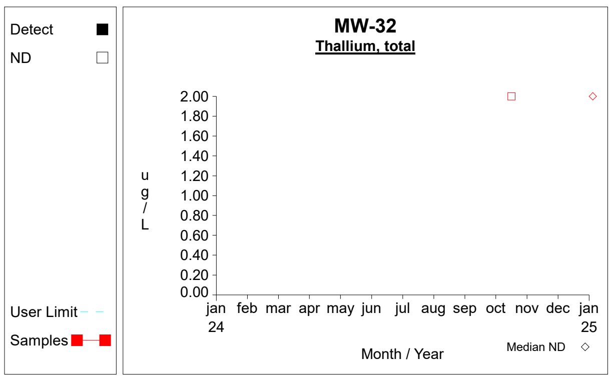
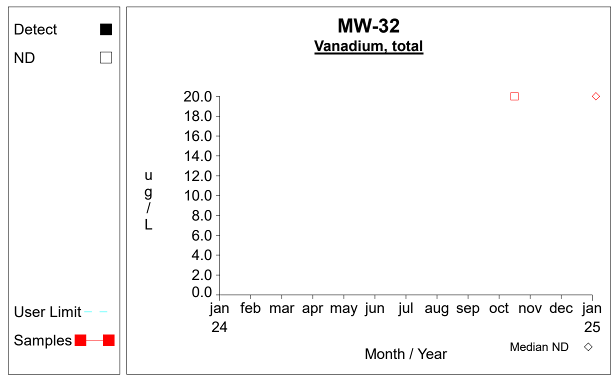
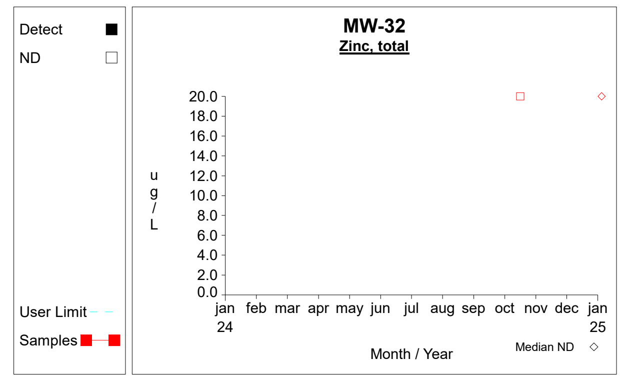


Graph 118



Graph 119



Graph 120

Results of the Ground Water Statistics

for North Central Iowa Regional Landfill

Second Semi-Annual Monitoring Event in 2024

Prepared for:
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December 2024

INTRODUCTION

This report contains the results of the statistical analyses used to evaluate the ground water data obtained during the second semi-annual monitoring event in 2024 at North Central Iowa Regional Landfill in Fort Dodge, Iowa. The ground water at North Central Iowa Regional Landfill is currently monitored by wells MW-10A, MW-10B, MW-18, MW-19, MW-20, MW-21R, MW-22, MW-25, MW-28, MW-30, and GU-2. Monitoring wells MW-10A, MW-10B, MW-18, MW-20, MW-21R, MW-22, MW-25, MW-28, and MW-30 were sampled on October 11, 2024 and analyzed for the parameters required by permit.

The statistical plan is designed to detect a release from the facility at the earliest indication so that it is protective of human health and the environment. The intrawell methodology is described and then applied to the North Central Iowa Regional Landfill data. The statistical plan conforms with IAC 567, Chapter 113.10 and the USEPA guidance document ("*Statistical Analysis of Ground-Water Monitoring Data at RCRA Facilities, Unified Guidance*", March 2009).

Ground Water Monitoring Program

Each of the groundwater monitoring wells is to be sampled at least semiannually and analyzed for the detection monitoring parameters listed in 113.10(5), which includes 15 inorganic constituents and 47 organic compounds, summarized below.

Detection monitoring constituents listed in Appendix I of IAC 567, Chapter 113.

Organic Compounds:

Acetone	*trans*-1,4-Dichloro-2-butene	Iodomethane
Acrylonitrile	1,1-Dichloroethane	4-Methyl-2-pentanone
Benzene	1,2-Dichloroethane	Styrene
Bromochloromethane	1,1-Dichloroethene	1,1,1,2-Tetrachloroethane
Bromodichloromethane	*cis*-1,2-Dichloroethene	1,1,2,2-Tetrachloroethane
Bromoform	*trans*-1,2-Dichloroethene	Tetrachloroethene
Carbon disulfide	1,2-Dichloropropane	Toluene
Carbon tetrachloride	*cis*-1,3-Dichloropropene	1,1,1-Trichloroethane
Chlorobenzene	*trans*-1,3-Dichloropropene	1,1,2-Trichloroethane
Chloroethane	Ethylbenzene	Trichloroethene
Chloroform	2-Hexanone	Trichlorofluoromethane
Dibromochloromethane	Bromomethane	1,2,3-Trichloropropane
1,2-Dibromo-3-chloropropane	Chloromethane	Vinyl acetate
1,2-Dibromoethane	Dibromomethane	Vinyl chloride
1,2-Dichlorobenzene	Methylene chloride	Xylenes (Total)
1,4-Dichlorobenzene	2-Butanone	

Inorganic constituents:

Antimony, Total	Chromium, Total	Selenium, Total
Arsenic, Total	Cobalt, Total	Silver, Total
Barium, Total	Copper, Total	Thallium, Total
Beryllium, Total	Lead, Total	Vanadium, Total
Cadmium, Total	Nickel, Total	Zinc, Total

The ground water data obtained during the second semi-annual monitoring event in 2024 are summarized in Attachment A.

STATISTICAL METHODOLOGIES FOR DETECTION MONITORING

IAC 567, Chapter 113.10(4) provides several options for statistically evaluating the ground water data at those wells that monitor the open cells or contiguous MSWLF units. The preferred methods for comparing ground water data are using either prediction limits or using control charts. The interwell method using site prediction limits was previously applied to the North Central Iowa Regional Landfill data using the DUMPStat® statistical program. DUMPStat® is a program for the statistical analysis of groundwater monitoring data using methods described in "Statistical Methods for Groundwater Monitoring" by Dr. Robert D. Gibbons. The DUMPStat program is completely consistent with all USEPA regulations and guidance and the ASTM D6312-98 guidance. An intrawell method using DUMPStat® was recently approved for the current monitoring network.

Ground water statistics are to be done on the inorganic constituents listed. The organic constituents are compared to maximum contaminant levels (MCLs) or practical quantitation limits (PQLs), in lieu of statistical comparisons to historical concentrations.

Intrawell statistics

Intrawell statistics are appropriate for facilities where the upgradient wells do not accurately characterize the natural ground water conditions downgradient from the facility. This may be due to different hydrogeological conditions where the wells are screened, having too few upgradient wells to account for the spatial variability, or the site exhibiting no definable hydraulic gradient. Intrawell statistics compare new measurements to the historical data at each ground water monitoring well independently. It is recommended that at least eight background samples be obtained prior to performing the statistics.

The most useful technique for intrawell comparisons is the combined Shewhart-CUSUM control chart. This control chart procedure is useful because it will detect releases both in terms of the constituent concentration and cumulative increases. This method is also extremely sensitive to sudden and gradual releases. A requirement for constructing these control charts is that the parameter is detected at a frequency greater than or equal to 25%, otherwise the data variance is not properly defined.

The combined Shewhart-CUSUM control chart assumes that the data are independent and normally distributed with a fixed mean and a constant variance. Independent data is much more critical than the normality assumption. To achieve independence, it is recommended that data are collected no more frequently than quarterly to account for seasonal variation. The combined Shewhart-CUSUM control chart is extremely robust to deviations from normality. Because the control charts do not use a specific multiplier based on a normal distribution, it is more conservative to assume normality.

It is recommended that at least eight rounds of data be available to provide a reliable estimate of the mean and standard deviation of the parameter concentration, although the control charts will be generated with as few as four data points. Having only four data points may produce greater uncertainty in the mean and standard deviation of the background data, leading to higher control limits, thus having a potentially high false negative rate.

Many groundwater monitoring parameters are not detected at a frequency great enough to generate the combined Shewhart-CUSUM control charts. For constituents that are detected less than 25% of the time at a particular well, the data should be plotted as a time series until a sufficient number of data points are available to provide a 99% confidence nonparametric prediction limit. Thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit. Eight independent measurements (for pass 1 of 2 resamples) are necessary to achieve a 99% confidence nonparametric prediction limit. The nonparametric prediction limit is the largest determination out of the data set collected for that well and parameter. If the detection frequency is 0% after thirteen samples have been collected, the practical quantitation limit (PQL) becomes the nonparametric prediction limit.

In developing the statistical background, the historical data must be thoroughly screened for anomalous data due to sampling error, analytical error, or simply by chance alone. An erroneous data point, if not removed prior to the mean and variance computations, would yield a larger control limit thus increasing the false negative rate. The DUMPStat® program screens for outliers using the Dixon test. If the Dixon test indicates an outlier, the value is considered a statistical outlier and will not be used in the mean and variance determinations. Anomalous data will still be plotted on the graphs (with a unique symbol) but will not be included in the calculations.

The verification resample plan is an integral function of the statistical plan to reduce the probability that anomalous data obtained after the background has been established, is indicative of a landfill release.

The background data for each well and constituent is tested for existing trends using Sen's nonparametric estimate of trend. If contamination exists prior to completing the background, the control limits could be potentially high and this control chart method would not be able to detect an increasing trend unless the increase is severe.

Results of the Intrawell Statistics

The Appendix I trace metals data from wells MW-10A, MW-10B, MW-18, MW-20, MW-21R, MW-22, and MW-30 were evaluated using the combined Shewhart-CUSUM control chart method.

The background at MW-18, MW-19, MW-20, and MW-22 included the eight rounds of data obtained from October 2014 through 2020. The background at MW-10A included the eight rounds of data obtained from October 2014 through December 2019. The background at MW-10B included the eight rounds of data obtained from October 2014 through June 2019. The background at MW-21R includes the eight rounds of data obtained from October 2014 through April 2021.

Even for wells with eight rounds of background, there is insufficient data to determine control limits given the approved resample program. For constituents that are detected less than 25% of the time at a particular well, thirteen independent measurements (with 1 resample) are necessary to achieve a 99% confidence (1% false positive rate) nonparametric prediction limit.

As ground water monitoring at a municipal solid waste facility proceeds, it is recommended to update background data sets periodically with valid detection monitoring results that are representative of background groundwater quality not affected by leakage from a monitored unit. Failure to update background will exclude factors such as natural temporal variation, changes in field or laboratory methodologies, and changes in the water table due to meteorological conditions or other influences.

Since there have been no statistical failures attributed to the landfill, the background was updated to include data obtained from October 2014 through April 2021 for wells MW-10B, MW-18, MW-19, MW-20, MW-21R, and MW-22. The background was updated to include data obtained from October 2014 through April 2022 for well MW-10A. The initial background at ground water well MW-30 includes the eight rounds of data from 2019 through April 2023. Ground water wells MW-25, MW-28, MW-31, MW-32, GU-2, GU-3, GU-4, and GU-5 have fewer than eight rounds of data.

A summary of the intrawell statistics is included in Attachment B, Table 1 “Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts.” The control charts or time series graphs follow the summary table. For the parameters evaluated, the control limit exceedances detected are summarized in the table below.

Control Limit Exceedances During the Second Semi-Annual Monitoring Event in 2024

Sample Point	Trace Metal	Result	CUSUM Value	Control Limit	Control Limit Type	Verified/ Awaiting Verification
MW-21R	Arsenic, μg/L	12.6	13.2121	5.6295	Normal	Awaiting Verification

No increasing trends were detected in the background data.

A control chart factor was selected to provide a balance of the site-wide false positive and false negative rates. A statistical power curve indicates the expected false assessments for the site as a whole. For intrawell analysis, the site-wide false positive rate is 3% and the test becomes sensitive to 4 standard deviation units over background.

The previous verified exceedances at these wells were evaluated against the ground water protection standards (GWPS) using confidence limits calculated in accordance with the Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities – Unified Guidance, USEPA, March 2009 (Attachment C). The analysis was conducted to evaluate whether verified concentrations are significantly above the water quality standard. The 95% lower confidence limit (LCL) for the mean of the historical data was used to evaluate whether the regulated unit is in compliance with the ground-water protection standards under 40 CFR 264 (e.g. whether the verified constituent is detected at a significant level above the GWPS). An exceedance is verified if the LCL is above the Regulatory GWPS.

The 95% LCL for cobalt at MW-18 (43.757 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L.

The 95% LCL for cobalt at MW-21R (6.129 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L.

The 95% LCL for cobalt at MW-25 (3.358 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L.

The 95% LCL for cobalt at MW-30 (2.842 μg/L) exceeds the Iowa Statewide Standard of 2.1 μg/L but does not exceed the site-specific GWPS of 48.1 μg/L.

The remainder of the calculated 95% LCLs are below the respective ground water quality standards.

Volatile Organic Compounds

Volatile Organic Compounds (VOCs) are generally man-made compounds not present in ambient ground water. If VOCs are detected above their statistical limit (i.e., the laboratory PQL or reporting limit), a verification resample will be conducted at the next scheduled sampling event. A statistical exceedance will be indicated if the VOC detection is confirmed by the subsequent monitoring. The only VOC detected in the ground water at North Central Iowa Regional Landfill during the second semi-annual monitoring event in 2024 was 1,1-dichloroethane (1.0 μg/L) at MW-25. The reporting limit for 1,1-dichloroethane is 1 μg/L. Historical VOC detections are summarized in Attachment D.

Attachment A

Ground Water Data obtained during the Second Semi-Annual Monitoring Event in 2024

Table 1

Analytical Data Summary for 9/27/2024

Constituents	Units	GU-4	GU-5
Antimony, total	ug/L	<2	<2
Arsenic, total	ug/L	<4	<4
Barium, total	ug/L	19.6	25.6
Beryllium, total	ug/L	<4	<4
Cadmium, total	ug/L	<.8	<.8
Chromium, total	ug/L	<8	<8
Cobalt, total	ug/L	.6	2.8
Copper, total	ug/L	<4	<4
Lead, total	ug/L	<4	<4
Nickel, total	ug/L	35.5	30.5
Selenium, total	ug/L	<4	<4
Silver, total	ug/L	<4	<4
Thallium, total	ug/L	<2	<2
Vanadium, total	ug/L	<20	<20
Zinc, total	ug/L	3590	11500

* - The displayed value is the arithmetic mean of multiple database matches.

Table 2

Analytical Data Summary for 10/11/2024

Constituents	Units	GU-4	GU-5	MW-10A	MW-10B	MW-18	MW-20	MW-21R	MW-22	MW-25	MW-28	MW-30
1,1,1,2-tetrachloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,1-trichloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2,2-tetrachloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1,2-trichloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,1-dichloroethene	ug/L			<1	<1	<1	<1	<1	<1	1	<1	<1
1,2,3-trichloropropane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dibromo-3-chloropropane	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
1,2-dibromoethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichlorobenzene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,2-dichloropropane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
1,4-dichlorobenzene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
2-butanone (mek)	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
2-hexanone (mbk)	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
4-methyl-2-pentanone (mibk)	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
Acetone	ug/L			<10	<10	<10	<10	<10	<10	<10	<10	<10
Acrylonitrile	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
Antimony, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Arsenic, total	ug/L	<4.0	<4.0	22.1	<4.0	<4.0	26.2	12.6	<4.0	6.9	<4.0	<4.0
Barium, total	ug/L	15.2	23.3	62.2	26.0	27.2	61.8	25.2	9.9	62.0	19.9	24.5
Benzene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Beryllium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Bromochloromethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromodichloromethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromoform	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Bromomethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Cadmium, total	ug/L	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8	<.8
Carbon disulfide	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbon tetrachloride	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Chlorobenzene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloroform	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Chloromethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Chromium, total	ug/L	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
Cis-1,2-dichloroethene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Cis-1,3-dichloropropene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Cobalt, total	ug/L	<.4	2.2	1.8	<.4	68.3	2.1	6.8	<.4	3.7	<.4	7.4
Copper, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Dibromochloromethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Dibromomethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Ethylbenzene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Iodomethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Lead, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Methylene chloride	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
Nickel, total	ug/L	18.4	23.4	11.0	9.6	50.1	4.0	9.5	11.7	6.5	7.6	29.6
Selenium, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Silver, total	ug/L	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4	<4
Styrene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Tetrachloroethene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Thallium, total	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
Toluene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,2-dichloroethene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,3-dichloropropene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Trans-1,4-dichloro-2-butene	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
Trichloroethene	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Trichlorofluoromethane	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Vanadium, total	ug/L	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20	<20
Vinyl acetate	ug/L			<5	<5	<5	<5	<5	<5	<5	<5	<5
Vinyl chloride	ug/L			<1	<1	<1	<1	<1	<1	<1	<1	<1
Xylenes, total	ug/L			<2	<2	<2	<2	<2	<2	<2	<2	<2
Zinc, total	ug/L	358.0	13000.0	26.6	<20.0	27.3	<20.0	<20.0	<20.0	<20.0	<20.0	29.3

* - The displayed value is the arithmetic mean of multiple database matches.

Table 3

Analytical Data Summary for 10/16/2024

Constituents	Units	MW-31	MW-32
1,1,1,2-tetrachloroethane	ug/L	<1	<1
1,1,1-trichloroethane	ug/L	<1	<1
1,1,2,2-tetrachloroethane	ug/L	<1	<1
1,1,2-trichloroethane	ug/L	<1	<1
1,1-dichloroethane	ug/L	<1	<1
1,1-dichloroethene	ug/L	<1	<1
1,2,3-trichloropropane	ug/L	<1	<1
1,2-dibromo-3-chloropropane	ug/L	<5	<5
1,2-dibromoethane	ug/L	<1	<1
1,2-dichlorobenzene	ug/L	<1	<1
1,2-dichloroethane	ug/L	<1	<1
1,2-dichloropropane	ug/L	<1	<1
1,4-dichlorobenzene	ug/L	<1	<1
2-butanone (mek)	ug/L	<10	<10
2-hexanone (mbk)	ug/L	<5	<5
4-methyl-2-pentanone (mibk)	ug/L	<5	<5
Acetone	ug/L	<10	<10
Acrylonitrile	ug/L	<5	<5
Antimony, total	ug/L	<2	<2
Arsenic, total	ug/L	<4	<4
Barium, total	ug/L	63.5	72.1
Benzene	ug/L	<1	<1
Beryllium, total	ug/L	<4	<4
Bromochloromethane	ug/L	<1	<1
Bromodichloromethane	ug/L	<1	<1
Bromoform	ug/L	<1	<1
Bromomethane	ug/L	<1	<1
Cadmium, total	ug/L	<.8	<.8
Carbon disulfide	ug/L	<1	<1
Carbon tetrachloride	ug/L	<1	<1
Chlorobenzene	ug/L	<1	<1
Chloroethane	ug/L	<1	<1
Chloroform	ug/L	<1	<1
Chloromethane	ug/L	<1	<1
Chromium, total	ug/L	<8	<8
Cis-1,2-dichloroethene	ug/L	<1	<1
Cis-1,3-dichloropropene	ug/L	<1	<1
Cobalt, total	ug/L	7.0	30.7
Copper, total	ug/L	<4	<4
Dibromochloromethane	ug/L	<1	<1
Dibromomethane	ug/L	<1	<1
Ethylbenzene	ug/L	<1	<1
Iodomethane	ug/L	<1	<1
Lead, total	ug/L	<4	<4
Methylene chloride	ug/L	<5	<5
Nickel, total	ug/L	22.8	51.5
Selenium, total	ug/L	<4	<4
Silver, total	ug/L	<4	<4
Styrene	ug/L	<1	<1
Tetrachloroethene	ug/L	<1	<1
Thallium, total	ug/L	<2	<2
Toluene	ug/L	<1	<1
Trans-1,2-dichloroethene	ug/L	<1	<1
Trans-1,3-dichloropropene	ug/L	<1	<1
Trans-1,4-dichloro-2-butene	ug/L	<5	<5
Trichloroethene	ug/L	<1	<1
Trichlorofluoromethane	ug/L	<1	<1
Vanadium, total	ug/L	<20	<20
Vinyl acetate	ug/L	<5	<5
Vinyl chloride	ug/L	<1	<1
Xylenes, total	ug/L	<2	<2
Zinc, total	ug/L	<20	<20

* - The displayed value is the arithmetic mean of multiple database matches.

Attachment B

Summary Tables and Graphs for the Intrawell Comparisons

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Antimony, total	ug/L	MW-10A	13	5	41			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10A	13	6	42	6.8000	3.7354	4.0000	22.1000	6.8000	19.2984	31.0802	normal		
Barium, total	ug/L	MW-10A	11	7	43	37.1000	10.5196	31.0000	62.2000	37.1000	51.6804	105.4774	normal		
Beryllium, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10A	13	5	41			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10A	13	5	41			8.0000	8.0000			12.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10A	13	5	41	1.4615	1.9894	0.4000	1.8000	1.4615	1.4615	14.3924	normal		
Copper, total	ug/L	MW-10A	13	6	42			4.0000	4.0000			11.4000	nonpar	.99	**
Lead, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			6.9000	nonpar	.99	**
Nickel, total	ug/L	MW-10A	13	5	41	12.4000	14.5913	4.0000	11.0000	12.4000	12.4000	107.2436	normal		
Selenium, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			9.0000	nonpar	.99	**
Silver, total	ug/L	MW-10A	13	5	41			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10A	13	5	41			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10A	13	5	41			20.0000	20.0000			28.4000	nonpar	.99	**
Zinc, total	ug/L	MW-10A	13	5	41	23.1231	14.8627	20.0000	26.6000	23.1231	23.1231	119.7307	normal		
Antimony, total	ug/L	MW-10B	13	6	37			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.1000	nonpar	.99	**
Barium, total	ug/L	MW-10B	11	6	37	31.4091	6.2633	28.7000	26.0000	31.4091	31.4091	72.1205	normal		
Beryllium, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-10B	13	6	38			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-10B	13	6	37			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-10B	13	6	38			0.4000	0.4000			4.1000	nonpar	.99	**
Copper, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			7.4000	nonpar	.99	**
Lead, total	ug/L	MW-10B	13	6	37			4.0000	4.0000			4.6000	nonpar	.99	**
Nickel, total	ug/L	MW-10B	13	6	38	8.6538	4.8541	5.6000	9.6000	8.6538	8.6538	40.2058	normal		
Selenium, total	ug/L	MW-10B	13	6	38			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-10B	13	6	38			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-10B	13	6	37			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-10B	13	6	37			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-10B	12	6	37	18.2583	8.2091	20.0000	20.0000	18.2583	18.2583	71.6177	normal		
Antimony, total	ug/L	MW-18	13	7	42			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-18	13	7	42	25.8692	2.9652	24.0000	27.2000	28.4036	27.5105	45.1429	normal		
Beryllium, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-18	13	7	42			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-18	13	7	42			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-18	12	8	43	41.2417	10.3115	39.8000	68.3000	85.3148	104.6395	108.2662	normal		
Copper, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-18	13	7	42	36.9385	9.9355	37.2000	50.1000	36.9385	42.6484	101.5192	normal		
Selenium, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-18	13	7	42			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-18	13	7	42			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-18	13	7	42			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-18	13	7	43	18.9077	3.2938	20.0000	27.3000	18.9077	24.8297	40.3174	normal		
Antimony, total	ug/L	MW-20	13	7	41			2.0000	2.0000			2.0000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Arsenic, total	ug/L	MW-20	13	7	41	25.2154	16.8948	8.0000	26.2000	25.2154	25.2154	135.0314	normal		
Barium, total	ug/L	MW-20	13	7	41	67.6154	27.4452	39.0000	61.8000	67.6154	67.6154	246.0093	normal		
Beryllium, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-20	13	7	41			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-20	13	7	41			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-20	13	7	42	5.9308	2.2574	2.4000	2.1000	5.9308	5.9308	20.6036	normal		
Copper, total	ug/L	MW-20	13	8	42			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-20	13	7	41	8.4692	2.6550	4.0000	4.0000	8.4692	8.4692	25.7267	normal		
Selenium, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-20	13	7	41			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-20	13	7	41			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-20	13	7	41			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-20	14	7	42	21.4357	17.4166	20.0000	20.0000	21.4357	21.4357	134.6433	normal		
Antimony, total	ug/L	MW-21R	8	7	15			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-21R	8	8	16	4.1250	0.2315	5.2000	12.6000	4.9685	13.2121	5.6295	normal		
Barium, total	ug/L	MW-21R	8	7	15	31.8000	12.8251	19.6000	25.2000	31.8000	31.8000	115.1631	normal		
Beryllium, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-21R	8	7	15			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-21R	8	7	15			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-21R	9	7	16	17.8111	5.2987	9.1000	6.8000	17.8111	17.8111	52.2526	normal		
Copper, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			5.2000	nonpar	.99	**
Lead, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-21R	9	7	16	35.4889	15.6969	13.6000	9.5000	35.4889	35.4889	137.5189	normal		
Selenium, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-21R	8	7	15			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-21R	8	7	15			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-21R	8	7	15			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-21R	8	7	15	22.8625	12.7285	20.0000	20.0000	22.8625	22.8625	105.5976	normal		
Antimony, total	ug/L	MW-22	13	7	40			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Barium, total	ug/L	MW-22	13	7	40	18.1385	4.1526	13.3000	9.9000	18.1385	18.1385	45.1305	normal		
Beryllium, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-22	13	7	40			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-22	13	7	40			8.0000	8.0000			8.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-22	13	7	40			0.4000	0.4000			0.8000	nonpar	.99	**
Copper, total	ug/L	MW-22	13	8	41			4.0000	4.0000			4.0000	nonpar	.99	**
Lead, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Nickel, total	ug/L	MW-22	14	7	41	18.7929	15.0825	4.0000	11.7000	34.5834	18.7929	116.8292	normal		
Selenium, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Silver, total	ug/L	MW-22	13	7	40			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-22	13	7	40			2.0000	2.0000			4.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-22	13	7	40			20.0000	20.0000			20.0000	nonpar	.99	**
Zinc, total	ug/L	MW-22	15	7	42	22.3733	13.7636	20.0000	20.0000	22.3733	22.3733	111.8370	normal		
Antimony, total	ug/L	MW-30	8	3	11			2.0000	2.0000			2.0000	nonpar	.99	**
Arsenic, total	ug/L	MW-30	8	3	11			4.0000	4.0000			9.1000	nonpar	.99	**

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

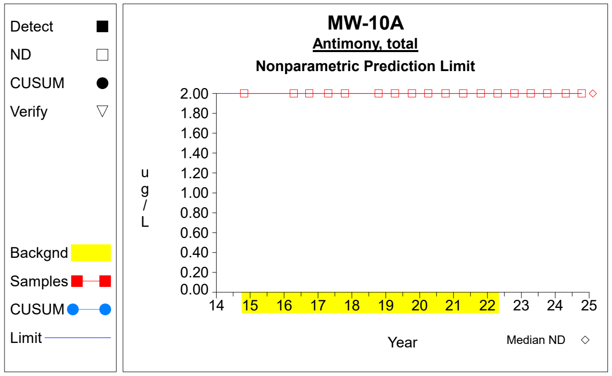
Table 1

Summary Statistics and Intermediate Computations for Combined Shewhart-CUSUM Control Charts

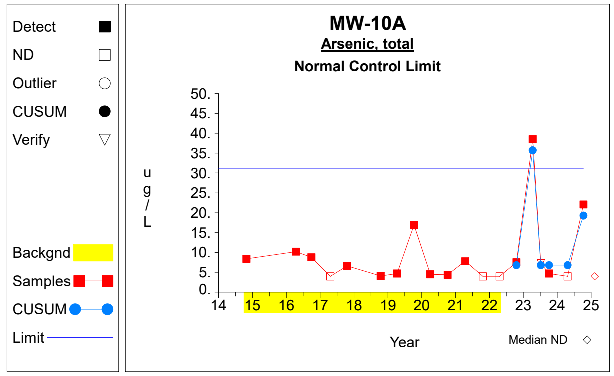
Constituent	Units	Well	N(back)	N(mon)	N(tot)	Mean	SD	R(i-1)	R(i)	S(i-1)	S(i)	Limit	Type	Conf	
Barium, total	ug/L	MW-30	8	3	11	26.8000	9.6465	14.2000	24.5000	26.8000	26.8000	89.5020	normal		
Beryllium, total	ug/L	MW-30	8	3	11			4.0000	4.0000			4.0000	nonpar	.99	**
Cadmium, total	ug/L	MW-30	8	3	11			0.8000	0.8000			0.8000	nonpar	.99	**
Chromium, total	ug/L	MW-30	8	3	11			8.0000	8.0000			43.0000	nonpar	.99	**
Cobalt, total	ug/L	MW-30	8	3	11	7.3750	7.3738	3.0000	7.4000	7.3750	7.3750	55.3050	normal		
Copper, total	ug/L	MW-30	7	3	11	4.5143	0.8802	4.0000	4.0000	4.5143	4.5143	10.2356	normal		
Lead, total	ug/L	MW-30	8	3	11			4.0000	4.0000			12.7000	nonpar	.99	**
Nickel, total	ug/L	MW-30	8	3	11	15.5875	16.3448	12.7000	29.6000	15.5875	15.5875	121.8287	normal		
Selenium, total	ug/L	MW-30	8	3	11			4.0000	4.0000			5.7000	nonpar	.99	**
Silver, total	ug/L	MW-30	8	3	11			4.0000	4.0000			4.0000	nonpar	.99	**
Thallium, total	ug/L	MW-30	8	3	11			2.0000	2.0000			2.0000	nonpar	.99	**
Vanadium, total	ug/L	MW-30	8	3	11			20.0000	20.0000			21.4000	nonpar	.99	**
Zinc, total	ug/L	MW-30	8	3	11	38.4375	41.5326	20.0000	29.3000	38.4375	38.4375	308.3996	normal		

N(back) and N(mon) = Non-outlier measurements in the background and monitoring periods.
N(tot) = All independent measurements for that constituent and well.
For transformed data, mean and SD in transformed units and control limit in original units.
Conf = confidence level for passing initial test or one of two verification resamples (nonparametric test only).
* - Insufficient Data.
** - Detection Frequency < 25%.
*** - Zero Variance.

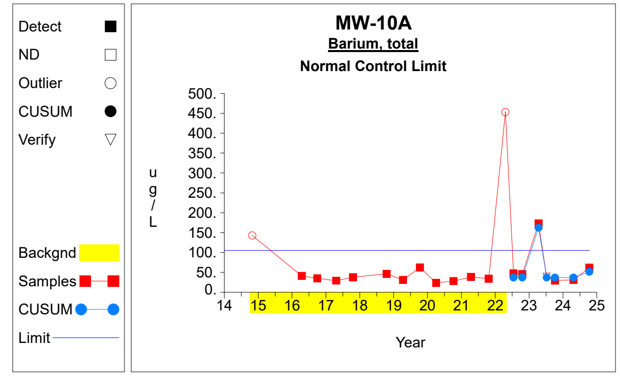
Intra-Well Control Charts / Prediction Limits



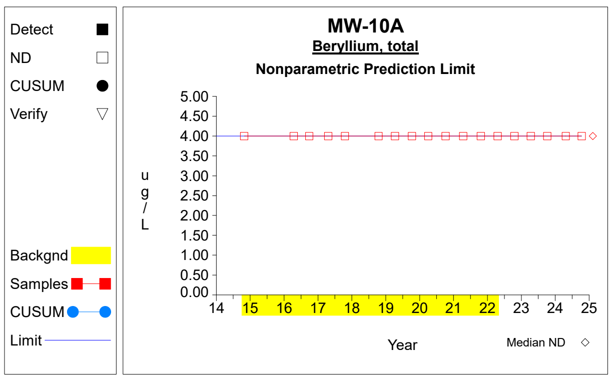
Graph 1



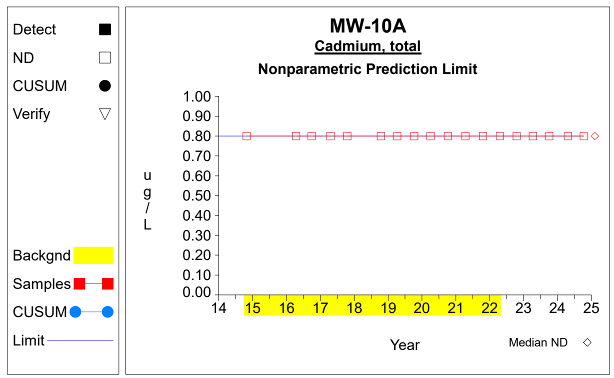
Graph 2



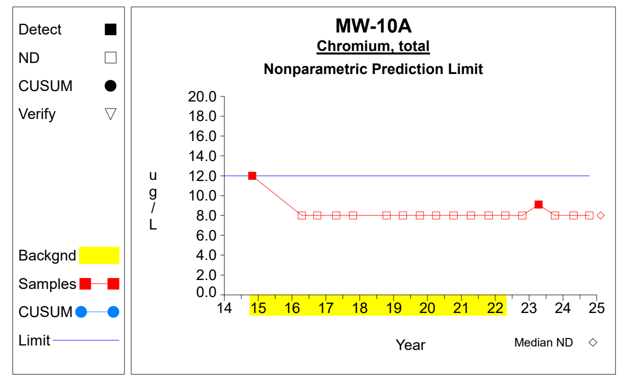
Graph 3



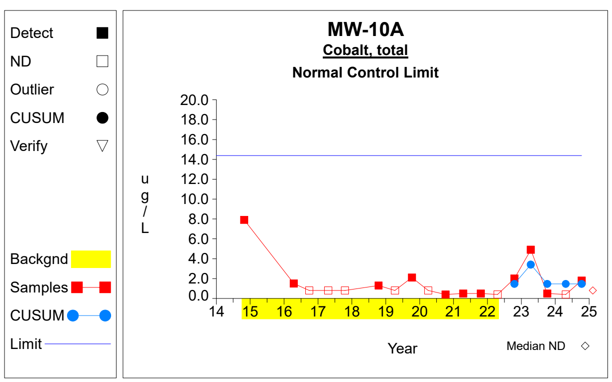
Graph 4



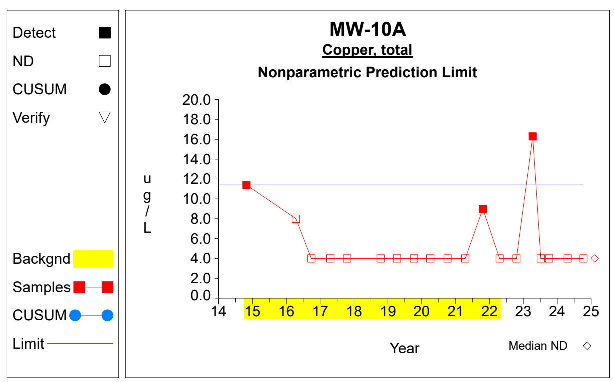
Graph 5



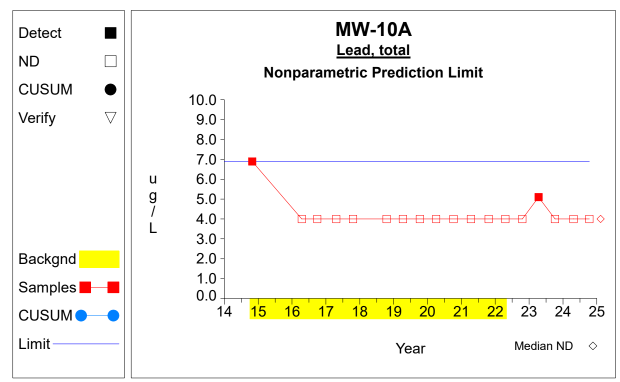
Graph 6



Graph 7



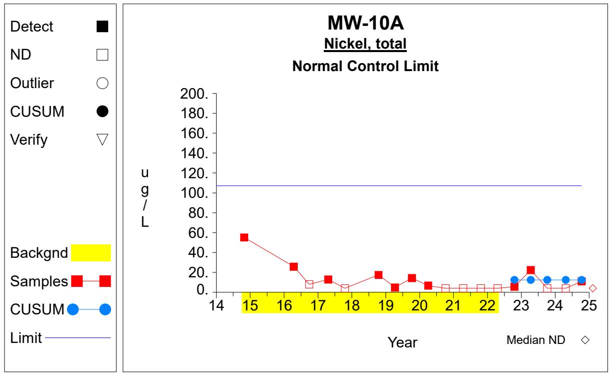
Graph 8



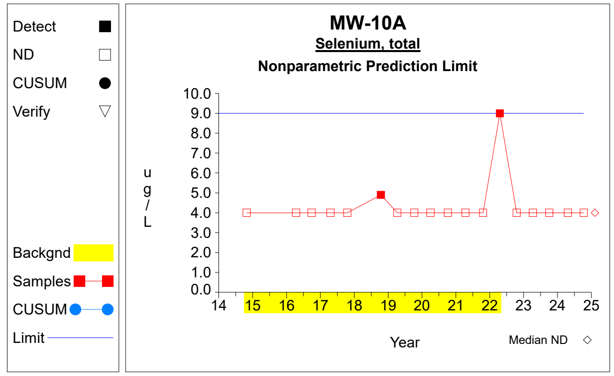
Graph 9

Prepared by: Otter Creek Environmental

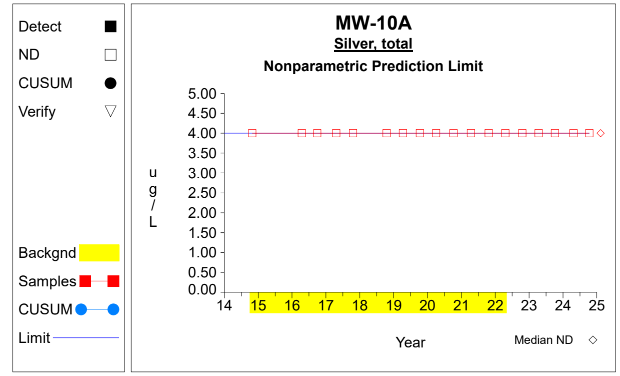
Intra-Well Control Charts / Prediction Limits



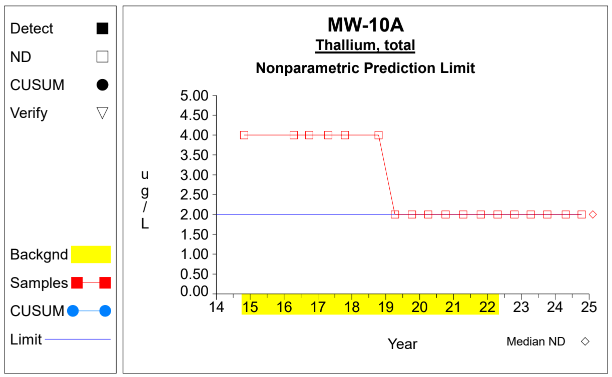
Graph 10



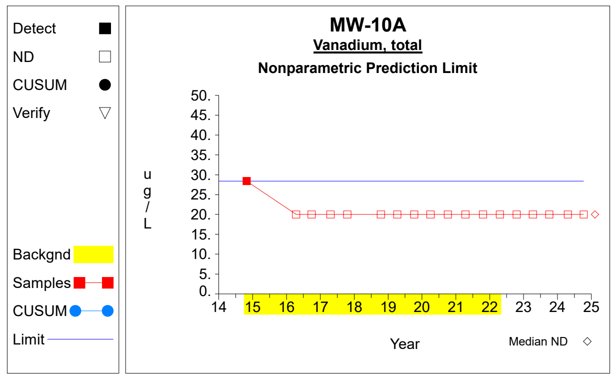
Graph 11



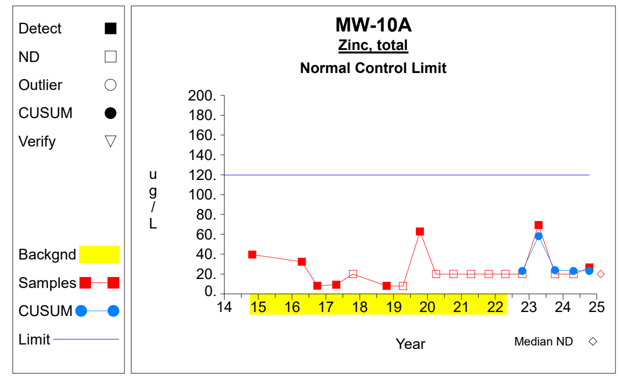
Graph 12



Graph 13



Graph 14



Graph 15

North Central Iowa [GW]

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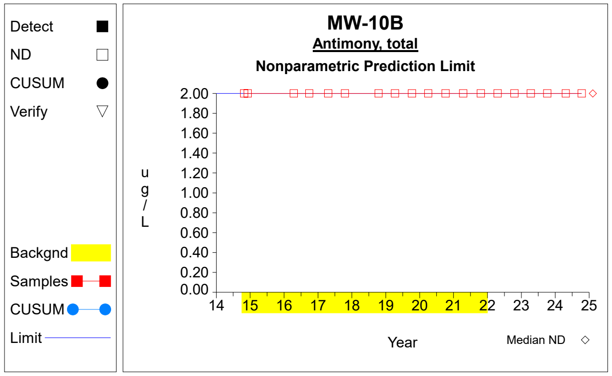
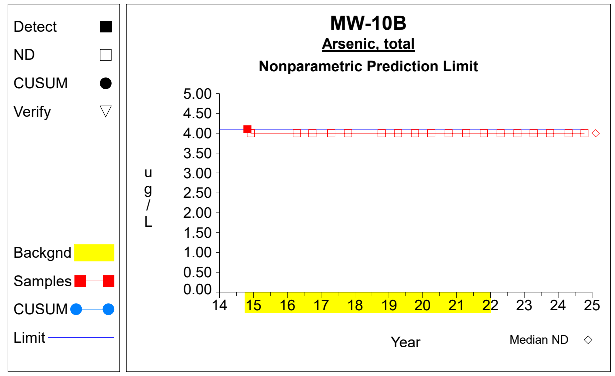
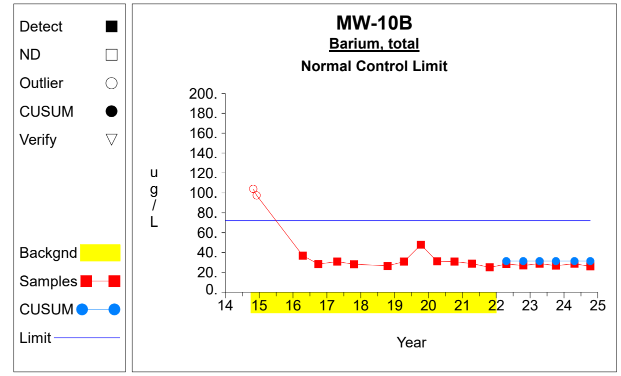
Intra-Well Control Charts / Prediction Limits



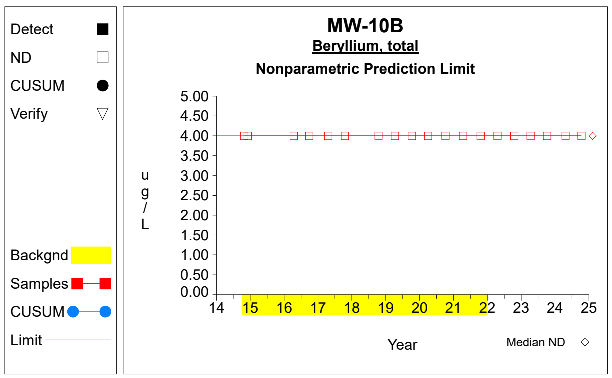
Graph 16



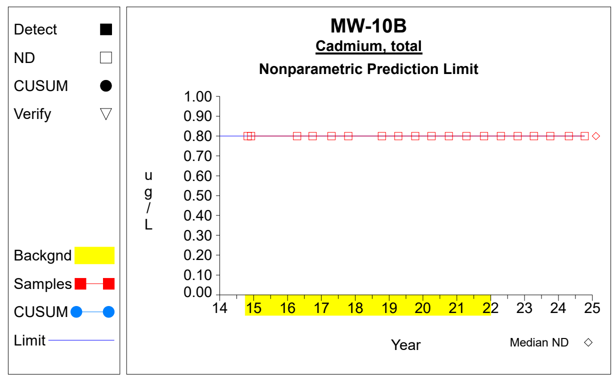
Graph 17



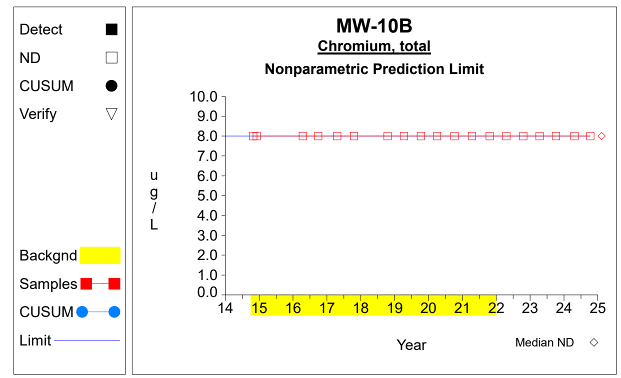
Graph 18



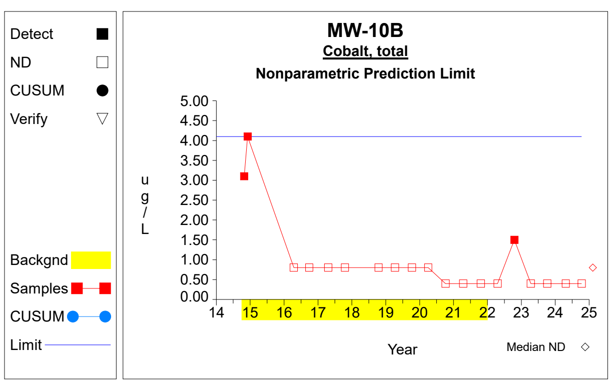
Graph 19



Graph 20



Graph 21



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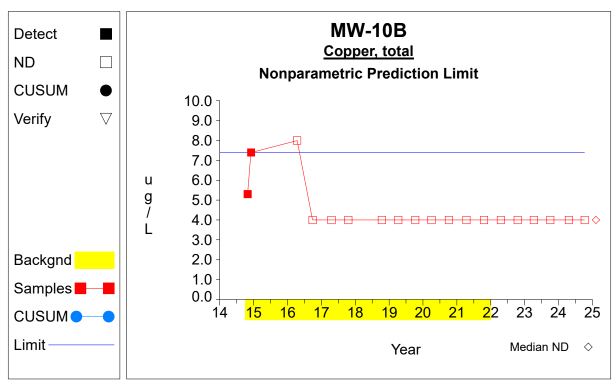
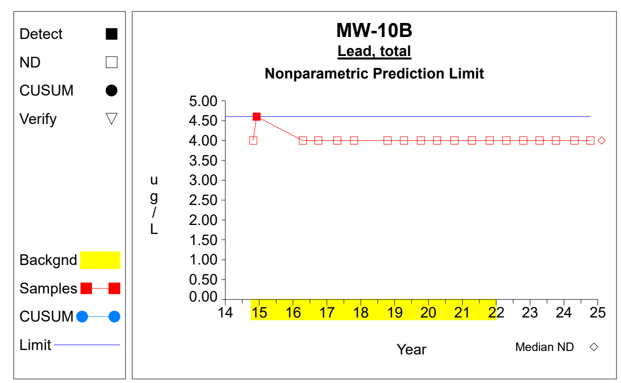


Graph 23



Graph 24

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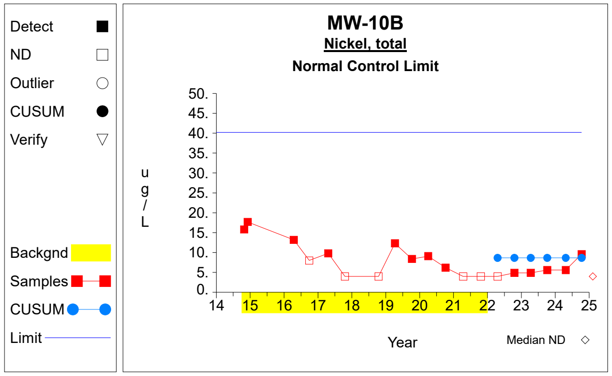
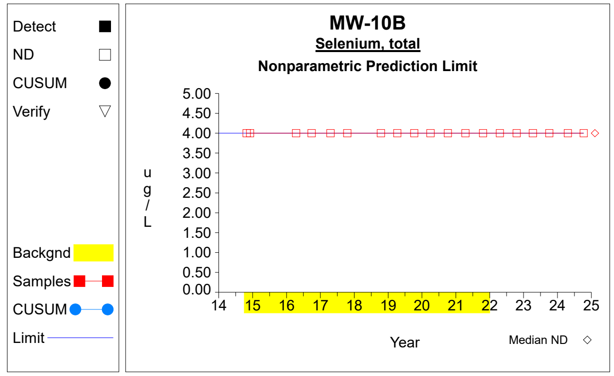
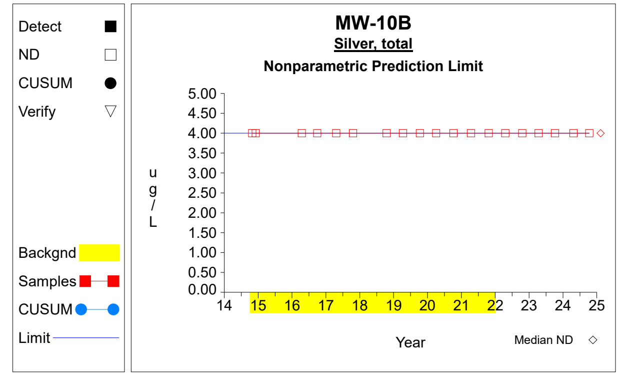
Intra-Well Control Charts / Prediction Limits



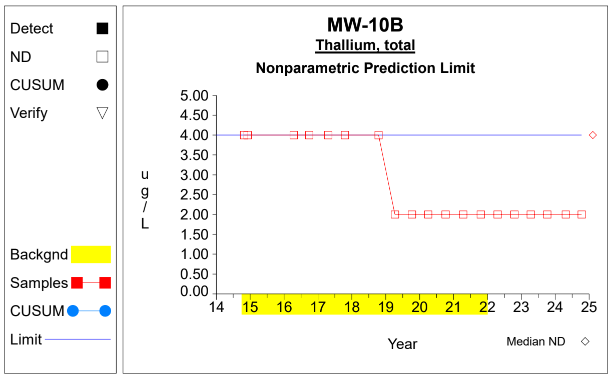
Graph 25



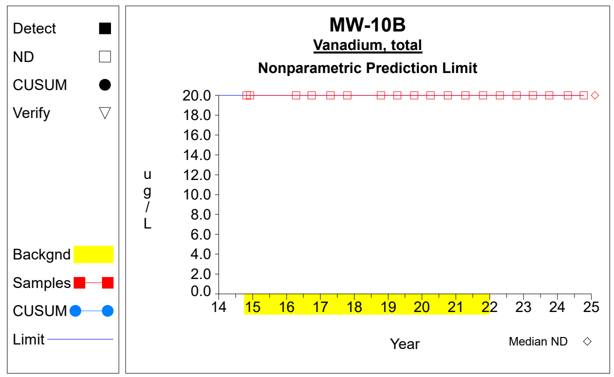
Graph 26



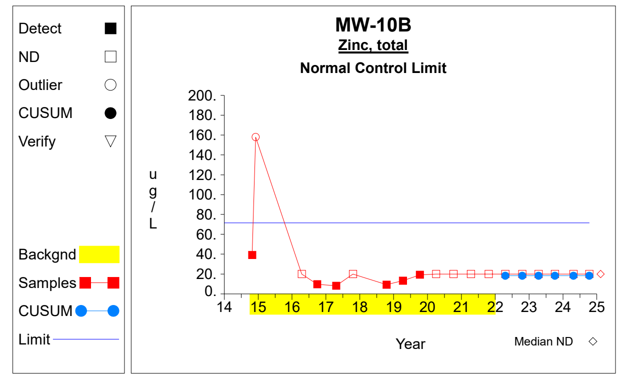
Graph 27



Graph 28

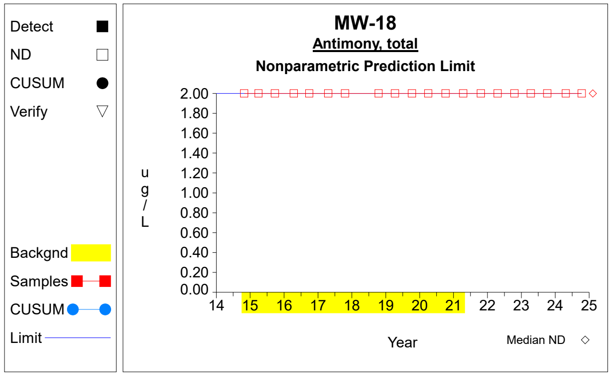


Graph 29



Graph 30

Intra-Well Control Charts / Prediction Limits



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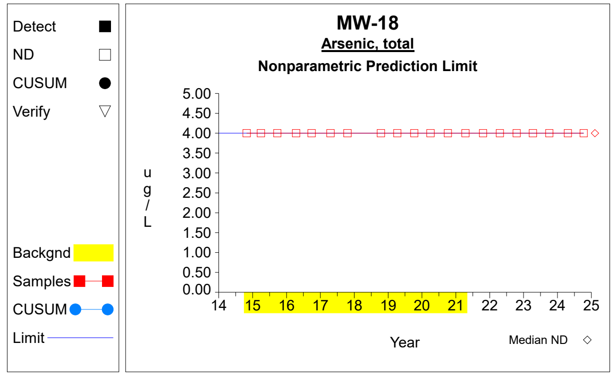
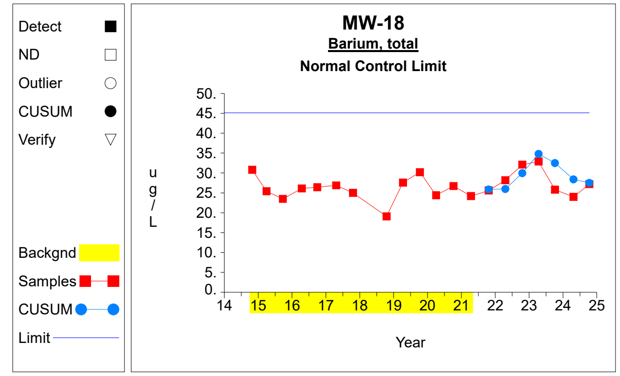
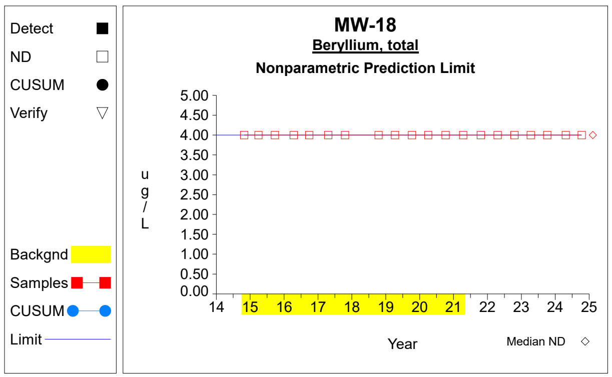


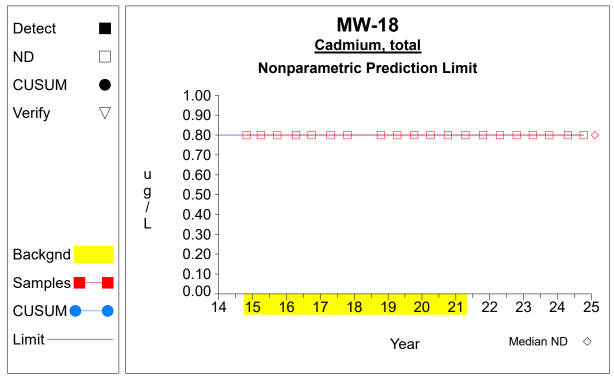
Graph 32



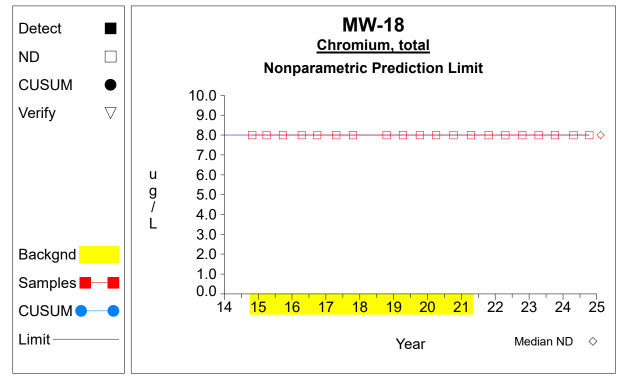
Graph 33



Graph 34



Graph 35



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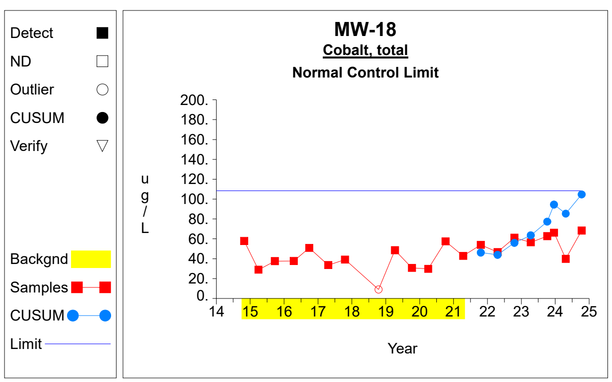

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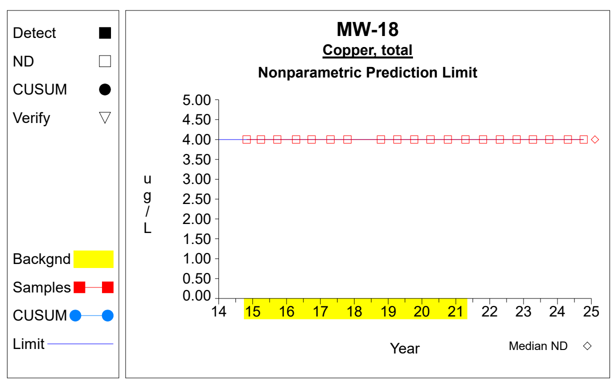

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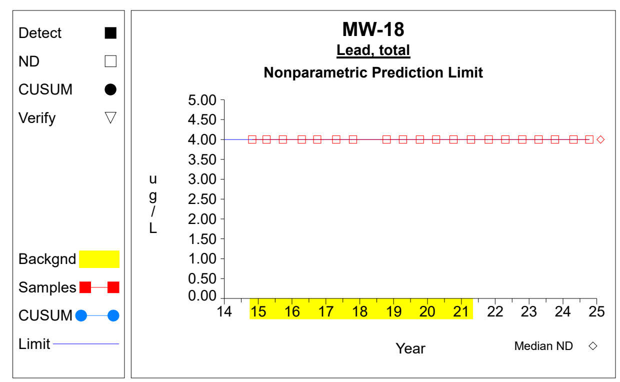
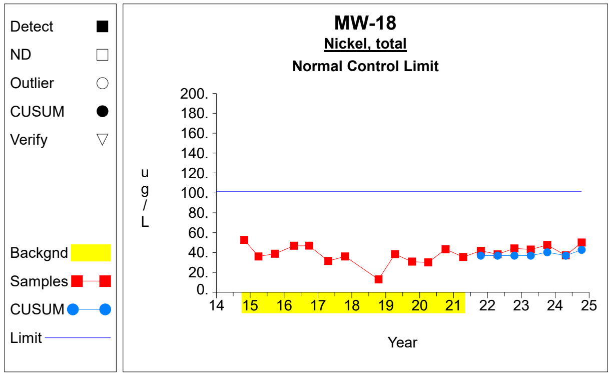
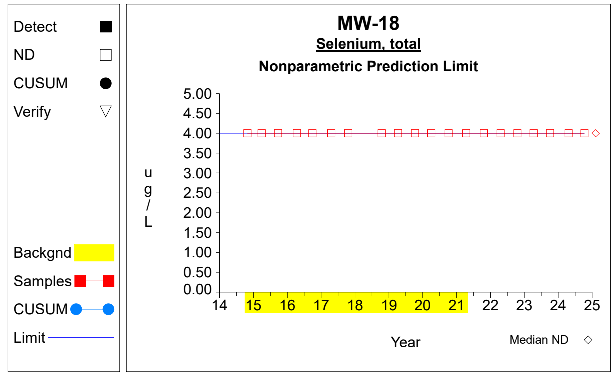


Graph 39

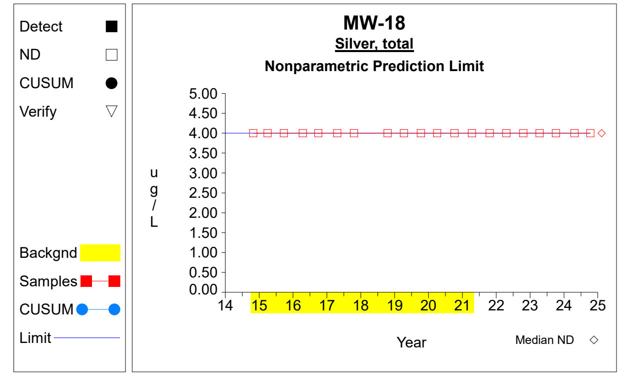
Intra-Well Control Charts / Prediction Limits



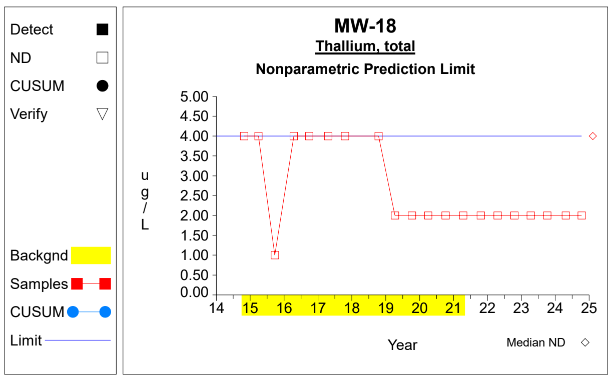
Graph 40



Graph 41



Graph 42



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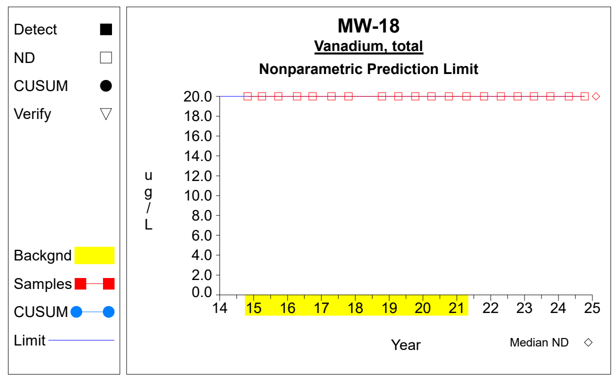

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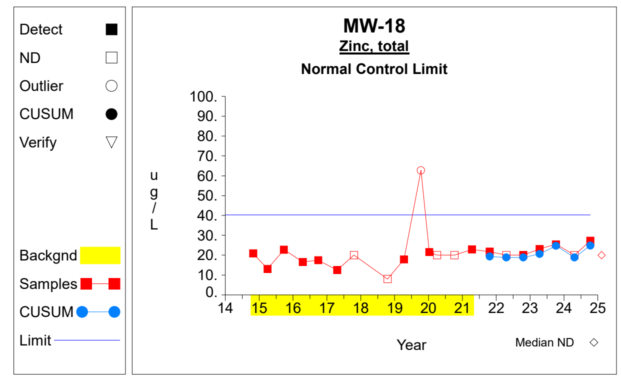
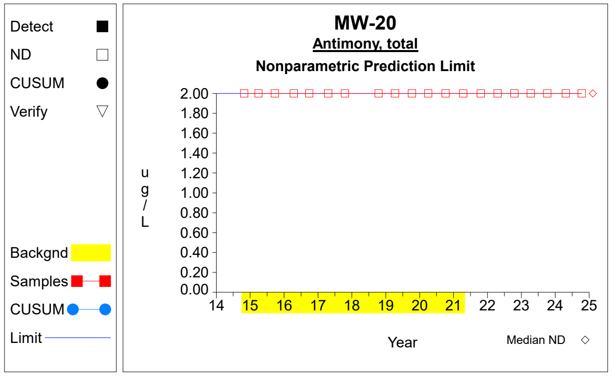


Graph 45

Intra-Well Control Charts / Prediction Limits



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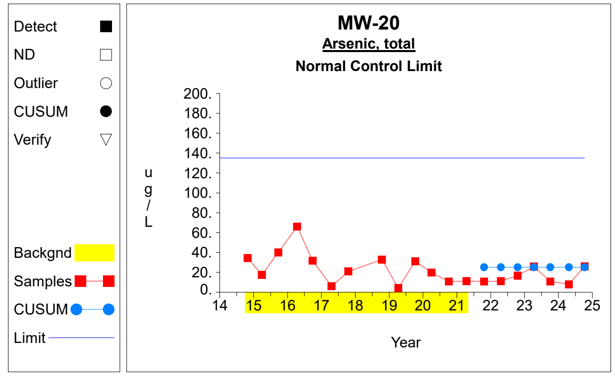
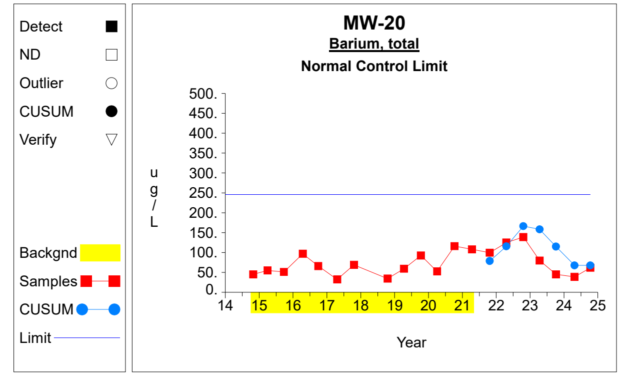


Graph 47



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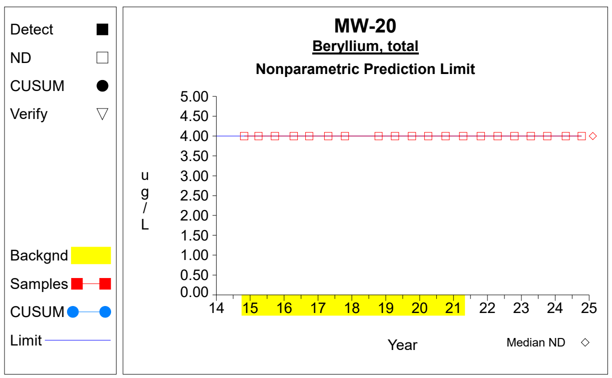

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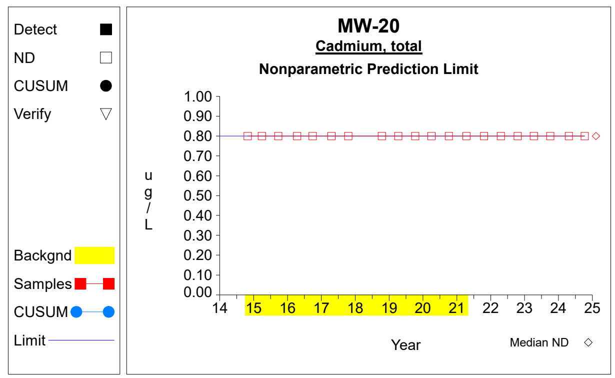
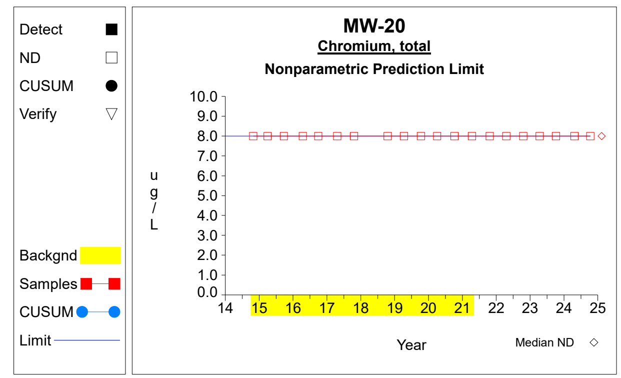
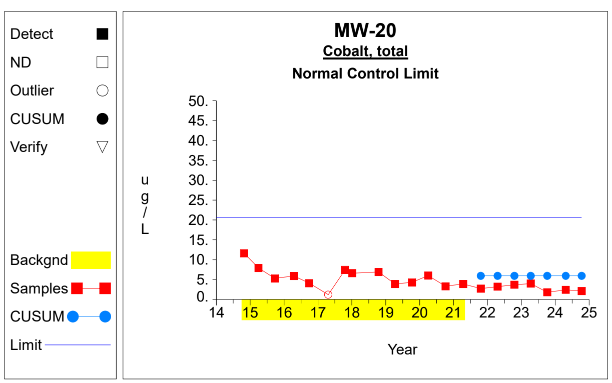


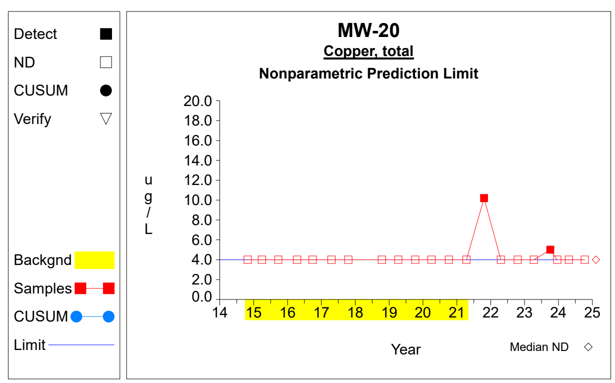
Graph 50



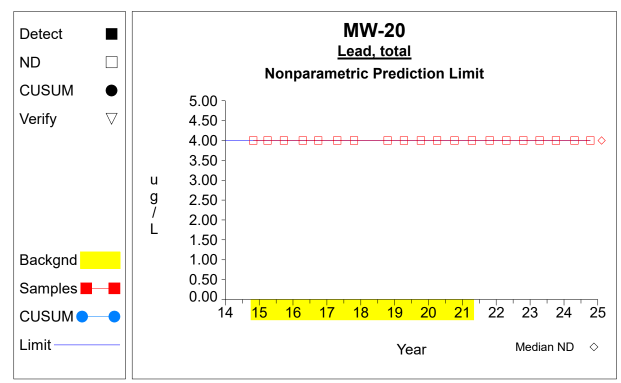
Graph 51



Graph 52

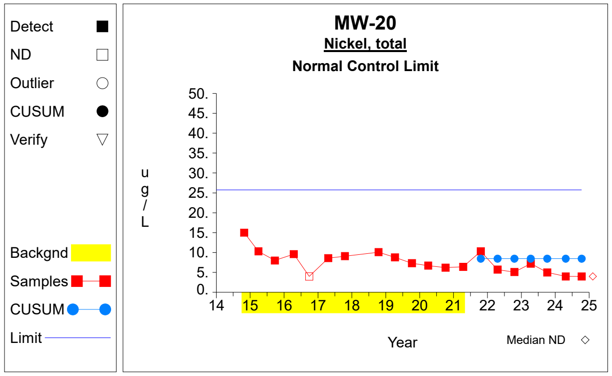


Graph 53

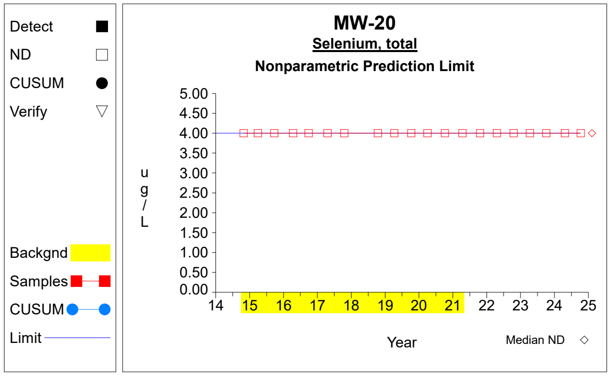


Graph 54

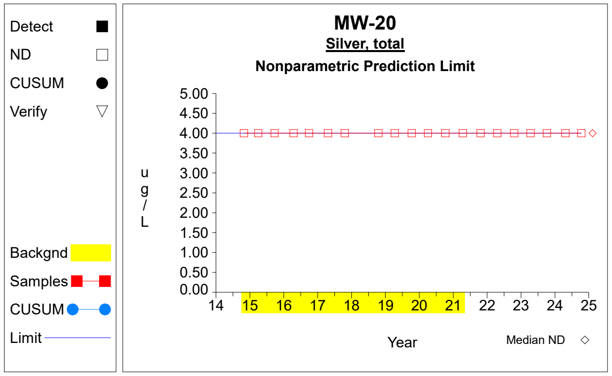
Intra-Well Control Charts / Prediction Limits



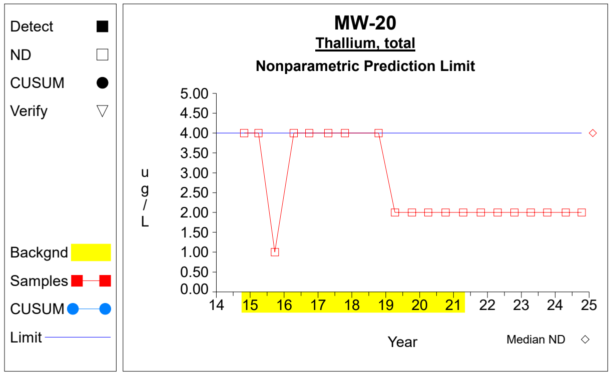
Graph 55



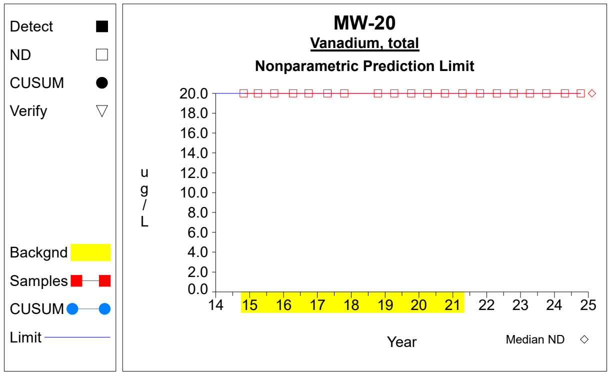
Graph 56



Graph 57



Graph 58



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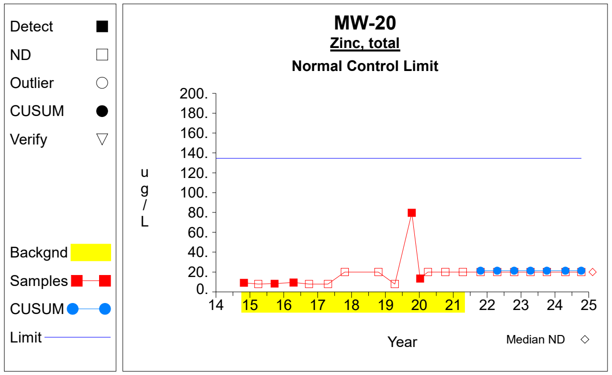

Graph 60

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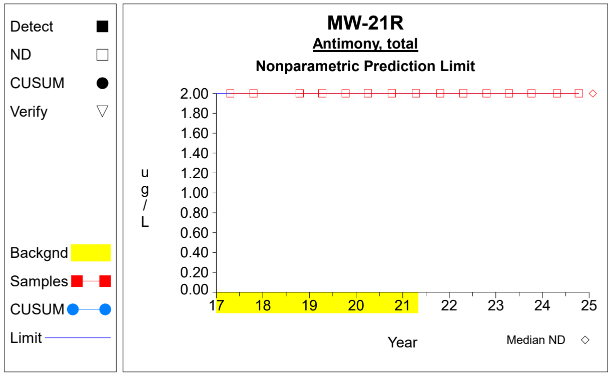
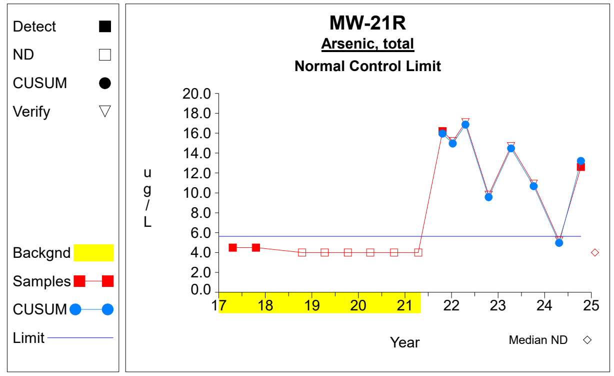
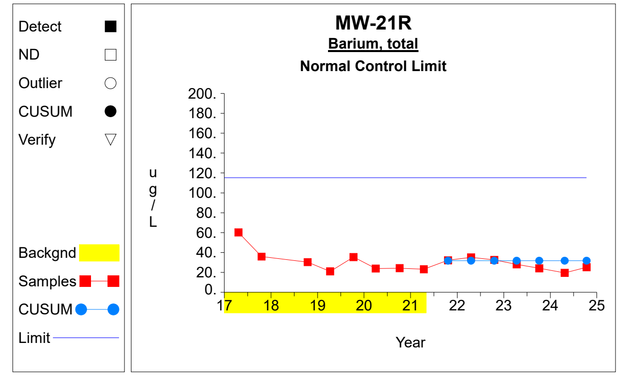
Intra-Well Control Charts / Prediction Limits



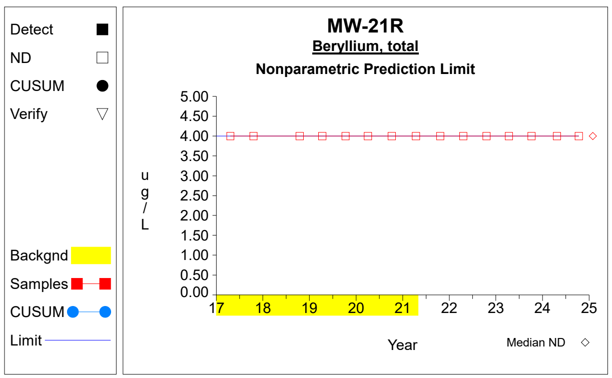
Graph 61



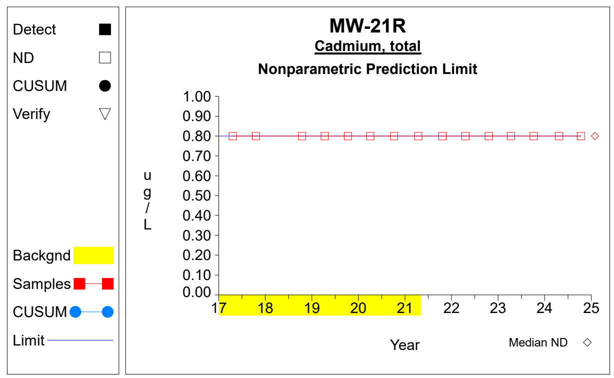
Graph 62



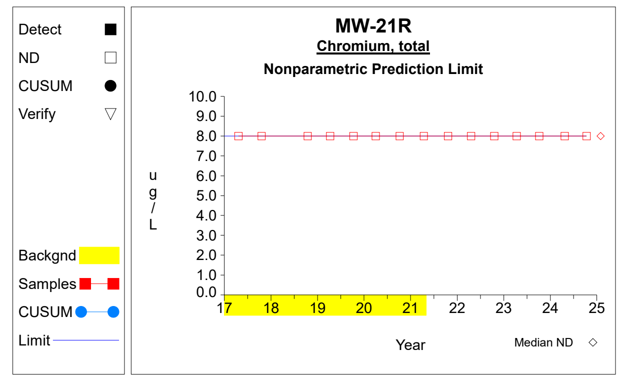
Graph 63



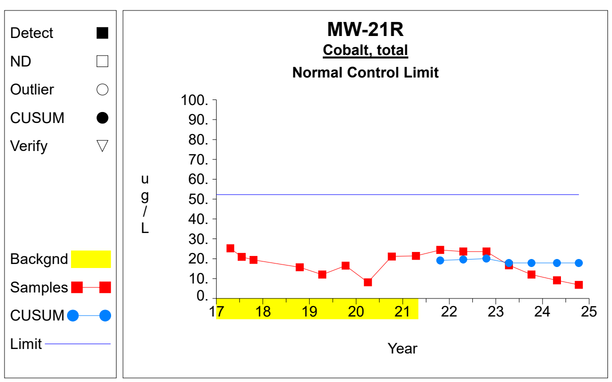
Graph 64



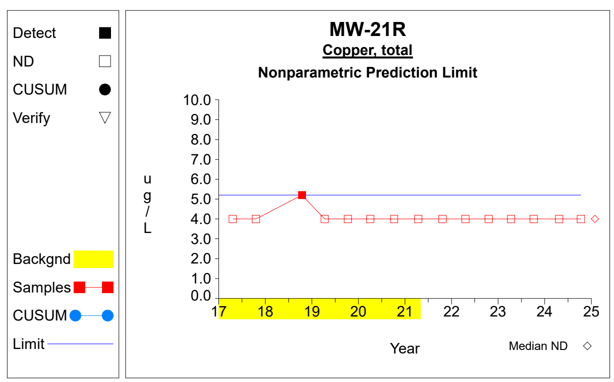
Graph 65



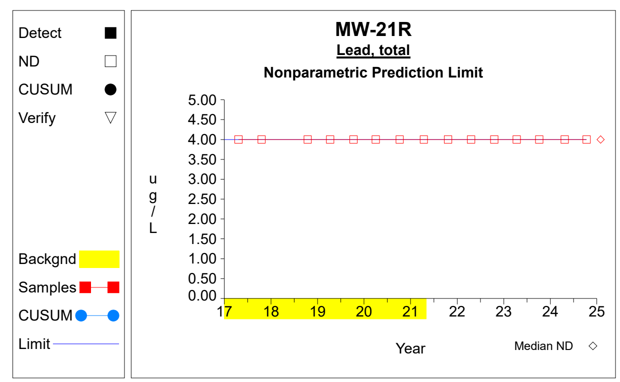
Graph 66



Graph 67



Graph 68



Graph 69

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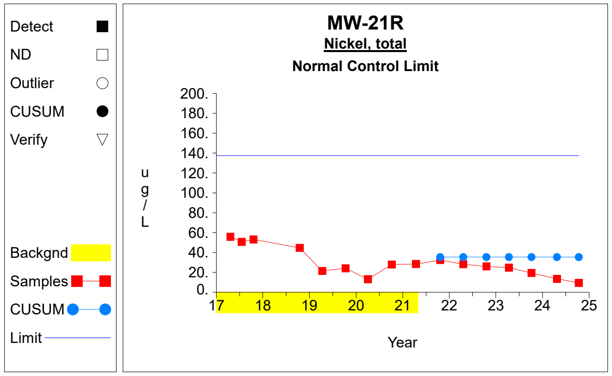
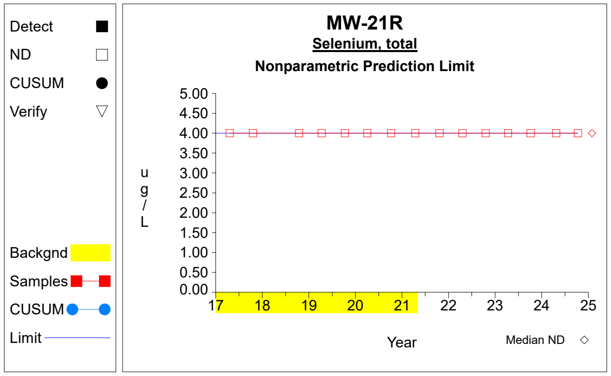
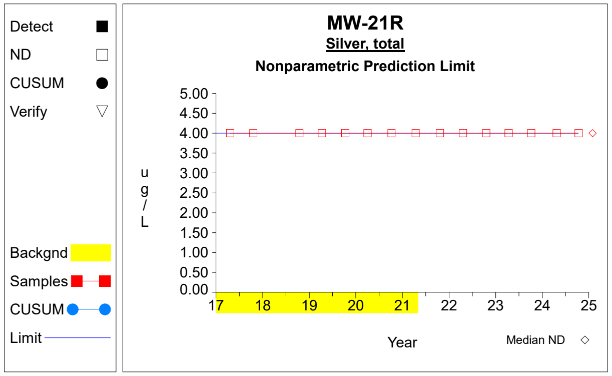
Intra-Well Control Charts / Prediction Limits



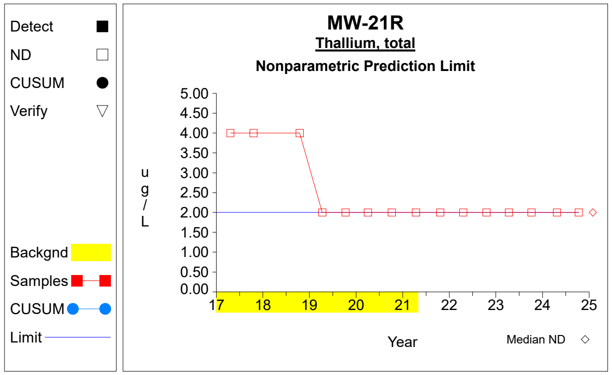
Graph 70



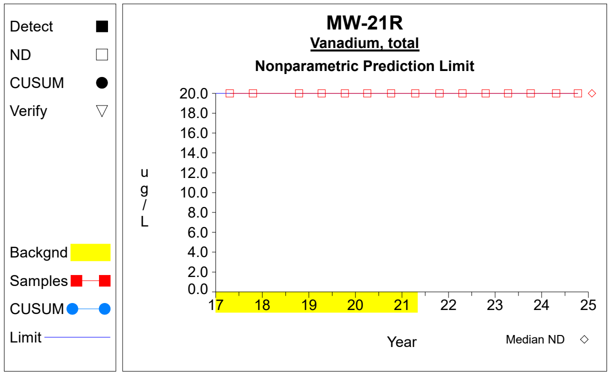
Graph 71



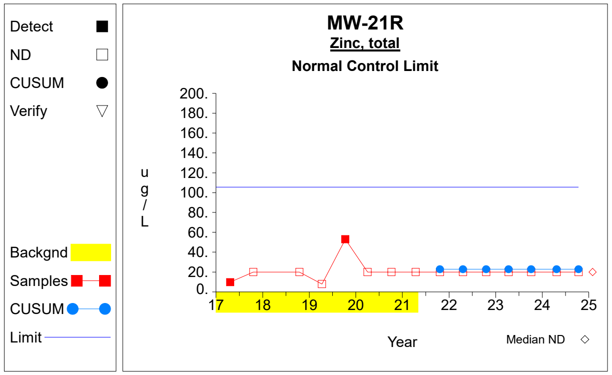
Graph 72



Graph 73



Graph 74



Graph 75

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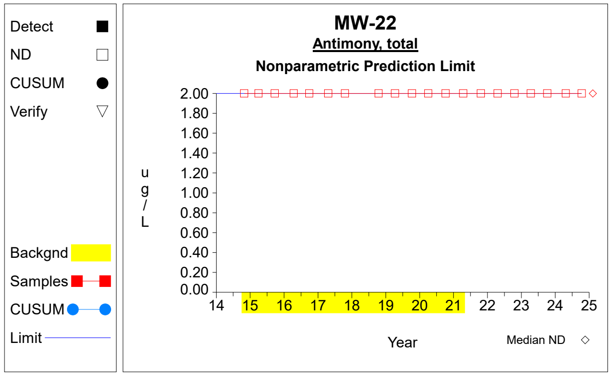
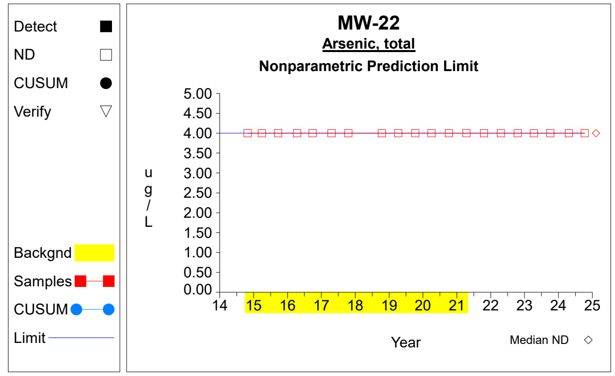
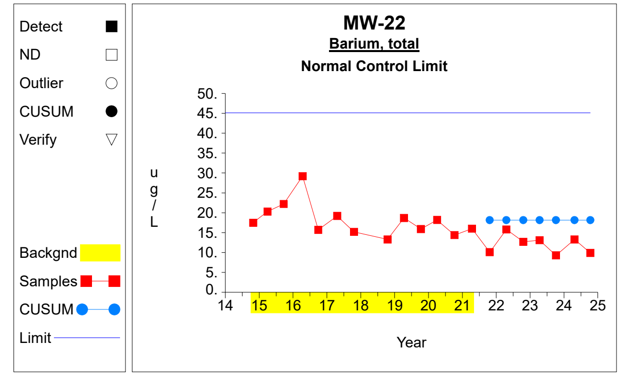
Intra-Well Control Charts / Prediction Limits



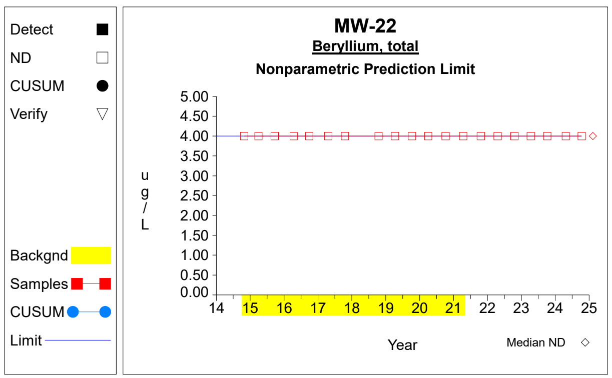
Graph 76



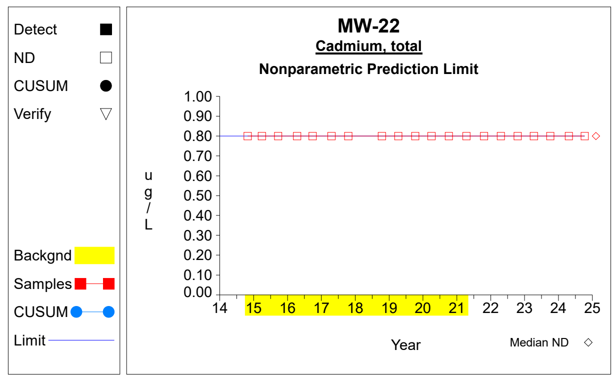
Graph 77



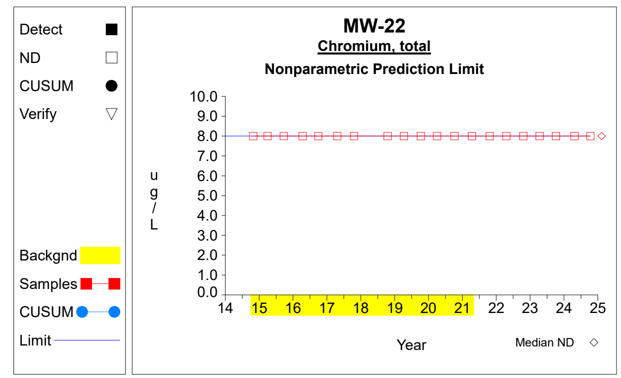
Graph 78



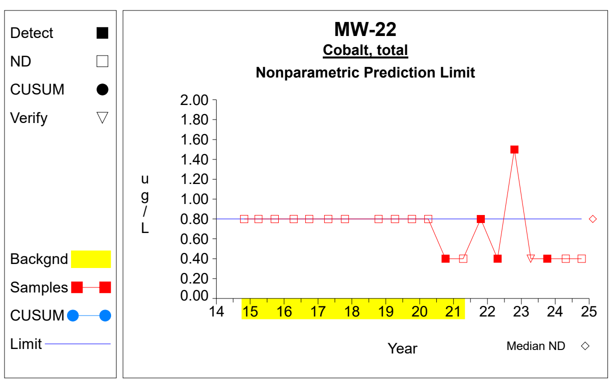
Graph 79



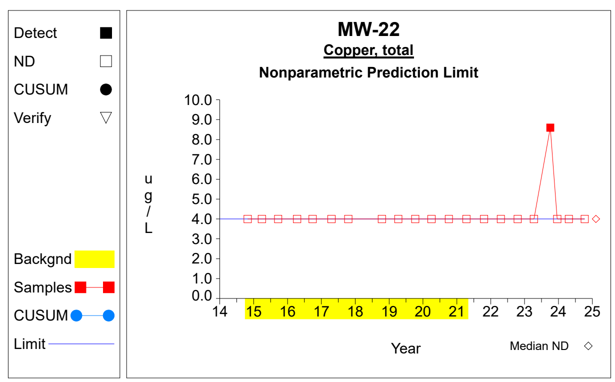
Graph 80



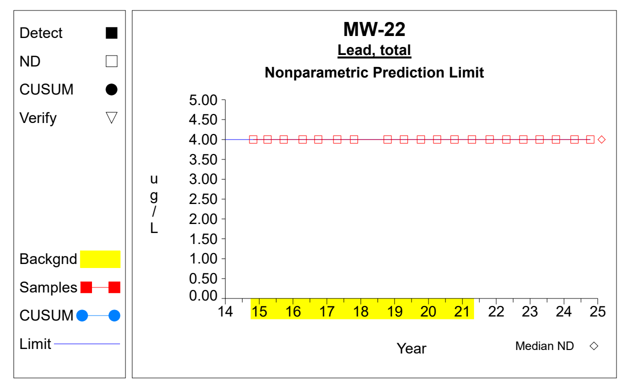
Graph 81



Graph 82



Graph 83



Graph 84

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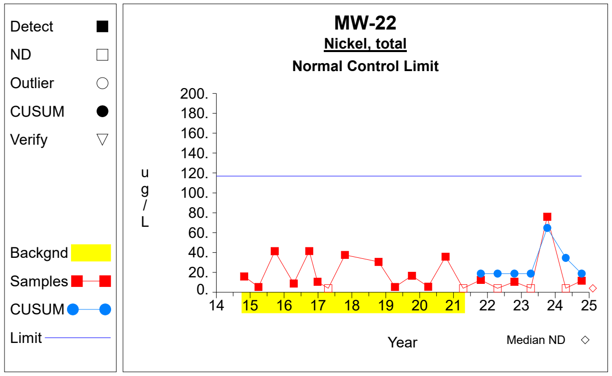
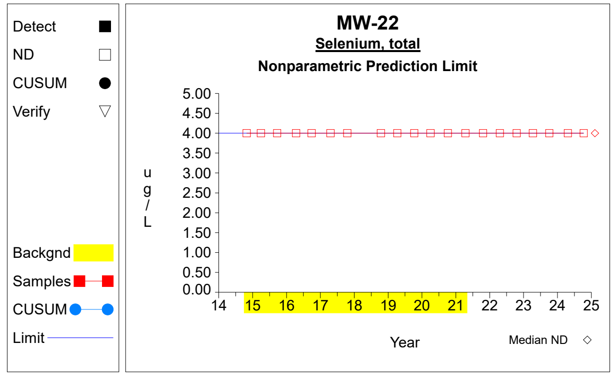
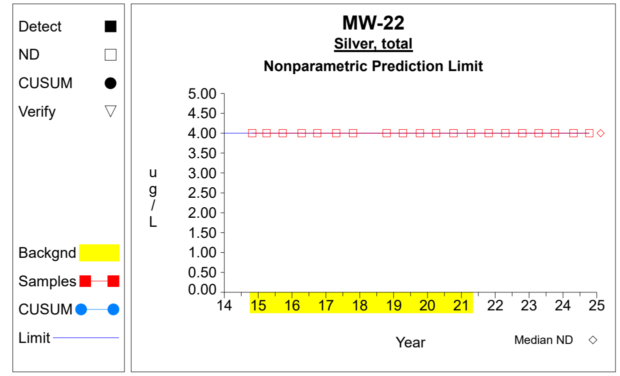
Intra-Well Control Charts / Prediction Limits



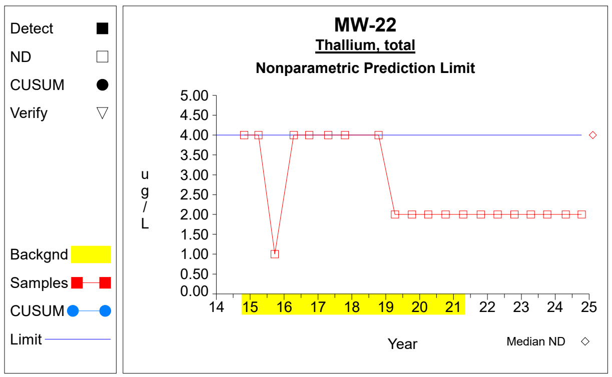
Graph 85



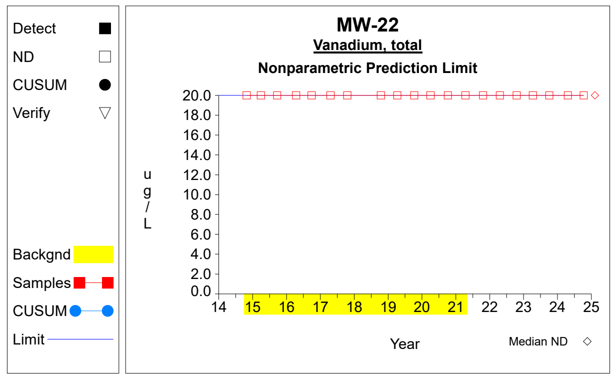
Graph 86



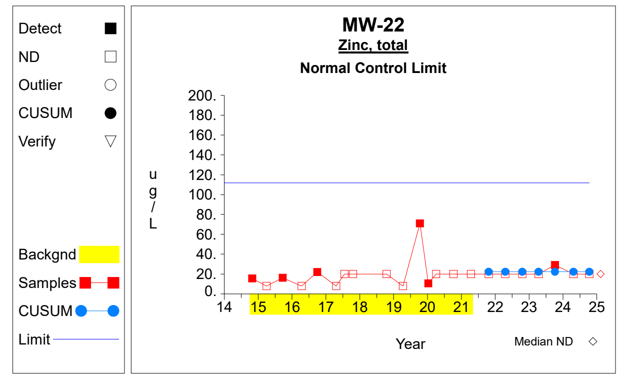
Graph 87



Graph 88

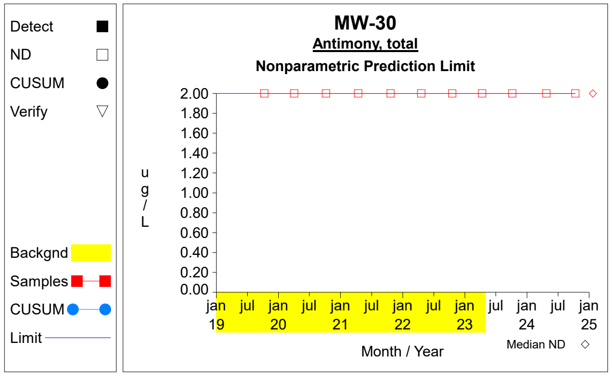


Graph 89

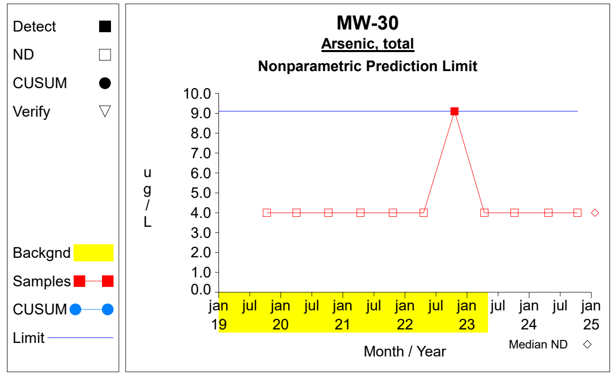


Graph 90

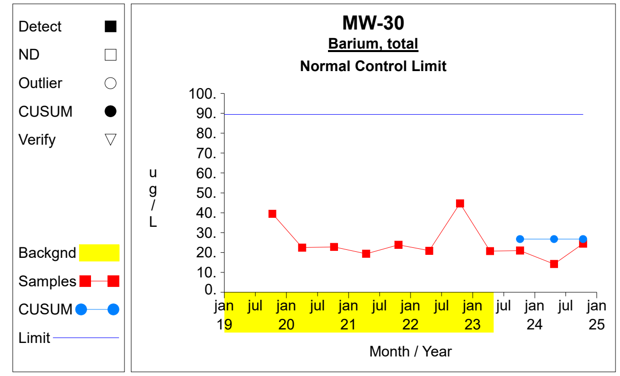
Intra-Well Control Charts / Prediction Limits



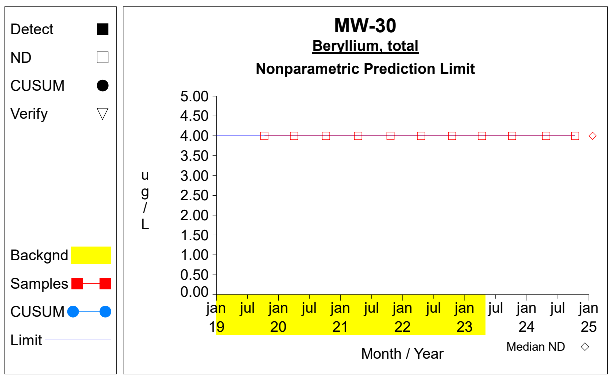
Graph 91



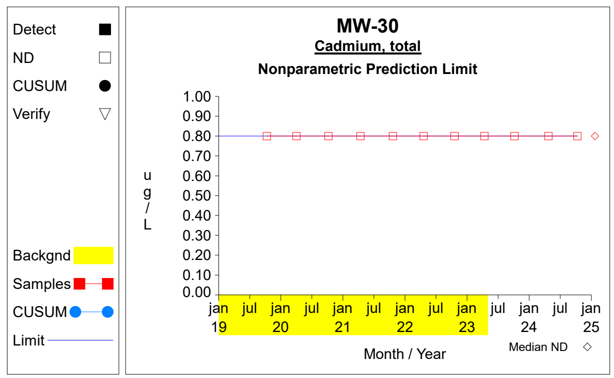
Graph 92



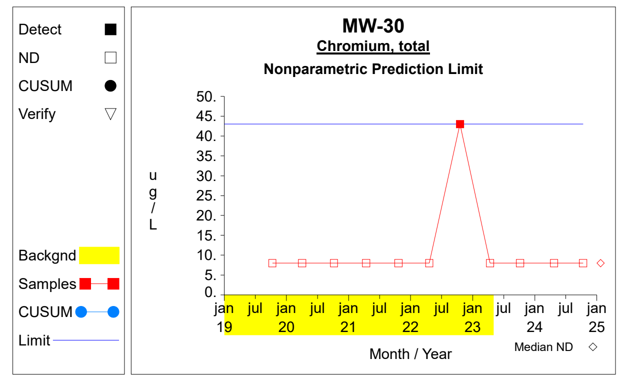
Graph 93



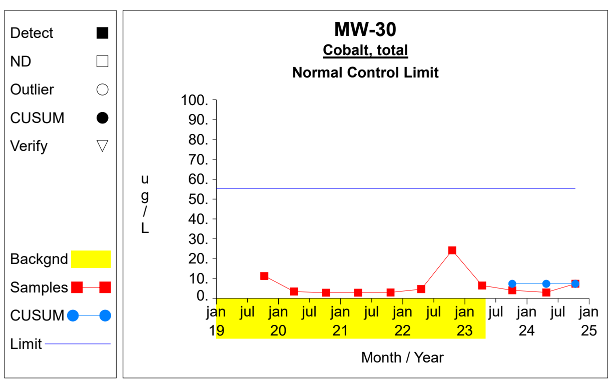
Graph 94



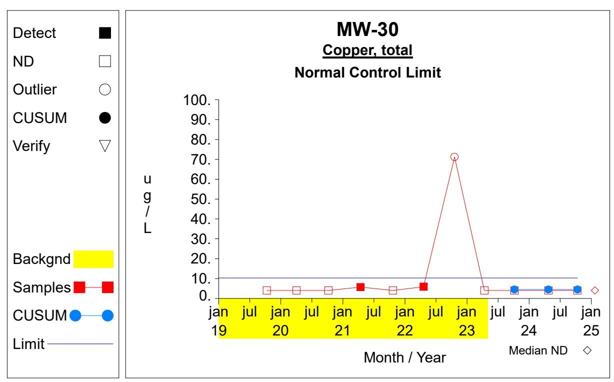
Graph 95



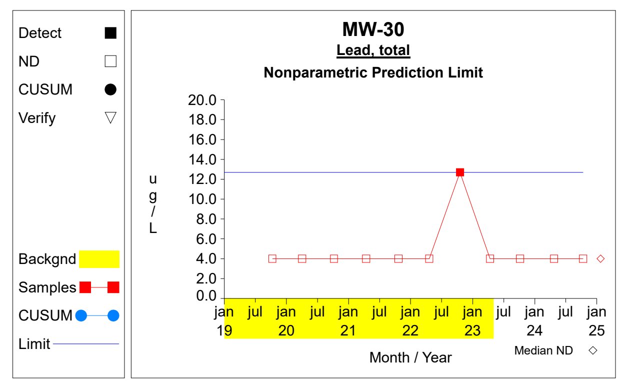
Graph 96



Graph 97



Graph 98



Graph 99

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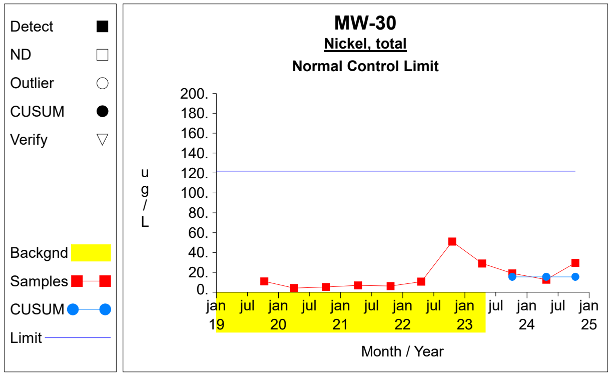
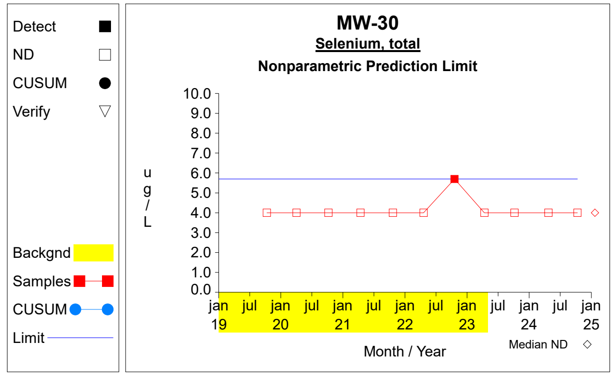
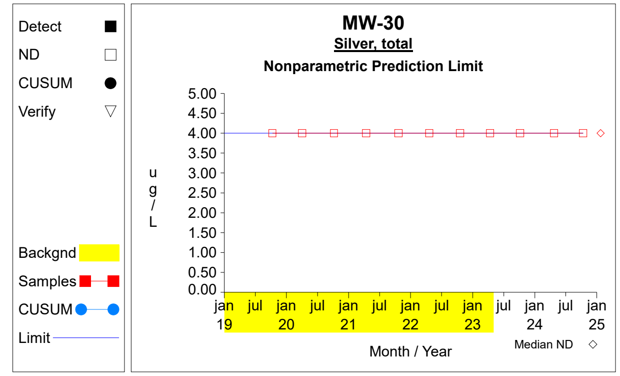
Intra-Well Control Charts / Prediction Limits



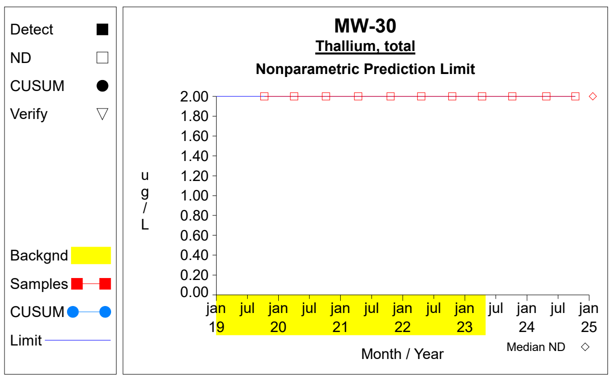
Graph 100



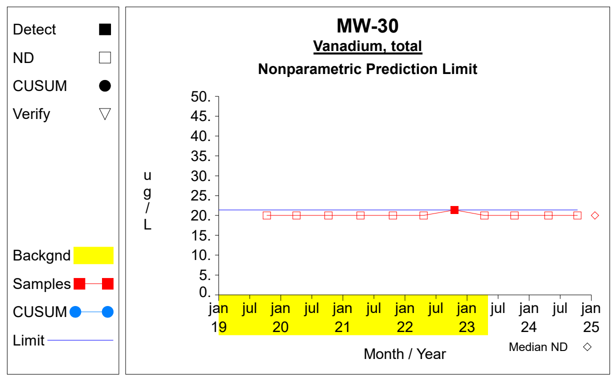
Graph 101



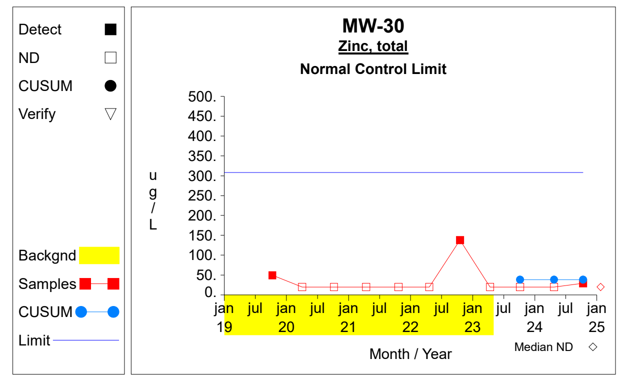
Graph 102



Graph 103



Graph 104



Graph 105

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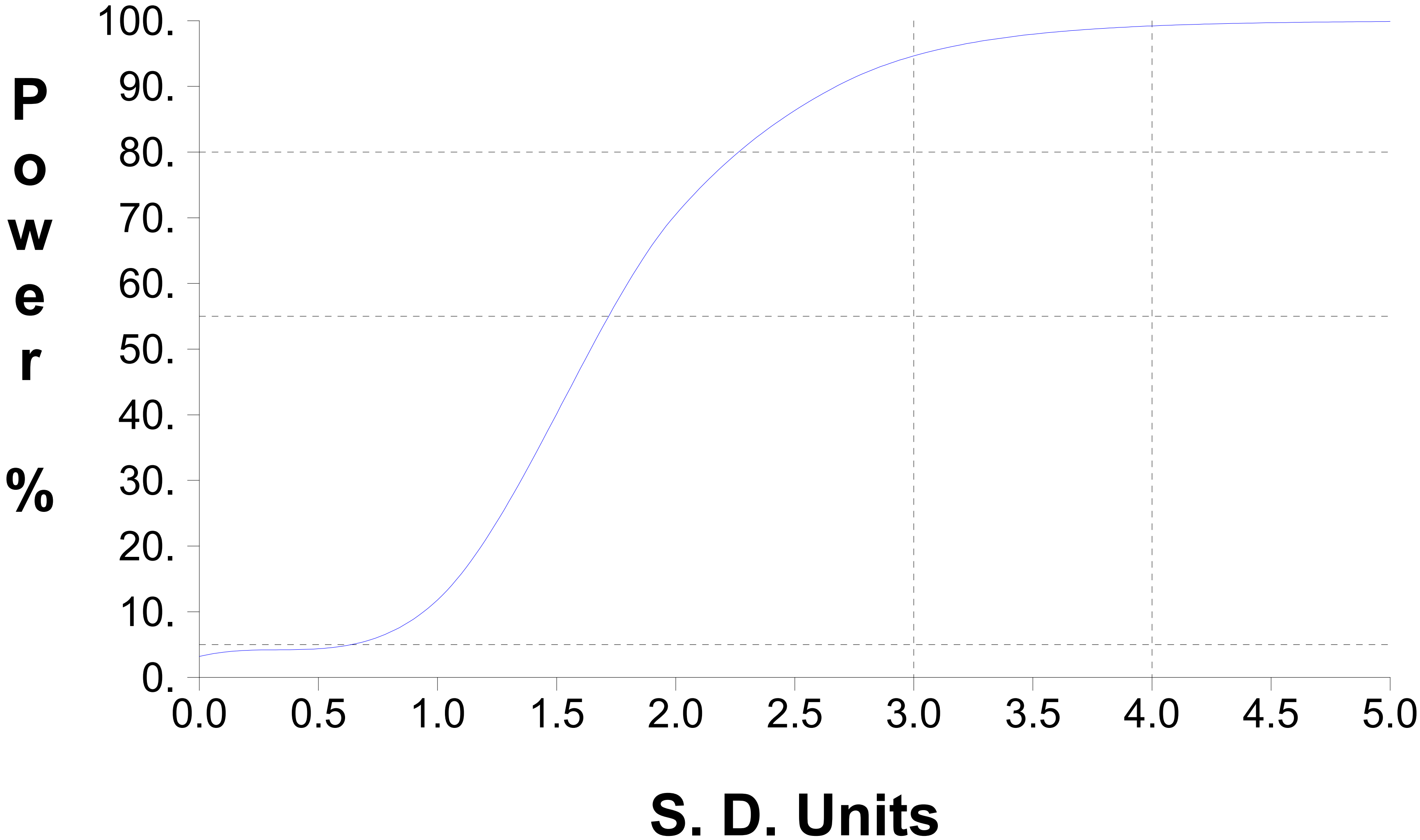
False Positive and False Negative Rates for Current Intra-Well Control Charts Monitoring Program



Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-10A
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **88.4** / **13** = **6.8**	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{768.56} - \mathbf{7814.56}/\mathbf{13}) / (\mathbf{13}-1))^{1/2}$ = **3.735**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **6.8** + **6.5** * **3.735** = **31.08**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-0.432**	Sen's estimator of trend.
6	var(S) = **265.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{78} - \mathbf{2.326} * \mathbf{265.0}^{1/2}) / 2$ = **20.068**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-1.295**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-10A
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **408.1** / **11** = **37.1**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**16247.13** - **166545.61**/**11**) / (**11**-1))^{½} = **10.52**	Compute background sd.
3	SCL = $\overline{X}$ + **F** * **S** = **37.1** + **6.5** * **10.52** = **105.477**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **11** * (**11**-1) / 2 = **55**	Number of sample pairs during trend detection period.
5	S = **-0.898**	Sen's estimator of trend.
6	var(S) = **165.0**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**55** - **2.326** * **165.0**^{½}) / 2 = **12.561**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-6.538**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **12.0**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-10A
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N**	Compute background mean.
	= **19.0** / **13**	
	= **1.462**	
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**75.26** - **361.0**/**13**) / (**13**-1))^{½}	
	= **1.989**	
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **1.462** + **6.5** * **1.989**	
	= **14.392**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **13** * (**13**-1) / 2	
	= **78**	
5	S = **-0.116**	Sen's estimator of trend.
6	var(S) = **239.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**78** - **2.326** * **239.333**^{½}) / 2	
	= **21.008**	
8	LCL(S) = **-0.514**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X)	Compute nonparametric prediction limit as largest background measurement.
	= **11.4**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **6.9**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-10A
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **161.2** / **13** = **12.4**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**4553.76** - **25985.44**/**13**) / (**13**-1))^{½} = **14.591**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **12.4** + **6.5** * **14.591** = **107.244**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-2.594**	Sen's estimator of trend.
6	var(S) = **240.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**78** - **2.326** * **240.333**^{½}) / 2 = **20.97**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-6.856**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **9.0**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-10A
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **28.4**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-10A
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **300.6** / **13**	
	= **23.123**	
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**9601.6** - **90360.36**/**13**) / (**13**-1))^{½}	
	= **14.863**	
3	SCL = $\bar{X}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **23.123** + **6.5** * **14.863**	
	= **119.731**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **13** * (**13**-1) / 2	
	= **78**	
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **224.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - $Z_{.99}$ * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**78** - **2.326** * **224.333**^{½}) / 2	
	= **21.581**	
8	LCL(S) = **-2.918**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **2.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **4.1**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-10B
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **345.5** / **11** = **31.409**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**11244.13** - **119370.25/11**) / (**11**-1))^{½} = **6.263**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **31.409** + **6.5** * **6.263** = **72.121**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **11** * (**11**-1) / 2 = **55**	Number of sample pairs during trend detection period.
5	S = **-0.584**	Sen's estimator of trend.
6	var(S) = **164.0**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**55** - **2.326** * **164.0**^{½}) / 2 = **12.606**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-3.863**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **8.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **4.1**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **7.4**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **4.6**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-10B
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$	Compute background mean.
	$= \mathbf{112.5} / \mathbf{13}$	
	$= \mathbf{8.654}$	
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$	Compute background sd.
	$= ((\mathbf{1256.31} - \mathbf{12656.25}/\mathbf{13}) / (\mathbf{13}-1))^{½}$	
	$= \mathbf{4.854}$	
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$	Compute combined Shewhart-CUSUM normal control limit.
	$= \mathbf{8.654} + \mathbf{6.5} * \mathbf{4.854}$	
	$= \mathbf{40.206}$	
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$	Number of sample pairs during trend detection period.
	$= \mathbf{13} * (\mathbf{13}-1) / 2$	
	$= \mathbf{78}$	
5	$S = \mathbf{-1.589}$	Sen's estimator of trend.
6	$var(S) = \mathbf{252.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{78} - \mathbf{2.326} * \mathbf{252.0}^{½}) / 2$	
	$= \mathbf{20.538}$	
8	$LCL(S) = \mathbf{-3.278}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	$PL = median(X)$	Compute nonparametric prediction limit as median reporting limit in background.
	$= \mathbf{4.0}$	
2	$Conf = \mathbf{0.99}$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-10B
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **20.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-10B
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **219.1** / **12** = **18.258**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**4741.69** - **48004.81**/**12**) / (**12**-1))^{½} = **8.209**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **18.258** + **6.5** * **8.209** = **71.618**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **12** * (**12**-1) / 2 = **66**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **184.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - $\mathbf{Z}_{.99}$ * **var(S)**^{½}) / 2 = (**66** - **2.326** * **184.333**^{½}) / 2 = **17.21**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-2.605**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-18
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **336.3** / **13** = **25.869**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**8805.33** - **113097.69**/**13**) / (**13**-1))^{½} = **2.965**	Compute background sd.
3	SCL = **$\bar{X}$** + **F** * **S** = **25.869** + **6.5** * **2.965** = **45.143**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-0.175**	Sen's estimator of trend.
6	var(S) = **268.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**78** - **2.326** * **268.667**^{½}) / 2 = **19.937**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-1.582**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **8.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-18
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **494.9** / **12** = **41.242**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**21580.09** - **244926.01**/**12**) / (**12**-1))$^{1/2}$ = **10.311**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **41.242** + **6.5** * **10.311** = **108.266**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **12** * (**12**-1) / 2 = **66**	Number of sample pairs during trend detection period.
5	S = **0.18**	Sen's estimator of trend.
6	var(S) = **212.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **$Z_{.99}$** * **var(S)**$^{1/2}$) / 2 = (**66** - **2.326** * **212.667**$^{1/2}$) / 2 = **16.04**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-4.032**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-18
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **480.2** / **13** = **36.938**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**18922.42** - **230592.04/13**) / (**13**-1))$^{1/2}$ = **9.936**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **36.938** + **6.5** * **9.936** = **101.519**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-1.74**	Sen's estimator of trend.
6	var(S) = **267.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**$^{1/2}$) / 2 = (**78** - **2.326** * **267.667**$^{1/2}$) / 2 = **19.973**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-4.834**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-18
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **20.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-18
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **245.8** / **13** = **18.908**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**4777.7** - **60417.64**/**13**) / (**13**-1))^{½} = **3.294**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **18.908** + **6.5** * **3.294** = **40.317**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **0.74**	Sen's estimator of trend.
6	var(S) = **260.0**	Variance estimate for slope.
7	M_1(S) = (**N'** - **$Z_{.99}$** * **var(S)**^{½}) / 2 = (**78** - **2.326** * **260.0**^{½}) / 2 = **20.247**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.3**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-20
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **327.8** / **13** = **25.215**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**11690.8** - **107452.84/13**) / (**13**-1))^{½} = **16.895**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **25.215** + **6.5** * **16.895** = **135.031**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-3.433**	Sen's estimator of trend.
6	var(S) = **268.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **$Z_{.99}$** * **var(S)**^{½}) / 2 = (**78** - **2.326** * **268.667**^{½}) / 2 = **19.937**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-10.896**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-20
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **879.0** / **13** = **67.615**	Compute background mean.
2	S = ((**sum[X²]** - **sum[X]**²/**N**) / (**N**-1))^½ = ((**68472.8** - **772641.0**/**13**) / (**13**-1))^½ = **27.445**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **67.615** + **6.5** * **27.445** = **246.009**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **8.193**	Sen's estimator of trend.
6	var(S) = **268.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - $Z_{.99}$ * **var(S)**^½) / 2 = (**78** - **2.326** * **268.667**^½) / 2 = **19.937**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-5.191**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **8.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-20
Normal Control Limit

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{77.1} / \mathbf{13}$ $= \mathbf{5.931}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{518.41} - \mathbf{5944.41}/\mathbf{13}) / (\mathbf{13}-1))^{1/2}$ $= \mathbf{2.257}$	Compute background sd.
3	$SCL = \overline{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{5.931} + \mathbf{6.5} * \mathbf{2.257}$ $= \mathbf{20.604}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{13} * (\mathbf{13}-1) / 2$ $= \mathbf{78}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-0.598}$	Sen's estimator of trend.
6	$var(S) = \mathbf{267.667}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{78} - \mathbf{2.326} * \mathbf{267.667}^{1/2}) / 2$ $= \mathbf{19.973}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1 th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-1.478}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-20
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **110.1** / **13** = **8.469**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**1017.05** - **12122.01**/**13**) / (**13**-1))^{½} = **2.655**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **8.469** + **6.5** * **2.655** = **25.727**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-0.682**	Sen's estimator of trend.
6	var(S) = **268.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - $Z_{.99}$ * **var(S)**^{½}) / 2 = (**78** - **2.326** * **268.667**^{½}) / 2 = **19.937**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-1.487**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-20
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **20.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-20
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **300.1** / **14** = **21.436**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**10376.23** - **90060.01**/**14**) / (**14**-1))$^{1/2}$ = **17.417**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **21.436** + **6.5** * **17.417** = **134.643**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **14** * (**14**-1) / 2 = **91**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **241.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**$^{1/2}$) / 2 = (**91** - **2.326** * **241.667**$^{1/2}$) / 2 = **27.42**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-21R
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **33.0** / **8** = **4.125**	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{136.5} - \mathbf{1089.0}/\mathbf{8}) / (\mathbf{8}-1))^{1/2}$ = **0.231**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **4.125** + **6.5** * **0.231** = **5.629**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **8** * (**8**-1) / 2 = **28**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **36.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{28} - \mathbf{2.326} * \mathbf{36.0}^{1/2}) / 2$ = **7.022**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-0.202**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-21R
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **254.4** / **8**	
	= **31.8**	
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½}	Compute background sd.
	= ((**9241.3** - **64719.36/8**) / (**8**-1))^{½}	
	= **12.825**	
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **31.8** + **6.5** * **12.825**	
	= **115.163**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **8** * (**8**-1) / 2	
	= **28**	
5	S = **-4.636**	Sen's estimator of trend.
6	var(S) = **65.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	= (**28** - **2.326** * **65.333**^{½}) / 2	
	= **4.6**	
8	LCL(S) = **-19.408**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **8.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-21R
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{160.3} / \mathbf{9}$ $= \mathbf{17.811}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{3079.73} - \mathbf{25696.09/9}) / (\mathbf{9}-1))^{1/2}$ $= \mathbf{5.299}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{17.811} + \mathbf{6.5} * \mathbf{5.299}$ $= \mathbf{52.253}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{9} * (\mathbf{9}-1) / 2$ $= \mathbf{36}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{-1.722}$	Sen's estimator of trend.
6	$var(S) = \mathbf{92.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{36} - \mathbf{2.326} * \mathbf{92.0}^{1/2}) / 2$ $= \mathbf{6.845}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{-5.912}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	$PL = max(X)$ $= \mathbf{5.2}$	Compute nonparametric prediction limit as largest background measurement.
2	$Conf = \mathbf{0.99}$	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-21R
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **319.4** / **9** = **35.489**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**13306.3** - **102016.36**/**9**) / (**9**-1))$^{1/2}$ = **15.697**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **35.489** + **6.5** * **15.697** = **137.519**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **9** * (**9**-1) / 2 = **36**	Number of sample pairs during trend detection period.
5	S = **-8.274**	Sen's estimator of trend.
6	var(S) = **92.0**	Variance estimate for slope.
7	M_1(S) = (**N'** - $\mathbf{Z}_{.99}$ * **var(S)**$^{1/2}$) / 2 = (**36** - **2.326** * **92.0**$^{1/2}$) / 2 = **6.845**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-17.944**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **4.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **2.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-21R
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X)	Compute nonparametric prediction limit as median reporting limit in background.
	= **20.0**	
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-21R
Normal Control Limit

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{182.9} / \mathbf{8}$ $= \mathbf{22.863}$	Compute background mean.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{5315.65} - \mathbf{33452.41}/\mathbf{8}) / (\mathbf{8}-1))^{1/2}$ $= \mathbf{12.728}$	Compute background sd.
3	$SCL = \bar{\mathbf{X}} + \mathbf{F} * \mathbf{S}$ $= \mathbf{22.863} + \mathbf{6.5} * \mathbf{12.728}$ $= \mathbf{105.598}$	Compute combined Shewhart-CUSUM normal control limit.
4	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{8} * (\mathbf{8}-1) / 2$ $= \mathbf{28}$	Number of sample pairs during trend detection period.
5	$S = \mathbf{0.0}$	Sen's estimator of trend.
6	$var(S) = \mathbf{37.0}$	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{28} - \mathbf{2.326} * \mathbf{37.0}^{1/2}) / 2$ $= \mathbf{6.926}$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	$LCL(S) = \mathbf{0.0}$	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-22
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **235.8** / **13** = **18.138**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**4483.98** - **55601.64**/**13**) / (**13**-1))^{½} = **4.153**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **18.138** + **6.5** * **4.153** = **45.13**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **13** * (**13**-1) / 2 = **78**	Number of sample pairs during trend detection period.
5	S = **-0.743**	Sen's estimator of trend.
6	var(S) = **268.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - $\mathbf{Z}_{.99}$ * **var(S)**^{½}) / 2 = (**78** - **2.326** * **268.667**^{½}) / 2 = **19.937**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-2.006**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **8.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **0.8**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-22
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **263.1** / **14** = **18.793**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**7901.67** - **69221.61**/**14**) / (**14**-1))^{½} = **15.083**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **18.793** + **6.5** * **15.083** = **116.829**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **14** * (**14**-1) / 2 = **91**	Number of sample pairs during trend detection period.
5	S = **-0.96**	Sen's estimator of trend.
6	var(S) = **332.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**91** - **2.326** * **332.667**^{½}) / 2 = **24.288**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-7.65**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-22
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **20.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-22
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **335.6** / **15** = **22.373**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**10160.62** - **112627.36**/**15**) / (**15**-1))^{½} = **13.764**	Compute background sd.
3	SCL = $\bar{X}$ + **F** * **S** = **22.373** + **6.5** * **13.764** = **111.837**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **15** * (**15**-1) / 2 = **105**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **283.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z$_{.99}$** * **var(S)**^{½}) / 2 = (**105** - **2.326** * **283.333**^{½}) / 2 = **32.924**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Antimony, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Arsenic, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **9.1**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Barium, total (ug/L) at MW-30
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **214.4** / **8** = **26.8**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**6397.3** - **45967.36**/**8**) / (**8**-1))^{½} = **9.646**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **26.8** + **6.5** * **9.646** = **89.502**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **8** * (**8**-1) / 2 = **28**	Number of sample pairs during trend detection period.
5	S = **-0.688**	Sen's estimator of trend.
6	var(S) = **65.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**28** - **2.326** * **65.333**^{½}) / 2 = **4.6**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1^{th} largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-9.933**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Beryllium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cadmium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **0.8**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Chromium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **43.0**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Cobalt, total (ug/L) at MW-30
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **59.0** / **8** = **7.375**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**815.74** - **3481.0**/**8**) / (**8**-1))^{½} = **7.374**	Compute background sd.
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S** = **7.375** + **6.5** * **7.374** = **55.305**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **8** * (**8**-1) / 2 = **28**	Number of sample pairs during trend detection period.
5	S = **0.789**	Sen's estimator of trend.
6	var(S) = **64.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **$Z_{.99}$** * **var(S)**^{½}) / 2 = (**28** - **2.326** * **64.333**^{½}) / 2 = **4.672**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-4.569**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Copper, total (ug/L) at MW-30
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **31.6** / **7** = **4.514**	Compute background mean.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))^{½} = ((**147.3** - **998.56/7**) / (**7**-1))^{½} = **0.88**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **4.514** + **6.5** * **0.88** = **10.236**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **7** * (**7**-1) / 2 = **21**	Number of sample pairs during trend detection period.
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **27.667**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**21** - **2.326** * **27.667**^{½}) / 2 = **4.383**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **0.0**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Lead, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **12.7**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Nickel, total (ug/L) at MW-30
Normal Control Limit

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **124.7** / **8** = **15.588**	Compute background mean.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**3813.83** - **15550.09**/**8**) / (**8**-1))^{½} = **16.345**	Compute background sd.
3	SCL = $\overline{\mathbf{X}}$ + **F** * **S** = **15.588** + **6.5** * **16.345** = **121.829**	Compute combined Shewhart-CUSUM normal control limit.
4	N' = **N** * (**N**-1) / 2 = **8** * (**8**-1) / 2 = **28**	Number of sample pairs during trend detection period.
5	S = **3.548**	Sen's estimator of trend.
6	var(S) = **65.333**	Variance estimate for slope.
7	M_1(S) = (**N'** - **Z**$_{.99}$ * **var(S)**^{½}) / 2 = (**28** - **2.326** * **65.333**^{½}) / 2 = **4.6**	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
8	LCL(S) = **-2.447**	One-sided lower confidence limit for slope.

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Selenium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **5.7**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Silver, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **4.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Thallium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = median(X) = **2.0**	Compute nonparametric prediction limit as median reporting limit in background.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Vanadium, total (ug/L) at MW-30
Nonparametric Prediction Limit

Step	Equation	Description
1	PL = max(X) = **21.4**	Compute nonparametric prediction limit as largest background measurement.
2	Conf = **0.99**	Confidence level is based on N, K and resampling strategy (see Gibbons 1994).

Worksheet 2 - Intra-Well Control Charts / Prediction Limits
Zinc, total (ug/L) at MW-30
Normal Control Limit

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N**	Compute background mean.
	= **307.5** / **8**	
	= **38.438**	
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{½}$	Compute background sd.
	$= ((\mathbf{23894.25} - \mathbf{94556.25/8}) / (\mathbf{8}-1))^{½}$	
	= **41.533**	
3	SCL = $\bar{\mathbf{X}}$ + **F** * **S**	Compute combined Shewhart-CUSUM normal control limit.
	= **38.438** + **6.5** * **41.533**	
	= **308.4**	
4	N' = **N** * (**N**-1) / 2	Number of sample pairs during trend detection period.
	= **8** * (**8**-1) / 2	
	= **28**	
5	S = **0.0**	Sen's estimator of trend.
6	var(S) = **37.0**	Variance estimate for slope.
7	$M_1(S) = (\mathbf{N'} - \mathbf{Z}_{.99} * \mathbf{var(S)}^{½}) / 2$	Ordinal position for one-sided lower confidence limit for slope. The LCL is the M_1th largest slope estimate. When M_1 is not an integer, interpolation is used.
	$= (\mathbf{28} - \mathbf{2.326} * \mathbf{37.0}^{½}) / 2$	
	= **6.926**	
8	LCL(S) = **-8.661**	One-sided lower confidence limit for slope.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Antimony, total	ug/L	MW-10A	10/28/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/14/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	09/29/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/18/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/15/2018	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/21/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	04/19/2022	yes	2.0000	ND				
Antimony, total	ug/L	MW-10A	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-10A	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-10A	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-10A	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-10A	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-10A	10/28/2014	yes	8.4000					
Arsenic, total	ug/L	MW-10A	04/14/2016	yes	10.2000					
Arsenic, total	ug/L	MW-10A	09/29/2016	yes	8.8000					
Arsenic, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10A	10/18/2017	yes	6.6000					
Arsenic, total	ug/L	MW-10A	10/15/2018	yes	4.1000					
Arsenic, total	ug/L	MW-10A	04/09/2019	yes	4.7000					
Arsenic, total	ug/L	MW-10A	10/09/2019	yes	16.9000					
Arsenic, total	ug/L	MW-10A	04/01/2020	yes	4.5000					
Arsenic, total	ug/L	MW-10A	10/06/2020	yes	4.4000					
Arsenic, total	ug/L	MW-10A	04/13/2021	yes	7.8000					
Arsenic, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10A	10/18/2022		7.5000			6.8000		
Arsenic, total	ug/L	MW-10A	04/11/2023		38.5000			35.6984		**
Arsenic, total	ug/L	MW-10A	07/07/2023		7.3000			6.8000		
Arsenic, total	ug/L	MW-10A	10/05/2023		4.7000			6.8000		
Arsenic, total	ug/L	MW-10A	04/23/2024		4.0000	ND		6.8000		
Arsenic, total	ug/L	MW-10A	10/11/2024		22.1000			19.2984		
Barium, total	ug/L	MW-10A	10/28/2014	yes	143.0000		yes			*
Barium, total	ug/L	MW-10A	04/14/2016	yes	41.3000					
Barium, total	ug/L	MW-10A	09/29/2016	yes	35.1000					
Barium, total	ug/L	MW-10A	04/20/2017	yes	29.3000					
Barium, total	ug/L	MW-10A	10/18/2017	yes	37.8000					
Barium, total	ug/L	MW-10A	10/15/2018	yes	46.3000					
Barium, total	ug/L	MW-10A	04/09/2019	yes	31.1000					
Barium, total	ug/L	MW-10A	10/09/2019	yes	62.3000					
Barium, total	ug/L	MW-10A	04/01/2020	yes	23.7000					
Barium, total	ug/L	MW-10A	10/06/2020	yes	28.3000					
Barium, total	ug/L	MW-10A	04/13/2021	yes	38.7000					
Barium, total	ug/L	MW-10A	10/21/2021	yes	34.2000					
Barium, total	ug/L	MW-10A	04/19/2022	yes	453.0000		yes			*

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Barium, total	ug/L	MW-10A	07/15/2022		47.6000			37.1000		
Barium, total	ug/L	MW-10A	10/18/2022		46.1000			37.1000		
Barium, total	ug/L	MW-10A	04/11/2023		173.0000			162.4804		**
Barium, total	ug/L	MW-10A	07/07/2023		39.0000			37.1000		
Barium, total	ug/L	MW-10A	10/05/2023		29.7000			37.1000		
Barium, total	ug/L	MW-10A	04/23/2024		31.0000			37.1000		
Barium, total	ug/L	MW-10A	10/11/2024		62.2000			51.6804		
Beryllium, total	ug/L	MW-10A	10/28/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/14/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-10A	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-10A	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-10A	10/28/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/14/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	09/29/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/18/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/21/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/19/2022	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-10A	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-10A	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-10A	10/28/2014	yes	12.0000					
Chromium, total	ug/L	MW-10A	04/14/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	09/29/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	10/18/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	10/15/2018	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	04/09/2019	yes	8.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chromium, total	ug/L	MW-10A	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	10/21/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	04/19/2022	yes	8.0000	ND				
Chromium, total	ug/L	MW-10A	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-10A	04/11/2023		9.1000					
Chromium, total	ug/L	MW-10A	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-10A	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-10A	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-10A	10/28/2014	yes	7.9000					
Cobalt, total	ug/L	MW-10A	04/14/2016	yes	1.5000					
Cobalt, total	ug/L	MW-10A	09/29/2016	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10A	04/20/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10A	10/18/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10A	10/15/2018	yes	1.3000					
Cobalt, total	ug/L	MW-10A	04/09/2019	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10A	10/09/2019	yes	2.1000					
Cobalt, total	ug/L	MW-10A	04/01/2020	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10A	10/06/2020	yes	0.4000					
Cobalt, total	ug/L	MW-10A	04/13/2021	yes	0.5000					
Cobalt, total	ug/L	MW-10A	10/21/2021	yes	0.5000					
Cobalt, total	ug/L	MW-10A	04/19/2022	yes	0.4000	ND			0.8000	***
Cobalt, total	ug/L	MW-10A	10/18/2022		2.0000			1.4615		
Cobalt, total	ug/L	MW-10A	04/11/2023		4.9000			3.4080		
Cobalt, total	ug/L	MW-10A	10/05/2023		0.5000			1.4615		
Cobalt, total	ug/L	MW-10A	04/23/2024		0.4000	ND		1.4615		
Cobalt, total	ug/L	MW-10A	10/11/2024		1.8000			1.4615		
Copper, total	ug/L	MW-10A	10/28/2014	yes	11.4000					
Copper, total	ug/L	MW-10A	04/14/2016	yes	8.0000	ND			4.0000	***
Copper, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/15/2018	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/21/2021	yes	9.0000					
Copper, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Copper, total	ug/L	MW-10A	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-10A	04/11/2023		16.3000					**
Copper, total	ug/L	MW-10A	07/07/2023		4.0000	ND				
Copper, total	ug/L	MW-10A	10/05/2023		4.0000	ND				
Copper, total	ug/L	MW-10A	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-10A	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-10A	10/28/2014	yes	6.9000					
Lead, total	ug/L	MW-10A	04/14/2016	yes	4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Lead, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Lead, total	ug/L	MW-10A	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-10A	04/11/2023		5.1000					
Lead, total	ug/L	MW-10A	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-10A	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-10A	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-10A	10/28/2014	yes	55.2000					
Nickel, total	ug/L	MW-10A	04/14/2016	yes	25.8000					
Nickel, total	ug/L	MW-10A	09/29/2016	yes	8.0000	ND			4.0000	***
Nickel, total	ug/L	MW-10A	04/20/2017	yes	12.9000					
Nickel, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Nickel, total	ug/L	MW-10A	10/15/2018	yes	17.5000					
Nickel, total	ug/L	MW-10A	04/09/2019	yes	4.8000					
Nickel, total	ug/L	MW-10A	10/09/2019	yes	14.3000					
Nickel, total	ug/L	MW-10A	04/01/2020	yes	6.7000					
Nickel, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Nickel, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Nickel, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Nickel, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Nickel, total	ug/L	MW-10A	10/18/2022		5.6000			12.4000		
Nickel, total	ug/L	MW-10A	04/11/2023		22.4000			12.4000		
Nickel, total	ug/L	MW-10A	10/05/2023		4.0000	ND		12.4000		
Nickel, total	ug/L	MW-10A	04/23/2024		4.0000	ND		12.4000		
Nickel, total	ug/L	MW-10A	10/11/2024		11.0000			12.4000		
Selenium, total	ug/L	MW-10A	10/28/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	04/14/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	10/15/2018	yes	4.9000					
Selenium, total	ug/L	MW-10A	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-10A	04/19/2022	yes	9.0000					
Selenium, total	ug/L	MW-10A	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-10A	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-10A	10/05/2023		4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Selenium, total	ug/L	MW-10A	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-10A	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-10A	10/28/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/14/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/21/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	04/19/2022	yes	4.0000	ND				
Silver, total	ug/L	MW-10A	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-10A	04/11/2023		4.0000	ND				
Silver, total	ug/L	MW-10A	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-10A	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-10A	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-10A	10/28/2014	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	04/14/2016	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	09/29/2016	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	04/20/2017	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	10/18/2017	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	10/15/2018	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-10A	04/09/2019	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	10/09/2019	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	04/01/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	10/06/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	04/13/2021	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	10/21/2021	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	04/19/2022	yes	2.0000	ND				
Thallium, total	ug/L	MW-10A	10/18/2022		2.0000	ND				
Thallium, total	ug/L	MW-10A	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-10A	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-10A	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-10A	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-10A	10/28/2014	yes	28.4000					
Vanadium, total	ug/L	MW-10A	04/14/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	09/29/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/18/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/21/2021	yes	20.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Vanadium, total	ug/L	MW-10A	04/19/2022	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-10A	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-10A	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-10A	10/28/2014	yes	39.7000					
Zinc, total	ug/L	MW-10A	04/14/2016	yes	32.4000					
Zinc, total	ug/L	MW-10A	09/29/2016	yes	8.2000					
Zinc, total	ug/L	MW-10A	04/20/2017	yes	9.3000					
Zinc, total	ug/L	MW-10A	10/18/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	10/15/2018	yes	8.1000					
Zinc, total	ug/L	MW-10A	04/09/2019	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-10A	10/09/2019	yes	62.9000					
Zinc, total	ug/L	MW-10A	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	10/21/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	04/19/2022	yes	20.0000	ND				
Zinc, total	ug/L	MW-10A	10/18/2022		20.0000	ND		23.1231		
Zinc, total	ug/L	MW-10A	04/11/2023		69.3000			58.1530		
Zinc, total	ug/L	MW-10A	10/05/2023		20.0000	ND		23.8829		
Zinc, total	ug/L	MW-10A	04/23/2024		20.0000	ND		23.1231		
Zinc, total	ug/L	MW-10A	10/11/2024		26.6000			23.1231		
Antimony, total	ug/L	MW-10B	10/28/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	12/03/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/14/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	09/29/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	10/18/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	10/15/2018	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	10/21/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-10B	04/19/2022		2.0000	ND				
Antimony, total	ug/L	MW-10B	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-10B	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-10B	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-10B	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-10B	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-10B	10/28/2014	yes	4.1000					
Arsenic, total	ug/L	MW-10B	12/03/2014	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Arsenic, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/05/2023		4.0000	ND				
Arsenic, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Arsenic, total	ug/L	MW-10B	10/11/2024		4.0000	ND				
Barium, total	ug/L	MW-10B	10/28/2014	yes	104.0000		yes			*
Barium, total	ug/L	MW-10B	12/03/2014	yes	97.5000		yes			*
Barium, total	ug/L	MW-10B	04/14/2016	yes	36.9000					
Barium, total	ug/L	MW-10B	09/29/2016	yes	28.4000					
Barium, total	ug/L	MW-10B	04/20/2017	yes	30.9000					
Barium, total	ug/L	MW-10B	10/18/2017	yes	28.2000					
Barium, total	ug/L	MW-10B	10/15/2018	yes	26.6000					
Barium, total	ug/L	MW-10B	04/09/2019	yes	30.8000					
Barium, total	ug/L	MW-10B	10/09/2019	yes	47.9000					
Barium, total	ug/L	MW-10B	04/01/2020	yes	31.1000					
Barium, total	ug/L	MW-10B	10/06/2020	yes	30.8000					
Barium, total	ug/L	MW-10B	04/13/2021	yes	28.8000					
Barium, total	ug/L	MW-10B	10/21/2021	yes	25.1000					
Barium, total	ug/L	MW-10B	04/19/2022		28.5000			31.4091		
Barium, total	ug/L	MW-10B	10/18/2022		26.9000			31.4091		
Barium, total	ug/L	MW-10B	04/11/2023		28.8000			31.4091		
Barium, total	ug/L	MW-10B	10/05/2023		26.8000			31.4091		
Barium, total	ug/L	MW-10B	04/23/2024		28.7000			31.4091		
Barium, total	ug/L	MW-10B	10/11/2024		26.0000			31.4091		
Beryllium, total	ug/L	MW-10B	10/28/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	12/03/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-10B	10/11/2024		4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cadmium, total	ug/L	MW-10B	10/28/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	12/03/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/14/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	09/29/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/18/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/21/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/19/2022		0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-10B	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-10B	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-10B	10/28/2014	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	12/03/2014	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/14/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	09/29/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	10/18/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	10/15/2018	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	10/21/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-10B	04/19/2022		8.0000	ND				
Chromium, total	ug/L	MW-10B	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-10B	04/11/2023		8.0000	ND				
Chromium, total	ug/L	MW-10B	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-10B	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-10B	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-10B	10/28/2014	yes	3.1000					
Cobalt, total	ug/L	MW-10B	12/03/2014	yes	4.1000					
Cobalt, total	ug/L	MW-10B	04/14/2016	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	09/29/2016	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	04/20/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	10/18/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	10/15/2018	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	04/09/2019	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	10/09/2019	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	04/01/2020	yes	0.8000	ND				
Cobalt, total	ug/L	MW-10B	10/06/2020	yes	0.4000	ND			0.8000	***
Cobalt, total	ug/L	MW-10B	04/13/2021	yes	0.4000	ND			0.8000	***

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cobalt, total	ug/L	MW-10B	10/21/2021	yes	0.4000	ND			0.8000	***
Cobalt, total	ug/L	MW-10B	04/19/2022		0.4000	ND				
Cobalt, total	ug/L	MW-10B	10/18/2022		1.5000					
Cobalt, total	ug/L	MW-10B	04/11/2023		0.4000	ND				
Cobalt, total	ug/L	MW-10B	10/05/2023		0.4000	ND				
Cobalt, total	ug/L	MW-10B	04/23/2024		0.4000	ND				
Cobalt, total	ug/L	MW-10B	10/11/2024		0.4000	ND				
Copper, total	ug/L	MW-10B	10/28/2014	yes	5.3000					
Copper, total	ug/L	MW-10B	12/03/2014	yes	7.4000					
Copper, total	ug/L	MW-10B	04/14/2016	yes	8.0000	ND			4.0000	***
Copper, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Copper, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Copper, total	ug/L	MW-10B	10/05/2023		4.0000	ND				
Copper, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-10B	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-10B	10/28/2014	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	12/03/2014	yes	4.6000					
Lead, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Lead, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Lead, total	ug/L	MW-10B	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-10B	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-10B	10/28/2014	yes	15.8000					
Nickel, total	ug/L	MW-10B	12/03/2014	yes	17.7000					
Nickel, total	ug/L	MW-10B	04/14/2016	yes	13.2000					
Nickel, total	ug/L	MW-10B	09/29/2016	yes	8.0000	ND			4.0000	***
Nickel, total	ug/L	MW-10B	04/20/2017	yes	9.8000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Nickel, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Nickel, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Nickel, total	ug/L	MW-10B	04/09/2019	yes	12.3000					
Nickel, total	ug/L	MW-10B	10/09/2019	yes	8.4000					
Nickel, total	ug/L	MW-10B	04/01/2020	yes	9.1000					
Nickel, total	ug/L	MW-10B	10/06/2020	yes	6.2000					
Nickel, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Nickel, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Nickel, total	ug/L	MW-10B	04/19/2022		4.0000	ND		8.6538		
Nickel, total	ug/L	MW-10B	10/18/2022		4.9000			8.6538		
Nickel, total	ug/L	MW-10B	04/11/2023		4.9000			8.6538		
Nickel, total	ug/L	MW-10B	10/05/2023		5.6000			8.6538		
Nickel, total	ug/L	MW-10B	04/23/2024		5.6000			8.6538		
Nickel, total	ug/L	MW-10B	10/11/2024		9.6000			8.6538		
Selenium, total	ug/L	MW-10B	10/28/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	12/03/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Selenium, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-10B	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-10B	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-10B	10/28/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	12/03/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	10/21/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-10B	04/19/2022		4.0000	ND				
Silver, total	ug/L	MW-10B	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-10B	04/11/2023		4.0000	ND				
Silver, total	ug/L	MW-10B	10/05/2023		4.0000	ND				

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**** - ND value replaced with manual RL.
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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Silver, total	ug/L	MW-10B	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-10B	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-10B	10/28/2014	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	12/03/2014	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	04/14/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	09/29/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	04/20/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	10/18/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	10/15/2018	yes	4.0000	ND				
Thallium, total	ug/L	MW-10B	04/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	10/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	04/01/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	10/06/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	04/13/2021	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	10/21/2021	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-10B	04/19/2022		2.0000	ND				
Thallium, total	ug/L	MW-10B	10/18/2022		2.0000	ND				
Thallium, total	ug/L	MW-10B	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-10B	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-10B	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-10B	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-10B	10/28/2014	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	12/03/2014	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/14/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	09/29/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/18/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/21/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/19/2022		20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-10B	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-10B	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-10B	10/28/2014	yes	39.3000					
Zinc, total	ug/L	MW-10B	12/03/2014	yes	158.0000		yes			*
Zinc, total	ug/L	MW-10B	04/14/2016	yes	20.0000	ND				
Zinc, total	ug/L	MW-10B	09/29/2016	yes	9.7000					
Zinc, total	ug/L	MW-10B	04/20/2017	yes	8.2000					
Zinc, total	ug/L	MW-10B	10/18/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-10B	10/15/2018	yes	9.3000					
Zinc, total	ug/L	MW-10B	04/09/2019	yes	13.3000					
Zinc, total	ug/L	MW-10B	10/09/2019	yes	19.3000					
Zinc, total	ug/L	MW-10B	04/01/2020	yes	20.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Zinc, total	ug/L	MW-10B	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-10B	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-10B	10/21/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-10B	04/19/2022		20.0000	ND		18.2583		
Zinc, total	ug/L	MW-10B	10/18/2022		20.0000	ND		18.2583		
Zinc, total	ug/L	MW-10B	04/11/2023		20.0000	ND		18.2583		
Zinc, total	ug/L	MW-10B	10/05/2023		20.0000	ND		18.2583		
Zinc, total	ug/L	MW-10B	04/23/2024		20.0000	ND		18.2583		
Zinc, total	ug/L	MW-10B	10/11/2024		20.0000	ND		18.2583		
Antimony, total	ug/L	MW-18	10/28/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	03/30/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	09/24/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	04/14/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	09/29/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	10/19/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	10/15/2018	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-18	10/21/2021		2.0000	ND				
Antimony, total	ug/L	MW-18	04/19/2022		2.0000	ND				
Antimony, total	ug/L	MW-18	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-18	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-18	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-18	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-18	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Arsenic, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Arsenic, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Arsenic, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Arsenic, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Arsenic, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Arsenic, total	ug/L	MW-18	10/11/2024		4.0000	ND				
Barium, total	ug/L	MW-18	10/28/2014	yes	30.8000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Barium, total	ug/L	MW-18	03/30/2015	yes	25.4000					
Barium, total	ug/L	MW-18	09/24/2015	yes	23.5000					
Barium, total	ug/L	MW-18	04/14/2016	yes	26.1000					
Barium, total	ug/L	MW-18	09/29/2016	yes	26.4000					
Barium, total	ug/L	MW-18	04/20/2017	yes	26.9000					
Barium, total	ug/L	MW-18	10/19/2017	yes	25.0000					
Barium, total	ug/L	MW-18	10/15/2018	yes	19.1000					
Barium, total	ug/L	MW-18	04/09/2019	yes	27.6000					
Barium, total	ug/L	MW-18	10/09/2019	yes	30.2000					
Barium, total	ug/L	MW-18	04/01/2020	yes	24.4000					
Barium, total	ug/L	MW-18	10/06/2020	yes	26.7000					
Barium, total	ug/L	MW-18	04/13/2021	yes	24.2000					
Barium, total	ug/L	MW-18	10/21/2021		25.6000			25.8692		
Barium, total	ug/L	MW-18	04/19/2022		28.2000			25.9761		
Barium, total	ug/L	MW-18	10/18/2022		32.1000			29.9830		
Barium, total	ug/L	MW-18	04/11/2023		32.9000			34.7899		
Barium, total	ug/L	MW-18	10/05/2023		25.8000			32.4968		
Barium, total	ug/L	MW-18	04/23/2024		24.0000			28.4036		
Barium, total	ug/L	MW-18	10/11/2024		27.2000			27.5105		
Beryllium, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Beryllium, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Beryllium, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-18	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-18	10/28/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	03/30/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	09/24/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	04/14/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	09/29/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	10/19/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	04/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	04/01/2020	yes	0.8000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cadmium, total	ug/L	MW-18	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-18	10/21/2021		0.8000	ND				
Cadmium, total	ug/L	MW-18	04/19/2022		0.8000	ND				
Cadmium, total	ug/L	MW-18	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-18	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-18	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-18	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-18	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-18	10/28/2014	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	03/30/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	09/24/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	04/14/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	09/29/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	10/19/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	10/15/2018	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	04/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-18	10/21/2021		8.0000	ND				
Chromium, total	ug/L	MW-18	04/19/2022		8.0000	ND				
Chromium, total	ug/L	MW-18	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-18	04/11/2023		8.0000	ND				
Chromium, total	ug/L	MW-18	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-18	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-18	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-18	10/28/2014	yes	57.8000					
Cobalt, total	ug/L	MW-18	03/30/2015	yes	28.9000					
Cobalt, total	ug/L	MW-18	09/24/2015	yes	37.6000					
Cobalt, total	ug/L	MW-18	04/14/2016	yes	37.7000					
Cobalt, total	ug/L	MW-18	09/29/2016	yes	50.8000					
Cobalt, total	ug/L	MW-18	04/20/2017	yes	33.6000					
Cobalt, total	ug/L	MW-18	10/19/2017	yes	39.1000					
Cobalt, total	ug/L	MW-18	10/15/2018	yes	9.0000		yes			*
Cobalt, total	ug/L	MW-18	04/09/2019	yes	48.6000					
Cobalt, total	ug/L	MW-18	10/09/2019	yes	30.7000					
Cobalt, total	ug/L	MW-18	04/01/2020	yes	29.8000					
Cobalt, total	ug/L	MW-18	10/06/2020	yes	57.5000					
Cobalt, total	ug/L	MW-18	04/13/2021	yes	42.8000					
Cobalt, total	ug/L	MW-18	10/21/2021		53.9000			46.1664		
Cobalt, total	ug/L	MW-18	04/19/2022		46.7000			43.8911		
Cobalt, total	ug/L	MW-18	10/18/2022		61.1000			56.0159		
Cobalt, total	ug/L	MW-18	04/11/2023		56.5000			63.5406		
Cobalt, total	ug/L	MW-18	10/05/2023		62.7000			77.2653		
Cobalt, total	ug/L	MW-18	12/19/2023		66.2000			94.4901		
Cobalt, total	ug/L	MW-18	04/23/2024		39.8000			85.3148		
Cobalt, total	ug/L	MW-18	10/11/2024		68.3000			104.6395		

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Copper, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Copper, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Copper, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Copper, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Copper, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Copper, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Copper, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-18	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Lead, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Lead, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Lead, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Lead, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-18	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-18	10/28/2014	yes	52.8000					
Nickel, total	ug/L	MW-18	03/30/2015	yes	36.1000					
Nickel, total	ug/L	MW-18	09/24/2015	yes	38.8000					
Nickel, total	ug/L	MW-18	04/14/2016	yes	46.8000					
Nickel, total	ug/L	MW-18	09/29/2016	yes	46.9000					
Nickel, total	ug/L	MW-18	04/20/2017	yes	31.5000					
Nickel, total	ug/L	MW-18	10/19/2017	yes	36.1000					
Nickel, total	ug/L	MW-18	10/15/2018	yes	13.0000					
Nickel, total	ug/L	MW-18	04/09/2019	yes	38.4000					
Nickel, total	ug/L	MW-18	10/09/2019	yes	30.9000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Nickel, total	ug/L	MW-18	04/01/2020	yes	30.0000					
Nickel, total	ug/L	MW-18	10/06/2020	yes	43.3000					
Nickel, total	ug/L	MW-18	04/13/2021	yes	35.6000					
Nickel, total	ug/L	MW-18	10/21/2021		41.7000			36.9385		
Nickel, total	ug/L	MW-18	04/19/2022		38.2000			36.9385		
Nickel, total	ug/L	MW-18	10/18/2022		44.1000			36.9385		
Nickel, total	ug/L	MW-18	04/11/2023		43.1000			36.9385		
Nickel, total	ug/L	MW-18	10/05/2023		47.7000			40.2484		
Nickel, total	ug/L	MW-18	04/23/2024		37.2000			36.9385		
Nickel, total	ug/L	MW-18	10/11/2024		50.1000			42.6484		
Selenium, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Selenium, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Selenium, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-18	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-18	09/24/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-18	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-18	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-18	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-18	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-18	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-18	10/21/2021		4.0000	ND				
Silver, total	ug/L	MW-18	04/19/2022		4.0000	ND				
Silver, total	ug/L	MW-18	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-18	04/11/2023		4.0000	ND				
Silver, total	ug/L	MW-18	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-18	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-18	10/11/2024		4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Thallium, total	ug/L	MW-18	10/28/2014	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	03/30/2015	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	09/24/2015	yes	1.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	04/14/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	09/29/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	04/20/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	10/19/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	10/15/2018	yes	4.0000	ND				
Thallium, total	ug/L	MW-18	04/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	10/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	04/01/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	10/06/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	04/13/2021	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-18	10/21/2021		2.0000	ND				
Thallium, total	ug/L	MW-18	04/19/2022		2.0000	ND				
Thallium, total	ug/L	MW-18	10/18/2022		2.0000	ND				
Thallium, total	ug/L	MW-18	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-18	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-18	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-18	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-18	10/28/2014	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	03/30/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	09/24/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	04/14/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	09/29/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	10/19/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-18	10/21/2021		20.0000	ND				
Vanadium, total	ug/L	MW-18	04/19/2022		20.0000	ND				
Vanadium, total	ug/L	MW-18	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-18	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-18	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-18	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-18	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-18	10/28/2014	yes	20.9000					
Zinc, total	ug/L	MW-18	03/30/2015	yes	13.1000					
Zinc, total	ug/L	MW-18	09/24/2015	yes	22.8000					
Zinc, total	ug/L	MW-18	04/14/2016	yes	16.6000					
Zinc, total	ug/L	MW-18	09/29/2016	yes	17.5000					
Zinc, total	ug/L	MW-18	04/20/2017	yes	12.5000					
Zinc, total	ug/L	MW-18	10/19/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-18	10/15/2018	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-18	04/09/2019	yes	17.9000					
Zinc, total	ug/L	MW-18	10/09/2019	yes	62.7000		yes			*

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Zinc, total	ug/L	MW-18	01/08/2020	yes	21.6000					
Zinc, total	ug/L	MW-18	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-18	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-18	04/13/2021	yes	22.9000					
Zinc, total	ug/L	MW-18	10/21/2021		21.8000			19.3297		
Zinc, total	ug/L	MW-18	04/19/2022		20.0000	ND		18.9077		
Zinc, total	ug/L	MW-18	10/18/2022		20.1000			18.9077		
Zinc, total	ug/L	MW-18	04/11/2023		23.1000			20.6297		
Zinc, total	ug/L	MW-18	10/05/2023		25.5000			24.7516		
Zinc, total	ug/L	MW-18	04/23/2024		20.0000	ND		18.9077		
Zinc, total	ug/L	MW-18	10/11/2024		27.3000			24.8297		
Antimony, total	ug/L	MW-20	10/28/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	03/30/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	09/24/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	04/14/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	09/29/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	10/18/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	10/15/2018	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-20	10/21/2021		2.0000	ND				
Antimony, total	ug/L	MW-20	04/19/2022		2.0000	ND				
Antimony, total	ug/L	MW-20	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-20	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-20	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-20	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-20	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-20	10/28/2014	yes	34.5000					
Arsenic, total	ug/L	MW-20	03/30/2015	yes	17.6000					
Arsenic, total	ug/L	MW-20	09/24/2015	yes	40.1000					
Arsenic, total	ug/L	MW-20	04/14/2016	yes	66.1000					
Arsenic, total	ug/L	MW-20	09/29/2016	yes	31.8000					
Arsenic, total	ug/L	MW-20	04/20/2017	yes	6.2000					
Arsenic, total	ug/L	MW-20	10/18/2017	yes	21.1000					
Arsenic, total	ug/L	MW-20	10/15/2018	yes	32.9000					
Arsenic, total	ug/L	MW-20	04/09/2019	yes	4.3000					
Arsenic, total	ug/L	MW-20	10/09/2019	yes	31.3000					
Arsenic, total	ug/L	MW-20	04/01/2020	yes	19.9000					
Arsenic, total	ug/L	MW-20	10/06/2020	yes	10.8000					
Arsenic, total	ug/L	MW-20	04/13/2021	yes	11.2000					
Arsenic, total	ug/L	MW-20	10/21/2021		10.8000			25.2154		
Arsenic, total	ug/L	MW-20	04/19/2022		11.2000			25.2154		
Arsenic, total	ug/L	MW-20	10/18/2022		16.7000			25.2154		
Arsenic, total	ug/L	MW-20	04/11/2023		25.9000			25.2154		
Arsenic, total	ug/L	MW-20	10/05/2023		10.8000			25.2154		
Arsenic, total	ug/L	MW-20	04/23/2024		8.0000			25.2154		

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Arsenic, total	ug/L	MW-20	10/11/2024		26.2000			25.2154		
Barium, total	ug/L	MW-20	10/28/2014	yes	45.2000					
Barium, total	ug/L	MW-20	03/30/2015	yes	54.9000					
Barium, total	ug/L	MW-20	09/24/2015	yes	51.3000					
Barium, total	ug/L	MW-20	04/14/2016	yes	97.0000					
Barium, total	ug/L	MW-20	09/29/2016	yes	66.2000					
Barium, total	ug/L	MW-20	04/20/2017	yes	32.4000					
Barium, total	ug/L	MW-20	10/18/2017	yes	69.1000					
Barium, total	ug/L	MW-20	10/15/2018	yes	34.4000					
Barium, total	ug/L	MW-20	04/09/2019	yes	59.2000					
Barium, total	ug/L	MW-20	10/09/2019	yes	92.7000					
Barium, total	ug/L	MW-20	04/01/2020	yes	52.6000					
Barium, total	ug/L	MW-20	10/06/2020	yes	116.0000					
Barium, total	ug/L	MW-20	04/13/2021	yes	108.0000					
Barium, total	ug/L	MW-20	10/21/2021		99.5000			78.9161		
Barium, total	ug/L	MW-20	04/19/2022		125.0000			115.7168		
Barium, total	ug/L	MW-20	10/18/2022		139.0000			166.5175		
Barium, total	ug/L	MW-20	04/11/2023		80.0000			158.3182		
Barium, total	ug/L	MW-20	10/05/2023		45.1000			115.2189		
Barium, total	ug/L	MW-20	04/23/2024		39.0000			67.6154		
Barium, total	ug/L	MW-20	10/11/2024		61.8000			67.6154		
Beryllium, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	09/24/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-20	10/21/2021		4.0000	ND				
Beryllium, total	ug/L	MW-20	04/19/2022		4.0000	ND				
Beryllium, total	ug/L	MW-20	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-20	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-20	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-20	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-20	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-20	10/28/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	03/30/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	09/24/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	04/14/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	09/29/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	10/18/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	04/09/2019	yes	0.8000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cadmium, total	ug/L	MW-20	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-20	10/21/2021		0.8000	ND				
Cadmium, total	ug/L	MW-20	04/19/2022		0.8000	ND				
Cadmium, total	ug/L	MW-20	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-20	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-20	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-20	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-20	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-20	10/28/2014	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	03/30/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	09/24/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	04/14/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	09/29/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	10/18/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	10/15/2018	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	04/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-20	10/21/2021		8.0000	ND				
Chromium, total	ug/L	MW-20	04/19/2022		8.0000	ND				
Chromium, total	ug/L	MW-20	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-20	04/11/2023		8.0000	ND				
Chromium, total	ug/L	MW-20	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-20	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-20	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-20	10/28/2014	yes	11.6000					
Cobalt, total	ug/L	MW-20	03/30/2015	yes	7.9000					
Cobalt, total	ug/L	MW-20	09/24/2015	yes	5.3000					
Cobalt, total	ug/L	MW-20	04/14/2016	yes	5.9000					
Cobalt, total	ug/L	MW-20	09/29/2016	yes	4.1000					
Cobalt, total	ug/L	MW-20	04/20/2017	yes	1.2000		yes			*
Cobalt, total	ug/L	MW-20	10/18/2017	yes	7.4000					
Cobalt, total	ug/L	MW-20	01/05/2018	yes	6.6000					
Cobalt, total	ug/L	MW-20	10/15/2018	yes	6.9000					
Cobalt, total	ug/L	MW-20	04/09/2019	yes	3.9000					
Cobalt, total	ug/L	MW-20	10/09/2019	yes	4.3000					
Cobalt, total	ug/L	MW-20	04/01/2020	yes	6.0000					
Cobalt, total	ug/L	MW-20	10/06/2020	yes	3.3000					
Cobalt, total	ug/L	MW-20	04/13/2021	yes	3.9000					
Cobalt, total	ug/L	MW-20	10/21/2021		2.7000			5.9308		
Cobalt, total	ug/L	MW-20	04/19/2022		3.2000			5.9308		
Cobalt, total	ug/L	MW-20	10/18/2022		3.7000			5.9308		
Cobalt, total	ug/L	MW-20	04/11/2023		4.0000			5.9308		
Cobalt, total	ug/L	MW-20	10/05/2023		1.8000			5.9308		

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cobalt, total	ug/L	MW-20	04/23/2024		2.4000			5.9308		
Cobalt, total	ug/L	MW-20	10/11/2024		2.1000			5.9308		
Copper, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Copper, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-20	09/24/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Copper, total	ug/L	MW-20	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-20	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-20	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-20	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-20	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-20	10/21/2021		10.2000					**
Copper, total	ug/L	MW-20	04/19/2022		4.0000	ND				
Copper, total	ug/L	MW-20	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-20	04/11/2023		4.0000	ND				
Copper, total	ug/L	MW-20	10/05/2023		5.0000					**
Copper, total	ug/L	MW-20	12/19/2023		4.0000	ND				
Copper, total	ug/L	MW-20	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-20	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Lead, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-20	09/24/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-20	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-20	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-20	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-20	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-20	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-20	10/21/2021		4.0000	ND				
Lead, total	ug/L	MW-20	04/19/2022		4.0000	ND				
Lead, total	ug/L	MW-20	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-20	04/11/2023		4.0000	ND				
Lead, total	ug/L	MW-20	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-20	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-20	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-20	10/28/2014	yes	15.0000					
Nickel, total	ug/L	MW-20	03/30/2015	yes	10.3000					
Nickel, total	ug/L	MW-20	09/24/2015	yes	8.0000					
Nickel, total	ug/L	MW-20	04/14/2016	yes	9.6000					
Nickel, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Nickel, total	ug/L	MW-20	04/20/2017	yes	8.6000					
Nickel, total	ug/L	MW-20	10/18/2017	yes	9.1000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Nickel, total	ug/L	MW-20	10/15/2018	yes	10.1000					
Nickel, total	ug/L	MW-20	04/09/2019	yes	8.8000					
Nickel, total	ug/L	MW-20	10/09/2019	yes	7.3000					
Nickel, total	ug/L	MW-20	04/01/2020	yes	6.7000					
Nickel, total	ug/L	MW-20	10/06/2020	yes	6.2000					
Nickel, total	ug/L	MW-20	04/13/2021	yes	6.4000					
Nickel, total	ug/L	MW-20	10/21/2021		10.3000			8.4692		
Nickel, total	ug/L	MW-20	04/19/2022		5.7000			8.4692		
Nickel, total	ug/L	MW-20	10/18/2022		5.1000			8.4692		
Nickel, total	ug/L	MW-20	04/11/2023		7.2000			8.4692		
Nickel, total	ug/L	MW-20	10/05/2023		5.0000			8.4692		
Nickel, total	ug/L	MW-20	04/23/2024		4.0000			8.4692		
Nickel, total	ug/L	MW-20	10/11/2024		4.0000			8.4692		
Selenium, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	09/24/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-20	10/21/2021		4.0000	ND				
Selenium, total	ug/L	MW-20	04/19/2022		4.0000	ND				
Selenium, total	ug/L	MW-20	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-20	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-20	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-20	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-20	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-20	09/24/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-20	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-20	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-20	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-20	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-20	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-20	10/21/2021		4.0000	ND				
Silver, total	ug/L	MW-20	04/19/2022		4.0000	ND				
Silver, total	ug/L	MW-20	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-20	04/11/2023		4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Silver, total	ug/L	MW-20	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-20	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-20	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-20	10/28/2014	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	03/30/2015	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	09/24/2015	yes	1.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	04/14/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	09/29/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	04/20/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	10/18/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	10/15/2018	yes	4.0000	ND				
Thallium, total	ug/L	MW-20	04/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	10/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	04/01/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	10/06/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	04/13/2021	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-20	10/21/2021		2.0000	ND				
Thallium, total	ug/L	MW-20	04/19/2022		2.0000	ND				
Thallium, total	ug/L	MW-20	10/18/2022		2.0000	ND				
Thallium, total	ug/L	MW-20	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-20	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-20	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-20	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-20	10/28/2014	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	03/30/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	09/24/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	04/14/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	09/29/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	10/18/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-20	10/21/2021		20.0000	ND				
Vanadium, total	ug/L	MW-20	04/19/2022		20.0000	ND				
Vanadium, total	ug/L	MW-20	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-20	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-20	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-20	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-20	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-20	10/28/2014	yes	9.2000					
Zinc, total	ug/L	MW-20	03/30/2015	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-20	09/24/2015	yes	8.3000					
Zinc, total	ug/L	MW-20	04/14/2016	yes	9.4000					
Zinc, total	ug/L	MW-20	09/29/2016	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-20	04/20/2017	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-20	10/18/2017	yes	20.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Zinc, total	ug/L	MW-20	10/15/2018	yes	20.0000	ND				
Zinc, total	ug/L	MW-20	04/09/2019	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-20	10/09/2019	yes	79.7000					
Zinc, total	ug/L	MW-20	01/08/2020	yes	13.5000					
Zinc, total	ug/L	MW-20	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-20	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-20	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-20	10/21/2021		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	04/19/2022		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	10/18/2022		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	04/11/2023		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	10/05/2023		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	04/23/2024		20.0000	ND		21.4357		
Zinc, total	ug/L	MW-20	10/11/2024		20.0000	ND		21.4357		
Antimony, total	ug/L	MW-21R	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	10/19/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	10/15/2018	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-21R	10/21/2021		2.0000	ND				
Antimony, total	ug/L	MW-21R	04/19/2022		2.0000	ND				
Antimony, total	ug/L	MW-21R	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-21R	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-21R	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-21R	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-21R	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-21R	04/20/2017	yes	4.5000					
Arsenic, total	ug/L	MW-21R	10/19/2017	yes	4.5000					
Arsenic, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-21R	10/21/2021		16.2000			15.9685		**
Arsenic, total	ug/L	MW-21R	01/10/2022		15.2000			14.9685		**
Arsenic, total	ug/L	MW-21R	04/19/2022		17.1000			16.8685		**
Arsenic, total	ug/L	MW-21R	10/18/2022		9.8000			9.5685		**
Arsenic, total	ug/L	MW-21R	04/11/2023		14.7000			14.4685		**
Arsenic, total	ug/L	MW-21R	10/05/2023		10.9000			10.6685		**
Arsenic, total	ug/L	MW-21R	04/23/2024		5.2000			4.9685		
Arsenic, total	ug/L	MW-21R	10/11/2024		12.6000			13.2121		**
Barium, total	ug/L	MW-21R	04/20/2017	yes	60.3000					
Barium, total	ug/L	MW-21R	10/19/2017	yes	35.9000					
Barium, total	ug/L	MW-21R	10/15/2018	yes	30.3000					
Barium, total	ug/L	MW-21R	04/09/2019	yes	21.1000					
Barium, total	ug/L	MW-21R	10/09/2019	yes	35.4000					

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Barium, total	ug/L	MW-21R	04/01/2020	yes	23.9000					
Barium, total	ug/L	MW-21R	10/06/2020	yes	24.3000					
Barium, total	ug/L	MW-21R	04/13/2021	yes	23.2000					
Barium, total	ug/L	MW-21R	10/21/2021		32.2000			31.8000		
Barium, total	ug/L	MW-21R	04/19/2022		35.2000			31.8000		
Barium, total	ug/L	MW-21R	10/18/2022		32.6000			31.8000		
Barium, total	ug/L	MW-21R	04/11/2023		28.1000			31.8000		
Barium, total	ug/L	MW-21R	10/05/2023		24.2000			31.8000		
Barium, total	ug/L	MW-21R	04/23/2024		19.6000			31.8000		
Barium, total	ug/L	MW-21R	10/11/2024		25.2000			31.8000		
Beryllium, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/21/2021		4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/19/2022		4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-21R	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-21R	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-21R	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/19/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/21/2021		0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/19/2022		0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-21R	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-21R	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-21R	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	10/19/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	10/15/2018	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	04/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-21R	10/21/2021		8.0000	ND				
Chromium, total	ug/L	MW-21R	04/19/2022		8.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chromium, total	ug/L	MW-21R	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-21R	04/11/2023		8.0000	ND				
Chromium, total	ug/L	MW-21R	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-21R	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-21R	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-21R	04/20/2017	yes	25.2000					
Cobalt, total	ug/L	MW-21R	07/17/2017	yes	20.9000					
Cobalt, total	ug/L	MW-21R	10/19/2017	yes	19.4000					
Cobalt, total	ug/L	MW-21R	10/15/2018	yes	15.7000					
Cobalt, total	ug/L	MW-21R	04/09/2019	yes	12.0000					
Cobalt, total	ug/L	MW-21R	10/09/2019	yes	16.5000					
Cobalt, total	ug/L	MW-21R	04/01/2020	yes	8.1000					
Cobalt, total	ug/L	MW-21R	10/06/2020	yes	21.1000					
Cobalt, total	ug/L	MW-21R	04/13/2021	yes	21.4000					
Cobalt, total	ug/L	MW-21R	10/21/2021		24.4000			19.1013		
Cobalt, total	ug/L	MW-21R	04/19/2022		23.6000			19.5915		
Cobalt, total	ug/L	MW-21R	10/18/2022		23.6000			20.0817		
Cobalt, total	ug/L	MW-21R	04/11/2023		16.7000			17.8111		
Cobalt, total	ug/L	MW-21R	10/05/2023		12.0000			17.8111		
Cobalt, total	ug/L	MW-21R	04/23/2024		9.1000			17.8111		
Cobalt, total	ug/L	MW-21R	10/11/2024		6.8000			17.8111		
Copper, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	10/15/2018	yes	5.2000					
Copper, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-21R	10/21/2021		4.0000	ND				
Copper, total	ug/L	MW-21R	04/19/2022		4.0000	ND				
Copper, total	ug/L	MW-21R	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-21R	04/11/2023		4.0000	ND				
Copper, total	ug/L	MW-21R	10/05/2023		4.0000	ND				
Copper, total	ug/L	MW-21R	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-21R	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-21R	10/21/2021		4.0000	ND				
Lead, total	ug/L	MW-21R	04/19/2022		4.0000	ND				
Lead, total	ug/L	MW-21R	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-21R	04/11/2023		4.0000	ND				
Lead, total	ug/L	MW-21R	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-21R	04/23/2024		4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Lead, total	ug/L	MW-21R	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-21R	04/20/2017	yes	55.8000					
Nickel, total	ug/L	MW-21R	07/17/2017	yes	50.7000					
Nickel, total	ug/L	MW-21R	10/19/2017	yes	53.1000					
Nickel, total	ug/L	MW-21R	10/15/2018	yes	44.7000					
Nickel, total	ug/L	MW-21R	04/09/2019	yes	21.5000					
Nickel, total	ug/L	MW-21R	10/09/2019	yes	24.2000					
Nickel, total	ug/L	MW-21R	04/01/2020	yes	13.1000					
Nickel, total	ug/L	MW-21R	10/06/2020	yes	27.9000					
Nickel, total	ug/L	MW-21R	04/13/2021	yes	28.4000					
Nickel, total	ug/L	MW-21R	10/21/2021		32.4000			35.4889		
Nickel, total	ug/L	MW-21R	04/19/2022		28.3000			35.4889		
Nickel, total	ug/L	MW-21R	10/18/2022		26.0000			35.4889		
Nickel, total	ug/L	MW-21R	04/11/2023		24.8000			35.4889		
Nickel, total	ug/L	MW-21R	10/05/2023		19.4000			35.4889		
Nickel, total	ug/L	MW-21R	04/23/2024		13.6000			35.4889		
Nickel, total	ug/L	MW-21R	10/11/2024		9.5000			35.4889		
Selenium, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-21R	10/21/2021		4.0000	ND				
Selenium, total	ug/L	MW-21R	04/19/2022		4.0000	ND				
Selenium, total	ug/L	MW-21R	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-21R	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-21R	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-21R	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-21R	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-21R	10/21/2021		4.0000	ND				
Silver, total	ug/L	MW-21R	04/19/2022		4.0000	ND				
Silver, total	ug/L	MW-21R	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-21R	04/11/2023		4.0000	ND				
Silver, total	ug/L	MW-21R	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-21R	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-21R	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-21R	04/20/2017	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-21R	10/19/2017	yes	4.0000	ND			2.0000	***
Thallium, total	ug/L	MW-21R	10/15/2018	yes	4.0000	ND			2.0000	***

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Thallium, total	ug/L	MW-21R	04/09/2019	yes	2.0000	ND				
Thallium, total	ug/L	MW-21R	10/09/2019	yes	2.0000	ND				
Thallium, total	ug/L	MW-21R	04/01/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-21R	10/06/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-21R	04/13/2021	yes	2.0000	ND				
Thallium, total	ug/L	MW-21R	10/21/2021		2.0000	ND				
Thallium, total	ug/L	MW-21R	04/19/2022		2.0000	ND				
Thallium, total	ug/L	MW-21R	10/18/2022		2.0000	ND				
Thallium, total	ug/L	MW-21R	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-21R	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-21R	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-21R	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-21R	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/19/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/21/2021		20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/19/2022		20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-21R	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-21R	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-21R	04/20/2017	yes	9.8000					
Zinc, total	ug/L	MW-21R	10/19/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-21R	10/15/2018	yes	20.0000	ND				
Zinc, total	ug/L	MW-21R	04/09/2019	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-21R	10/09/2019	yes	53.1000					
Zinc, total	ug/L	MW-21R	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-21R	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-21R	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-21R	10/21/2021		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	04/19/2022		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	10/18/2022		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	04/11/2023		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	10/05/2023		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	04/23/2024		20.0000	ND		22.8625		
Zinc, total	ug/L	MW-21R	10/11/2024		20.0000	ND		22.8625		
Antimony, total	ug/L	MW-22	10/28/2014	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	03/30/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	09/22/2015	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	04/13/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	09/29/2016	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	04/20/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	10/18/2017	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	10/15/2018	yes	2.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Antimony, total	ug/L	MW-22	04/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	04/13/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-22	10/21/2021		2.0000	ND				
Antimony, total	ug/L	MW-22	04/19/2022		2.0000	ND				
Antimony, total	ug/L	MW-22	10/18/2022		2.0000	ND				
Antimony, total	ug/L	MW-22	04/11/2023		2.0000	ND				
Antimony, total	ug/L	MW-22	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-22	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-22	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Arsenic, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Arsenic, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Arsenic, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Arsenic, total	ug/L	MW-22	10/05/2023		4.0000	ND				
Arsenic, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Arsenic, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Barium, total	ug/L	MW-22	10/28/2014	yes	17.5000					
Barium, total	ug/L	MW-22	03/30/2015	yes	20.3000					
Barium, total	ug/L	MW-22	09/22/2015	yes	22.2000					
Barium, total	ug/L	MW-22	04/13/2016	yes	29.2000					
Barium, total	ug/L	MW-22	09/29/2016	yes	15.7000					
Barium, total	ug/L	MW-22	04/20/2017	yes	19.2000					
Barium, total	ug/L	MW-22	10/18/2017	yes	15.2000					
Barium, total	ug/L	MW-22	10/15/2018	yes	13.3000					
Barium, total	ug/L	MW-22	04/09/2019	yes	18.7000					
Barium, total	ug/L	MW-22	10/09/2019	yes	15.9000					
Barium, total	ug/L	MW-22	04/01/2020	yes	18.2000					
Barium, total	ug/L	MW-22	10/06/2020	yes	14.4000					
Barium, total	ug/L	MW-22	04/13/2021	yes	16.0000					
Barium, total	ug/L	MW-22	10/21/2021		10.1000			18.1385		
Barium, total	ug/L	MW-22	04/19/2022		15.8000			18.1385		
Barium, total	ug/L	MW-22	10/18/2022		12.7000			18.1385		
Barium, total	ug/L	MW-22	04/11/2023		13.1000			18.1385		
Barium, total	ug/L	MW-22	10/05/2023		9.3000			18.1385		

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Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Barium, total	ug/L	MW-22	04/23/2024		13.3000			18.1385		
Barium, total	ug/L	MW-22	10/11/2024		9.9000			18.1385		
Beryllium, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Beryllium, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Beryllium, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Beryllium, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Beryllium, total	ug/L	MW-22	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-22	10/28/2014	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	03/30/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	09/22/2015	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	04/13/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	09/29/2016	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	04/20/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	10/18/2017	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	10/15/2018	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	04/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-22	10/21/2021		0.8000	ND				
Cadmium, total	ug/L	MW-22	04/19/2022		0.8000	ND				
Cadmium, total	ug/L	MW-22	10/18/2022		0.8000	ND				
Cadmium, total	ug/L	MW-22	04/11/2023		0.8000	ND				
Cadmium, total	ug/L	MW-22	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-22	04/23/2024		0.8000	ND				
Cadmium, total	ug/L	MW-22	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-22	10/28/2014	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	03/30/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	09/22/2015	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	04/13/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	09/29/2016	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	04/20/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	10/18/2017	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	10/15/2018	yes	8.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Chromium, total	ug/L	MW-22	04/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-22	10/21/2021		8.0000	ND				
Chromium, total	ug/L	MW-22	04/19/2022		8.0000	ND				
Chromium, total	ug/L	MW-22	10/18/2022		8.0000	ND				
Chromium, total	ug/L	MW-22	04/11/2023		8.0000	ND				
Chromium, total	ug/L	MW-22	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-22	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-22	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-22	10/28/2014	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	03/30/2015	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	09/22/2015	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	04/13/2016	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	09/29/2016	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	04/20/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	10/18/2017	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	10/15/2018	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	04/09/2019	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	10/09/2019	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	04/01/2020	yes	0.8000	ND				
Cobalt, total	ug/L	MW-22	10/06/2020	yes	0.4000					
Cobalt, total	ug/L	MW-22	04/13/2021	yes	0.4000	ND			0.8000	***
Cobalt, total	ug/L	MW-22	10/21/2021		0.8000					
Cobalt, total	ug/L	MW-22	04/19/2022		0.4000					
Cobalt, total	ug/L	MW-22	10/18/2022		1.5000					**
Cobalt, total	ug/L	MW-22	04/11/2023		0.4000					
Cobalt, total	ug/L	MW-22	10/05/2023		0.4000					
Cobalt, total	ug/L	MW-22	04/23/2024		0.4000	ND				
Cobalt, total	ug/L	MW-22	10/11/2024		0.4000	ND				
Copper, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Copper, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Copper, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Copper, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Copper, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Copper, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Copper, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Copper, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Copper, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Copper, total	ug/L	MW-22	10/05/2023		8.6000					**

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Copper, total	ug/L	MW-22	12/19/2023		4.0000	ND				
Copper, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Copper, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Lead, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Lead, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Lead, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Lead, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Lead, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Lead, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Lead, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Lead, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Lead, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Lead, total	ug/L	MW-22	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-22	10/28/2014	yes	16.0000					
Nickel, total	ug/L	MW-22	03/30/2015	yes	5.4000					
Nickel, total	ug/L	MW-22	09/22/2015	yes	41.3000					
Nickel, total	ug/L	MW-22	04/13/2016	yes	8.8000					
Nickel, total	ug/L	MW-22	09/29/2016	yes	41.5000					
Nickel, total	ug/L	MW-22	12/28/2016	yes	10.6000					
Nickel, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Nickel, total	ug/L	MW-22	10/18/2017	yes	37.6000					
Nickel, total	ug/L	MW-22	10/15/2018	yes	30.6000					
Nickel, total	ug/L	MW-22	04/09/2019	yes	5.3000					
Nickel, total	ug/L	MW-22	10/09/2019	yes	16.6000					
Nickel, total	ug/L	MW-22	04/01/2020	yes	5.6000					
Nickel, total	ug/L	MW-22	10/06/2020	yes	35.8000					
Nickel, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Nickel, total	ug/L	MW-22	10/21/2021		12.5000			18.7929		
Nickel, total	ug/L	MW-22	04/19/2022		4.0000	ND		18.7929		
Nickel, total	ug/L	MW-22	10/18/2022		10.6000			18.7929		
Nickel, total	ug/L	MW-22	04/11/2023		4.0000	ND		18.7929		
Nickel, total	ug/L	MW-22	10/05/2023		76.0000			64.6881		
Nickel, total	ug/L	MW-22	04/23/2024		4.0000	ND		34.5834		
Nickel, total	ug/L	MW-22	10/11/2024		11.7000			18.7929		
Selenium, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Selenium, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Selenium, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Selenium, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Selenium, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Selenium, total	ug/L	MW-22	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Silver, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-22	09/22/2015	yes	4.0000	ND				
Silver, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Silver, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Silver, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Silver, total	ug/L	MW-22	04/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-22	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-22	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-22	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-22	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-22	10/21/2021		4.0000	ND				
Silver, total	ug/L	MW-22	04/19/2022		4.0000	ND				
Silver, total	ug/L	MW-22	10/18/2022		4.0000	ND				
Silver, total	ug/L	MW-22	04/11/2023		4.0000	ND				
Silver, total	ug/L	MW-22	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-22	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-22	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-22	10/28/2014	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	03/30/2015	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	09/22/2015	yes	1.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	04/13/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	09/29/2016	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	04/20/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	10/18/2017	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	10/15/2018	yes	4.0000	ND				
Thallium, total	ug/L	MW-22	04/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	10/09/2019	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	04/01/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	10/06/2020	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	04/13/2021	yes	2.0000	ND			4.0000	***
Thallium, total	ug/L	MW-22	10/21/2021		2.0000	ND				
Thallium, total	ug/L	MW-22	04/19/2022		2.0000	ND				
Thallium, total	ug/L	MW-22	10/18/2022		2.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Thallium, total	ug/L	MW-22	04/11/2023		2.0000	ND				
Thallium, total	ug/L	MW-22	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-22	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-22	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-22	10/28/2014	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	03/30/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	09/22/2015	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	04/13/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	09/29/2016	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	04/20/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	10/18/2017	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	10/15/2018	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	04/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-22	10/21/2021		20.0000	ND				
Vanadium, total	ug/L	MW-22	04/19/2022		20.0000	ND				
Vanadium, total	ug/L	MW-22	10/18/2022		20.0000	ND				
Vanadium, total	ug/L	MW-22	04/11/2023		20.0000	ND				
Vanadium, total	ug/L	MW-22	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-22	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-22	10/11/2024		20.0000	ND				
Zinc, total	ug/L	MW-22	10/28/2014	yes	15.6000					
Zinc, total	ug/L	MW-22	03/30/2015	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-22	09/22/2015	yes	16.3000					
Zinc, total	ug/L	MW-22	04/13/2016	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-22	09/29/2016	yes	22.0000					
Zinc, total	ug/L	MW-22	04/20/2017	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-22	07/17/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	10/18/2017	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	10/15/2018	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	04/09/2019	yes	8.0000	ND			20.0000	***
Zinc, total	ug/L	MW-22	10/09/2019	yes	71.1000					
Zinc, total	ug/L	MW-22	01/08/2020	yes	10.6000					
Zinc, total	ug/L	MW-22	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-22	10/21/2021		20.0000	ND		22.3733		
Zinc, total	ug/L	MW-22	04/19/2022		20.0000	ND		22.3733		
Zinc, total	ug/L	MW-22	10/18/2022		20.0000	ND		22.3733		
Zinc, total	ug/L	MW-22	04/11/2023		20.0000	ND		22.3733		
Zinc, total	ug/L	MW-22	10/05/2023		29.2000			22.3733		
Zinc, total	ug/L	MW-22	04/23/2024		20.0000	ND		22.3733		
Zinc, total	ug/L	MW-22	10/11/2024		20.0000	ND		22.3733		
Antimony, total	ug/L	MW-30	10/09/2019	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	04/01/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	10/06/2020	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	04/13/2021	yes	2.0000	ND				

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Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Antimony, total	ug/L	MW-30	10/21/2021	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	04/19/2022	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	10/18/2022	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	04/11/2023	yes	2.0000	ND				
Antimony, total	ug/L	MW-30	10/05/2023		2.0000	ND				
Antimony, total	ug/L	MW-30	04/23/2024		2.0000	ND				
Antimony, total	ug/L	MW-30	10/11/2024		2.0000	ND				
Arsenic, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	04/13/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	04/19/2022	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	10/18/2022	yes	9.1000					
Arsenic, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Arsenic, total	ug/L	MW-30	10/05/2023		4.0000	ND				
Arsenic, total	ug/L	MW-30	04/23/2024		4.0000	ND				
Arsenic, total	ug/L	MW-30	10/11/2024		4.0000	ND				
Barium, total	ug/L	MW-30	10/09/2019	yes	39.5000					
Barium, total	ug/L	MW-30	04/01/2020	yes	22.5000					
Barium, total	ug/L	MW-30	10/06/2020	yes	22.8000					
Barium, total	ug/L	MW-30	04/13/2021	yes	19.4000					
Barium, total	ug/L	MW-30	10/21/2021	yes	23.9000					
Barium, total	ug/L	MW-30	04/19/2022	yes	20.9000					
Barium, total	ug/L	MW-30	10/18/2022	yes	44.7000					
Barium, total	ug/L	MW-30	04/11/2023	yes	20.7000					
Barium, total	ug/L	MW-30	10/05/2023		21.0000			26.8000		
Barium, total	ug/L	MW-30	04/23/2024		14.2000			26.8000		
Barium, total	ug/L	MW-30	10/11/2024		24.5000			26.8000		
Beryllium, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	04/13/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	04/19/2022	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	10/18/2022	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Beryllium, total	ug/L	MW-30	10/05/2023		4.0000	ND				
Beryllium, total	ug/L	MW-30	04/23/2024		4.0000	ND				
Beryllium, total	ug/L	MW-30	10/11/2024		4.0000	ND				
Cadmium, total	ug/L	MW-30	10/09/2019	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	04/01/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	10/06/2020	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	04/13/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	10/21/2021	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	04/19/2022	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	10/18/2022	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	04/11/2023	yes	0.8000	ND				
Cadmium, total	ug/L	MW-30	10/05/2023		0.8000	ND				
Cadmium, total	ug/L	MW-30	04/23/2024		0.8000	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Cadmium, total	ug/L	MW-30	10/11/2024		0.8000	ND				
Chromium, total	ug/L	MW-30	10/09/2019	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	04/01/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	10/06/2020	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	04/13/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	10/21/2021	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	04/19/2022	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	10/18/2022	yes	43.0000					
Chromium, total	ug/L	MW-30	04/11/2023	yes	8.0000	ND				
Chromium, total	ug/L	MW-30	10/05/2023		8.0000	ND				
Chromium, total	ug/L	MW-30	04/23/2024		8.0000	ND				
Chromium, total	ug/L	MW-30	10/11/2024		8.0000	ND				
Cobalt, total	ug/L	MW-30	10/09/2019	yes	11.3000					
Cobalt, total	ug/L	MW-30	04/01/2020	yes	3.5000					
Cobalt, total	ug/L	MW-30	10/06/2020	yes	2.9000					
Cobalt, total	ug/L	MW-30	04/13/2021	yes	2.9000					
Cobalt, total	ug/L	MW-30	10/21/2021	yes	3.0000					
Cobalt, total	ug/L	MW-30	04/19/2022	yes	4.7000					
Cobalt, total	ug/L	MW-30	10/18/2022	yes	24.2000					
Cobalt, total	ug/L	MW-30	04/11/2023	yes	6.5000					
Cobalt, total	ug/L	MW-30	10/05/2023		4.1000			7.3750		
Cobalt, total	ug/L	MW-30	04/23/2024		3.0000			7.3750		
Cobalt, total	ug/L	MW-30	10/11/2024		7.4000			7.3750		
Copper, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Copper, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Copper, total	ug/L	MW-30	04/13/2021	yes	5.7000					
Copper, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Copper, total	ug/L	MW-30	04/19/2022	yes	5.9000					
Copper, total	ug/L	MW-30	10/18/2022	yes	71.2000		yes			*
Copper, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Copper, total	ug/L	MW-30	10/05/2023		4.0000	ND		4.5143		
Copper, total	ug/L	MW-30	04/23/2024		4.0000	ND		4.5143		
Copper, total	ug/L	MW-30	10/11/2024		4.0000	ND		4.5143		
Lead, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Lead, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Lead, total	ug/L	MW-30	04/13/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Lead, total	ug/L	MW-30	04/19/2022	yes	4.0000	ND				
Lead, total	ug/L	MW-30	10/18/2022	yes	12.7000					
Lead, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Lead, total	ug/L	MW-30	10/05/2023		4.0000	ND				
Lead, total	ug/L	MW-30	04/23/2024		4.0000	ND				
Lead, total	ug/L	MW-30	10/11/2024		4.0000	ND				
Nickel, total	ug/L	MW-30	10/09/2019	yes	11.0000					
Nickel, total	ug/L	MW-30	04/01/2020	yes	4.3000					
Nickel, total	ug/L	MW-30	10/06/2020	yes	5.4000					
Nickel, total	ug/L	MW-30	04/13/2021	yes	7.0000					
Nickel, total	ug/L	MW-30	10/21/2021	yes	6.3000					

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Nickel, total	ug/L	MW-30	04/19/2022	yes	10.7000					
Nickel, total	ug/L	MW-30	10/18/2022	yes	51.0000					
Nickel, total	ug/L	MW-30	04/11/2023	yes	29.0000					
Nickel, total	ug/L	MW-30	10/05/2023		19.0000			15.5875		
Nickel, total	ug/L	MW-30	04/23/2024		12.7000			15.5875		
Nickel, total	ug/L	MW-30	10/11/2024		29.6000			15.5875		
Selenium, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	04/13/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	04/19/2022	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	10/18/2022	yes	5.7000					
Selenium, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Selenium, total	ug/L	MW-30	10/05/2023		4.0000	ND				
Selenium, total	ug/L	MW-30	04/23/2024		4.0000	ND				
Selenium, total	ug/L	MW-30	10/11/2024		4.0000	ND				
Silver, total	ug/L	MW-30	10/09/2019	yes	4.0000	ND				
Silver, total	ug/L	MW-30	04/01/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-30	10/06/2020	yes	4.0000	ND				
Silver, total	ug/L	MW-30	04/13/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-30	10/21/2021	yes	4.0000	ND				
Silver, total	ug/L	MW-30	04/19/2022	yes	4.0000	ND				
Silver, total	ug/L	MW-30	10/18/2022	yes	4.0000	ND				
Silver, total	ug/L	MW-30	04/11/2023	yes	4.0000	ND				
Silver, total	ug/L	MW-30	10/05/2023		4.0000	ND				
Silver, total	ug/L	MW-30	04/23/2024		4.0000	ND				
Silver, total	ug/L	MW-30	10/11/2024		4.0000	ND				
Thallium, total	ug/L	MW-30	10/09/2019	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	04/01/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	10/06/2020	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	04/13/2021	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	10/21/2021	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	04/19/2022	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	10/18/2022	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	04/11/2023	yes	2.0000	ND				
Thallium, total	ug/L	MW-30	10/05/2023		2.0000	ND				
Thallium, total	ug/L	MW-30	04/23/2024		2.0000	ND				
Thallium, total	ug/L	MW-30	10/11/2024		2.0000	ND				
Vanadium, total	ug/L	MW-30	10/09/2019	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	04/01/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	10/06/2020	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	04/13/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	10/21/2021	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	04/19/2022	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	10/18/2022	yes	21.4000					
Vanadium, total	ug/L	MW-30	04/11/2023	yes	20.0000	ND				
Vanadium, total	ug/L	MW-30	10/05/2023		20.0000	ND				
Vanadium, total	ug/L	MW-30	04/23/2024		20.0000	ND				
Vanadium, total	ug/L	MW-30	10/11/2024		20.0000	ND				

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 2

Analytical Data and CUSUM Summary

Constituent	Units	Well	Date	Background	Result		Outlier	CUSUM	Adjusted	
Zinc, total	ug/L	MW-30	10/09/2019	yes	49.5000					
Zinc, total	ug/L	MW-30	04/01/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	10/06/2020	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	04/13/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	10/21/2021	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	04/19/2022	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	10/18/2022	yes	138.0000					
Zinc, total	ug/L	MW-30	04/11/2023	yes	20.0000	ND				
Zinc, total	ug/L	MW-30	10/05/2023		20.0000	ND		38.4375		
Zinc, total	ug/L	MW-30	04/23/2024		20.0000	ND		38.4375		
Zinc, total	ug/L	MW-30	10/11/2024		29.3000			38.4375		

* - Outlier for that well and constituent.
** - Non-outlier detected sample Result and / or CUSUM value exceeds limit.
*** - ND value replaced with median RL.
**** - ND value replaced with manual RL.
ND = Not detected, Result = detection limit.

Table 4

Dixon's Test Outliers
1% Significance Level

Constituent	Units	Well	Date	Result	ND Qualifier	Date Range	N	Critical Value
Barium, total	ug/L	MW-10A	10/28/2014	143.0000		10/28/2014-04/19/2022	13	0.6425
Barium, total	ug/L	MW-10A	04/19/2022	453.0000		10/28/2014-04/19/2022	13	0.6425
Barium, total	ug/L	MW-10B	10/28/2014	104.0000		10/28/2014-10/21/2021	13	0.6425
Barium, total	ug/L	MW-10B	12/03/2014	97.5000		10/28/2014-10/21/2021	13	0.6425
Zinc, total	ug/L	MW-10B	12/03/2014	158.0000		10/28/2014-10/21/2021	13	0.6174
Cobalt, total	ug/L	MW-18	10/15/2018	9.0000		10/28/2014-04/13/2021	13	0.6174
Zinc, total	ug/L	MW-18	10/09/2019	62.7000		10/28/2014-04/13/2021	14	0.6403
Cobalt, total	ug/L	MW-20	04/20/2017	1.2000		10/28/2014-04/13/2021	14	0.6403
Copper, total	ug/L	MW-30	10/18/2022	71.2000		10/09/2019-04/11/2023	8	0.6808

N = Total number of independent measurements in background at each well.
Date Range = Dates of the first and last measurements included in background at each well.
Critical Value depends on the significance level and on N-1 when the two most extreme values are tested or N for the most extreme value.

Attachment C

Assessment Statistics for Trace Metals

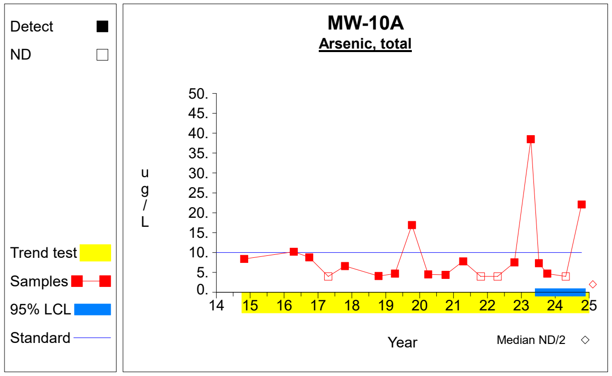
Table 1

Confidence Intervals for Comparing the Mean of the Last 4 Measurements to an Assessment Monitoring Standard

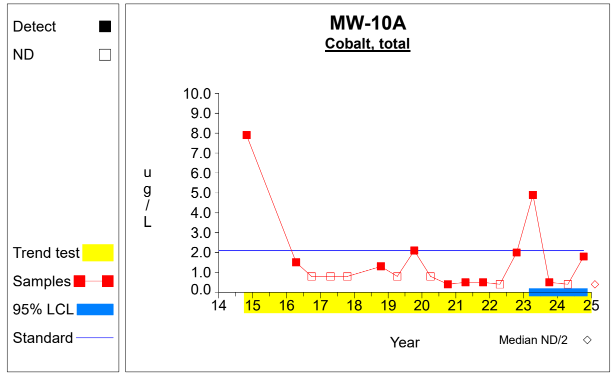
Constituent	Units	Well	N	Mean	SD	Factor	95% LCL	95% UCL	Standard	Trend	
Arsenic, total	ug/L	MW-10A	4	9.025	8.981	1.176	0.000	19.590	10.000		
Cobalt, total	ug/L	MW-10A	4	1.900	2.099	1.176	0.000	4.369	2.100		
Nickel, total	ug/L	MW-10A	4	9.350	9.679	1.176	0.000	20.736	100.000		
Arsenic, total	ug/L	MW-18	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-18	4	59.250	13.171	1.176	43.757	74.743	2.100	inc	**
Nickel, total	ug/L	MW-18	4	44.525	5.682	1.176	37.842	51.208	100.000		
Arsenic, total	ug/L	MW-20	4	17.725	9.681	1.176	6.337	29.113	10.000		
Cobalt, total	ug/L	MW-20	4	2.575	0.981	1.176	1.421	3.729	2.100	dec	
Nickel, total	ug/L	MW-20	4	5.050	1.509	1.176	3.275	6.825	100.000	dec	
Arsenic, total	ug/L	MW-21R	4	10.850	4.075	1.176	6.057	15.643	10.000		
Cobalt, total	ug/L	MW-21R	4	11.150	4.268	1.176	6.129	16.171	2.100		**
Nickel, total	ug/L	MW-21R	4	16.825	6.690	1.176	8.955	24.695	100.000	dec	
Arsenic, total	ug/L	MW-22	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-22	4	0.400	0.000	1.176	0.400	0.400	2.100		
Nickel, total	ug/L	MW-22	4	22.925	35.678	1.176	0.000	64.892	100.000		
Arsenic, total	ug/L	MW-25	4	9.300	4.225	1.176	4.331	14.269	10.000		
Cobalt, total	ug/L	MW-25	4	6.075	2.310	1.176	3.358	8.792	2.100	dec	**
Nickel, total	ug/L	MW-25	4	11.000	4.500	1.176	5.707	16.293	100.000		
Arsenic, total	ug/L	MW-30	4	2.000	0.000	1.176	2.000	2.000	10.000		
Cobalt, total	ug/L	MW-30	4	5.250	2.047	1.176	2.842	7.658	2.100		**
Nickel, total	ug/L	MW-30	4	22.575	8.184	1.176	12.948	32.202	100.000		

* - Insufficient Data
** - Significant Exceedance
LCL = Lower Confidence Limit
UCL = Upper Confidence Limit

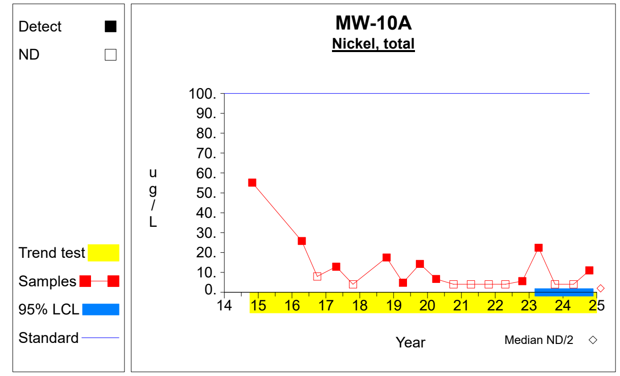
Confidence Limits (Assessment)



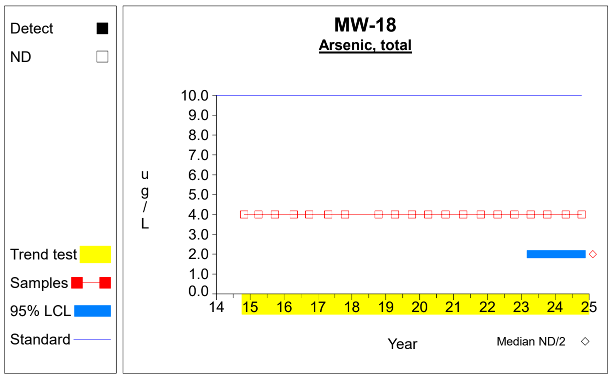
Graph 1



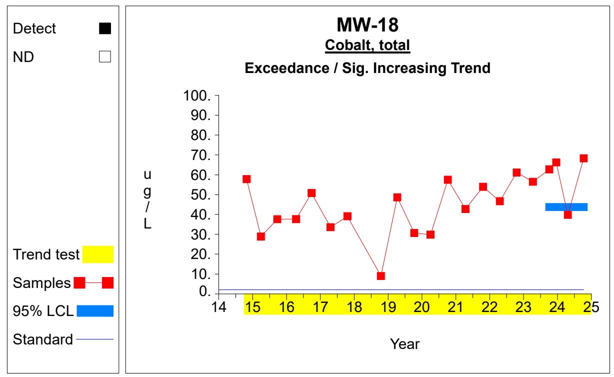
Graph 2



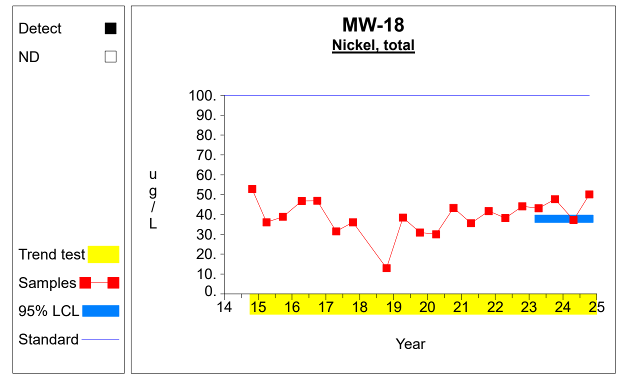
Graph 3



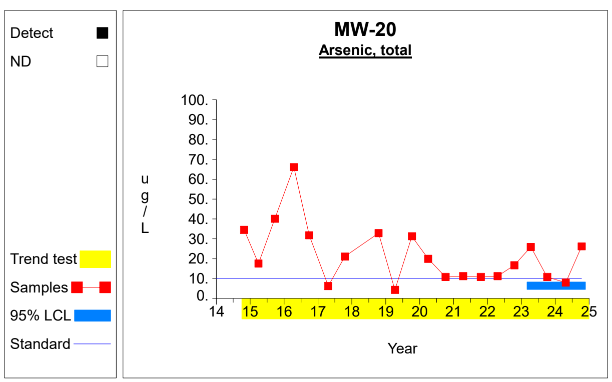
Graph 4



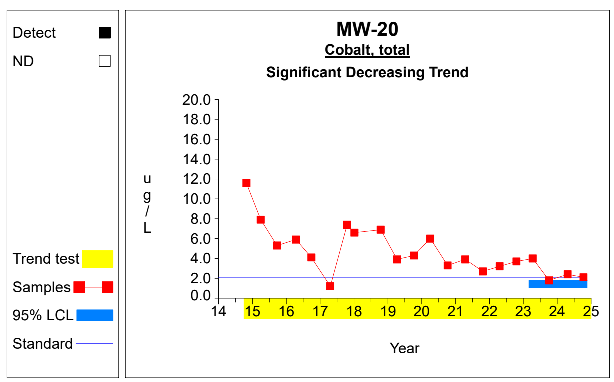
Graph 5



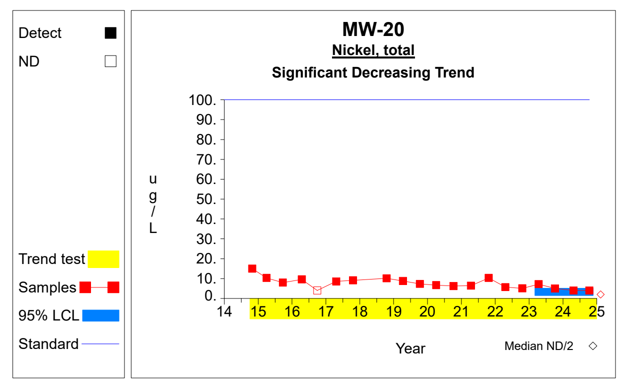
Graph 6



Graph 7



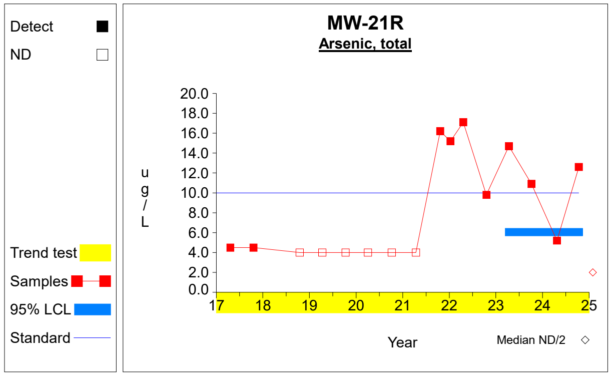
Graph 8



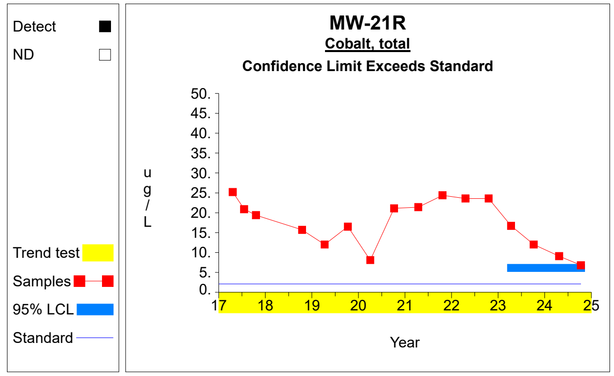
Graph 9

North Central Iowa [GW] December 2024

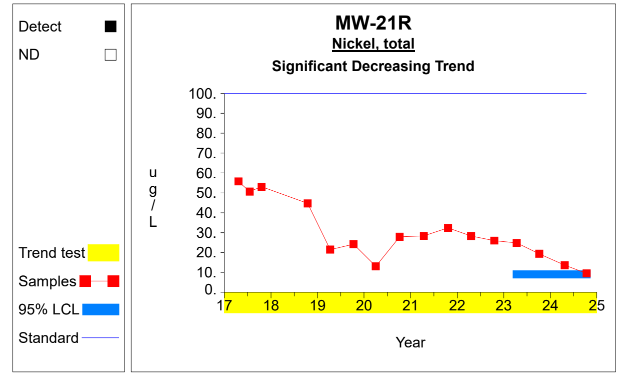
Confidence Limits (Assessment)



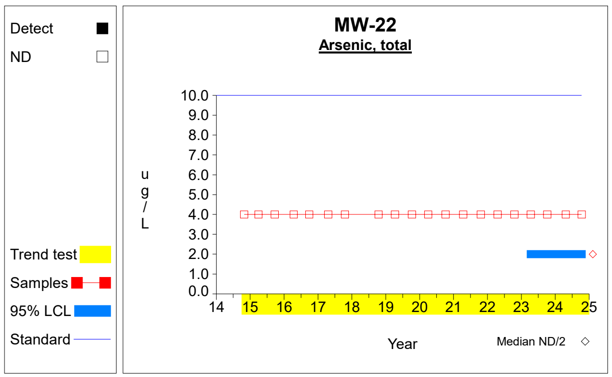
Graph 10



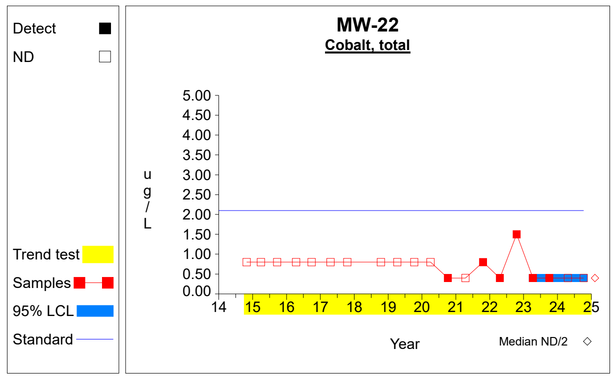
Graph 11



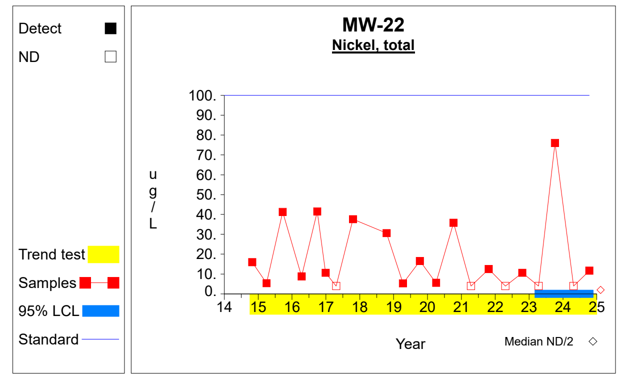
Graph 12



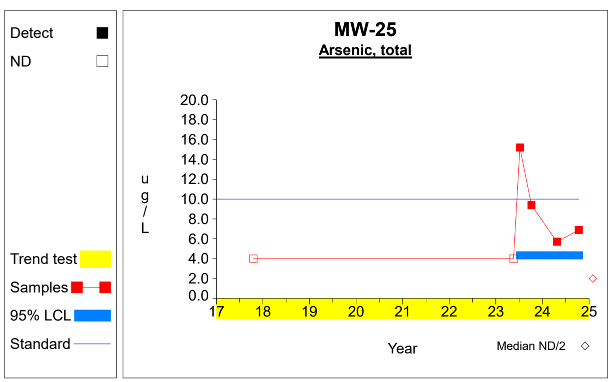
Graph 13



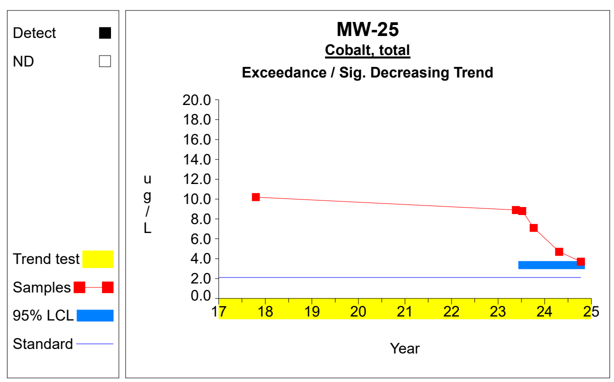
Graph 14



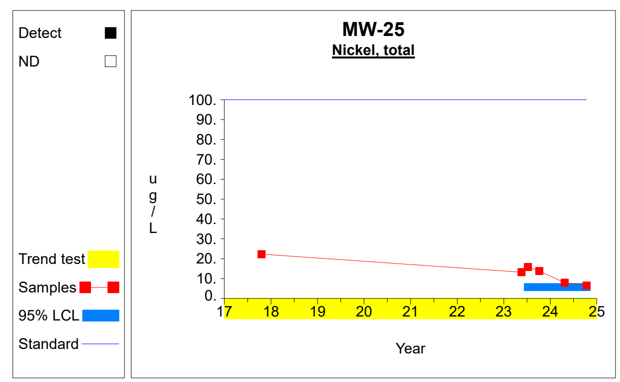
Graph 15



Graph 16



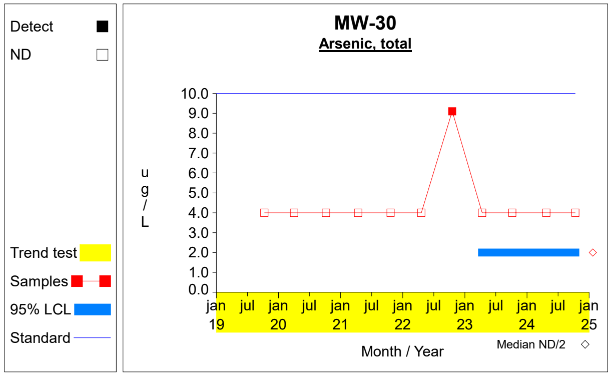
Graph 17



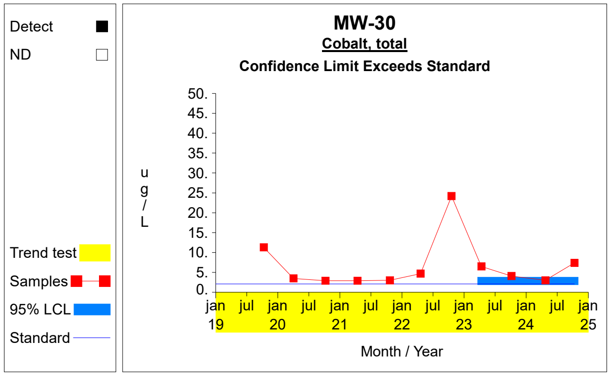
Graph 18

Prepared by: Otter Creek Environmental

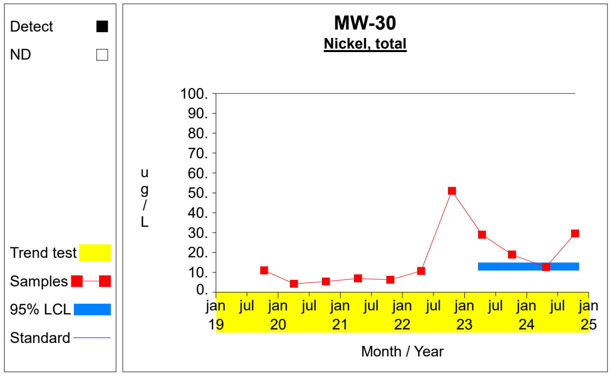
Confidence Limits (Assessment)



Graph 19



Graph 20



Graph 21

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-10A

Step	Equation	Description
1	$\bar{X} = \textbf{sum[X]} / \textbf{N}$ $= \textbf{36.1} / \textbf{4}$ $= \textbf{9.025}$	Compute the mean of the last 4 measurements.
2	$S = ((\textbf{sum[X}^2\textbf{]} - \textbf{sum[X]}^2/\textbf{N}) / (\textbf{N}-1))^{1/2}$ $= ((\textbf{567.79} - \textbf{1303.21/4}) / (\textbf{4}-1))^{1/2}$ $= \textbf{8.981}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{X} - tS/N^{1/2}$ $= \textbf{9.025} - \textbf{2.353} * \textbf{8.981/4}^{1/2}$ $= \textbf{0.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{X} + tS/N^{1/2}$ $= \textbf{9.025} + \textbf{2.353} * \textbf{8.981/4}^{1/2}$ $= \textbf{19.59}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \textbf{N} * (\textbf{N}-1) / 2$ $= \textbf{19} * (\textbf{19}-1) / 2$ $= \textbf{171}$	Number of sample pairs during trend detection period.
6	$S = \textbf{-0.127}$	Sen's estimator of trend.
7	$var(S) = \textbf{807.333}$	Variance estimate for slope.
8	$M(S) = (\textbf{N'} \pm \textbf{Z}_{.995} * \textbf{var(S)}^{1/2}) / 2$ $= (\textbf{171} \pm \textbf{2.576} * \textbf{807.333}^{1/2}) / 2$ $= [\ \textbf{48.903}, \textbf{122.097}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \textbf{-1.067}, \textbf{1.382}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-10A

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **7.6** / **4** = **1.9**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**27.66** - **57.76/4**) / (**4**-1))^{½} = **2.099**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **1.9** - **2.353** * **2.099/4**^{½} = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N**^{½} = **1.9** + **2.353** * **2.099/4**^{½} = **4.369**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **628.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**153** ± **2.576** * **628.0**^{½}) / 2 = [**44.223**, **108.777**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.183**, **0.097**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-10A

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **37.4** / **4** = **9.35**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**630.76** - **1398.76/4**) / (**4**-1))^{½} = **9.679**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N^{½}** = **9.35 - 2.353** * **9.679/4^{½}** = **0.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$ + tS/N^{½}** = **9.35** + **2.353** * **9.679/4^{½}** = **20.736**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **18** * (**18**-1) / 2 = **153**	Number of sample pairs during trend detection period.
6	S = **-0.659**	Sen's estimator of trend.
7	var(S) = **631.667**	Variance estimate for slope.
8	M(S) = (**N'** ± **$Z_{.995}$** * **var(S)^{½}**) / 2 = (**153** ± **2.576** * **631.667^{½}**) / 2 = [**44.129**, **108.871**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-3.862**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-18

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **8.0** / **4** = **2.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**16.0** - **64.0**/**4**) / (**4**-1))$^{1/2}$ = **0.0**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**$^{1/2}$ = **2.0** - **2.353** * **0.0**/**4**$^{1/2}$ = **2.0**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**$^{1/2}$ = **2.0** + **2.353** * **0.0**/**4**$^{1/2}$ = **2.0**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **0.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**190** ± **2.576** * **0.0**$^{1/2}$) / 2 = [**95.0**, **95.0**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-18

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **237.0** / **4** = **59.25**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**14562.66** - **56169.0**/**4**) / (**4**-1))^{½} = **13.171**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**^{½} = **59.25** - **2.353** * **13.171**/**4**^{½} = **43.757**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**^{½} = **59.25** + **2.353** * **13.171**/**4**^{½} = **74.743**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **21** * (**21**-1) / 2 = **210**	Number of sample pairs during trend detection period.
6	S = **2.704**	Sen's estimator of trend.
7	var(S) = **1096.667**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**210** ± **2.576** * **1096.667**^{½}) / 2 = [**62.347**, **147.653**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.18**, **4.965**]	Two-sided confidence interval for slope.
10	LCL(S) > 0	**Significant increasing trend.**

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-18

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **178.1** / **4** = **44.525**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**8026.75** - **31719.61**/**4**) / (**4**-1))^{½} = **5.682**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**^{½} = **44.525** - **2.353** * **5.682**/**4**^{½} = **37.842**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**^{½} = **44.525** + **2.353** * **5.682**/**4**^{½} = **51.208**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **0.472**	Sen's estimator of trend.
7	var(S) = **949.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**190** ± **2.576** * **949.0**^{½}) / 2 = [**55.322**, **134.678**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-1.364**, **2.468**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **70.9** / **4** = **17.725**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**1537.89** - **5026.81**/**4**) / (**4**-1))$^{1/2}$ = **9.681**	Compute sd of the last 4 measurements.
3	LCL = $\overline{X}$ - **tS**/**N**$^{1/2}$ = **17.725** - **2.353** * **9.681**/**4**$^{1/2}$ = **6.337**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{X}$ + **tS**/**N**$^{1/2}$ = **17.725** + **2.353** * **9.681**/**4**$^{1/2}$ = **29.113**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **-1.539**	Sen's estimator of trend.
7	var(S) = **945.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**190** ± **2.576** * **945.333**$^{1/2}$) / 2 = [**55.399**, **134.601**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-4.528**, **0.733**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-20

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **10.3** / **4** = **2.575**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**29.41** - **106.09**/**4**) / (**4**-1))$^{1/2}$ = **0.981**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N**$^{1/2}$ = **2.575** - **2.353** * **0.981**/**4**$^{1/2}$ = **1.421**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$ + tS/N**$^{1/2}$ = **2.575** + **2.353** * **0.981**/**4**$^{1/2}$ = **3.729**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **21** * (**21**-1) / 2 = **210**	Number of sample pairs during trend detection period.
6	S = **-0.498**	Sen's estimator of trend.
7	var(S) = **1095.667**	Variance estimate for slope.
8	M(S) = (**N'** ± $Z_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**210** ± **2.576** * **1095.667**$^{1/2}$) / 2 = [**62.366**, **147.634**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.895**, **-0.225**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-20

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **20.2** / **4** = **5.05**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**108.84** - **408.04**/**4**) / (**4**-1))^{½} = **1.509**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**^{½} = **5.05** - **2.353** * **1.509**/**4**^{½} = **3.275**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**^{½} = **5.05** + **2.353** * **1.509**/**4**^{½} = **6.825**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **-0.65**	Sen's estimator of trend.
7	var(S) = **948.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**190** ± **2.576** * **948.0**^{½}) / 2 = [**55.343**, **134.657**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.966**, **-0.335**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-21R

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **43.4** / **4** = **10.85**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**520.7** - **1883.56**/**4**) / (**4**-1))^{½} = **4.075**	Compute sd of the last 4 measurements.
3	LCL = $\overline{X}$ - **tS**/**N**^{½} = **10.85** - **2.353** * **4.075**/**4**^{½} = **6.057**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\overline{X}$ + **tS**/**N**^{½} = **10.85** + **2.353** * **4.075**/**4**^{½} = **15.643**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **16** * (**16**-1) / 2 = **120**	Number of sample pairs during trend detection period.
6	S = **1.067**	Sen's estimator of trend.
7	var(S) = **464.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**120** ± **2.576** * **464.0**^{½}) / 2 = [**32.256**, **87.744**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-0.57**, **2.898**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-21R

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **44.6** / **4** = **11.15**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**551.94** - **1989.16**/**4**) / (**4**-1))$^{1/2}$ = **4.268**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$** - **tS**/**N**$^{1/2}$ = **11.15** - **2.353** * **4.268**/**4**$^{1/2}$ = **6.129**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS**/**N**$^{1/2}$ = **11.15** + **2.353** * **4.268**/**4**$^{1/2}$ = **16.171**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **16** * (**16**-1) / 2 = **120**	Number of sample pairs during trend detection period.
6	S = **-1.189**	Sen's estimator of trend.
7	var(S) = **491.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**120** ± **2.576** * **491.333**$^{1/2}$) / 2 = [**31.45**, **88.55**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-4.414**, **0.892**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-21R

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **67.3** / **4** = **16.825**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))$^{1/2}$ = ((**1266.61** - **4529.29/4**) / (**4**-1))$^{1/2}$ = **6.69**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N**$^{1/2}$ = **16.825** - **2.353** * **6.69/4**$^{1/2}$ = **8.955**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$ + tS/N**$^{1/2}$ = **16.825** + **2.353** * **6.69/4**$^{1/2}$ = **24.695**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **16** * (**16**-1) / 2 = **120**	Number of sample pairs during trend detection period.
6	S = **-5.178**	Sen's estimator of trend.
7	var(S) = **493.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**120** ± **2.576** * **493.333**$^{1/2}$) / 2 = [**31.392**, **88.608**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-7.486**, **-1.365**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-22

Step	Equation	Description
1	$\overline{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{8.0} / \mathbf{4}$ $= \mathbf{2.0}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{16.0} - \mathbf{64.0}/\mathbf{4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{0.0}$	Compute sd of the last 4 measurements.
3	$LCL = \overline{\mathbf{X}} - \mathbf{tS}/\mathbf{N}^{1/2}$ $= \mathbf{2.0} - \mathbf{2.353} * \mathbf{0.0}/\mathbf{4}^{1/2}$ $= \mathbf{2.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \overline{\mathbf{X}} + \mathbf{tS}/\mathbf{N}^{1/2}$ $= \mathbf{2.0} + \mathbf{2.353} * \mathbf{0.0}/\mathbf{4}^{1/2}$ $= \mathbf{2.0}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{20} * (\mathbf{20}-1) / 2$ $= \mathbf{190}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{0.0}$	Sen's estimator of trend.
7	$var(S) = \mathbf{0.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{190} \pm \mathbf{2.576} * \mathbf{0.0}^{1/2}) / 2$ $= [\ \mathbf{95.0}, \mathbf{95.0}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{0.0}, \mathbf{0.0}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-22

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **1.6** / **4** = **0.4**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2/N**) / (**N**-1))^{½} = ((**0.64** - **2.56/4**) / (**4**-1))^{½} = **4.21x10^{-9}**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N^{½}** = **0.4** - **2.353** * **4.21x10^{-9}/4^{½}** = **0.4**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$ + tS/N^{½}** = **0.4** + **2.353** * **4.21x10^{-9}/4^{½}** = **0.4**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **20** * (**20**-1) / 2 = **190**	Number of sample pairs during trend detection period.
6	S = **0.0**	Sen's estimator of trend.
7	var(S) = **253.0**	Variance estimate for slope.
8	M(S) = (**N' ± $Z_{.995}$** * **var(S)^{½}**) / 2 = (**190** ± **2.576** * **253.0^{½}**) / 2 = [**74.513**, **115.487**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**0.0**, **0.0**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-22

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{91.7} / \mathbf{4}$ $= \mathbf{22.925}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{5920.89} - \mathbf{8408.89/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{35.678}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{\mathbf{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{22.925} - \mathbf{2.353} * \mathbf{35.678/4}^{1/2}$ $= \mathbf{0.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{\mathbf{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{22.925} + \mathbf{2.353} * \mathbf{35.678/4}^{1/2}$ $= \mathbf{64.892}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{21} * (\mathbf{21}-1) / 2$ $= \mathbf{210}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{-0.835}$	Sen's estimator of trend.
7	$var(S) = \mathbf{1079.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{210} \pm \mathbf{2.576} * \mathbf{1079.0}^{1/2}) / 2$ $= [\ \mathbf{62.692}, \mathbf{147.308}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{-4.627}, \mathbf{1.522}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-25

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **37.2** / **4** = **9.3**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))$^{1/2}$ = ((**399.5** - **1383.84**/**4**) / (**4**-1))$^{1/2}$ = **4.225**	Compute sd of the last 4 measurements.
3	LCL = $\bar{X}$ - **tS**/**N**$^{1/2}$ = **9.3** - **2.353** * **4.225**/**4**$^{1/2}$ = **4.331**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = $\bar{X}$ + **tS**/**N**$^{1/2}$ = **9.3** + **2.353** * **4.225**/**4**$^{1/2}$ = **14.269**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **6** * (**6**-1) / 2 = **15**	Number of sample pairs during trend detection period.
6	S = **0.702**	Sen's estimator of trend.
7	var(S) = **27.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**15** ± **2.576** * **27.333**$^{1/2}$) / 2 = [**0.766**, **14.234**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-23.522**, **37.313**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-25

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **24.3** / **4** = **6.075**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]^2**/**N**) / (**N**-1))^{½} = ((**163.63** - **590.49**/**4**) / (**4**-1))^{½} = **2.31**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$ - tS/N^{½}** = **6.075** - **2.353** * **2.31/4^{½}** = **3.358**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS/N^{½}** = **6.075** + **2.353** * **2.31/4^{½}** = **8.792**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **6** * (**6**-1) / 2 = **15**	Number of sample pairs during trend detection period.
6	S = **-3.343**	Sen's estimator of trend.
7	var(S) = **28.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**15** ± **2.576** * **28.333**^{½}) / 2 = [**0.644**, **14.356**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-6.894**, **-0.241**]	Two-sided confidence interval for slope.
10	UCL(S) < 0	**Significant decreasing trend.**

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-25

Step	Equation	Description
1	$\overline{X}$ = **sum[X]** / **N** = **44.0** / **4** = **11.0**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2]** - **sum[X]**^{2}/**N**) / (**N**-1))^{½} = ((**544.74** - **1936.0**/**4**) / (**4**-1))^{½} = **4.5**	Compute sd of the last 4 measurements.
3	LCL = **$\overline{X}$ - tS/N**^{½} = **11.0** - **2.353** * **4.5/4**^{½} = **5.707**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\overline{X}$** + **tS/N**^{½} = **11.0** + **2.353** * **4.5/4**^{½} = **16.293**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **6** * (**6**-1) / 2 = **15**	Number of sample pairs during trend detection period.
6	S = **-2.996**	Sen's estimator of trend.
7	var(S) = **28.333**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**^{½}) / 2 = (**15** ± **2.576** * **28.333**^{½}) / 2 = [**0.644**, **14.356**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-10.73**, **7.763**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Arsenic, total (ug/L) at MW-30

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{8.0} / \mathbf{4}$ $= \mathbf{2.0}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{16.0} - \mathbf{64.0/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{0.0}$	Compute sd of the last 4 measurements.
3	$LCL = \mathbf{\bar{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} - \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \mathbf{\bar{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{2.0} + \mathbf{2.353} * \mathbf{0.0/4}^{1/2}$ $= \mathbf{2.0}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{11} * (\mathbf{11}-1) / 2$ $= \mathbf{55}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{0.0}$	Sen's estimator of trend.
7	$var(S) = \mathbf{40.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{55} \pm \mathbf{2.576} * \mathbf{40.0}^{1/2}) / 2$ $= [\ \mathbf{19.354}, \mathbf{35.646}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{0.0}, \mathbf{0.0}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Cobalt, total (ug/L) at MW-30

Step	Equation	Description
1	$\bar{X}$ = **sum[X]** / **N** = **21.0** / **4** = **5.25**	Compute the mean of the last 4 measurements.
2	S = ((**sum[X^2] - sum[X]^2**/**N**) / (**N**-1))$^{1/2}$ = ((**122.82** - **441.0**/**4**) / (**4**-1))$^{1/2}$ = **2.047**	Compute sd of the last 4 measurements.
3	LCL = **$\bar{X}$** - **tS**/**N**$^{1/2}$ = **5.25** - **2.353** * **2.047**/**4**$^{1/2}$ = **2.842**	Compute lower confidence limit for the mean of the last 4 measurements.
4	UCL = **$\bar{X}$** + **tS**/**N**$^{1/2}$ = **5.25** + **2.353** * **2.047**/**4**$^{1/2}$ = **7.658**	Compute upper confidence limit for the mean of the last 4 measurements.
5	N' = **N** * (**N**-1) / 2 = **11** * (**11**-1) / 2 = **55**	Number of sample pairs during trend detection period.
6	S = **0.171**	Sen's estimator of trend.
7	var(S) = **163.0**	Variance estimate for slope.
8	M(S) = (**N'** ± **Z**$_{.995}$ * **var(S)**$^{1/2}$) / 2 = (**55** ± **2.576** * **163.0**$^{1/2}$) / 2 = [**11.056**, **43.944**]	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the Mth largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	CL(S) = [**-2.579**, **1.803**]	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Worksheet 6 - Assessment Monitoring
Nickel, total (ug/L) at MW-30

Step	Equation	Description
1	$\bar{X} = \mathbf{sum[X]} / \mathbf{N}$ $= \mathbf{90.3} / \mathbf{4}$ $= \mathbf{22.575}$	Compute the mean of the last 4 measurements.
2	$S = ((\mathbf{sum[X^2]} - \mathbf{sum[X]}^2/\mathbf{N}) / (\mathbf{N}-1))^{1/2}$ $= ((\mathbf{2239.45} - \mathbf{8154.09/4}) / (\mathbf{4}-1))^{1/2}$ $= \mathbf{8.184}$	Compute sd of the last 4 measurements.
3	$LCL = \bar{\mathbf{X}} - \mathbf{tS/N}^{1/2}$ $= \mathbf{22.575} - \mathbf{2.353} * \mathbf{8.184/4}^{1/2}$ $= \mathbf{12.948}$	Compute lower confidence limit for the mean of the last 4 measurements.
4	$UCL = \bar{\mathbf{X}} + \mathbf{tS/N}^{1/2}$ $= \mathbf{22.575} + \mathbf{2.353} * \mathbf{8.184/4}^{1/2}$ $= \mathbf{32.202}$	Compute upper confidence limit for the mean of the last 4 measurements.
5	$N' = \mathbf{N} * (\mathbf{N}-1) / 2$ $= \mathbf{11} * (\mathbf{11}-1) / 2$ $= \mathbf{55}$	Number of sample pairs during trend detection period.
6	$S = \mathbf{3.456}$	Sen's estimator of trend.
7	$var(S) = \mathbf{165.0}$	Variance estimate for slope.
8	$M(S) = (\mathbf{N'} \pm \mathbf{Z}_{.995} * \mathbf{var(S)}^{1/2}) / 2$ $= (\mathbf{55} \pm \mathbf{2.576} * \mathbf{165.0}^{1/2}) / 2$ $= [\ \mathbf{10.955}, \mathbf{44.045}\ ]$	Ordinal positions for two-sided lower confidence limits for slope. The LCL and UCL are the M^{th} largest slope estimates for the values shown. When the values are not integers, interpolation is used.
9	$CL(S) = [\ \mathbf{-2.327}, \mathbf{9.442}\ ]$	Two-sided confidence interval for slope.
10	the interval includes 0	There is no significant trend.

Attachment D

Historical VOC Detections

Table 1

Historical Volatile Organic Compound Detections

Constituent	Well	Date	Identifier	Result	Limit	Units
Acetone	GU-2	4/11/2023		10.7	10.0	ug/L
Acetone	MW-10A	7/29/2009		291.0	1.0	ug/L
Acetone	MW-10A	10/06/2009		164.0	1.0	ug/L
Acetone	MW-10A	5/17/2013		214.0	10.0	ug/L
Acetone	MW-10A	10/28/2014		18.1	10.0	ug/L
Acetone	MW-10A	10/18/2017		20.3	10.0	ug/L
Carbon disulfide	MW-10A	7/29/2009		1.65	1.00	ug/L
Carbon disulfide	MW-10A	7/12/2012		8.79	1.00	ug/L
Carbon disulfide	MW-10A	7/12/2012		8.79	1.00	ug/L
Carbon disulfide	MW-10A	5/17/2013		1.40	1.00	ug/L
Dieldrin	MW-10A	10/02/2012		.00248	.00200	ug/L
Acetone	MW-10B	10/18/2017		19.2	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-10B	10/02/2012		.466	.390	ug/L
Carbon disulfide	MW-10B	12/29/2009		1.04	1.00	ug/L
Phorate	MW-10B	10/02/2012		.171	.170	ug/L
Acetone	MW-18	10/19/2017		21.1	10.0	ug/L
Arochlor 1016	MW-18	10/19/2017		2.36	.10	ug/L
Arochlor 1260	MW-18	10/19/2017		.2	.1	ug/L
Bromomethane	MW-18	10/04/2012		.60	.22	ug/L
Bromomethane	MW-18	10/05/2012		.60	.20	ug/L
Acetone	MW-19	10/19/2017		19.5	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-19	10/03/2012		17.5	10.0	ug/L
Nitrobenzene	MW-19	10/03/2012		.224	.220	ug/L
Acetone	MW-20	4/11/2014		252.0	10.0	ug/L
Acetone	MW-20	10/18/2017		20.2	10.0	ug/L
Acetone	MW-20	4/09/2019		22.2	10.0	ug/L
Acetone	MW-21R	10/19/2017		21.5	10.0	ug/L
Bis(2-ethylhexyl)phthalate	MW-21R	10/19/2017		7	6	ug/L
Acetone	MW-22	10/18/2017		21.1	10.0	ug/L
Bromomethane	MW-22	10/04/2012		.41	.22	ug/L
Bromomethane	MW-22	10/05/2012		.41	.20	ug/L
1,1-dichloroethene	MW-25	10/11/2024		1	1	ug/L
Acetone	MW-25	5/18/2023		25.5	10.0	ug/L

Detections are shown for the constituents and sample points selected for the analysis
The Limit column refers to the laboratory reporting limit

Appendix C

Laboratory Reports for Reporting Period

With Chain of Custody

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Project Description

6030

For:

Todd Whipple

HLW Engineering

PO Box 314

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Tuesday, May 28, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

HLW Engineering

Todd Whipple
PO Box 314
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 04/24/2024
Reported: 05/28/2024

Case Narrative

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-10A	1HE0312-01	Aqueous	GRAB		04/23/24 09:23	04/24/24 10:16
MW-10B	1HE0312-02	Aqueous	GRAB		04/23/24 09:14	04/24/24 10:16
MW-18	1HE0312-03	Aqueous	GRAB		04/23/24 09:40	04/24/24 10:16
MW-19	1HE0312-04	Aqueous	GRAB		04/23/24 09:55	04/24/24 10:16
MW-20	1HE0312-05	Aqueous	GRAB		04/23/24 10:14	04/24/24 10:16
MW-21R	1HE0312-06	Aqueous	GRAB		04/23/24 00:00	04/24/24 10:16
MW-22	1HE0312-07	Aqueous	GRAB		04/23/24 10:56	04/24/24 10:16
MW-30	1HE0312-08	Aqueous	GRAB		04/23/24 07:55	04/24/24 10:16
Duplicate	1HE0312-09	Aqueous	GRAB		04/23/24 00:00	04/24/24 10:16
MW-25	1HE0312-10	Aqueous	GRAB		04/23/24 08:36	04/24/24 10:16
MW-28	1HE0312-11	Aqueous	GRAB		04/23/24 08:55	04/24/24 10:16

Analytical Testing Parameters

Client Sample ID:	MW-10A		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-01	**Collection Date:**	04/23/2024 9:23

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH

Client Sample ID:	MW-10A		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-01	**Collection Date:**	04/23/2024 9:23

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: Dibromofluoromethane	95.4	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: Dibromofluoromethane	95.4	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: 1,2-Dichloroethane-d4	98.2	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: 1,2-Dichloroethane-d4	98.2	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: Toluene-d8	99.3	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: Toluene-d8	99.3	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: 4-Bromofluorobenzene	101	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1412	LNH
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1412	LNH

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Barium, total	**0.0310**	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Nickel, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/24/24 0812	05/24/24 1659	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/24/24 0812	05/24/24 1659	RVV

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-10B		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-02	**Collection Date:**	04/23/2024 9:14

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-10B			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-02		**Collection Date:**	04/23/2024 9:14

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: Dibromofluoromethane	96.9	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: Dibromofluoromethane	96.9	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: 1,2-Dichloroethane-d4	99.3	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: 1,2-Dichloroethane-d4	99.3	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: Toluene-d8	99.4	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: Toluene-d8	99.4	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1435	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1435	LJS

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Barium, total	**0.0287**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Nickel, total	**0.0056**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0027	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0027	RVV

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-18		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-03	**Collection Date:**	04/23/2024 9:40

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-18			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-03		**Collection Date:**	04/23/2024 9:40

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: Dibromofluoromethane	98.1	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: Dibromofluoromethane	98.1	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: 1,2-Dichloroethane-d4	99.9	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: 1,2-Dichloroethane-d4	99.9	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: Toluene-d8	99.6	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: Toluene-d8	99.6	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: 4-Bromofluorobenzene	103	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1458	LJS
Surrogate: 4-Bromofluorobenzene	103	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1458	LJS

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Barium, total	**0.0240**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Cobalt, total	**0.0398**	0.0004	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Nickel, total	**0.0372**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0104	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0104	RVV

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-19		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-04	**Collection Date:**	04/23/2024 9:55

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS

Client Sample ID:	MW-19		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-04	**Collection Date:**	04/23/2024 9:55

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: Dibromofluoromethane	97.4	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: Dibromofluoromethane	97.4	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: Toluene-d8	99.6	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: Toluene-d8	99.6	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1521	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1521	LJS

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Barium, total	**0.0178**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Cobalt, total	**0.0007**	0.0004	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Nickel, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0110	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0110	RVV

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-20		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-05	**Collection Date:**	04/23/2024 10:14

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-20		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-05	**Collection Date:**	04/23/2024 10:14

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: Dibromofluoromethane	98.7	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: Dibromofluoromethane	98.7	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: 1,2-Dichloroethane-d4	99.6	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: 1,2-Dichloroethane-d4	99.6	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: Toluene-d8	99.8	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: Toluene-d8	99.8	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1543	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1543	LJS

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Arsenic, total	**0.0080**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Barium, total	**0.0390**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Cobalt, total	**0.0024**	0.0004	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Nickel, total	**0.0040**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0116	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0116	RVV

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-21R		
Sample Matrix:	Aqueous		
Lab Sample ID:	1HE0312-06	**Collection Date:**	04/23/2024

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-21R		
Sample Matrix:	Aqueous		
Lab Sample ID:	1HE0312-06	**Collection Date:**	04/23/2024

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: Dibromofluoromethane	99.1	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: Dibromofluoromethane	99.1	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: Toluene-d8	100	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1606	LJS
Surrogate: 4-Bromofluorobenzene	101	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1606	LJS

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Arsenic, total	**0.0052**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Barium, total	**0.0196**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Cobalt, total	**0.0091**	0.0004	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Nickel, total	**0.0136**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0122	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0122	RVV

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-22		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-07	**Collection Date:**	04/23/2024 10:56

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS

Client Sample ID:	MW-22		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-07	**Collection Date:**	04/23/2024 10:56

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: Dibromofluoromethane	98.2	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: Dibromofluoromethane	98.2	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: Toluene-d8	100	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: 4-Bromofluorobenzene	103	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1629	LJS
Surrogate: 4-Bromofluorobenzene	103	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1629	LJS

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Barium, total	**0.0133**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Nickel, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0129	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0129	RVV

Client Sample ID:	MW-30			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-08		**Collection Date:**	04/23/2024 7:55

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS

Client Sample ID:	MW-30		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-08	**Collection Date:**	04/23/2024 7:55

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: Dibromofluoromethane	99.3	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: Dibromofluoromethane	99.3	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: Toluene-d8	100	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1652	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1652	LJS

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Barium, total	**0.0142**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Cobalt, total	**0.0030**	0.0004	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Nickel, total	**0.0127**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0135	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0135	RVV

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	Duplicate		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-09	**Collection Date:**	04/23/2024

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Arsenic, total	**0.0063**	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Barium, total	**0.0520**	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Cobalt, total	**0.0052**	0.0004	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Nickel, total	**0.0083**	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/03/24 0131	05/03/24 0131	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/03/24 0131	05/03/24 0131	RVV

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-25		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-10	**Collection Date:**	04/23/2024 8:36

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS

Client Sample ID:	MW-25		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-10	**Collection Date:**	04/23/2024 8:36

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: Dibromofluoromethane	99.1	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: Dibromofluoromethane	99.1	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: 1,2-Dichloroethane-d4	101	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: Toluene-d8	100	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1715	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1715	LJS

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Arsenic, total	**0.0057**	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Barium, total	**0.0483**	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Cobalt, total	**0.0047**	0.0004	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Nickel, total	**0.0079**	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/03/24 0100	05/03/24 0100	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/03/24 0100	05/03/24 0100	RVV

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-28		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-11	**Collection Date:**	04/23/2024 8:55

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Vinyl Chloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Bromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Chloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Trichlorofluoromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Acetone	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Methyl Iodide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Carbon Disulfide	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Methylene Chloride	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Acrylonitrile	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Vinyl Acetate	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
2-Butanone (MEK)	<10.0	10.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Bromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Chloroform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Carbon Tetrachloride	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Benzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2-Dichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Trichloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2-Dichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Dibromomethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Bromodichloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Toluene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Tetrachloroethylene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Dibromochloromethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2-Dibromoethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Chlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Ethylbenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Xylenes, total	<2.0	2.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Styrene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Bromoform	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS

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CERTIFICATE OF ANALYSIS

1HE0312

Client Sample ID:	MW-28			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HE0312-11		**Collection Date:**	04/23/2024 8:55

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: Dibromofluoromethane	97.9	Limit: 75-136	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: Dibromofluoromethane	97.9	Limit: 80-126	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: 1,2-Dichloroethane-d4	99.8	Limit: 61-142	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: 1,2-Dichloroethane-d4	99.8	Limit: 63-138	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: Toluene-d8	99.6	Limit: 87-116	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: Toluene-d8	99.6	Limit: 82-121	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 85-111	% Rec	1		05/06/24 0000	05/06/24 1738	LJS
Surrogate: 4-Bromofluorobenzene	102	Limit: 80-116	% Rec	1		05/06/24 0000	05/06/24 1738	LJS

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Barium, total	**0.0178**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Copper, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Lead, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Nickel, total	**0.0071**	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Silver, total	<0.0040	0.0040	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0153	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		05/06/24 0931	05/07/24 0153	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HE0236	1HE0312-10	MW-25
		1HE0312-09	Duplicate
		1HE0236-BLK1	
		1HE0236-BS1	
		1HE0312-02	MW-10B
		1HE0236-MS1	1HE0312-02
		1HE0236-MSD1	1HE0312-02
		1HE0312-03	MW-18
		1HE0312-04	MW-19
		1HE0312-05	MW-20
		1HE0312-06	MW-21R
		1HE0312-07	MW-22
		1HE0312-08	MW-30
		1HE0312-11	MW-28
		1HE0236-MS1	1HE0312-02
		1HE0236-PS1	1HE0312-02

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260B	1HE0316	1HE0316-BS1	
		1HE0316-BSD1	
		1HE0316-BLK1	
		1HE0312-01	MW-10A
		1HE0312-02	MW-10B
		1HE0312-03	MW-18
		1HE0312-04	MW-19
		1HE0312-05	MW-20
		1HE0312-06	MW-21R
		1HE0312-07	MW-22
		1HE0312-08	MW-30
		1HE0312-10	MW-25
		1HE0312-11	MW-28
		1HE0316-MS1	1HE0312-01
		1HE0316-MSD1	1HE0312-01

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HE1395	1HE1395-BLK1	
		1HE1395-BS1	
		1HE0312-01	MW-10A
		1HE1395-MS1	1HE0312-01
		1HE1395-MSD1	1HE0312-01

EPA 6020A	1HE1395	1HE1395-PS1	1HE0312-01

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
Blank (1HE0316-BLK1)				Prepared: 05/06/24 00:00 Analyzed: 05/06/24 10:43						
Chloromethane	<1.0	1.0	ug/L							
Vinyl Chloride	<1.0	1.0	ug/L							
Bromomethane	<1.0	1.0	ug/L							
Chloroethane	<1.0	1.0	ug/L							
Trichlorofluoromethane	<1.0	1.0	ug/L							
1,1-Dichloroethylene	<1.0	1.0	ug/L							
Acetone	<10.0	10.0	ug/L							
Methyl Iodide	<1.0	1.0	ug/L							
Carbon Disulfide	<1.0	1.0	ug/L							
Methylene Chloride	<5.0	5.0	ug/L							
Acrylonitrile	<5.0	5.0	ug/L							
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Vinyl Acetate	<5.0	5.0	ug/L							
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L							
2-Butanone (MEK)	<10.0	10.0	ug/L							
Bromochloromethane	<1.0	1.0	ug/L							
Chloroform	<1.0	1.0	ug/L							
1,1,1-Trichloroethane	<1.0	1.0	ug/L							
Carbon Tetrachloride	<1.0	1.0	ug/L							
Benzene	<1.0	1.0	ug/L							
1,2-Dichloroethane	<1.0	1.0	ug/L							
Trichloroethylene	<1.0	1.0	ug/L							
1,2-Dichloropropane	<1.0	1.0	ug/L							
Dibromomethane	<1.0	1.0	ug/L							
Bromodichloromethane	<1.0	1.0	ug/L							
cis-1,3-Dichloropropene	<1.0	1.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L							
Toluene	<1.0	1.0	ug/L							
trans-1,3-Dichloropropene	<1.0	1.0	ug/L							
1,1,2-Trichloroethane	<1.0	1.0	ug/L							
Tetrachloroethylene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<5.0	5.0	ug/L							
Dibromochloromethane	<1.0	1.0	ug/L							
1,2-Dibromoethane	<1.0	1.0	ug/L							
Chlorobenzene	<1.0	1.0	ug/L							
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L							
Ethylbenzene	<1.0	1.0	ug/L							
Xylenes, total	<2.0	2.0	ug/L							
Styrene	<1.0	1.0	ug/L							

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes

Batch 1HE0316 - EPA 5030B - EPA 8260B

Blank (1HE0316-BLK1) Prepared: 05/06/24 00:00 Analyzed: 05/06/24 10:43

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Bromoform	<1.0	1.0	ug/L							
1,2,3-Trichloropropane	<1.0	1.0	ug/L							
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L							
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L							
1,4-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L							
Surrogate: Dibromofluoromethane	*45.1*		ug/L	*50.2*		*89.9*	*75-136*			
Surrogate: Dibromofluoromethane	*45.1*		ug/L	*50.2*		*89.9*	*80-126*			
Surrogate: 1,2-Dichloroethane-d4	*46.7*		ug/L	*50.1*		*93.3*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*46.7*		ug/L	*50.1*		*93.3*	*63-138*			
Surrogate: Toluene-d8	*49.8*		ug/L	*50.4*		*98.9*	*82-121*			
Surrogate: Toluene-d8	*49.8*		ug/L	*50.4*		*98.9*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*50.8*		ug/L	*50.1*		*101*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*50.8*		ug/L	*50.1*		*101*	*85-111*			

LCS (1HE0316-BS1) Prepared: 05/06/24 00:00 Analyzed: 05/06/24 09:35

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Chloromethane	28.49	1.0	ug/L	30.6		93.0	63-155			
Vinyl Chloride	25.79	1.0	ug/L	30.2		85.3	70-154			
Bromomethane	25.40	1.0	ug/L	28.8		88.2	52-176			
Chloroethane	29.47	1.0	ug/L	31.6		93.2	72-148			
Trichlorofluoromethane	28.48	1.0	ug/L	32.6		87.3	70-152			
1,1-Dichloroethylene	45.02	1.0	ug/L	50.0		90.0	70-148			
Acetone	81.15	10.0	ug/L	101		80.2	43-172			
Methyl Iodide	85.85	1.0	ug/L	102		84.3	69-170			
Carbon Disulfide	99.48	1.0	ug/L	103		96.9	72-162			
Methylene Chloride	45.67	5.0	ug/L	50.0		91.3	68-142			
Acrylonitrile	82.84	5.0	ug/L	100		82.5	67-144			
trans-1,2-Dichloroethylene	46.59	1.0	ug/L	50.0		93.2	66-148			
1,1-Dichloroethane	45.46	1.0	ug/L	50.0		90.9	66-143			
Vinyl Acetate	89.53	5.0	ug/L	100		89.5	43-153			
cis-1,2-Dichloroethylene	53.45	1.0	ug/L	50.0		107	71-149			
2-Butanone (MEK)	101.7	10.0	ug/L	102		99.9	52-159			
Bromochloromethane	45.71	1.0	ug/L	50.0		91.4	69-143			
Chloroform	44.46	1.0	ug/L	50.0		88.9	69-144			
1,1,1-Trichloroethane	44.90	1.0	ug/L	50.0		89.8	62-129			
Carbon Tetrachloride	46.17	1.0	ug/L	50.0		92.3	63-141			
Benzene	47.59	1.0	ug/L	50.0		95.2	71-134			
1,2-Dichloroethane	46.27	1.0	ug/L	50.0		92.5	72-132			
Trichloroethylene	49.22	1.0	ug/L	50.0		98.4	71-135			
1,2-Dichloropropane	48.48	1.0	ug/L	50.0		97.0	69-136			
Dibromomethane	48.93	1.0	ug/L	50.0		97.9	73-147			
Bromodichloromethane	47.83	1.0	ug/L	50.0		95.7	68-129			
cis-1,3-Dichloropropene	51.31	1.0	ug/L	50.0		103	65-134			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
LCS (1HE0316-BS1)			Prepared: 05/06/24 00:00 Analyzed: 05/06/24 09:35							
4-Methyl-2-pentanone (MIBK)	99.47	5.0	ug/L	100		99.4	58-147			
Toluene	46.86	1.0	ug/L	50.0		93.7	72-133			
trans-1,3-Dichloropropene	53.82	1.0	ug/L	50.0		108	67-130			
1,1,2-Trichloroethane	48.81	1.0	ug/L	50.0		97.6	69-135			
Tetrachloroethylene	48.92	1.0	ug/L	50.0		97.8	69-130			
2-Hexanone (MBK)	102.2	5.0	ug/L	99.3		103	55-144			
Dibromochloromethane	49.56	1.0	ug/L	50.0		99.1	73-127			
1,2-Dibromoethane	48.34	1.0	ug/L	50.0		96.7	67-132			
Chlorobenzene	48.26	1.0	ug/L	50.0		96.5	72-123			
1,1,1,2-Tetrachloroethane	50.50	1.0	ug/L	50.0		101	73-127			
Ethylbenzene	49.32	1.0	ug/L	50.0		98.6	71-127			
Xylenes, total	150.9	2.0	ug/L	150		101	74-127			
Styrene	50.12	1.0	ug/L	50.0		100	66-126			
Bromoform	49.12	1.0	ug/L	50.0		98.2	68-130			
1,2,3-Trichloropropane	48.56	1.0	ug/L	50.0		97.1	63-136			
trans-1,4-Dichloro-2-butene	85.15	5.0	ug/L	103		82.8	54-134			
1,1,2,2-Tetrachloroethane	45.42	1.0	ug/L	50.0		90.8	61-131			
1,4-Dichlorobenzene	47.47	1.0	ug/L	50.0		94.9	70-129			
1,2-Dichlorobenzene	49.26	1.0	ug/L	50.0		98.5	69-126			
1,2-Dibromo-3-chloropropane	47.53	5.0	ug/L	50.0		95.1	50-143			
Surrogate: Dibromofluoromethane	*45.4*		ug/L	*50.2*		*90.4*	*75-136*			
Surrogate: Dibromofluoromethane	*45.4*		ug/L	*50.2*		*90.4*	*80-126*			
Surrogate: 1,2-Dichloroethane-d4	*46.0*		ug/L	*50.1*		*91.8*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*46.0*		ug/L	*50.1*		*91.8*	*63-138*			
Surrogate: Toluene-d8	*49.8*		ug/L	*50.4*		*98.8*	*82-121*			
Surrogate: Toluene-d8	*49.8*		ug/L	*50.4*		*98.8*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*51.3*		ug/L	*50.1*		*102*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*51.3*		ug/L	*50.1*		*102*	*85-111*			
LCS Dup (1HE0316-BSD1)			Prepared: 05/06/24 00:00 Analyzed: 05/06/24 09:58							
Chloromethane	27.60	1.0	ug/L	30.6		90.1	63-155	3.17	24	
Vinyl Chloride	25.11	1.0	ug/L	30.2		83.1	70-154	2.67	25	
Bromomethane	25.37	1.0	ug/L	28.8		88.1	52-176	0.118	27	
Chloroethane	28.81	1.0	ug/L	31.6		91.1	72-148	2.26	25	
Trichlorofluoromethane	27.71	1.0	ug/L	32.6		85.0	70-152	2.74	26	
1,1-Dichloroethylene	43.71	1.0	ug/L	50.0		87.4	70-148	2.95	24	
Acetone	79.30	10.0	ug/L	101		78.4	43-172	2.31	30	
Methyl Iodide	85.90	1.0	ug/L	102		84.3	69-170	0.0582	30	
Carbon Disulfide	96.67	1.0	ug/L	103		94.1	72-162	2.87	24	
Methylene Chloride	44.68	5.0	ug/L	50.0		89.4	68-142	2.19	21	
Acrylonitrile	81.71	5.0	ug/L	100		81.4	67-144	1.37	24	
trans-1,2-Dichloroethylene	45.15	1.0	ug/L	50.0		90.3	66-148	3.14	27	
1,1-Dichloroethane	44.75	1.0	ug/L	50.0		89.5	66-143	1.57	24	
Vinyl Acetate	91.27	5.0	ug/L	100		91.3	43-153	1.92	30	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
LCS Dup (1HE0316-BSD1)			Prepared: 05/06/24 00:00 Analyzed: 05/06/24 09:58							
cis-1,2-Dichloroethylene	52.53	1.0	ug/L	50.0		105	71-149	1.74	26	
2-Butanone (MEK)	101.5	10.0	ug/L	102		99.7	52-159	0.167	27	
Bromochloromethane	44.81	1.0	ug/L	50.0		89.6	69-143	1.99	23	
Chloroform	43.79	1.0	ug/L	50.0		87.6	69-144	1.52	23	
1,1,1-Trichloroethane	44.05	1.0	ug/L	50.0		88.1	62-129	1.91	24	
Carbon Tetrachloride	45.61	1.0	ug/L	50.0		91.2	63-141	1.22	25	
Benzene	46.87	1.0	ug/L	50.0		93.7	71-134	1.52	24	
1,2-Dichloroethane	45.76	1.0	ug/L	50.0		91.5	72-132	1.11	24	
Trichloroethylene	48.23	1.0	ug/L	50.0		96.5	71-135	2.03	24	
1,2-Dichloropropane	47.19	1.0	ug/L	50.0		94.4	69-136	2.70	24	
Dibromomethane	48.06	1.0	ug/L	50.0		96.1	73-147	1.79	25	
Bromodichloromethane	47.05	1.0	ug/L	50.0		94.1	68-129	1.64	22	
cis-1,3-Dichloropropene	50.20	1.0	ug/L	50.0		100	65-134	2.19	23	
4-Methyl-2-pentanone (MIBK)	100.6	5.0	ug/L	100		101	58-147	1.14	27	
Toluene	46.02	1.0	ug/L	50.0		92.0	72-133	1.81	24	
trans-1,3-Dichloropropene	52.87	1.0	ug/L	50.0		106	67-130	1.78	24	
1,1,2-Trichloroethane	48.48	1.0	ug/L	50.0		97.0	69-135	0.678	23	
Tetrachloroethylene	48.11	1.0	ug/L	50.0		96.2	69-130	1.67	25	
2-Hexanone (MBK)	102.4	5.0	ug/L	99.3		103	55-144	0.283	25	
Dibromochloromethane	48.98	1.0	ug/L	50.0		98.0	73-127	1.18	22	
1,2-Dibromoethane	48.34	1.0	ug/L	50.0		96.7	67-132	0.00	24	
Chlorobenzene	47.66	1.0	ug/L	50.0		95.3	72-123	1.25	23	
1,1,1,2-Tetrachloroethane	49.89	1.0	ug/L	50.0		99.8	73-127	1.22	24	
Ethylbenzene	48.73	1.0	ug/L	50.0		97.5	71-127	1.20	26	
Xylenes, total	148.9	2.0	ug/L	150		99.3	74-127	1.30	25	
Styrene	49.37	1.0	ug/L	50.0		98.7	66-126	1.51	23	
Bromoform	49.53	1.0	ug/L	50.0		99.1	68-130	0.831	23	
1,2,3-Trichloropropane	48.93	1.0	ug/L	50.0		97.9	63-136	0.759	24	
trans-1,4-Dichloro-2-butene	84.91	5.0	ug/L	103		82.6	54-134	0.282	27	
1,1,2,2-Tetrachloroethane	45.75	1.0	ug/L	50.0		91.5	61-131	0.724	29	
1,4-Dichlorobenzene	47.43	1.0	ug/L	50.0		94.9	70-129	0.0843	24	
1,2-Dichlorobenzene	49.01	1.0	ug/L	50.0		98.0	69-126	0.509	26	
1,2-Dibromo-3-chloropropane	48.01	5.0	ug/L	50.0		96.0	50-143	1.00	30	
Surrogate: Dibromofluoromethane	*45.4*		ug/L	*50.2*		*90.4*	*75-136*			
Surrogate: Dibromofluoromethane	*45.4*		ug/L	*50.2*		*90.4*	*80-126*			
Surrogate: 1,2-Dichloroethane-d4	*45.6*		ug/L	*50.1*		*91.1*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*45.6*		ug/L	*50.1*		*91.1*	*63-138*			
Surrogate: Toluene-d8	*49.9*		ug/L	*50.4*		*99.0*	*82-121*			
Surrogate: Toluene-d8	*49.9*		ug/L	*50.4*		*99.0*	*87-116*			
Surrogate: 4-Bromofluorobenzene	*51.7*		ug/L	*50.1*		*103*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*51.7*		ug/L	*50.1*		*103*	*85-111*			
Matrix Spike (1HE0316-MS1)	**Source: 1HE0312-01**		Prepared: 05/06/24 00:00 Analyzed: 05/06/24 18:01							
Chloromethane	322.6	10.0	ug/L	306	ND	105	61-152			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
Matrix Spike (1HE0316-MS1)	**Source: 1HE0312-01**		Prepared: 05/06/24 00:00 Analyzed: 05/06/24 18:01							
Vinyl Chloride	289.1	10.0	ug/L	302	ND	95.6	66-149			
Bromomethane	291.0	10.0	ug/L	288	ND	101	43-171			
Chloroethane	330.0	10.0	ug/L	316	ND	104	69-148			
Trichlorofluoromethane	316.6	10.0	ug/L	326	ND	97.1	62-163			
1,1-Dichloroethylene	504.4	10.0	ug/L	500	ND	101	70-148			
Acetone	948.9	100	ug/L	1010	ND	93.8	45-173			
Methyl Iodide	855.6	10.0	ug/L	1020	ND	84.0	62-167			
Carbon Disulfide	1100	10.0	ug/L	1030	ND	107	71-163			
Methylene Chloride	509.2	50.0	ug/L	500	ND	102	69-140			
Acrylonitrile	925.0	50.0	ug/L	1000	ND	92.1	58-151			
trans-1,2-Dichloroethylene	518.1	10.0	ug/L	500	ND	104	69-144			
1,1-Dichloroethane	511.1	10.0	ug/L	500	ND	102	70-138			
Vinyl Acetate	1059	50.0	ug/L	1000	ND	106	58-142			
cis-1,2-Dichloroethylene	590.0	10.0	ug/L	500	ND	118	68-151			
2-Butanone (MEK)	1148	100	ug/L	1020	ND	113	50-160			
Bromochloromethane	514.2	10.0	ug/L	500	ND	103	65-143			
Chloroform	501.0	10.0	ug/L	500	ND	100	71-143			
1,1,1-Trichloroethane	500.7	10.0	ug/L	500	ND	100	63-133			
Carbon Tetrachloride	524.4	10.0	ug/L	500	ND	105	63-142			
Benzene	502.5	10.0	ug/L	500	ND	100	69-133			
1,2-Dichloroethane	494.3	10.0	ug/L	500	ND	98.9	63-138			
Trichloroethylene	511.5	10.0	ug/L	500	ND	102	71-133			
1,2-Dichloropropane	508.2	10.0	ug/L	500	ND	102	69-132			
Dibromomethane	513.3	10.0	ug/L	500	ND	103	70-147			
Bromodichloromethane	508.3	10.0	ug/L	500	ND	102	67-130			
cis-1,3-Dichloropropene	529.0	10.0	ug/L	500	ND	106	61-126			
4-Methyl-2-pentanone (MIBK)	1062	50.0	ug/L	1000	ND	106	55-147			
Toluene	489.5	10.0	ug/L	500	ND	97.9	71-133			
trans-1,3-Dichloropropene	554.0	10.0	ug/L	500	ND	111	63-124			
1,1,2-Trichloroethane	511.4	10.0	ug/L	500	ND	102	69-133			
Tetrachloroethylene	499.7	10.0	ug/L	500	ND	99.9	70-124			
2-Hexanone (MBK)	1065	50.0	ug/L	993	ND	107	53-141			
Dibromochloromethane	511.2	10.0	ug/L	500	ND	102	74-122			
1,2-Dibromoethane	502.2	10.0	ug/L	500	ND	100	66-127			
Chlorobenzene	494.4	10.0	ug/L	500	ND	98.9	76-116			
1,1,1,2-Tetrachloroethane	519.7	10.0	ug/L	500	ND	104	77-121			
Ethylbenzene	503.5	10.0	ug/L	500	ND	101	73-124			
Xylenes, total	1536	20.0	ug/L	1500	ND	102	75-123			
Styrene	515.3	10.0	ug/L	500	ND	103	70-120			
Bromoform	506.2	10.0	ug/L	500	ND	101	70-124			
1,2,3-Trichloropropane	504.5	10.0	ug/L	500	ND	101	62-135			
trans-1,4-Dichloro-2-butene	835.3	50.0	ug/L	1030	ND	81.3	50-120			
1,1,2,2-Tetrachloroethane	470.0	10.0	ug/L	500	ND	94.0	63-126			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
Matrix Spike (1HE0316-MS1)	**Source: 1HE0312-01**		Prepared: 05/06/24 00:00 Analyzed: 05/06/24 18:01							
1,4-Dichlorobenzene	487.1	10.0	ug/L	500	ND	97.4	72-119			
1,2-Dichlorobenzene	503.6	10.0	ug/L	500	ND	101	71-117			
1,2-Dibromo-3-chloropropane	485.0	50.0	ug/L	500	ND	97.0	49-134			
Surrogate: Dibromofluoromethane	*498*		ug/L	*502*		*99.3*	*80-126*			
Surrogate: Dibromofluoromethane	*498*		ug/L	*502*		*99.3*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*497*		ug/L	*501*		*99.2*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*497*		ug/L	*501*		*99.2*	*61-142*			
Surrogate: Toluene-d8	*505*		ug/L	*504*		*100*	*87-116*			
Surrogate: Toluene-d8	*505*		ug/L	*504*		*100*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*510*		ug/L	*501*		*102*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*510*		ug/L	*501*		*102*	*80-116*			
Matrix Spike Dup (1HE0316-MSD1)	**Source: 1HE0312-01**		Prepared: 05/06/24 00:00 Analyzed: 05/06/24 18:24							
Chloromethane	296.9	10.0	ug/L	306	ND	96.9	61-152	8.30	26	
Vinyl Chloride	267.9	10.0	ug/L	302	ND	88.6	66-149	7.61	23	
Bromomethane	269.9	10.0	ug/L	288	ND	93.7	43-171	7.52	29	
Chloroethane	310.2	10.0	ug/L	316	ND	98.1	69-148	6.19	25	
Trichlorofluoromethane	291.9	10.0	ug/L	326	ND	89.5	62-163	8.12	25	
1,1-Dichloroethylene	466.8	10.0	ug/L	500	ND	93.4	70-148	7.74	22	
Acetone	909.3	100	ug/L	1010	ND	89.9	45-173	4.26	30	
Methyl Iodide	880.7	10.0	ug/L	1020	ND	86.5	62-167	2.89	24	
Carbon Disulfide	1020	10.0	ug/L	1030	ND	99.3	71-163	7.60	22	
Methylene Chloride	475.5	50.0	ug/L	500	ND	95.1	69-140	6.84	19	
Acrylonitrile	876.4	50.0	ug/L	1000	ND	87.3	58-151	5.40	15	
trans-1,2-Dichloroethylene	479.3	10.0	ug/L	500	ND	95.9	69-144	7.78	22	
1,1-Dichloroethane	469.8	10.0	ug/L	500	ND	94.0	70-138	8.42	20	
Vinyl Acetate	1005	50.0	ug/L	1000	ND	100	58-142	5.27	24	
cis-1,2-Dichloroethylene	555.7	10.0	ug/L	500	ND	111	68-151	5.99	22	
2-Butanone (MEK)	1104	100	ug/L	1020	ND	108	50-160	3.94	23	
Bromochloromethane	480.8	10.0	ug/L	500	ND	96.2	65-143	6.71	22	
Chloroform	467.0	10.0	ug/L	500	ND	93.4	71-143	7.02	21	
1,1,1-Trichloroethane	465.1	10.0	ug/L	500	ND	93.0	63-133	7.37	23	
Carbon Tetrachloride	488.4	10.0	ug/L	500	ND	97.7	63-142	7.11	22	
Benzene	465.9	10.0	ug/L	500	ND	93.2	69-133	7.56	18	
1,2-Dichloroethane	467.4	10.0	ug/L	500	ND	93.5	63-138	5.59	20	
Trichloroethylene	472.4	10.0	ug/L	500	ND	94.5	71-133	7.95	23	
1,2-Dichloropropane	471.2	10.0	ug/L	500	ND	94.2	69-132	7.56	20	
Dibromomethane	482.7	10.0	ug/L	500	ND	96.5	70-147	6.14	22	
Bromodichloromethane	472.8	10.0	ug/L	500	ND	94.6	67-130	7.24	21	
cis-1,3-Dichloropropene	491.9	10.0	ug/L	500	ND	98.4	61-126	7.27	21	
4-Methyl-2-pentanone (MIBK)	1016	50.0	ug/L	1000	ND	101	55-147	4.42	23	
Toluene	455.7	10.0	ug/L	500	ND	91.1	71-133	7.15	19	
trans-1,3-Dichloropropene	516.0	10.0	ug/L	500	ND	103	63-124	7.10	21	
1,1,2-Trichloroethane	487.4	10.0	ug/L	500	ND	97.5	69-133	4.81	19	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0316 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HE0316-MSD1)	**Source: 1HE0312-01**		Prepared: 05/06/24 00:00 Analyzed: 05/06/24 18:24							
Tetrachloroethylene	463.0	10.0	ug/L	500	ND	92.6	70-124	7.62	24	
2-Hexanone (MBK)	1031	50.0	ug/L	993	ND	104	53-141	3.25	24	
Dibromochloromethane	479.7	10.0	ug/L	500	ND	95.9	74-122	6.36	21	
1,2-Dibromoethane	475.4	10.0	ug/L	500	ND	95.1	66-127	5.48	23	
Chlorobenzene	461.2	10.0	ug/L	500	ND	92.2	76-116	6.95	21	
1,1,1,2-Tetrachloroethane	489.3	10.0	ug/L	500	ND	97.9	77-121	6.03	25	
Ethylbenzene	472.1	10.0	ug/L	500	ND	94.4	73-124	6.44	20	
Xylenes, total	1441	20.0	ug/L	1500	ND	96.1	75-123	6.36	20	
Styrene	481.1	10.0	ug/L	500	ND	96.2	70-120	6.86	23	
Bromoform	481.3	10.0	ug/L	500	ND	96.3	70-124	5.04	22	
1,2,3-Trichloropropane	491.0	10.0	ug/L	500	ND	98.2	62-135	2.71	28	
trans-1,4-Dichloro-2-butene	783.9	50.0	ug/L	1030	ND	76.3	50-120	6.35	26	
1,1,2,2-Tetrachloroethane	450.5	10.0	ug/L	500	ND	90.1	63-126	4.24	24	
1,4-Dichlorobenzene	456.1	10.0	ug/L	500	ND	91.2	72-119	6.57	24	
1,2-Dichlorobenzene	474.5	10.0	ug/L	500	ND	94.9	71-117	5.95	24	
1,2-Dibromo-3-chloropropane	467.6	50.0	ug/L	500	ND	93.5	49-134	3.65	28	
Surrogate: Dibromofluoromethane	*494*		ug/L	*502*		*98.5*	*80-126*			
Surrogate: Dibromofluoromethane	*494*		ug/L	*502*		*98.5*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*494*		ug/L	*501*		*98.6*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*494*		ug/L	*501*		*98.6*	*61-142*			
Surrogate: Toluene-d8	*504*		ug/L	*504*		*100*	*87-116*			
Surrogate: Toluene-d8	*504*		ug/L	*504*		*100*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*512*		ug/L	*501*		*102*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*512*		ug/L	*501*		*102*	*80-116*			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0236 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HE0236-BLK1)			Prepared: 05/06/24 09:31 Analyzed: 05/07/24 00:09							
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0236 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HE0236-BLK1)			Prepared: 05/06/24 09:31 Analyzed: 05/07/24 00:09							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HE0236-BS1)			Prepared: 05/06/24 09:31 Analyzed: 05/07/24 00:15							
Antimony, total	0.0950	0.0020	mg/L	0.100		95.0	80-120			
Arsenic, total	0.101	0.0040	mg/L	0.100		101	80-120			
Barium, total	0.101	0.0040	mg/L	0.100		101	80-120			
Beryllium, total	0.0992	0.0040	mg/L	0.100		99.2	80-120			
Cadmium, total	0.0990	0.0008	mg/L	0.100		99.0	80-120			
Chromium, total	0.0988	0.0080	mg/L	0.100		98.8	80-120			
Cobalt, total	0.102	0.0004	mg/L	0.100		102	80-120			
Copper, total	0.101	0.0040	mg/L	0.100		101	80-120			
Lead, total	0.0991	0.0040	mg/L	0.100		99.1	80-120			
Nickel, total	0.101	0.0040	mg/L	0.100		101	80-120			
Selenium, total	0.1070	0.0040	mg/L	0.100		107	80-120			
Silver, total	0.103	0.0040	mg/L	0.100		103	80-120			
Thallium, total	0.0969	0.0020	mg/L	0.100		96.9	80-120			
Vanadium, total	0.102	0.0200	mg/L	0.100		102	80-120			
Zinc, total	0.107	0.0200	mg/L	0.100		107	80-120			
Matrix Spike (1HE0236-MS1)	**Source: 1HE0312-02**		Prepared: 05/06/24 09:31 Analyzed: 05/07/24 12:53							
Antimony, total	0.0895	0.0020	mg/L	0.100	ND	89.5	75-125			
Arsenic, total	0.0968	0.0040	mg/L	0.100	0.0021	94.7	75-125			
Barium, total	0.117	0.0040	mg/L	0.100	0.0287	88.8	75-125			
Beryllium, total	0.0834	0.0040	mg/L	0.100	ND	83.4	75-125			
Cadmium, total	0.0847	0.0008	mg/L	0.100	ND	84.7	75-125			
Chromium, total	0.0883	0.0080	mg/L	0.100	0.0011	87.1	75-125			
Cobalt, total	0.0929	0.0004	mg/L	0.100	ND	92.9	75-125			
Copper, total	0.0870	0.0040	mg/L	0.100	ND	87.0	75-125			
Lead, total	0.0840	0.0040	mg/L	0.100	ND	84.0	75-125			
Nickel, total	0.0956	0.0040	mg/L	0.100	0.0056	90.1	75-125			
Selenium, total	0.0933	0.0040	mg/L	0.100	ND	93.3	75-125			
Silver, total	0.0890	0.0040	mg/L	0.100	ND	89.0	75-125			
Thallium, total	0.0852	0.0020	mg/L	0.100	0.0002	85.0	75-125			
Vanadium, total	0.0931	0.0200	mg/L	0.100	ND	93.1	75-125			
Zinc, total	0.226	0.0200	mg/L	0.100	ND	226	75-125			QM-07
Matrix Spike Dup (1HE0236-MSD1)	**Source: 1HE0312-02**		Prepared: 05/06/24 09:31 Analyzed: 05/07/24 00:39							
Antimony, total	0.0948	0.0020	mg/L	0.100	ND	94.8	75-125	5.75	20	
Arsenic, total	0.103	0.0040	mg/L	0.100	0.0021	101	75-125	6.28	20	
Barium, total	0.130	0.0040	mg/L	0.100	0.0287	102	75-125	10.5	20	
Beryllium, total	0.0844	0.0040	mg/L	0.100	ND	84.4	75-125	1.19	20	
Cadmium, total	0.0925	0.0008	mg/L	0.100	ND	92.5	75-125	8.83	20	
Chromium, total	0.0941	0.0080	mg/L	0.100	0.0011	93.0	75-125	6.42	20	
Cobalt, total	0.0994	0.0004	mg/L	0.100	ND	99.4	75-125	6.78	20	
Copper, total	0.0920	0.0040	mg/L	0.100	ND	92.0	75-125	5.61	20	
Lead, total	0.0937	0.0040	mg/L	0.100	ND	93.7	75-125	10.9	20	

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE0236 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Matrix Spike Dup (1HE0236-MSD1)	**Source: 1HE0312-02**		Prepared: 05/06/24 09:31 Analyzed: 05/07/24 00:39							
Nickel, total	0.102	0.0040	mg/L	0.100	0.0056	96.2	75-125	6.25	20	
Selenium, total	0.1061	0.0040	mg/L	0.100	ND	106	75-125	12.8	20	
Silver, total	0.0975	0.0040	mg/L	0.100	ND	97.5	75-125	9.17	20	
Thallium, total	0.0951	0.0020	mg/L	0.100	0.0002	94.9	75-125	10.9	20	
Vanadium, total	0.100	0.0200	mg/L	0.100	ND	100	75-125	7.26	20	
Zinc, total	0.0948	0.0200	mg/L	0.100	ND	94.8	75-125	81.7	20	QM-07
Post Spike (1HE0236-PS1)	**Source: 1HE0312-02**		Prepared: 05/06/24 09:31 Analyzed: 05/07/24 12:59							
Antimony, total	0.0799		mg/L	0.0800	0.0001	99.8	80-120			
Arsenic, total	0.0858		mg/L	0.0800	0.0021	105	80-120			
Barium, total	0.104		mg/L	0.0800	0.0281	94.6	80-120			
Beryllium, total	0.0731		mg/L	0.0800	0.000009	91.4	80-120			
Cadmium, total	0.0763		mg/L	0.0800	0.00002	95.3	80-120			
Chromium, total	0.0791		mg/L	0.0800	0.0011	97.4	80-120			
Cobalt, total	0.0834		mg/L	0.0800	0.0001	104	80-120			
Copper, total	0.0773		mg/L	0.0800	0.0005	96.0	80-120			
Lead, total	0.0749		mg/L	0.0800	0.00005	93.5	80-120			
Nickel, total	0.0869		mg/L	0.0800	0.0055	102	80-120			
Selenium, total	0.0805		mg/L	0.0800	-0.0007	101	80-120			
Silver, total	0.0791		mg/L	0.0800	-0.00008	98.9	80-120			
Thallium, total	0.0762		mg/L	0.0800	0.0002	94.9	80-120			
Vanadium, total	0.0859		mg/L	0.0800	0.0050	101	80-120			
Zinc, total	0.0764		mg/L	0.0800	0.0019	93.0	80-120			
Batch 1HE1395 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HE1395-BLK1)			Prepared: 05/24/24 08:12 Analyzed: 05/24/24 16:47							
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HE1395-BS1)			Prepared: 05/24/24 08:12 Analyzed: 05/24/24 16:53							
Antimony, total	0.0982	0.0020	mg/L	0.100		98.2	80-120			
Arsenic, total	0.0985	0.0040	mg/L	0.100		98.5	80-120			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE1395 - EPA 3005A Total Recoverable Metals - EPA 6020A										
LCS (1HE1395-BS1)			Prepared: 05/24/24 08:12 Analyzed: 05/24/24 16:53							
Barium, total	0.105	0.0040	mg/L	0.100		105	80-120			
Beryllium, total	0.100	0.0040	mg/L	0.100		100	80-120			
Cadmium, total	0.0983	0.0008	mg/L	0.100		98.3	80-120			
Chromium, total	0.0969	0.0080	mg/L	0.100		96.9	80-120			
Cobalt, total	0.101	0.0004	mg/L	0.100		101	80-120			
Copper, total	0.0986	0.0040	mg/L	0.100		98.6	80-120			
Lead, total	0.0989	0.0040	mg/L	0.100		98.9	80-120			
Nickel, total	0.0995	0.0040	mg/L	0.100		99.5	80-120			
Selenium, total	0.0974	0.0040	mg/L	0.100		97.4	80-120			
Silver, total	0.101	0.0040	mg/L	0.100		101	80-120			
Thallium, total	0.0979	0.0020	mg/L	0.100		97.9	80-120			
Vanadium, total	0.0994	0.0200	mg/L	0.100		99.4	80-120			
Zinc, total	0.100	0.0200	mg/L	0.100		100	80-120			
Matrix Spike (1HE1395-MS1)	**Source: 1HE0312-01**		Prepared: 05/24/24 08:12 Analyzed: 05/24/24 17:18							
Antimony, total	0.0982	0.0020	mg/L	0.100	ND	98.2	75-125			
Arsenic, total	0.107	0.0040	mg/L	0.100	0.0037	104	75-125			
Barium, total	0.138	0.0040	mg/L	0.100	0.0310	107	75-125			
Beryllium, total	0.0910	0.0040	mg/L	0.100	ND	91.0	75-125			
Cadmium, total	0.0907	0.0008	mg/L	0.100	ND	90.7	75-125			
Chromium, total	0.0941	0.0080	mg/L	0.100	0.0006	94.1	75-125			
Cobalt, total	0.103	0.0004	mg/L	0.100	ND	103	75-125			
Copper, total	0.0896	0.0040	mg/L	0.100	ND	89.6	75-125			
Lead, total	0.0919	0.0040	mg/L	0.100	ND	91.9	75-125			
Nickel, total	0.0988	0.0040	mg/L	0.100	0.0026	96.2	75-125			
Selenium, total	0.0998	0.0040	mg/L	0.100	ND	99.8	75-125			
Silver, total	0.0968	0.0040	mg/L	0.100	ND	96.8	75-125			
Thallium, total	0.0952	0.0020	mg/L	0.100	0.0004	94.8	75-125			
Vanadium, total	0.0993	0.0200	mg/L	0.100	ND	99.3	75-125			
Zinc, total	0.0909	0.0200	mg/L	0.100	ND	90.9	75-125			
Matrix Spike Dup (1HE1395-MSD1)	**Source: 1HE0312-01**		Prepared: 05/24/24 08:12 Analyzed: 05/24/24 17:24							
Antimony, total	0.0987	0.0020	mg/L	0.100	ND	98.7	75-125	0.548	20	
Arsenic, total	0.108	0.0040	mg/L	0.100	0.0037	105	75-125	0.900	20	
Barium, total	0.138	0.0040	mg/L	0.100	0.0310	107	75-125	0.237	20	
Beryllium, total	0.0928	0.0040	mg/L	0.100	ND	92.8	75-125	1.95	20	
Cadmium, total	0.0936	0.0008	mg/L	0.100	ND	93.6	75-125	3.13	20	
Chromium, total	0.0956	0.0080	mg/L	0.100	0.0006	95.6	75-125	1.54	20	
Cobalt, total	0.104	0.0004	mg/L	0.100	ND	104	75-125	1.26	20	
Copper, total	0.0917	0.0040	mg/L	0.100	ND	91.7	75-125	2.31	20	
Lead, total	0.0951	0.0040	mg/L	0.100	ND	95.1	75-125	3.46	20	
Nickel, total	0.101	0.0040	mg/L	0.100	0.0026	98.3	75-125	2.10	20	
Selenium, total	0.0992	0.0040	mg/L	0.100	ND	99.2	75-125	0.622	20	
Silver, total	0.0982	0.0040	mg/L	0.100	ND	98.2	75-125	1.46	20	
Thallium, total	0.0977	0.0020	mg/L	0.100	0.0004	97.2	75-125	2.59	20	

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HE1395 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Matrix Spike Dup (1HE1395-MSD1)	**Source: 1HE0312-01**	Prepared: 05/24/24 08:12 Analyzed: 05/24/24 17:24								
Vanadium, total	0.101	0.0200	mg/L	0.100	ND	101	75-125	1.62	20	
Zinc, total	0.0940	0.0200	mg/L	0.100	ND	94.0	75-125	3.43	20	
Post Spike (1HE1395-PS1)	**Source: 1HE0312-01**	Prepared: 05/24/24 08:12 Analyzed: 05/24/24 17:30								
Antimony, total	0.0760		mg/L	0.0800	0.0003	94.6	80-120			
Arsenic, total	0.0846		mg/L	0.0800	0.0036	101	80-120			
Barium, total	0.110		mg/L	0.0800	0.0304	98.9	80-120			
Beryllium, total	0.0701		mg/L	0.0800	0.00002	87.6	80-120			
Cadmium, total	0.0712		mg/L	0.0800	0.000000	89.0	80-120			
Chromium, total	0.0736		mg/L	0.0800	0.0006	91.3	80-120			
Cobalt, total	0.0799		mg/L	0.0800	0.0002	99.6	80-120			
Copper, total	0.0696		mg/L	0.0800	0.0005	86.5	80-120			
Lead, total	0.0731		mg/L	0.0800	0.00005	91.3	80-120			
Nickel, total	0.0766		mg/L	0.0800	0.0026	92.6	80-120			
Selenium, total	0.0741		mg/L	0.0800	0.0003	92.3	80-120			
Silver, total	0.0758		mg/L	0.0800	0.0002	94.4	80-120			
Thallium, total	0.0763		mg/L	0.0800	0.0004	94.8	80-120			
Vanadium, total	0.0799		mg/L	0.0800	0.0036	95.4	80-120			
Zinc, total	0.0708		mg/L	0.0800	0.0055	81.6	80-120			

Definitions

I-05: Sample received at laboratory past hold time for this analyte.

QM-07: The spike recovery and/or RPD was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

RL: Reporting Limit

RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Murphy

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
05/28/24 13:50

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES
A Microbac Company

600 East 17th Street Soutl
Newton, IA 50208
641-792-8451

1 H E 0 3 1 2
HLW Engineering
PM: Heather Murphy

nted: 3/4/2024 10:32:49A
www.keystonelabs.cor

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: NCIRSWA - New Regs
6030

REPORT TO

Todd Whipple
HLW Engineering
PO Box 314
Story City, IA 50248

Lori Lindstrom
NCIRSWA Landfill
2151 Gypsum Hollow Road
Fort Dodge, IA 50501

SPECIAL INSTRUCTIONS

None

Turn Around Time
☐ Standard ☐ RUSH, need by __/__/__

LAB USE ONLY

Work Order
Temperature 0.0
Turn-Cooler: No

☐ Custody Seal
☒ Containers Intact
☒ COC/Labels Agree
☐ Preservation Confirmed
☒ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses		Lab Sample Number
-001	MW-10A	Water	GRAB	4/23/24	9:23	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-10B	Water	GRAB	4/23/24	9:14	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-18	Water	GRAB	4/23/24	9:40	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-19	Water	GRAB	4/23/24	9:55	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-20	Water	GRAB	4/23/24	10:14	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-21R	Water	GRAB	4/23/24	10:35	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-22	Water	GRAB	4/23/24	10:56	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	

Relinquished By [signature] Date/Time 4/24/24

Relinquished By Date/Time

Received By Date/Time

Received for Lab By Maher Date/Time 4/24/24 10:16

Remarks:

Original - Lab Copy Yellow - Sampler Copy

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES
A Microbac Company

600 East 17th Street South
Newton, IA 50208
641-792-8451
www.keystonelabs.com

1HE0312
HLW Engineering
PM: Heather Murphy

d: 3/4/2024 10:32:49A

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: NCIRSWA - New Regs 6030

REPORT TO

Todd Whipple
HLW Engineering
PO Box 314
Story City, IA 50248

INVOICE TO

Lori Lindstrom
NCIRSWA Landfill
2151 Gypsum Hollow Road
Fort Dodge, IA 50501

SPECIAL INSTRUCTIONS

None

Turn Around Time
☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order
Temperature 0.0
Turn-Cooler: No

☐ Custody Seal
☒ Containers Intact
☒ COC/Labels Agree
☐ Preservation Confirmed
☒ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses		Lab Sample Number
-001	MW-30	Water	GRAB	4/23/24	7:55	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	GU-2 DRY	Water	GRAB	4/23/24	—	0	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	GU-3 DRY	Water	GRAB	4/23/24	—	0	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	Duplicate	Water	GRAB	4/23/24	✓	1	~~lndfill-app1-voc-group~~	lndfll-app1-metals-6020	
-001	MW-25	Water	GRAB	4/23/24	8:36	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	
-001	MW-28	Water	GRAB	4/23/24	8:55	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	

Relinquished By: [signature] Date/Time: 4/24/24

Relinquished By ___ Date/Time ___

Received By ___ Date/Time ___

Received for Lab By: [signature] Date/Time: 4/24/24 10:16

Remarks:

Original - Lab Copy Yellow - Sampler Copy

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ0100

Project Description

6030

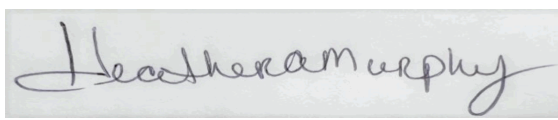
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Friday, October 11, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

600 East 17th Street South | Newton, IA 50208 | 641-792-8451 p | www.microbac.com

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ0100

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 10/01/2024
Reported: 10/11/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
GU-4	1HJ0100-01	Aqueous	GRAB		09/27/24 15:10	10/01/24 10:30
GU-5	1HJ0100-02	Aqueous	GRAB		09/27/24 15:14	10/01/24 10:30

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ0100

Analytical Testing Parameters

Client Sample ID:	GU-4		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ0100-01	**Collection Date:**	09/27/2024 15:10

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Barium, total	**0.0196**	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Cobalt, total	**0.0006**	0.0004	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Nickel, total	**0.0355**	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/07/24 1602	10/08/24 1739	RVV
Zinc, total	**3.59**	0.500	mg/L	100		10/07/24 1602	10/09/24 1019	RVV

Client Sample ID:	GU-5		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ0100-02	**Collection Date:**	09/27/2024 15:14

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Barium, total	**0.0256**	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Cobalt, total	**0.0028**	0.0004	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Nickel, total	**0.0305**	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/07/24 1602	10/08/24 1745	RVV
Zinc, total	**11.5**	0.500	mg/L	100		10/07/24 1602	10/09/24 1025	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HJ0426	1HJ0426-BLK1	
		1HJ0426-BS1	
		1HJ0100-01	GU-4
		1HJ0100-02	GU-5
		1HJ0426-MS1	1HJ0275-01
		1HJ0426-PS1	1HJ0275-01
		1HJ0100-01RE1	GU-4
		1HJ0100-02RE1	GU-5
		1HJ0426-MSD1	1HJ0275-01

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ0426 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HJ0426-BLK1)				Prepared: 10/07/24 16:02 Analyzed: 10/08/24 17:26						
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HJ0426-BS1)				Prepared: 10/07/24 16:02 Analyzed: 10/08/24 17:32						
Antimony, total	0.103	0.0020	mg/L	0.100		103	80-120			
Arsenic, total	0.104	0.0040	mg/L	0.100		104	80-120			
Barium, total	0.114	0.0040	mg/L	0.100		114	80-120			
Beryllium, total	0.108	0.0040	mg/L	0.100		108	80-120			
Cadmium, total	0.105	0.0008	mg/L	0.100		105	80-120			
Chromium, total	0.103	0.0080	mg/L	0.100		103	80-120			
Cobalt, total	0.109	0.0004	mg/L	0.100		109	80-120			
Copper, total	0.112	0.0040	mg/L	0.100		112	80-120			
Lead, total	0.106	0.0040	mg/L	0.100		106	80-120			
Nickel, total	0.110	0.0040	mg/L	0.100		110	80-120			
Selenium, total	0.1007	0.0040	mg/L	0.100		101	80-120			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ0426 - EPA 3005A Total Recoverable Metals - EPA 6020A										
LCS (1HJ0426-BS1)				Prepared: 10/07/24 16:02 Analyzed: 10/08/24 17:32						
Silver, total	0.106	0.0040	mg/L	0.100		106	80-120			
Thallium, total	0.0928	0.0020	mg/L	0.100		92.8	80-120			
Vanadium, total	0.106	0.0200	mg/L	0.100		106	80-120			
Zinc, total	0.103	0.0200	mg/L	0.100		103	80-120			
Matrix Spike (1HJ0426-MS1)	**Source: 1HJ0275-01**			Prepared: 10/07/24 16:02 Analyzed: 10/08/24 18:03						
Antimony, total	0.0987	0.0020	mg/L	0.100	ND	98.7	75-125			
Arsenic, total	0.101	0.0040	mg/L	0.100	0.0012	99.9	75-125			
Barium, total	0.300	0.0040	mg/L	0.100	0.194	107	75-125			
Beryllium, total	0.102	0.0040	mg/L	0.100	ND	102	75-125			
Cadmium, total	0.0983	0.0008	mg/L	0.100	ND	98.3	75-125			
Chromium, total	0.101	0.0080	mg/L	0.100	0.0059	95.5	75-125			
Cobalt, total	0.109	0.0004	mg/L	0.100	ND	109	75-125			
Copper, total	0.106	0.0040	mg/L	0.100	ND	106	75-125			
Lead, total	0.0992	0.0040	mg/L	0.100	ND	99.2	75-125			
Nickel, total	0.109	0.0040	mg/L	0.100	ND	109	75-125			
Selenium, total	0.0981	0.0040	mg/L	0.100	ND	98.1	75-125			
Silver, total	0.0992	0.0040	mg/L	0.100	ND	99.2	75-125			
Thallium, total	0.0880	0.0020	mg/L	0.100	ND	88.0	75-125			
Vanadium, total	0.103	0.0200	mg/L	0.100	ND	103	75-125			
Zinc, total	0.0991	0.0200	mg/L	0.100	ND	99.1	75-125			
Matrix Spike Dup (1HJ0426-MSD1)	**Source: 1HJ0275-01**			Prepared: 10/07/24 16:02 Analyzed: 10/09/24 10:31						
Antimony, total	0.102	0.0020	mg/L	0.100	ND	102	75-125	3.23	20	
Arsenic, total	0.107	0.0040	mg/L	0.100	0.0012	105	75-125	5.23	20	
Barium, total	0.314	0.0040	mg/L	0.100	0.194	120	75-125	4.26	20	
Beryllium, total	0.110	0.0040	mg/L	0.100	ND	110	75-125	7.42	20	
Cadmium, total	0.101	0.0008	mg/L	0.100	ND	101	75-125	2.27	20	
Chromium, total	0.109	0.0080	mg/L	0.100	0.0059	103	75-125	6.83	20	
Cobalt, total	0.115	0.0004	mg/L	0.100	ND	115	75-125	5.71	20	
Copper, total	0.116	0.0040	mg/L	0.100	ND	116	75-125	8.36	20	
Lead, total	0.0983	0.0040	mg/L	0.100	ND	98.3	75-125	0.952	20	
Nickel, total	0.115	0.0040	mg/L	0.100	ND	115	75-125	4.83	20	
Selenium, total	0.0992	0.0040	mg/L	0.100	ND	99.2	75-125	1.16	20	
Silver, total	0.103	0.0040	mg/L	0.100	ND	103	75-125	4.15	20	
Thallium, total	0.0942	0.0020	mg/L	0.100	ND	94.2	75-125	6.84	20	
Vanadium, total	0.110	0.0200	mg/L	0.100	ND	110	75-125	7.12	20	
Zinc, total	0.118	0.0200	mg/L	0.100	ND	118	75-125	17.2	20	
Post Spike (1HJ0426-PS1)	**Source: 1HJ0275-01**			Prepared: 10/07/24 16:02 Analyzed: 10/08/24 18:28						
Antimony, total	0.0745		mg/L	0.0800	0.0001	93.0	80-120			
Arsenic, total	0.0779		mg/L	0.0800	0.0012	95.9	80-120			
Barium, total	0.267		mg/L	0.0800	0.190	96.6	80-120			
Beryllium, total	0.0796		mg/L	0.0800	-0.00001	99.5	80-120			
Cadmium, total	0.0732		mg/L	0.0800	0.00003	91.4	80-120			
Chromium, total	0.0755		mg/L	0.0800	0.0058	87.2	80-120			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ0426 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Post Spike (1HJ0426-PS1)	**Source: 1HJ0275-01**	Prepared: 10/07/24 16:02 Analyzed: 10/08/24 18:28								
Cobalt, total	0.0794		mg/L	0.0800	0.0001	99.2	80-120			
Copper, total	0.0756		mg/L	0.0800	0.0007	93.7	80-120			
Lead, total	0.0746		mg/L	0.0800	-0.000007	93.3	80-120			
Nickel, total	0.0793		mg/L	0.0800	0.0011	97.7	80-120			
Selenium, total	0.0730		mg/L	0.0800	-0.0003	91.3	80-120			
Silver, total	0.0749		mg/L	0.0800	-0.00008	93.6	80-120			
Thallium, total	0.0634		mg/L	0.0800	0.00001	79.3	80-120			Q
Vanadium, total	0.0791		mg/L	0.0800	0.0049	92.7	80-120			
Zinc, total	0.0753		mg/L	0.0800	0.0013	92.5	80-120			

Definitions

Q:	One or more quality control criteria failed.
RL:	Reporting Limit
RPD:	Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
10/11/24 14:35

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

☐ 600 E. 17th St. S. Newton, IA 5020[illegible] Phone: 641-792-8[illegible] Fax: 641-792-7[illegible]

[illegible] KS 66105 [illegible]321-7856 Fax: [illegible]831-6778

☐ 205 E VanBuren St Centerville, IA 52544 Phone: 641-437-7023 Fax: 641-437-7040

1 H J 0 1 0 0
HLW Engineering
PM: Heather Murphy

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW	REPORT TO:	BILL TO:
SAMPLER: TODD WHIPPLE	NAME: TODD WHIPPLE	NAME: Lori Lindstrom, CFO
SITE NAME: NCIRSWA	COMPANY NAME: HLW Group	COMPANY NAME: NCIRSWA
ADDRESS: FORT DODGE	ADDRESS: P.O. Box 314	ADDRESS: P.O Box 578
CITY/ST/ZIP: IOWA	CITY/ST/ZIP: STORY City IA 50248	CITY/ST/ZIP: FORT DODGE, IA 50501
PHONE:	PHONE: 515 733 4144	PHONE:
	FAX: 4146	Keystone Quote No: (If Applicable)

LAB USE ONLY
LABORATORY WORK ORDER NO. 1HJ0100
SAMPLE TEMPERATURE UPON RECEIPT: 0.0 ice °C

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: App I metals								SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
GU-4	9/27/24	15:10	GU-4	1	W	G	X									01
GU-5	9/27/24	15:14	GU-5	1	W	G	X									02

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Turn-Around: ☐ Standard ☐ Rush ______ Contact Lab Prior to Submission
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature) [signature]	Date 10-1-24 Time 1030	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ1141

Project Description

6030

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Tisdale

Heather Tisdale

Customer Relationship Specialist

Friday, October 25, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

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CERTIFICATE OF ANALYSIS

1HJ1141

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 10/14/2024
Reported: 10/25/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-10A	1HJ1141-01	Aqueous	GRAB		10/11/24 10:47	10/14/24 15:41
MW-10B	1HJ1141-02	Aqueous	GRAB		10/11/24 10:56	10/14/24 15:41
MW-18	1HJ1141-03	Aqueous	GRAB		10/11/24 11:10	10/14/24 15:41
MW-20	1HJ1141-04	Aqueous	GRAB		10/11/24 11:33	10/14/24 15:41
MW-21R	1HJ1141-05	Aqueous	GRAB		10/11/24 11:47	10/14/24 15:41
MW-22	1HJ1141-06	Aqueous	GRAB		10/11/24 11:58	10/14/24 15:41
MW-30	1HJ1141-07	Aqueous	GRAB		10/11/24 08:01	10/14/24 15:41
GU-4	1HJ1141-08	Aqueous	GRAB		10/11/24 08:26	10/14/24 15:41
GU-5	1HJ1141-09	Aqueous			10/11/24 09:05	10/14/24 15:41
Duplicate	1HJ1141-10	Aqueous	GRAB		10/11/24 00:00	10/14/24 15:41
MW-25	1HJ1141-11	Aqueous	GRAB		10/11/24 09:44	10/14/24 15:41
MW-28	1HJ1141-12	Aqueous	GRAB		10/11/24 09:57	10/14/24 15:41

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CERTIFICATE OF ANALYSIS

1HJ1141

Analytical Testing Parameters

Client Sample ID:	MW-10A		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-01	**Collection Date:**	10/11/2024 10:47

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM

CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-10A		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-01	**Collection Date:**	10/11/2024 10:47

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: Dibromofluoromethane	89.8	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: Dibromofluoromethane	89.8	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: 1,2-Dichloroethane-d4	92.4	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: 1,2-Dichloroethane-d4	92.4	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: Toluene-d8	94.0	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: Toluene-d8	94.0	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2147	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2147	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Arsenic, total	**0.0221**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Barium, total	**0.0622**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Cobalt, total	**0.0018**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Nickel, total	**0.0110**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1705	RVV
Zinc, total	**0.0266**	0.0200	mg/L	4		10/17/24 0759	10/18/24 1705	RVV

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CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-10B		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-02	**Collection Date:**	10/11/2024 10:56

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM

Client Sample ID:	MW-10B			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-02		**Collection Date:**	10/11/2024 10:56

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: Dibromofluoromethane	90.6	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: Dibromofluoromethane	90.6	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: 1,2-Dichloroethane-d4	92.0	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: 1,2-Dichloroethane-d4	92.0	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: Toluene-d8	93.6	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: Toluene-d8	93.6	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: 4-Bromofluorobenzene	100	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2209	CSM
Surrogate: 4-Bromofluorobenzene	100	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2209	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Barium, total	**0.0260**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Nickel, total	**0.0096**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/22/24 1420	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/22/24 1420	RVV

Client Sample ID:	MW-18		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-03	**Collection Date:**	10/11/2024 11:10

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM

Client Sample ID:	MW-18			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-03		**Collection Date:**	10/11/2024 11:10

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: Dibromofluoromethane	89.5	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: Dibromofluoromethane	89.5	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: 1,2-Dichloroethane-d4	92.1	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: 1,2-Dichloroethane-d4	92.1	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: Toluene-d8	97.6	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: Toluene-d8	97.6	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2232	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2232	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Barium, total	**0.0272**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Cobalt, total	**0.0683**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Nickel, total	**0.0501**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1748	RVV
Zinc, total	**0.0273**	0.0200	mg/L	4		10/17/24 0759	10/18/24 1748	RVV

Client Sample ID:	MW-20		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-04	**Collection Date:**	10/11/2024 11:33

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM

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CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-20		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-04	**Collection Date:**	10/11/2024 11:33

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: Dibromofluoromethane	91.2	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: Dibromofluoromethane	91.2	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: 1,2-Dichloroethane-d4	94.4	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: 1,2-Dichloroethane-d4	94.4	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: Toluene-d8	94.6	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: Toluene-d8	94.6	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: 4-Bromofluorobenzene	100	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2255	CSM
Surrogate: 4-Bromofluorobenzene	100	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2255	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Arsenic, total	**0.0262**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Barium, total	**0.0618**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Cobalt, total	**0.0021**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Nickel, total	**0.0040**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1754	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1754	RVV

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CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-21R		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-05	**Collection Date:**	10/11/2024 11:47

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM

Client Sample ID:	MW-21R			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-05		**Collection Date:**	10/11/2024 11:47

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: Dibromofluoromethane	92.0	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: Dibromofluoromethane	92.0	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: 1,2-Dichloroethane-d4	94.8	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: 1,2-Dichloroethane-d4	94.8	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: Toluene-d8	93.5	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: Toluene-d8	93.5	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2317	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2317	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Arsenic, total	**0.0126**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Barium, total	**0.0252**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Cobalt, total	**0.0068**	0.0004	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Nickel, total	**0.0095**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/22/24 1426	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/22/24 1426	RVV

Client Sample ID:	MW-22		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-06	**Collection Date:**	10/11/2024 11:58

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM

Client Sample ID:	MW-22		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-06	**Collection Date:**	10/11/2024 11:58

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: Dibromofluoromethane	91.7	Limit: 75-136	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: Dibromofluoromethane	91.7	Limit: 57-134	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: 1,2-Dichloroethane-d4	94.0	Limit: 61-142	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: 1,2-Dichloroethane-d4	94.0	Limit: 53-140	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: Toluene-d8	94.3	Limit: 82-121	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: Toluene-d8	94.3	Limit: 86-114	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: 4-Bromofluorobenzene	99.8	Limit: 80-116	% Rec	1		10/17/24 0000	10/17/24 2340	CSM
Surrogate: 4-Bromofluorobenzene	99.8	Limit: 78-121	% Rec	1		10/17/24 0000	10/17/24 2340	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Barium, total	**0.0099**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Nickel, total	**0.0117**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1806	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1806	RVV

Client Sample ID:	MW-30			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-07		**Collection Date:**	10/11/2024 8:01

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM

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CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-30		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-07	**Collection Date:**	10/11/2024 8:01

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: Dibromofluoromethane	92.1	Limit: 57-134	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: Dibromofluoromethane	92.1	Limit: 75-136	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: 1,2-Dichloroethane-d4	95.4	Limit: 53-140	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: 1,2-Dichloroethane-d4	95.4	Limit: 61-142	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: Toluene-d8	91.9	Limit: 82-121	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: Toluene-d8	91.9	Limit: 86-114	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: 4-Bromofluorobenzene	99.5	Limit: 78-121	% Rec	1		10/17/24 0000	10/18/24 0002	CSM
Surrogate: 4-Bromofluorobenzene	99.5	Limit: 80-116	% Rec	1		10/17/24 0000	10/18/24 0002	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Barium, total	**0.0245**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Cobalt, total	**0.0074**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Nickel, total	**0.0296**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1812	RVV
Zinc, total	**0.0293**	0.0200	mg/L	4		10/17/24 0759	10/18/24 1812	RVV

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	GU-4		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-08	**Collection Date:**	10/11/2024 8:26

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Barium, total	**0.0152**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Nickel, total	**0.0184**	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/22/24 1432	RVV
Zinc, total	**0.358**	0.0200	mg/L	4		10/17/24 0759	10/22/24 1432	RVV

Client Sample ID:	GU-5		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-09	**Collection Date:**	10/11/2024 9:05

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Barium, total	**0.0233**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Cobalt, total	**0.0022**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Nickel, total	**0.0234**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1824	RVV
Zinc, total	**13.0**	0.500	mg/L	100		10/17/24 0759	10/22/24 1438	RVV

CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	Duplicate		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-10	**Collection Date:**	10/11/2024

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Barium, total	**0.0258**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Cobalt, total	**0.0598**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Nickel, total	**0.0432**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1830	RVV
Zinc, total	**0.0374**	0.0200	mg/L	4		10/17/24 0759	10/18/24 1830	RVV

Client Sample ID:	MW-25		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-11	**Collection Date:**	10/11/2024 9:44

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1-Dichloroethylene	**1.0**	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM

Client Sample ID:	MW-25		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-11	**Collection Date:**	10/11/2024 9:44

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: Dibromofluoromethane	91.9	Limit: 57-134	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: Dibromofluoromethane	91.9	Limit: 75-136	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: 1,2-Dichloroethane-d4	94.7	Limit: 53-140	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: 1,2-Dichloroethane-d4	94.7	Limit: 61-142	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: Toluene-d8	94.0	Limit: 86-114	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: Toluene-d8	94.0	Limit: 82-121	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 78-121	% Rec	1		10/17/24 0000	10/18/24 0025	CSM
Surrogate: 4-Bromofluorobenzene	101	Limit: 80-116	% Rec	1		10/17/24 0000	10/18/24 0025	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Arsenic, total	**0.0069**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Barium, total	**0.0620**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Cobalt, total	**0.0037**	0.0004	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Nickel, total	**0.0065**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1849	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1849	RVV

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CERTIFICATE OF ANALYSIS

1HJ1141

Client Sample ID:	MW-28			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-12		**Collection Date:**	10/11/2024 9:57

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Acetone	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Chloroform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Benzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Toluene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Styrene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Bromoform	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM

Client Sample ID:	MW-28		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1141-12	**Collection Date:**	10/11/2024 9:57

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: Dibromofluoromethane	92.0	Limit: 57-134	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: Dibromofluoromethane	92.0	Limit: 75-136	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: 1,2-Dichloroethane-d4	95.0	Limit: 61-142	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: 1,2-Dichloroethane-d4	95.0	Limit: 53-140	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: Toluene-d8	93.9	Limit: 86-114	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: Toluene-d8	93.9	Limit: 82-121	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: 4-Bromofluorobenzene	99.0	Limit: 80-116	% Rec	1		10/17/24 0000	10/18/24 0047	CSM
Surrogate: 4-Bromofluorobenzene	99.0	Limit: 78-121	% Rec	1		10/17/24 0000	10/18/24 0047	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Barium, total	**0.0199**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Nickel, total	**0.0076**	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1855	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/17/24 0759	10/18/24 1855	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HJ1014	1HJ1014-BLK1	
		1HJ1014-BS1	
		1HJ1141-01	MW-10A
		1HJ1141-03	MW-18
		1HJ1141-04	MW-20
		1HJ1141-06	MW-22
		1HJ1141-07	MW-30
		1HJ1141-09	GU-5
		1HJ1141-10	Duplicate
		1HJ1141-11	MW-25
		1HJ1141-12	MW-28
		1HJ1014-MS1	1HJ1141-02
		1HJ1014-MSD1	1HJ1141-02
		1HJ1014-PS1	1HJ1141-02
		1HJ1141-02	MW-10B
		1HJ1141-05	MW-21R
		1HJ1141-08	GU-4
		1HJ1141-09RE1	GU-5

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260B	1HJ1146	1HJ1146-BS1	
		1HJ1146-BSD1	
		1HJ1146-BLK1	
		1HJ1146-MS1	1HJ1078-08RE1
		1HJ1146-MSD1	1HJ1078-08RE1
		1HJ1141-01	MW-10A
		1HJ1141-02	MW-10B
		1HJ1141-03	MW-18
		1HJ1141-04	MW-20
		1HJ1141-05	MW-21R
		1HJ1141-06	MW-22
		1HJ1141-07	MW-30
		1HJ1141-11	MW-25
		1HJ1141-12	MW-28

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
Blank (1HJ1146-BLK1)				Prepared: 10/17/24 00:00 Analyzed: 10/17/24 13:32						
Chloromethane	<1.0	1.0	ug/L							
Vinyl Chloride	<1.0	1.0	ug/L							
Bromomethane	<1.0	1.0	ug/L							
Chloroethane	<1.0	1.0	ug/L							
Trichlorofluoromethane	<1.0	1.0	ug/L							
1,1-Dichloroethylene	<1.0	1.0	ug/L							
Acetone	<10.0	10.0	ug/L							
Methyl Iodide	<1.0	1.0	ug/L							
Carbon Disulfide	<1.0	1.0	ug/L							
Methylene Chloride	<5.0	5.0	ug/L							
Acrylonitrile	<5.0	5.0	ug/L							
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Vinyl Acetate	<5.0	5.0	ug/L							
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L							
2-Butanone (MEK)	<10.0	10.0	ug/L							
Bromochloromethane	<1.0	1.0	ug/L							
Chloroform	<1.0	1.0	ug/L							
1,1,1-Trichloroethane	<1.0	1.0	ug/L							
Carbon Tetrachloride	<1.0	1.0	ug/L							
Benzene	<1.0	1.0	ug/L							
1,2-Dichloroethane	<1.0	1.0	ug/L							
Trichloroethylene	<1.0	1.0	ug/L							
1,2-Dichloropropane	<1.0	1.0	ug/L							
Dibromomethane	<1.0	1.0	ug/L							
Bromodichloromethane	<1.0	1.0	ug/L							
cis-1,3-Dichloropropene	<1.0	1.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L							
Toluene	<1.0	1.0	ug/L							
trans-1,3-Dichloropropene	<1.0	1.0	ug/L							
1,1,2-Trichloroethane	<1.0	1.0	ug/L							
Tetrachloroethylene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<5.0	5.0	ug/L							
Dibromochloromethane	<1.0	1.0	ug/L							
1,2-Dibromoethane	<1.0	1.0	ug/L							
Chlorobenzene	<1.0	1.0	ug/L							
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L							
Ethylbenzene	<1.0	1.0	ug/L							
Xylenes, total	<2.0	2.0	ug/L							
Styrene	<1.0	1.0	ug/L							
Bromoform	<1.0	1.0	ug/L							
1,2,3-Trichloropropane	<1.0	1.0	ug/L							
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L							

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
Blank (1HJ1146-BLK1)			Prepared: 10/17/24 00:00 Analyzed: 10/17/24 13:32							
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L							
1,4-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L							
Surrogate: Dibromofluoromethane	*44.0*		ug/L	*50.2*		*87.5*	*75-136*			
Surrogate: Dibromofluoromethane	*44.0*		ug/L	*50.2*		*87.5*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*45.5*		ug/L	*50.4*		*90.4*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*45.5*		ug/L	*50.4*		*90.4*	*53-140*			
Surrogate: Toluene-d8	*46.9*		ug/L	*50.5*		*93.0*	*82-121*			
Surrogate: Toluene-d8	*46.9*		ug/L	*50.5*		*93.0*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*78-121*			
LCS (1HJ1146-BS1)			Prepared: 10/17/24 00:00 Analyzed: 10/17/24 12:24							
Chloromethane	22.04	1.0	ug/L	30.0		73.5	63-155			
Vinyl Chloride	19.71	1.0	ug/L	30.0		65.7	70-154			Q3
Bromomethane	23.31	1.0	ug/L	30.0		77.7	52-176			
Chloroethane	23.94	1.0	ug/L	30.0		79.8	72-148			
Trichlorofluoromethane	23.41	1.0	ug/L	30.0		78.0	70-152			
1,1-Dichloroethylene	42.38	1.0	ug/L	50.0		84.8	70-148			
Acetone	87.12	10.0	ug/L	101		86.1	43-172			
Methyl Iodide	89.97	1.0	ug/L	102		88.3	69-170			
Carbon Disulfide	66.12	1.0	ug/L	103		64.4	72-162			Q3
Methylene Chloride	42.80	5.0	ug/L	50.0		85.6	68-142			
Acrylonitrile	73.55	5.0	ug/L	100		73.3	56-135			
trans-1,2-Dichloroethylene	43.34	1.0	ug/L	50.0		86.7	66-148			
1,1-Dichloroethane	43.49	1.0	ug/L	50.0		87.0	66-143			
Vinyl Acetate	90.62	5.0	ug/L	100		90.6	43-153			
cis-1,2-Dichloroethylene	43.49	1.0	ug/L	50.0		87.0	71-149			
2-Butanone (MEK)	84.55	10.0	ug/L	102		83.1	52-159			
Bromochloromethane	41.28	1.0	ug/L	50.0		82.6	69-143			
Chloroform	43.42	1.0	ug/L	50.0		86.8	69-144			
1,1,1-Trichloroethane	44.99	1.0	ug/L	50.0		90.0	62-129			
Carbon Tetrachloride	45.81	1.0	ug/L	50.0		91.6	63-141			
Benzene	48.90	1.0	ug/L	50.0		97.8	71-134			
1,2-Dichloroethane	50.00	1.0	ug/L	50.0		100	72-132			
Trichloroethylene	48.26	1.0	ug/L	50.0		96.5	71-135			
1,2-Dichloropropane	47.00	1.0	ug/L	50.0		94.0	69-136			
Dibromomethane	47.94	1.0	ug/L	50.0		95.9	73-147			
Bromodichloromethane	47.18	1.0	ug/L	50.0		94.4	68-129			
cis-1,3-Dichloropropene	45.37	1.0	ug/L	50.0		90.7	65-134			
4-Methyl-2-pentanone (MIBK)	92.21	5.0	ug/L	100		92.1	58-147			
Toluene	47.48	1.0	ug/L	50.0		95.0	72-133			
trans-1,3-Dichloropropene	47.00	1.0	ug/L	50.0		94.0	67-130			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
LCS (1HJ1146-BS1)			Prepared: 10/17/24 00:00 Analyzed: 10/17/24 12:24							
1,1,2-Trichloroethane	46.90	1.0	ug/L	50.0		93.8	69-135			
Tetrachloroethylene	53.06	1.0	ug/L	50.0		106	69-130			
2-Hexanone (MBK)	91.96	5.0	ug/L	99.3		92.6	55-144			
Dibromochloromethane	50.07	1.0	ug/L	50.0		100	73-127			
1,2-Dibromoethane	49.23	1.0	ug/L	50.0		98.5	67-132			
Chlorobenzene	49.33	1.0	ug/L	50.0		98.7	72-123			
1,1,1,2-Tetrachloroethane	51.55	1.0	ug/L	50.0		103	73-127			
Ethylbenzene	51.68	1.0	ug/L	50.0		103	71-127			
Xylenes, total	151.4	2.0	ug/L	150		101	74-127			
Styrene	51.75	1.0	ug/L	50.0		104	66-126			
Bromoform	50.94	1.0	ug/L	50.0		102	68-130			
1,2,3-Trichloropropane	50.33	1.0	ug/L	50.0		101	63-136			
trans-1,4-Dichloro-2-butene	90.69	5.0	ug/L	103		88.2	54-134			
1,1,2,2-Tetrachloroethane	48.37	1.0	ug/L	50.0		96.7	61-131			
1,4-Dichlorobenzene	48.28	1.0	ug/L	50.0		96.6	70-129			
1,2-Dichlorobenzene	49.05	1.0	ug/L	50.0		98.1	69-126			
1,2-Dibromo-3-chloropropane	47.32	5.0	ug/L	50.0		94.6	50-143			
Surrogate: Dibromofluoromethane	*43.9*		ug/L	*50.2*		*87.4*	*75-136*			
Surrogate: Dibromofluoromethane	*43.9*		ug/L	*50.2*		*87.4*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*44.5*		ug/L	*50.4*		*88.3*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*44.5*		ug/L	*50.4*		*88.3*	*53-140*			
Surrogate: Toluene-d8	*48.6*		ug/L	*50.5*		*96.3*	*82-121*			
Surrogate: Toluene-d8	*48.6*		ug/L	*50.5*		*96.3*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*49.9*		ug/L	*50.2*		*99.5*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*49.9*		ug/L	*50.2*		*99.5*	*78-121*			
LCS Dup (1HJ1146-BSD1)			Prepared: 10/17/24 00:00 Analyzed: 10/17/24 12:47							
Chloromethane	20.77	1.0	ug/L	30.0		69.2	63-155	5.93	24	
Vinyl Chloride	18.33	1.0	ug/L	30.0		61.1	70-154	7.26	25	Q3
Bromomethane	21.94	1.0	ug/L	30.0		73.1	52-176	6.06	27	
Chloroethane	22.36	1.0	ug/L	30.0		74.5	72-148	6.83	25	
Trichlorofluoromethane	21.96	1.0	ug/L	30.0		73.2	70-152	6.39	26	
1,1-Dichloroethylene	39.63	1.0	ug/L	50.0		79.3	70-148	6.71	24	
Acetone	83.77	10.0	ug/L	101		82.8	43-172	3.92	30	
Methyl Iodide	87.15	1.0	ug/L	102		85.5	69-170	3.18	30	
Carbon Disulfide	62.34	1.0	ug/L	103		60.7	72-162	5.89	24	Q3
Methylene Chloride	40.90	5.0	ug/L	50.0		81.8	68-142	4.54	21	
Acrylonitrile	71.48	5.0	ug/L	100		71.2	56-135	2.85	16	
trans-1,2-Dichloroethylene	41.35	1.0	ug/L	50.0		82.7	66-148	4.70	27	
1,1-Dichloroethane	41.05	1.0	ug/L	50.0		82.1	66-143	5.77	24	
Vinyl Acetate	88.51	5.0	ug/L	100		88.5	43-153	2.36	30	
cis-1,2-Dichloroethylene	41.23	1.0	ug/L	50.0		82.5	71-149	5.34	26	
2-Butanone (MEK)	82.57	10.0	ug/L	102		81.1	52-159	2.37	27	
Bromochloromethane	39.42	1.0	ug/L	50.0		78.8	69-143	4.61	23	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
LCS Dup (1HJ1146-BSD1)				Prepared: 10/17/24 00:00 Analyzed: 10/17/24 12:47						
Chloroform	42.01	1.0	ug/L	50.0		84.0	69-144	3.30	23	
1,1,1-Trichloroethane	42.17	1.0	ug/L	50.0		84.3	62-129	6.47	24	
Carbon Tetrachloride	43.63	1.0	ug/L	50.0		87.3	63-141	4.87	25	
Benzene	47.77	1.0	ug/L	50.0		95.5	71-134	2.34	24	
1,2-Dichloroethane	49.28	1.0	ug/L	50.0		98.6	72-132	1.45	24	
Trichloroethylene	47.60	1.0	ug/L	50.0		95.2	71-135	1.38	24	
1,2-Dichloropropane	46.40	1.0	ug/L	50.0		92.8	69-136	1.28	24	
Dibromomethane	48.60	1.0	ug/L	50.0		97.2	73-147	1.37	25	
Bromodichloromethane	47.34	1.0	ug/L	50.0		94.7	68-129	0.339	22	
cis-1,3-Dichloropropene	45.81	1.0	ug/L	50.0		91.6	65-134	0.965	23	
4-Methyl-2-pentanone (MIBK)	93.40	5.0	ug/L	100		93.3	58-147	1.28	27	
Toluene	46.62	1.0	ug/L	50.0		93.2	72-133	1.83	24	
trans-1,3-Dichloropropene	47.30	1.0	ug/L	50.0		94.6	67-130	0.636	24	
1,1,2-Trichloroethane	47.82	1.0	ug/L	50.0		95.6	69-135	1.94	23	
Tetrachloroethylene	52.04	1.0	ug/L	50.0		104	69-130	1.94	25	
2-Hexanone (MBK)	89.46	5.0	ug/L	99.3		90.1	55-144	2.76	25	
Dibromochloromethane	49.84	1.0	ug/L	50.0		99.7	73-127	0.460	22	
1,2-Dibromoethane	48.85	1.0	ug/L	50.0		97.7	67-132	0.775	24	
Chlorobenzene	48.81	1.0	ug/L	50.0		97.6	72-123	1.06	23	
1,1,1,2-Tetrachloroethane	51.08	1.0	ug/L	50.0		102	73-127	0.916	24	
Ethylbenzene	50.11	1.0	ug/L	50.0		100	71-127	3.08	26	
Xylenes, total	148.2	2.0	ug/L	150		98.8	74-127	2.12	25	
Styrene	51.63	1.0	ug/L	50.0		103	66-126	0.232	23	
Bromoform	50.91	1.0	ug/L	50.0		102	68-130	0.0589	23	
1,2,3-Trichloropropane	49.63	1.0	ug/L	50.0		99.3	63-136	1.40	24	
trans-1,4-Dichloro-2-butene	89.77	5.0	ug/L	103		87.3	54-134	1.02	27	
1,1,2,2-Tetrachloroethane	47.67	1.0	ug/L	50.0		95.3	61-131	1.46	29	
1,4-Dichlorobenzene	49.48	1.0	ug/L	50.0		99.0	70-129	2.45	24	
1,2-Dichlorobenzene	50.70	1.0	ug/L	50.0		101	69-126	3.31	26	
1,2-Dibromo-3-chloropropane	47.58	5.0	ug/L	50.0		95.2	50-143	0.548	30	
Surrogate: Dibromofluoromethane	*42.8*		ug/L	*50.2*		*85.3*	*75-136*			
Surrogate: Dibromofluoromethane	*42.8*		ug/L	*50.2*		*85.3*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*43.2*		ug/L	*50.4*		*85.8*	*61-142*			
Surrogate: 1,2-Dichloroethane-d4	*43.2*		ug/L	*50.4*		*85.8*	*53-140*			
Surrogate: Toluene-d8	*49.0*		ug/L	*50.5*		*97.0*	*82-121*			
Surrogate: Toluene-d8	*49.0*		ug/L	*50.5*		*97.0*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*80-116*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*78-121*			
Matrix Spike (1HJ1146-MS1)	**Source: 1HJ1078-08RE1**			Prepared: 10/17/24 00:00 Analyzed: 10/17/24 16:53						
Chloromethane	225.5	10.0	ug/L	300	ND	75.2	61-152			
Vinyl Chloride	210.2	10.0	ug/L	300	ND	70.1	66-149			
Bromomethane	239.1	10.0	ug/L	300	ND	79.7	43-171			
Chloroethane	243.7	10.0	ug/L	300	ND	81.2	69-148			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
Matrix Spike (1HJ1146-MS1)	**Source: 1HJ1078-08RE1** Prepared: 10/17/24 00:00 Analyzed: 10/17/24 16:53									
Trichlorofluoromethane	248.4	10.0	ug/L	300	ND	82.8	62-163			
1,1-Dichloroethylene	431.5	10.0	ug/L	500	ND	86.3	70-148			
Acetone	805.9	100	ug/L	1010	ND	79.6	45-173			
Methyl Iodide	900.3	10.0	ug/L	1020	ND	88.4	62-167			
Carbon Disulfide	664.5	10.0	ug/L	1030	ND	64.7	71-163			M2
Methylene Chloride	470.1	50.0	ug/L	500	ND	94.0	69-140			
Acrylonitrile	617.8	50.0	ug/L	1000	ND	61.5	38-147			
trans-1,2-Dichloroethylene	429.9	10.0	ug/L	500	ND	86.0	69-144			
1,1-Dichloroethane	422.0	10.0	ug/L	500	ND	84.4	70-138			
Vinyl Acetate	798.4	50.0	ug/L	1000	ND	79.8	58-142			
cis-1,2-Dichloroethylene	415.4	10.0	ug/L	500	ND	83.1	68-151			
2-Butanone (MEK)	620.4	100	ug/L	1020	ND	60.9	50-160			
Bromochloromethane	396.5	10.0	ug/L	500	ND	79.3	65-143			
Chloroform	429.6	10.0	ug/L	500	ND	85.9	71-143			
1,1,1-Trichloroethane	430.4	10.0	ug/L	500	ND	86.1	63-133			
Carbon Tetrachloride	438.3	10.0	ug/L	500	ND	87.7	63-142			
Benzene	463.9	10.0	ug/L	500	ND	92.8	69-133			
1,2-Dichloroethane	461.9	10.0	ug/L	500	ND	92.4	63-138			
Trichloroethylene	455.7	10.0	ug/L	500	ND	91.1	71-133			
1,2-Dichloropropane	440.8	10.0	ug/L	500	ND	88.2	69-132			
Dibromomethane	431.3	10.0	ug/L	500	ND	86.3	70-147			
Bromodichloromethane	443.1	10.0	ug/L	500	ND	88.6	67-130			
cis-1,3-Dichloropropene	427.1	10.0	ug/L	500	ND	85.4	61-126			
4-Methyl-2-pentanone (MIBK)	713.1	50.0	ug/L	1000	ND	71.2	55-147			
Toluene	440.5	10.0	ug/L	500	ND	88.1	71-133			
trans-1,3-Dichloropropene	429.1	10.0	ug/L	500	ND	85.8	63-124			
1,1,2-Trichloroethane	422.5	10.0	ug/L	500	ND	84.5	69-133			
Tetrachloroethylene	507.8	10.0	ug/L	500	ND	102	70-124			
2-Hexanone (MBK)	718.3	50.0	ug/L	993	ND	72.3	53-141			
Dibromochloromethane	458.4	10.0	ug/L	500	ND	91.7	74-122			
1,2-Dibromoethane	443.5	10.0	ug/L	500	ND	88.7	66-127			
Chlorobenzene	464.6	10.0	ug/L	500	ND	92.9	76-116			
1,1,1,2-Tetrachloroethane	491.0	10.0	ug/L	500	ND	98.2	77-121			
Ethylbenzene	485.6	10.0	ug/L	500	ND	97.1	73-124			
Xylenes, total	1433	20.0	ug/L	1500	ND	95.5	75-123			
Styrene	486.4	10.0	ug/L	500	ND	97.3	70-120			
Bromoform	433.3	10.0	ug/L	500	ND	86.7	70-124			
1,2,3-Trichloropropane	393.6	10.0	ug/L	500	ND	78.7	62-135			
trans-1,4-Dichloro-2-butene	694.5	50.0	ug/L	1030	ND	67.6	50-120			
1,1,2,2-Tetrachloroethane	396.6	10.0	ug/L	500	ND	79.3	63-126			
1,4-Dichlorobenzene	457.0	10.0	ug/L	500	ND	91.4	72-119			
1,2-Dichlorobenzene	462.4	10.0	ug/L	500	ND	92.5	71-117			
1,2-Dibromo-3-chloropropane	345.8	50.0	ug/L	500	ND	69.2	49-134			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
Matrix Spike (1HJ1146-MS1)	**Source: 1HJ1078-08RE1** Prepared: 10/17/24 00:00 Analyzed: 10/17/24 16:53									
Surrogate: Dibromofluoromethane	*443*		ug/L	*502*		*88.2*	*57-134*			
Surrogate: Dibromofluoromethane	*443*		ug/L	*502*		*88.2*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*434*		ug/L	*504*		*86.1*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*434*		ug/L	*504*		*86.1*	*61-142*			
Surrogate: Toluene-d8	*477*		ug/L	*505*		*94.6*	*86-114*			
Surrogate: Toluene-d8	*477*		ug/L	*505*		*94.6*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*494*		ug/L	*502*		*98.5*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*494*		ug/L	*502*		*98.5*	*80-116*			
Matrix Spike Dup (1HJ1146-MSD1)	**Source: 1HJ1078-08RE1** Prepared: 10/17/24 00:00 Analyzed: 10/17/24 17:16									
Chloromethane	201.8	10.0	ug/L	300	ND	67.3	61-152	11.1	26	
Vinyl Chloride	186.1	10.0	ug/L	300	ND	62.0	66-149	12.2	23	M2
Bromomethane	217.1	10.0	ug/L	300	ND	72.4	43-171	9.64	29	
Chloroethane	221.4	10.0	ug/L	300	ND	73.8	69-148	9.59	25	
Trichlorofluoromethane	222.9	10.0	ug/L	300	ND	74.3	62-163	10.8	25	
1,1-Dichloroethylene	401.7	10.0	ug/L	500	ND	80.3	70-148	7.15	22	
Acetone	1011	100	ug/L	1010	ND	99.9	45-173	22.6	30	
Methyl Iodide	871.2	10.0	ug/L	1020	ND	85.5	62-167	3.29	24	
Carbon Disulfide	625.0	10.0	ug/L	1030	ND	60.9	71-163	6.13	22	M2
Methylene Chloride	461.0	50.0	ug/L	500	ND	92.2	69-140	1.95	19	
Acrylonitrile	728.5	50.0	ug/L	1000	ND	72.6	38-147	16.4	30	
trans-1,2-Dichloroethylene	414.1	10.0	ug/L	500	ND	82.8	69-144	3.74	22	
1,1-Dichloroethane	418.5	10.0	ug/L	500	ND	83.7	70-138	0.833	20	
Vinyl Acetate	861.9	50.0	ug/L	1000	ND	86.2	58-142	7.65	24	
cis-1,2-Dichloroethylene	420.4	10.0	ug/L	500	ND	84.1	68-151	1.20	22	
2-Butanone (MEK)	845.9	100	ug/L	1020	ND	83.1	50-160	30.8	23	R1
Bromochloromethane	411.0	10.0	ug/L	500	ND	82.2	65-143	3.59	22	
Chloroform	433.2	10.0	ug/L	500	ND	86.6	71-143	0.834	21	
1,1,1-Trichloroethane	425.1	10.0	ug/L	500	ND	85.0	63-133	1.24	23	
Carbon Tetrachloride	445.2	10.0	ug/L	500	ND	89.0	63-142	1.56	22	
Benzene	469.4	10.0	ug/L	500	ND	93.9	69-133	1.18	18	
1,2-Dichloroethane	482.1	10.0	ug/L	500	ND	96.4	63-138	4.28	20	
Trichloroethylene	462.7	10.0	ug/L	500	ND	92.5	71-133	1.52	23	
1,2-Dichloropropane	457.7	10.0	ug/L	500	ND	91.5	69-132	3.76	20	
Dibromomethane	464.8	10.0	ug/L	500	ND	93.0	70-147	7.48	22	
Bromodichloromethane	458.4	10.0	ug/L	500	ND	91.7	67-130	3.39	21	
cis-1,3-Dichloropropene	442.6	10.0	ug/L	500	ND	88.5	61-126	3.56	21	
4-Methyl-2-pentanone (MIBK)	918.4	50.0	ug/L	1000	ND	91.7	55-147	25.2	23	R1
Toluene	457.3	10.0	ug/L	500	ND	91.5	71-133	3.74	19	
trans-1,3-Dichloropropene	464.1	10.0	ug/L	500	ND	92.8	63-124	7.84	21	
1,1,2-Trichloroethane	461.8	10.0	ug/L	500	ND	92.4	69-133	8.89	19	
Tetrachloroethylene	501.7	10.0	ug/L	500	ND	100	70-124	1.21	24	
2-Hexanone (MBK)	931.2	50.0	ug/L	993	ND	93.8	53-141	25.8	24	R1
Dibromochloromethane	483.5	10.0	ug/L	500	ND	96.7	74-122	5.33	21	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1146 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HJ1146-MSD1)	**Source: 1HJ1078-08RE1**	Prepared: 10/17/24 00:00 Analyzed: 10/17/24 17:16								
1,2-Dibromoethane	481.8	10.0	ug/L	500	ND	96.4	66-127	8.28	23	
Chlorobenzene	477.1	10.0	ug/L	500	ND	95.4	76-116	2.65	21	
1,1,1,2-Tetrachloroethane	497.9	10.0	ug/L	500	ND	99.6	77-121	1.40	25	
Ethylbenzene	486.1	10.0	ug/L	500	ND	97.2	73-124	0.103	20	
Xylenes, total	1448	20.0	ug/L	1500	ND	96.6	75-123	1.08	20	
Styrene	502.0	10.0	ug/L	500	ND	100	70-120	3.16	23	
Bromoform	497.7	10.0	ug/L	500	ND	99.5	70-124	13.8	22	
1,2,3-Trichloropropane	481.2	10.0	ug/L	500	ND	96.2	62-135	20.0	28	
trans-1,4-Dichloro-2-butene	890.9	50.0	ug/L	1030	ND	86.7	50-120	24.8	26	
1,1,2,2-Tetrachloroethane	478.3	10.0	ug/L	500	ND	95.7	63-126	18.7	24	
1,4-Dichlorobenzene	469.0	10.0	ug/L	500	ND	93.8	72-119	2.59	24	
1,2-Dichlorobenzene	474.8	10.0	ug/L	500	ND	95.0	71-117	2.65	24	
1,2-Dibromo-3-chloropropane	458.8	50.0	ug/L	500	ND	91.8	49-134	28.1	28	R1
Surrogate: Dibromofluoromethane	*441*		ug/L	*502*		*87.8*	*57-134*			
Surrogate: Dibromofluoromethane	*441*		ug/L	*502*		*87.8*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*441*		ug/L	*504*		*87.6*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*441*		ug/L	*504*		*87.6*	*61-142*			
Surrogate: Toluene-d8	*489*		ug/L	*505*		*96.9*	*86-114*			
Surrogate: Toluene-d8	*489*		ug/L	*505*		*96.9*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*498*		ug/L	*502*		*99.2*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*498*		ug/L	*502*		*99.2*	*80-116*			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1014 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HJ1014-BLK1)		Prepared: 10/17/24 07:59 Analyzed: 10/18/24 16:52								
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HJ1014-BS1)		Prepared: 10/17/24 07:59 Analyzed: 10/18/24 16:59								

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1014 - EPA 3005A Total Recoverable Metals - EPA 6020A										
LCS (1HJ1014-BS1)			Prepared: 10/17/24 07:59 Analyzed: 10/18/24 16:59							
Antimony, total	0.0949	0.0020	mg/L	0.100		94.9	80-120			
Arsenic, total	0.0935	0.0040	mg/L	0.100		93.5	80-120			
Barium, total	0.101	0.0040	mg/L	0.100		101	80-120			
Beryllium, total	0.100	0.0040	mg/L	0.100		100	80-120			
Cadmium, total	0.0964	0.0008	mg/L	0.100		96.4	80-120			
Chromium, total	0.0941	0.0080	mg/L	0.100		94.1	80-120			
Cobalt, total	0.0947	0.0004	mg/L	0.100		94.7	80-120			
Copper, total	0.0949	0.0040	mg/L	0.100		94.9	80-120			
Lead, total	0.0962	0.0040	mg/L	0.100		96.2	80-120			
Nickel, total	0.0946	0.0040	mg/L	0.100		94.6	80-120			
Selenium, total	0.0939	0.0040	mg/L	0.100		93.9	80-120			
Silver, total	0.0953	0.0040	mg/L	0.100		95.3	80-120			
Thallium, total	0.0915	0.0020	mg/L	0.100		91.5	80-120			
Vanadium, total	0.0934	0.0200	mg/L	0.100		93.4	80-120			
Zinc, total	0.0969	0.0200	mg/L	0.100		96.9	80-120			
Matrix Spike (1HJ1014-MS1)	**Source: 1HJ1141-02**		Prepared: 10/17/24 07:59 Analyzed: 10/22/24 14:01							
Antimony, total	0.0964	0.0020	mg/L	0.100	ND	96.4	75-125			
Arsenic, total	0.103	0.0040	mg/L	0.100	0.0028	100	75-125			
Barium, total	0.130	0.0040	mg/L	0.100	0.0260	104	75-125			
Beryllium, total	0.0892	0.0040	mg/L	0.100	ND	89.2	75-125			
Cadmium, total	0.0916	0.0008	mg/L	0.100	ND	91.6	75-125			
Chromium, total	0.0893	0.0080	mg/L	0.100	0.0008	88.5	75-125			
Cobalt, total	0.0964	0.0004	mg/L	0.100	ND	96.4	75-125			
Copper, total	0.0908	0.0040	mg/L	0.100	0.0014	89.4	75-125			
Lead, total	0.0913	0.0040	mg/L	0.100	ND	91.3	75-125			
Nickel, total	0.102	0.0040	mg/L	0.100	0.0096	92.0	75-125			
Selenium, total	0.0937	0.0040	mg/L	0.100	ND	93.7	75-125			
Silver, total	0.0937	0.0040	mg/L	0.100	ND	93.7	75-125			
Thallium, total	0.0944	0.0020	mg/L	0.100	0.0003	94.1	75-125			
Vanadium, total	0.100	0.0200	mg/L	0.100	ND	100	75-125			
Zinc, total	0.215	0.0200	mg/L	0.100	ND	215	75-125			M1
Matrix Spike Dup (1HJ1014-MSD1)	**Source: 1HJ1141-02**		Prepared: 10/17/24 07:59 Analyzed: 10/22/24 14:08							
Antimony, total	0.0851	0.0020	mg/L	0.100	ND	85.1	75-125	12.4	20	
Arsenic, total	0.0919	0.0040	mg/L	0.100	0.0028	89.1	75-125	11.2	20	
Barium, total	0.116	0.0040	mg/L	0.100	0.0260	89.7	75-125	11.4	20	
Beryllium, total	0.0779	0.0040	mg/L	0.100	ND	77.9	75-125	13.5	20	
Cadmium, total	0.0837	0.0008	mg/L	0.100	ND	83.7	75-125	9.01	20	
Chromium, total	0.0822	0.0080	mg/L	0.100	0.0008	81.4	75-125	8.24	20	
Cobalt, total	0.0862	0.0004	mg/L	0.100	ND	86.2	75-125	11.2	20	
Copper, total	0.0808	0.0040	mg/L	0.100	0.0014	79.5	75-125	11.6	20	
Lead, total	0.0824	0.0040	mg/L	0.100	ND	82.4	75-125	10.3	20	
Nickel, total	0.0922	0.0040	mg/L	0.100	0.0096	82.6	75-125	9.71	20	
Selenium, total	0.0888	0.0040	mg/L	0.100	ND	88.8	75-125	5.37	20	

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1014 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Matrix Spike Dup (1HJ1014-MSD1)	**Source: 1HJ1141-02**		Prepared: 10/17/24 07:59 Analyzed: 10/22/24 14:08							
Silver, total	0.0835	0.0040	mg/L	0.100	ND	83.5	75-125	11.5	20	
Thallium, total	0.0840	0.0020	mg/L	0.100	0.0003	83.7	75-125	11.7	20	
Vanadium, total	0.0901	0.0200	mg/L	0.100	ND	90.1	75-125	10.6	20	
Zinc, total	0.0862	0.0200	mg/L	0.100	ND	86.2	75-125	85.7	20	R1
Post Spike (1HJ1014-PS1)	**Source: 1HJ1141-02**		Prepared: 10/17/24 07:59 Analyzed: 10/22/24 14:14							
Antimony, total	0.0777		mg/L	0.0800	0.0001	97.0	80-120			
Arsenic, total	0.0831		mg/L	0.0800	0.0027	100	80-120			
Barium, total	0.104		mg/L	0.0800	0.0255	97.9	80-120			
Beryllium, total	0.0715		mg/L	0.0800	0.00002	89.3	80-120			
Cadmium, total	0.0740		mg/L	0.0800	0.00006	92.4	80-120			
Chromium, total	0.0726		mg/L	0.0800	0.0008	89.8	80-120			
Cobalt, total	0.0774		mg/L	0.0800	0.00008	96.7	80-120			
Copper, total	0.0734		mg/L	0.0800	0.0013	90.1	80-120			
Lead, total	0.0739		mg/L	0.0800	0.0001	92.2	80-120			
Nickel, total	0.0829		mg/L	0.0800	0.0094	91.8	80-120			
Selenium, total	0.0759		mg/L	0.0800	0.00002	94.9	80-120			
Silver, total	0.0744		mg/L	0.0800	0.0002	92.8	80-120			
Thallium, total	0.0761		mg/L	0.0800	0.0003	94.7	80-120			
Vanadium, total	0.0837		mg/L	0.0800	0.0073	95.5	80-120			
Zinc, total	0.0781		mg/L	0.0800	0.0099	85.2	80-120			

Definitions

M1: Matrix spike recovery is above acceptance limits.

M2: Matrix spike recovery is below acceptance limits.

Q3: LCS recovery is below acceptance limits. The reported value is estimated.

R1: Duplicate RPD is outside acceptance criteria.

RL: Reporting Limit

RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler   Temp: 1.4°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Tisdale

Heather Tisdale
Customer Relationship Specialist
10/25/24 16:10

CHAIN OF CUSTODY RECORD

MICROBAC®
600 East 17th Street S
Newton, IA 50208
641-792-8451

1 H J 1 1 4 1
HLW Engineering
PM: Heather Murphy

Printed: 10/3/2024 2:46:32P
www.keystonelabs.com

SITE INFORMATION

Sampler: TODD WHIPPLE
Project: NCIRSWA - New Regs
6030

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE

Lori Lindstrom
NCIRSWA Landfill
2151 Gypsum Hollow Road
Fort Dodge, IA 50501

SPECIAL INSTRUCTIONS

None

Turn Around Time
☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order: 1HJ1141
Temperature: 1.4
Turn-Cooler: No

☐ Custody Seal
☑ Containers Intact
☑ COC/Labels Agree
☐ Preservation Confirmed
☒ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses		Lab Sample Number
-001	MW-10A	Aqueous	GRAB	10/11/24	10:47	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	01
-001	MW-10B	Aqueous	GRAB	10/11/24	10:56	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	02
-001	MW-18	Aqueous	GRAB	10/11/24	11:10	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	03
-001	MW-19 Buried	Aqueous	GRAB	10/11/24	—	0	lndfill-app1-voc-group	lndfll-app1-metals-6020	~~04~~ EF amp
-001	MW-20	Aqueous	GRAB	10/11/24	11:33	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	04
-001	MW-21R	Aqueous	GRAB	10/11/24	11:47	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	05
-001	MW-22	Aqueous	GRAB	10/11/24	11:58	7	lndfill-app1-voc-group	lndfll-app1-metals-6020	06

Relinquished By: Todd Whipple Date/Time: 10/14/24
Relinquished By: Date/Time:
Received By: Date/Time:
Received for Lab By: Schober Date/Time: 10/14/24 11:12

Remarks:

Original - Lab Copy Yellow - Sampler Copy

CHAIN OF CUSTODY RECORD

MICROBAC®
600 East 17th Street So
Newton, IA 50208
641-792-8451

1 H J 1 1 4 1
HLW Engineering
PM: Heather Murphy

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www.keystonelabs.com

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: NCIRSWA - New Regs
6030

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

Lori Lindstrom
NCIRSWA Landfill
2151 Gypsum Hollow Road
Fort Dodge, IA 50501

SPECIAL INSTRUCTIONS

None

Turn Around Time
☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order: 1HJ1141
Temperature: 1.4
Turn-Cooler: No

☐ Custody Seal
☑ Containers Intact
☑ COC/Labels Agree
☐ Preservation Confirmed
☒ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses		Lab Sample Number
-001	MW-30	Aqueous	GRAB	10/11/24	8:01	7	lndfll-app1-voc-group	lndfll-app1-metals-6020	07
-001	GU-4	Aqueous	GRAB	10/11/24	8:26	1	~~lndfll-app1-voc-group~~	lndfll-app1-metals-6020	08
-001	GU-5	Aqueous	GRAB	10/11/24	9:05	1	~~lndfll-app1-voc-group~~	lndfll-app1-metals-6020	09
-001	Duplicate	Aqueous	GRAB	10/11/24	✓	1	~~lndfll-app1-voc-group~~	lndfll-app1-metals-6020	10
-001	MW-25	Aqueous	GRAB	10/11/24	9:44	7	lndfll-app1-voc-group	lndfll-app1-metals-6020	11
-001	MW-28	Aqueous	GRAB	10/11/24	9:57	7	lndfll-app1-voc-group	lndfll-app1-metals-6020	12

Relinquished By: Todd Whipple Date/Time: 10/14/24

Relinquished By: Date/Time:

Received By: Date/Time:

Received for Lab By: Schober Date/Time: 10/14/24 11:12

Remarks:

Original - Lab Copy Yellow - Sampler Copy

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ1544

Project Description

6030

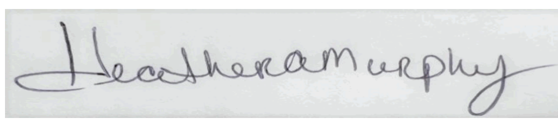
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Monday, October 28, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc.

600 East 17th Street South | Newton, IA 50208 | 641-792-8451 p | www.microbac.com

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ1544

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 10/18/2024
Reported: 10/28/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-31	1HJ1544-01	Aqueous	GRAB		10/16/24 07:25	10/18/24 09:40
MW-32	1HJ1544-02	Aqueous	GRAB		10/16/24 07:37	10/18/24 09:40

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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HJ1544

Analytical Testing Parameters

Client Sample ID:	MW-31		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1544-01	**Collection Date:**	10/16/2024 7:25

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Acetone	<10.0	10.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Chloroform	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Benzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Toluene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Styrene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM

Client Sample ID:	MW-31			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1544-01		**Collection Date:**	10/16/2024 7:25

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
Bromoform	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: Dibromofluoromethane	94.4	Limit: 75-136	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: Dibromofluoromethane	94.4	Limit: 57-134	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 61-142	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 53-140	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: Toluene-d8	95.2	Limit: 86-114	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: Toluene-d8	95.2	Limit: 82-121	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: 4-Bromofluorobenzene	99.7	Limit: 78-121	% Rec	1		10/23/24 0000	10/23/24 1813	CSM
Surrogate: 4-Bromofluorobenzene	99.7	Limit: 80-116	% Rec	1		10/23/24 0000	10/23/24 1813	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Barium, total	**0.0635**	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Cobalt, total	**0.0070**	0.0004	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Nickel, total	**0.0228**	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/24/24 0758	10/24/24 1758	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/24/24 0758	10/24/24 1758	RVV

Client Sample ID:	MW-32			
Sample Matrix:	Aqueous		**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1544-02		**Collection Date:**	10/16/2024 7:37

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Bromomethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Chloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Acetone	<10.0	10.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Chloroform	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Benzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Dibromomethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Toluene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Xylenes, total	<2.0	2.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Styrene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Bromoform	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM

Client Sample ID:	MW-32		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HJ1544-02	**Collection Date:**	10/16/2024 7:37

Determination of Volatile Organic Compounds	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: Dibromofluoromethane	95.0	Limit: 75-136	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: Dibromofluoromethane	95.0	Limit: 57-134	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: 1,2-Dichloroethane-d4	103	Limit: 61-142	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: 1,2-Dichloroethane-d4	103	Limit: 53-140	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: Toluene-d8	94.6	Limit: 82-121	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: Toluene-d8	94.6	Limit: 86-114	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: 4-Bromofluorobenzene	99.1	Limit: 80-116	% Rec	1		10/23/24 0000	10/23/24 1836	CSM
Surrogate: 4-Bromofluorobenzene	99.1	Limit: 78-121	% Rec	1		10/23/24 0000	10/23/24 1836	CSM

Determination of Total Metals	**Result**	**RL**	**Units**	**DF**	**Note**	**Prepared**	**Analyzed**	**Analyst**
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Barium, total	**0.0721**	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Cobalt, total	**0.0307**	0.0004	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Copper, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Lead, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Nickel, total	**0.0515**	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Silver, total	<0.0040	0.0040	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		10/24/24 0758	10/24/24 1804	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		10/24/24 0758	10/24/24 1804	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HJ1462	1HJ1462-BLK1	
		1HJ1462-BS1	
		1HJ1544-01	MW-31
		1HJ1544-02	MW-32
		1HJ1462-MS1	1HJ1617-01
		1HJ1462-PS1	1HJ1617-01
		1HJ1462-MSD1	1HJ1617-01
		1HJ1462-PS1	1HJ1617-01

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260B	1HJ1517	1HJ1517-BS1	
		1HJ1517-BSD1	
		1HJ1517-BLK1	
		1HJ1544-01	MW-31
		1HJ1544-02	MW-32
		1HJ1517-MS1	1HJ1633-03
		1HJ1517-MSD1	1HJ1633-03

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
Blank (1HJ1517-BLK1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 15:48							
Chloromethane	<1.0	1.0	ug/L							
Vinyl Chloride	<1.0	1.0	ug/L							
Bromomethane	<1.0	1.0	ug/L							
Chloroethane	<1.0	1.0	ug/L							
Trichlorofluoromethane	<1.0	1.0	ug/L							
1,1-Dichloroethylene	<1.0	1.0	ug/L							
Acetone	<10.0	10.0	ug/L							
Methyl Iodide	<1.0	1.0	ug/L							
Carbon Disulfide	<1.0	1.0	ug/L							
Methylene Chloride	<5.0	5.0	ug/L							
Acrylonitrile	<5.0	5.0	ug/L							
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Vinyl Acetate	<5.0	5.0	ug/L							
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L							
2-Butanone (MEK)	<10.0	10.0	ug/L							
Bromochloromethane	<1.0	1.0	ug/L							
Chloroform	<1.0	1.0	ug/L							

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
Blank (1HJ1517-BLK1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 15:48							
1,1,1-Trichloroethane	<1.0	1.0	ug/L							
Carbon Tetrachloride	<1.0	1.0	ug/L							
Benzene	<1.0	1.0	ug/L							
1,2-Dichloroethane	<1.0	1.0	ug/L							
Trichloroethylene	<1.0	1.0	ug/L							
1,2-Dichloropropane	<1.0	1.0	ug/L							
Dibromomethane	<1.0	1.0	ug/L							
Bromodichloromethane	<1.0	1.0	ug/L							
cis-1,3-Dichloropropene	<1.0	1.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L							
Toluene	<1.0	1.0	ug/L							
trans-1,3-Dichloropropene	<1.0	1.0	ug/L							
1,1,2-Trichloroethane	<1.0	1.0	ug/L							
Tetrachloroethylene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<5.0	5.0	ug/L							
Dibromochloromethane	<1.0	1.0	ug/L							
1,2-Dibromoethane	<1.0	1.0	ug/L							
Chlorobenzene	<1.0	1.0	ug/L							
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L							
Ethylbenzene	<1.0	1.0	ug/L							
Xylenes, total	<2.0	2.0	ug/L							
Styrene	<1.0	1.0	ug/L							
Bromoform	<1.0	1.0	ug/L							
1,2,3-Trichloropropane	<1.0	1.0	ug/L							
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L							
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L							
1,4-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L							
Surrogate: Dibromofluoromethane	*47.5*		ug/L	*50.2*		*94.6*	*57-134*			
Surrogate: Dibromofluoromethane	*47.5*		ug/L	*50.2*		*94.6*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*50.8*		ug/L	*50.4*		*101*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*50.8*		ug/L	*50.4*		*101*	*61-142*			
Surrogate: Toluene-d8	*47.8*		ug/L	*50.5*		*94.7*	*86-114*			
Surrogate: Toluene-d8	*47.8*		ug/L	*50.5*		*94.7*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*49.9*		ug/L	*50.2*		*99.4*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*49.9*		ug/L	*50.2*		*99.4*	*80-116*			
LCS (1HJ1517-BS1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 14:41							
Chloromethane	35.40	1.0	ug/L	30.3		117	63-155			
Vinyl Chloride	35.61	1.0	ug/L	30.2		118	70-154			
Bromomethane	38.05	1.0	ug/L	30.1		126	52-176			
Chloroethane	28.14	1.0	ug/L	30.3		92.8	72-148			
Trichlorofluoromethane	27.24	1.0	ug/L	30.3		89.9	70-152			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
LCS (1HJ1517-BS1)				Prepared: 10/23/24 00:00 Analyzed: 10/23/24 14:41						
1,1-Dichloroethylene	46.21	1.0	ug/L	50.1		92.2	70-148			
Acetone	89.83	10.0	ug/L	100		89.8	43-172			
Methyl Iodide	87.27	1.0	ug/L	100		87.3	69-170			
Carbon Disulfide	83.54	1.0	ug/L	100		83.5	72-162			
Methylene Chloride	44.70	5.0	ug/L	50.1		89.2	68-142			
Acrylonitrile	36.52	5.0	ug/L	50.2		72.7	56-135			
trans-1,2-Dichloroethylene	47.38	1.0	ug/L	50.1		94.6	66-148			
1,1-Dichloroethane	46.66	1.0	ug/L	50.1		93.1	66-143			
Vinyl Acetate	134.3	5.0	ug/L	156		86.2	43-153			
cis-1,2-Dichloroethylene	47.08	1.0	ug/L	50.4		93.5	71-149			
2-Butanone (MEK)	76.94	10.0	ug/L	100		76.9	52-159			
Bromochloromethane	46.35	1.0	ug/L	50.4		92.0	69-143			
Chloroform	45.57	1.0	ug/L	50.1		91.0	69-144			
1,1,1-Trichloroethane	45.87	1.0	ug/L	50.1		91.5	62-129			
Carbon Tetrachloride	46.22	1.0	ug/L	50.1		92.3	63-141			
Benzene	49.62	1.0	ug/L	50.4		98.4	71-134			
1,2-Dichloroethane	50.74	1.0	ug/L	50.1		101	72-132			
Trichloroethylene	48.04	1.0	ug/L	50.1		95.9	71-135			
1,2-Dichloropropane	48.22	1.0	ug/L	50.1		96.3	69-136			
Dibromomethane	45.88	1.0	ug/L	50.4		91.1	73-147			
Bromodichloromethane	47.45	1.0	ug/L	50.1		94.7	68-129			
cis-1,3-Dichloropropene	46.32	1.0	ug/L	50.1		92.5	65-134			
4-Methyl-2-pentanone (MIBK)	88.52	5.0	ug/L	100		88.5	58-147			
Toluene	47.79	1.0	ug/L	50.5		94.7	72-133			
trans-1,3-Dichloropropene	45.61	1.0	ug/L	50.1		91.1	67-130			
1,1,2-Trichloroethane	45.10	1.0	ug/L	50.1		90.0	69-135			
Tetrachloroethylene	49.26	1.0	ug/L	50.1		98.3	69-130			
2-Hexanone (MBK)	86.67	5.0	ug/L	100		86.7	55-144			
Dibromochloromethane	47.51	1.0	ug/L	50.1		94.9	73-127			
1,2-Dibromoethane	46.14	1.0	ug/L	50.2		91.9	67-132			
Chlorobenzene	48.53	1.0	ug/L	50.1		96.9	72-123			
1,1,1,2-Tetrachloroethane	49.21	1.0	ug/L	50.3		97.7	73-127			
Ethylbenzene	51.30	1.0	ug/L	50.2		102	71-127			
Xylenes, total	148.1	2.0	ug/L	151		98.0	74-127			
Styrene	50.16	1.0	ug/L	50.4		99.6	66-126			
Bromoform	45.02	1.0	ug/L	50.1		89.8	68-130			
1,2,3-Trichloropropane	44.34	1.0	ug/L	50.3		88.1	63-136			
trans-1,4-Dichloro-2-butene	93.16	5.0	ug/L	100		93.2	54-134			
1,1,2,2-Tetrachloroethane	43.80	1.0	ug/L	50.1		87.4	61-131			
1,4-Dichlorobenzene	47.15	1.0	ug/L	50.1		94.1	70-129			
1,2-Dichlorobenzene	46.26	1.0	ug/L	50.1		92.3	69-126			
1,2-Dibromo-3-chloropropane	35.99	5.0	ug/L	50.1		71.8	50-143			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
LCS (1HJ1517-BS1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 14:41							
Surrogate: Dibromofluoromethane	*46.5*		ug/L	*50.2*		*92.7*	*57-134*			
Surrogate: Dibromofluoromethane	*46.5*		ug/L	*50.2*		*92.7*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*48.2*		ug/L	*50.4*		*95.7*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*48.2*		ug/L	*50.4*		*95.7*	*61-142*			
Surrogate: Toluene-d8	*49.3*		ug/L	*50.5*		*97.7*	*86-114*			
Surrogate: Toluene-d8	*49.3*		ug/L	*50.5*		*97.7*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*80-116*			
LCS Dup (1HJ1517-BSD1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 15:03							
Chloromethane	34.61	1.0	ug/L	30.3		114	63-155	2.26	24	
Vinyl Chloride	34.44	1.0	ug/L	30.2		114	70-154	3.34	25	
Bromomethane	37.51	1.0	ug/L	30.1		125	52-176	1.43	27	
Chloroethane	27.84	1.0	ug/L	30.3		91.8	72-148	1.07	25	
Trichlorofluoromethane	26.64	1.0	ug/L	30.3		87.9	70-152	2.23	26	
1,1-Dichloroethylene	45.54	1.0	ug/L	50.1		90.9	70-148	1.46	24	
Acetone	108.4	10.0	ug/L	100		108	43-172	18.8	30	
Methyl Iodide	86.62	1.0	ug/L	100		86.6	69-170	0.748	30	
Carbon Disulfide	82.34	1.0	ug/L	100		82.3	72-162	1.45	24	
Methylene Chloride	45.42	5.0	ug/L	50.1		90.6	68-142	1.60	21	
Acrylonitrile	42.39	5.0	ug/L	50.2		84.4	56-135	14.9	16	
trans-1,2-Dichloroethylene	47.64	1.0	ug/L	50.1		95.1	66-148	0.547	27	
1,1-Dichloroethane	47.82	1.0	ug/L	50.1		95.4	66-143	2.46	24	
Vinyl Acetate	147.8	5.0	ug/L	156		94.9	43-153	9.59	30	
cis-1,2-Dichloroethylene	48.41	1.0	ug/L	50.4		96.1	71-149	2.79	26	
2-Butanone (MEK)	98.33	10.0	ug/L	100		98.3	52-159	24.4	27	
Bromochloromethane	48.44	1.0	ug/L	50.4		96.1	69-143	4.41	23	
Chloroform	47.10	1.0	ug/L	50.1		94.0	69-144	3.30	23	
1,1,1-Trichloroethane	46.78	1.0	ug/L	50.1		93.3	62-129	1.96	24	
Carbon Tetrachloride	47.34	1.0	ug/L	50.1		94.5	63-141	2.39	25	
Benzene	51.27	1.0	ug/L	50.4		102	71-134	3.27	24	
1,2-Dichloroethane	53.94	1.0	ug/L	50.1		108	72-132	6.11	24	
Trichloroethylene	49.62	1.0	ug/L	50.1		99.1	71-135	3.24	24	
1,2-Dichloropropane	50.64	1.0	ug/L	50.1		101	69-136	4.90	24	
Dibromomethane	50.19	1.0	ug/L	50.4		99.6	73-147	8.97	25	
Bromodichloromethane	50.12	1.0	ug/L	50.1		100	68-129	5.47	22	
cis-1,3-Dichloropropene	49.34	1.0	ug/L	50.1		98.5	65-134	6.31	23	
4-Methyl-2-pentanone (MIBK)	112.2	5.0	ug/L	100		112	58-147	23.6	27	
Toluene	50.31	1.0	ug/L	50.5		99.7	72-133	5.14	24	
trans-1,3-Dichloropropene	49.33	1.0	ug/L	50.1		98.5	67-130	7.84	24	
1,1,2-Trichloroethane	49.31	1.0	ug/L	50.1		98.4	69-135	8.92	23	
Tetrachloroethylene	51.13	1.0	ug/L	50.1		102	69-130	3.73	25	
2-Hexanone (MBK)	113.5	5.0	ug/L	100		113	55-144	26.8	25	R1
Dibromochloromethane	50.88	1.0	ug/L	50.1		102	73-127	6.85	22	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
LCS Dup (1HJ1517-BSD1)			Prepared: 10/23/24 00:00 Analyzed: 10/23/24 15:03							
1,2-Dibromoethane	51.43	1.0	ug/L	50.2		102	67-132	10.8	24	
Chlorobenzene	50.73	1.0	ug/L	50.1		101	72-123	4.43	23	
1,1,1,2-Tetrachloroethane	51.92	1.0	ug/L	50.3		103	73-127	5.36	24	
Ethylbenzene	53.34	1.0	ug/L	50.2		106	71-127	3.90	26	
Xylenes, total	155.5	2.0	ug/L	151		103	74-127	4.88	25	
Styrene	52.91	1.0	ug/L	50.4		105	66-126	5.34	23	
Bromoform	50.65	1.0	ug/L	50.1		101	68-130	11.8	23	
1,2,3-Trichloropropane	52.86	1.0	ug/L	50.3		105	63-136	17.5	24	
trans-1,4-Dichloro-2-butene	113.7	5.0	ug/L	100		114	54-134	19.8	27	
1,1,2,2-Tetrachloroethane	52.77	1.0	ug/L	50.1		105	61-131	18.6	29	
1,4-Dichlorobenzene	49.79	1.0	ug/L	50.1		99.3	70-129	5.45	24	
1,2-Dichlorobenzene	49.59	1.0	ug/L	50.1		99.0	69-126	6.95	26	
1,2-Dibromo-3-chloropropane	47.36	5.0	ug/L	50.1		94.5	50-143	27.3	30	
Surrogate: Dibromofluoromethane	*45.8*		ug/L	*50.2*		*91.2*	*57-134*			
Surrogate: Dibromofluoromethane	*45.8*		ug/L	*50.2*		*91.2*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*48.7*		ug/L	*50.4*		*96.8*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*48.7*		ug/L	*50.4*		*96.8*	*61-142*			
Surrogate: Toluene-d8	*49.7*		ug/L	*50.5*		*98.5*	*86-114*			
Surrogate: Toluene-d8	*49.7*		ug/L	*50.5*		*98.5*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*50.1*		ug/L	*50.2*		*99.9*	*80-116*			
Matrix Spike (1HJ1517-MS1)	**Source: 1HJ1633-03**		Prepared: 10/23/24 00:00 Analyzed: 10/23/24 21:36							
Chloromethane	344.0	10.0	ug/L	300	ND	115	61-152			
Vinyl Chloride	317.5	10.0	ug/L	300	ND	106	66-149			
Bromomethane	337.7	10.0	ug/L	300	ND	113	43-171			
Chloroethane	276.1	10.0	ug/L	300	ND	92.0	69-148			
Trichlorofluoromethane	254.2	10.0	ug/L	300	ND	84.7	62-163			
1,1-Dichloroethylene	480.2	10.0	ug/L	500	ND	96.0	70-148			
Acetone	1140	100	ug/L	1010	ND	113	45-173			
Methyl Iodide	898.9	10.0	ug/L	1020	ND	88.2	62-167			
Carbon Disulfide	712.2	10.0	ug/L	1030	ND	69.3	71-163			M2
Methylene Chloride	470.9	50.0	ug/L	500	ND	94.2	69-140			
Acrylonitrile	867.3	50.0	ug/L	1000	ND	86.4	38-147			
trans-1,2-Dichloroethylene	494.0	10.0	ug/L	500	ND	98.8	69-144			
1,1-Dichloroethane	486.4	10.0	ug/L	500	ND	97.3	70-138			
Vinyl Acetate	948.7	50.0	ug/L	1000	ND	94.9	58-142			
cis-1,2-Dichloroethylene	482.5	10.0	ug/L	500	ND	96.5	68-151			
2-Butanone (MEK)	1028	100	ug/L	1020	ND	101	50-160			
Bromochloromethane	490.8	10.0	ug/L	500	ND	98.2	65-143			
Chloroform	474.4	10.0	ug/L	500	ND	94.9	71-143			
1,1,1-Trichloroethane	464.3	10.0	ug/L	500	ND	92.9	63-133			
Carbon Tetrachloride	472.0	10.0	ug/L	500	ND	94.4	63-142			
Benzene	514.0	10.0	ug/L	500	ND	103	69-133			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
Matrix Spike (1HJ1517-MS1)	**Source: 1HJ1633-03**	Prepared: 10/23/24 00:00 Analyzed: 10/23/24 21:36								
1,2-Dichloroethane	544.0	10.0	ug/L	500	ND	109	63-138			
Trichloroethylene	487.6	10.0	ug/L	500	ND	97.5	71-133			
1,2-Dichloropropane	500.1	10.0	ug/L	500	ND	100	69-132			
Dibromomethane	509.7	10.0	ug/L	500	ND	102	70-147			
Bromodichloromethane	494.3	10.0	ug/L	500	ND	98.9	67-130			
cis-1,3-Dichloropropene	469.6	10.0	ug/L	500	ND	93.9	61-126			
4-Methyl-2-pentanone (MIBK)	1106	50.0	ug/L	1000	ND	110	55-147			
Toluene	489.8	10.0	ug/L	500	ND	98.0	71-133			
trans-1,3-Dichloropropene	479.2	10.0	ug/L	500	ND	95.8	63-124			
1,1,2-Trichloroethane	491.8	10.0	ug/L	500	ND	98.4	69-133			
Tetrachloroethylene	491.3	10.0	ug/L	500	ND	98.3	70-124			
2-Hexanone (MBK)	1073	50.0	ug/L	993	ND	108	53-141			
Dibromochloromethane	492.7	10.0	ug/L	500	ND	98.5	74-122			
1,2-Dibromoethane	499.1	10.0	ug/L	500	ND	99.8	66-127			
Chlorobenzene	490.1	10.0	ug/L	500	ND	98.0	76-116			
1,1,1,2-Tetrachloroethane	507.5	10.0	ug/L	500	ND	102	77-121			
Ethylbenzene	521.5	10.0	ug/L	500	ND	104	73-124			
Xylenes, total	1514	20.0	ug/L	1500	ND	101	75-123			
Styrene	514.9	10.0	ug/L	500	ND	103	70-120			
Bromoform	483.1	10.0	ug/L	500	ND	96.6	70-124			
1,2,3-Trichloropropane	502.4	10.0	ug/L	500	ND	100	62-135			
trans-1,4-Dichloro-2-butene	974.4	50.0	ug/L	1030	ND	94.8	50-120			
1,1,2,2-Tetrachloroethane	514.4	10.0	ug/L	500	ND	103	63-126			
1,4-Dichlorobenzene	469.4	10.0	ug/L	500	ND	93.9	72-119			
1,2-Dichlorobenzene	482.1	10.0	ug/L	500	ND	96.4	71-117			
1,2-Dibromo-3-chloropropane	435.3	50.0	ug/L	500	ND	87.1	49-134			
Surrogate: Dibromofluoromethane	*474*		ug/L	*502*		*94.4*	*57-134*			
Surrogate: Dibromofluoromethane	*474*		ug/L	*502*		*94.4*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*502*		ug/L	*504*		*99.6*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*502*		ug/L	*504*		*99.6*	*61-142*			
Surrogate: Toluene-d8	*504*		ug/L	*505*		*99.9*	*86-114*			
Surrogate: Toluene-d8	*504*		ug/L	*505*		*99.9*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*500*		ug/L	*502*		*99.6*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*500*		ug/L	*502*		*99.6*	*80-116*			
Matrix Spike Dup (1HJ1517-MSD1)	**Source: 1HJ1633-03**	Prepared: 10/23/24 00:00 Analyzed: 10/23/24 21:59								
Chloromethane	305.0	10.0	ug/L	300	ND	102	61-152	12.0	26	
Vinyl Chloride	285.2	10.0	ug/L	300	ND	95.1	66-149	10.7	23	
Bromomethane	307.4	10.0	ug/L	300	ND	102	43-171	9.39	29	
Chloroethane	249.6	10.0	ug/L	300	ND	83.2	69-148	10.1	25	
Trichlorofluoromethane	230.1	10.0	ug/L	300	ND	76.7	62-163	9.95	25	
1,1-Dichloroethylene	438.0	10.0	ug/L	500	ND	87.6	70-148	9.19	22	
Acetone	1089	100	ug/L	1010	ND	108	45-173	4.50	30	
Methyl Iodide	902.1	10.0	ug/L	1020	ND	88.6	62-167	0.355	24	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HJ1517-MSD1)	**Source: 1HJ1633-03**	Prepared: 10/23/24 00:00 Analyzed: 10/23/24 21:59								
Carbon Disulfide	650.5	10.0	ug/L	1030	ND	63.3	71-163	9.06	22	M2
Methylene Chloride	440.1	50.0	ug/L	500	ND	88.0	69-140	6.76	19	
Acrylonitrile	843.4	50.0	ug/L	1000	ND	84.0	38-147	2.79	30	
trans-1,2-Dichloroethylene	458.1	10.0	ug/L	500	ND	91.6	69-144	7.54	22	
1,1-Dichloroethane	458.2	10.0	ug/L	500	ND	91.6	70-138	5.97	20	
Vinyl Acetate	916.2	50.0	ug/L	1000	ND	91.6	58-142	3.49	24	
cis-1,2-Dichloroethylene	452.1	10.0	ug/L	500	ND	90.4	68-151	6.51	22	
2-Butanone (MEK)	1034	100	ug/L	1020	ND	102	50-160	0.534	23	
Bromochloromethane	470.0	10.0	ug/L	500	ND	94.0	65-143	4.33	22	
Chloroform	449.6	10.0	ug/L	500	ND	89.9	71-143	5.37	21	
1,1,1-Trichloroethane	440.7	10.0	ug/L	500	ND	88.1	63-133	5.22	23	
Carbon Tetrachloride	447.2	10.0	ug/L	500	ND	89.4	63-142	5.40	22	
Benzene	484.4	10.0	ug/L	500	ND	96.9	69-133	5.93	18	
1,2-Dichloroethane	525.1	10.0	ug/L	500	ND	105	63-138	3.54	20	
Trichloroethylene	460.6	10.0	ug/L	500	ND	92.1	71-133	5.70	23	
1,2-Dichloropropane	481.0	10.0	ug/L	500	ND	96.2	69-132	3.89	20	
Dibromomethane	493.2	10.0	ug/L	500	ND	98.6	70-147	3.29	22	
Bromodichloromethane	477.7	10.0	ug/L	500	ND	95.5	67-130	3.42	21	
cis-1,3-Dichloropropene	449.9	10.0	ug/L	500	ND	90.0	61-126	4.28	21	
4-Methyl-2-pentanone (MIBK)	1090	50.0	ug/L	1000	ND	109	55-147	1.40	23	
Toluene	461.6	10.0	ug/L	500	ND	92.3	71-133	5.93	19	
trans-1,3-Dichloropropene	460.2	10.0	ug/L	500	ND	92.0	63-124	4.05	21	
1,1,2-Trichloroethane	473.4	10.0	ug/L	500	ND	94.7	69-133	3.81	19	
Tetrachloroethylene	461.4	10.0	ug/L	500	ND	92.3	70-124	6.28	24	
2-Hexanone (MBK)	1057	50.0	ug/L	993	ND	106	53-141	1.51	24	
Dibromochloromethane	472.5	10.0	ug/L	500	ND	94.5	74-122	4.19	21	
1,2-Dibromoethane	482.7	10.0	ug/L	500	ND	96.5	66-127	3.34	23	
Chlorobenzene	463.3	10.0	ug/L	500	ND	92.7	76-116	5.62	21	
1,1,1,2-Tetrachloroethane	480.7	10.0	ug/L	500	ND	96.1	77-121	5.42	25	
Ethylbenzene	490.7	10.0	ug/L	500	ND	98.1	73-124	6.09	20	
Xylenes, total	1432	20.0	ug/L	1500	ND	95.5	75-123	5.57	20	
Styrene	492.7	10.0	ug/L	500	ND	98.5	70-120	4.41	23	
Bromoform	465.7	10.0	ug/L	500	ND	93.1	70-124	3.67	22	
1,2,3-Trichloropropane	493.1	10.0	ug/L	500	ND	98.6	62-135	1.87	28	
trans-1,4-Dichloro-2-butene	952.3	50.0	ug/L	1030	ND	92.6	50-120	2.29	26	
1,1,2,2-Tetrachloroethane	505.3	10.0	ug/L	500	ND	101	63-126	1.78	24	
1,4-Dichlorobenzene	455.5	10.0	ug/L	500	ND	91.1	72-119	3.01	24	
1,2-Dichlorobenzene	464.7	10.0	ug/L	500	ND	92.9	71-117	3.68	24	
1,2-Dibromo-3-chloropropane	437.6	50.0	ug/L	500	ND	87.5	49-134	0.527	28	
Surrogate: Dibromofluoromethane	*472*		ug/L	*502*		*94.1*	*57-134*			
Surrogate: Dibromofluoromethane	*472*		ug/L	*502*		*94.1*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*500*		ug/L	*504*		*99.3*	*53-140*			
Surrogate: 1,2-Dichloroethane-d4	*500*		ug/L	*504*		*99.3*	*61-142*			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1517 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HJ1517-MSD1)	**Source: 1HJ1633-03**	Prepared: 10/23/24 00:00 Analyzed: 10/23/24 21:59								
Surrogate: Toluene-d8	*504*		ug/L	*505*		*99.9*	*86-114*			
Surrogate: Toluene-d8	*504*		ug/L	*505*		*99.9*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*500*		ug/L	*502*		*99.7*	*78-121*			
Surrogate: 4-Bromofluorobenzene	*500*		ug/L	*502*		*99.7*	*80-116*			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1462 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HJ1462-BLK1)		Prepared: 10/24/24 07:58 Analyzed: 10/24/24 17:46								
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HJ1462-BS1)		Prepared: 10/24/24 07:58 Analyzed: 10/24/24 17:52								
Antimony, total	0.0963	0.0020	mg/L	0.100		96.3	80-120			
Arsenic, total	0.0956	0.0040	mg/L	0.100		95.6	80-120			
Barium, total	0.107	0.0040	mg/L	0.100		107	80-120			
Beryllium, total	0.101	0.0040	mg/L	0.100		101	80-120			
Cadmium, total	0.0936	0.0008	mg/L	0.100		93.6	80-120			
Chromium, total	0.0943	0.0080	mg/L	0.100		94.3	80-120			
Cobalt, total	0.103	0.0004	mg/L	0.100		103	80-120			
Copper, total	0.101	0.0040	mg/L	0.100		101	80-120			
Lead, total	0.0985	0.0040	mg/L	0.100		98.5	80-120			
Nickel, total	0.102	0.0040	mg/L	0.100		102	80-120			
Selenium, total	0.0939	0.0040	mg/L	0.100		93.9	80-120			
Silver, total	0.0981	0.0040	mg/L	0.100		98.1	80-120			
Thallium, total	0.0972	0.0020	mg/L	0.100		97.2	80-120			
Vanadium, total	0.0972	0.0200	mg/L	0.100		97.2	80-120			
Zinc, total	0.0963	0.0200	mg/L	0.100		96.3	80-120			
Matrix Spike (1HJ1462-MS1)	**Source: 1HJ1617-01**	Prepared: 10/24/24 07:58 Analyzed: 10/24/24 18:16								

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1462 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Matrix Spike (1HJ1462-MS1)	**Source: 1HJ1617-01**	Prepared: 10/24/24 07:58 Analyzed: 10/24/24 18:16								
Antimony, total	0.0997	0.0020	mg/L	0.100	ND	99.7	75-125			
Arsenic, total	0.0992	0.0040	mg/L	0.100	0.0028	96.4	75-125			
Barium, total	0.223	0.0040	mg/L	0.100	0.137	86.0	75-125			
Beryllium, total	0.106	0.0040	mg/L	0.100	ND	106	75-125			
Cadmium, total	0.0978	0.0008	mg/L	0.100	0.0003	97.5	75-125			
Chromium, total	0.0994	0.0080	mg/L	0.100	0.0011	98.3	75-125			
Cobalt, total	0.106	0.0004	mg/L	0.100	ND	106	75-125			
Copper, total	0.100	0.0040	mg/L	0.100	0.0027	97.4	75-125			
Lead, total	0.100	0.0040	mg/L	0.100	ND	100	75-125			
Nickel, total	0.105	0.0040	mg/L	0.100	0.0039	101	75-125			
Selenium, total	0.0997	0.0040	mg/L	0.100	ND	99.7	75-125			
Silver, total	0.101	0.0040	mg/L	0.100	ND	101	75-125			
Thallium, total	0.100	0.0020	mg/L	0.100	ND	100	75-125			
Vanadium, total	0.110	0.0200	mg/L	0.100	ND	110	75-125			
Zinc, total	0.0992	0.0200	mg/L	0.100	ND	99.2	75-125			
Matrix Spike Dup (1HJ1462-MSD1)	**Source: 1HJ1617-01**	Prepared: 10/24/24 07:58 Analyzed: 10/25/24 10:29								
Antimony, total	0.0978	0.0020	mg/L	0.100	ND	97.8	75-125	1.95	20	
Arsenic, total	0.0933	0.0040	mg/L	0.100	0.0028	90.5	75-125	6.17	20	
Barium, total	0.203	0.0040	mg/L	0.100	0.137	65.7	75-125	9.55	20	M2
Beryllium, total	0.101	0.0040	mg/L	0.100	ND	101	75-125	4.81	20	
Cadmium, total	0.0910	0.0008	mg/L	0.100	0.0003	90.7	75-125	7.20	20	
Chromium, total	0.0954	0.0080	mg/L	0.100	0.0011	94.2	75-125	4.12	20	
Cobalt, total	0.0957	0.0004	mg/L	0.100	ND	95.7	75-125	9.86	20	
Copper, total	0.0968	0.0040	mg/L	0.100	0.0027	94.1	75-125	3.35	20	
Lead, total	0.0871	0.0040	mg/L	0.100	ND	87.1	75-125	13.8	20	
Nickel, total	0.0974	0.0040	mg/L	0.100	0.0039	93.5	75-125	7.33	20	
Selenium, total	0.0839	0.0040	mg/L	0.100	ND	83.9	75-125	17.3	20	
Silver, total	0.0912	0.0040	mg/L	0.100	ND	91.2	75-125	10.1	20	
Thallium, total	0.0877	0.0020	mg/L	0.100	ND	87.7	75-125	13.4	20	
Vanadium, total	0.102	0.0200	mg/L	0.100	ND	102	75-125	6.97	20	
Zinc, total	0.0910	0.0200	mg/L	0.100	ND	91.0	75-125	8.65	20	
Post Spike (1HJ1462-PS1)	**Source: 1HJ1617-01**	Prepared: 10/24/24 07:58 Analyzed: 10/24/24 18:41								
Antimony, total	0.0762		mg/L	0.0800	0.0002	95.0	80-120			
Arsenic, total	0.0759		mg/L	0.0800	0.0027	91.5	80-120			
Barium, total	0.183		mg/L	0.0800	0.134	60.3	80-120			M2
Beryllium, total	0.0790		mg/L	0.0800	0.00001	98.8	80-120			
Cadmium, total	0.0730		mg/L	0.0800	0.0003	90.9	80-120			
Chromium, total	0.0760		mg/L	0.0800	0.0011	93.7	80-120			
Cobalt, total	0.0808		mg/L	0.0800	0.0001	101	80-120			
Copper, total	0.0769		mg/L	0.0800	0.0026	92.8	80-120			
Lead, total	0.0761		mg/L	0.0800	0.000004	95.1	80-120			
Nickel, total	0.0806		mg/L	0.0800	0.0038	96.0	80-120			
Selenium, total	0.0733		mg/L	0.0800	0.0013	90.0	80-120			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HJ1462 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Post Spike (1HJ1462-PS1)	**Source: 1HJ1617-01**	Prepared: 10/24/24 07:58 Analyzed: 10/24/24 18:41								
Silver, total	0.0769		mg/L	0.0800	0.00002	96.1	80-120			
Thallium, total	0.0770		mg/L	0.0800	0.00008	96.1	80-120			
Vanadium, total	0.0845		mg/L	0.0800	0.0097	93.4	80-120			
Zinc, total	0.0752		mg/L	0.0800	0.0053	87.5	80-120			

Definitions

M2:	Matrix spike recovery is below acceptance limits.
R1:	Duplicate RPD is outside acceptance criteria.
RL:	Reporting Limit
RPD:	Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler   Temp: 0.3°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Murphy

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
10/28/24 15:49

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

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t Paul
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913-321-7856
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Phone: 641-437-7023
Fax: 641-437-7040

1 H J 1 5 4 4
HLW Engineering
PM: Heather Murphy

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW
SAMPLER: TODD WHIPPLE
SITE NAME: NCIRSWA
ADDRESS:
CITY/ST/ZIP: FORT DODGE, IA
PHONE:

REPORT TO:
NAME: TODD WHIPPLE
COMPANY NAME: HLW Group
ADDRESS: P.O. Box 314
CITY/ST/ZIP: Story City, IA 50248
PHONE: 515 733 4144
FAX: 4146

BILL TO:
NAME: Lori Lindstrom, CFO
COMPANY NAME: NCIRSWA
ADDRESS: P.O. Box 578
CITY/ST/ZIP: Fort Dodge, IA 50501
PHONE:
Keystone Quote No: (If Applicable)

LAB USE ONLY
LABORATORY WORK ORDER NO. 1H51544
SAMPLE TEMPERATURE UPON RECEIPT: 0.3 ice °C

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: Appendix I								SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
MW-31	10/16/24	7:25	MW-31	7	W	G	X									01
MW-32	10/16/24	7:37	MW-32	7	W	G	X									02

Relinquished by: (Signature)	Date	Received by: (Signature)	Date	Turn-Around:
[signature]	10/18/24			☐ Standard ☐ Rush ______ Contact Lab Prior to Submission
	Time		Time	
Relinquished by: (Signature)	**Date**	**Received for Lab by: (Signature)**	**Date**	**Remarks:**
		[signature]	10/18/24	Collected before waste was placed in Phase 3.
	Time		Time 10:40	

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK2021

Project Description

6030

For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248

Heather Murphy

Customer Relationship Specialist

Tuesday, December 10, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK2021

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 11/27/2024
Reported: 12/10/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW 31	1HK2021-01	Aqueous	GRAB		11/22/24 09:54	11/27/24 09:48
MW 32	1HK2021-02	Aqueous	GRAB		11/22/24 09:42	11/27/24 09:48
GU-4	1HK2021-03	Aqueous	GRAB		11/22/24 10:02	11/27/24 09:48
GU-6	1HK2021-04	Aqueous	GRAB		11/22/24 09:22	11/27/24 09:48

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK2021

Analytical Testing Parameters

Client Sample ID:	MW 31		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HK2021-01	**Collection Date:**	11/22/2024 9:54

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Barium, total	**0.0367**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Cobalt, total	**0.0080**	0.0004	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Copper, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Lead, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Nickel, total	**0.0177**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Silver, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2238	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2238	RVV

Client Sample ID:	MW 32		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HK2021-02	**Collection Date:**	11/22/2024 9:42

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Arsenic, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Barium, total	**0.0684**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Cobalt, total	**0.0252**	0.0004	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Copper, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Lead, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Nickel, total	**0.0460**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Silver, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2244	RVV
Zinc, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2244	RVV

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CERTIFICATE OF ANALYSIS

1HK2021

Client Sample ID:	GU-4		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HK2021-03	**Collection Date:**	11/22/2024 10:02

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Arsenic, total	**0.0043**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Barium, total	**0.0144**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Cobalt, total	<0.0004	0.0004	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Copper, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Lead, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Nickel, total	**0.0157**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Selenium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Silver, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2250	RVV
Zinc, total	**1.07**	0.0200	mg/L	4		12/02/24 1505	12/04/24 2250	RVV

Client Sample ID:	GU-6		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HK2021-04	**Collection Date:**	11/22/2024 9:22

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Antimony, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Arsenic, total	**0.0053**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Barium, total	**0.0267**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Beryllium, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Cadmium, total	<0.0008	0.0008	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Chromium, total	<0.0080	0.0080	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Cobalt, total	**0.0004**	0.0004	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Copper, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Lead, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Nickel, total	**0.0232**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Selenium, total	**0.0086**	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Silver, total	<0.0040	0.0040	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Thallium, total	<0.0020	0.0020	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Vanadium, total	<0.0200	0.0200	mg/L	4		12/02/24 1505	12/04/24 2256	RVV
Zinc, total	**0.640**	0.0200	mg/L	4		12/02/24 1505	12/04/24 2256	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HL0065	1HL0065-BLK1	
		1HL0065-BS1	
		1HL0065-MS1	1HK2018-02
		1HL0065-MSD1	1HK2018-02
		1HL0065-PS1	1HK2018-02
		1HK2021-01	MW 31
		1HK2021-02	MW 32
		1HK2021-03	GU-4
		1HK2021-04	GU-6

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HL0065 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HL0065-BLK1)		Prepared: 12/02/24 15:05 Analyzed: 12/04/24 21:42								
Antimony, total	<0.0020	0.0020	mg/L							
Arsenic, total	<0.0040	0.0040	mg/L							
Barium, total	<0.0040	0.0040	mg/L							
Beryllium, total	<0.0040	0.0040	mg/L							
Cadmium, total	<0.0008	0.0008	mg/L							
Chromium, total	<0.0080	0.0080	mg/L							
Cobalt, total	<0.0004	0.0004	mg/L							
Copper, total	<0.0040	0.0040	mg/L							
Lead, total	<0.0040	0.0040	mg/L							
Nickel, total	<0.0040	0.0040	mg/L							
Selenium, total	<0.0040	0.0040	mg/L							
Silver, total	<0.0040	0.0040	mg/L							
Thallium, total	<0.0020	0.0020	mg/L							
Vanadium, total	<0.0200	0.0200	mg/L							
Zinc, total	<0.0200	0.0200	mg/L							
LCS (1HL0065-BS1)		Prepared: 12/02/24 15:05 Analyzed: 12/04/24 21:49								
Antimony, total	0.100	0.0020	mg/L	0.100		100	80-120			
Arsenic, total	0.0997	0.0040	mg/L	0.100		99.7	80-120			
Barium, total	0.112	0.0040	mg/L	0.100		112	80-120			
Beryllium, total	0.105	0.0040	mg/L	0.100		105	80-120			
Cadmium, total	0.0961	0.0008	mg/L	0.100		96.1	80-120			
Chromium, total	0.0936	0.0080	mg/L	0.100		93.6	80-120			
Cobalt, total	0.103	0.0004	mg/L	0.100		103	80-120			
Copper, total	0.0971	0.0040	mg/L	0.100		97.1	80-120			
Lead, total	0.0961	0.0040	mg/L	0.100		96.1	80-120			
Nickel, total	0.0985	0.0040	mg/L	0.100		98.5	80-120			
Selenium, total	0.1022	0.0040	mg/L	0.100		102	80-120			

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK2021

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HL0065 - EPA 3005A Total Recoverable Metals - EPA 6020A										
LCS (1HL0065-BS1)			Prepared: 12/02/24 15:05 Analyzed: 12/04/24 21:49							
Silver, total	0.101	0.0040	mg/L	0.100		101	80-120			
Thallium, total	0.0970	0.0020	mg/L	0.100		97.0	80-120			
Vanadium, total	0.100	0.0200	mg/L	0.100		100	80-120			
Zinc, total	0.101	0.0200	mg/L	0.100		101	80-120			
Matrix Spike (1HL0065-MS1)	**Source: 1HK2018-02**		Prepared: 12/02/24 15:05 Analyzed: 12/04/24 22:19							
Antimony, total	0.0999	0.0020	mg/L	0.100	ND	99.9	75-125			
Arsenic, total	0.101	0.0040	mg/L	0.100	0.0051	95.4	75-125			
Barium, total	0.517	0.0040	mg/L	0.100	0.415	102	75-125			
Beryllium, total	0.102	0.0040	mg/L	0.100	0.0001	102	75-125			
Cadmium, total	0.0934	0.0008	mg/L	0.100	ND	93.4	75-125			
Chromium, total	0.0907	0.0080	mg/L	0.100	0.0011	89.6	75-125			
Cobalt, total	0.0980	0.0004	mg/L	0.100	0.0006	97.4	75-125			
Copper, total	0.0874	0.0040	mg/L	0.100	0.0010	86.4	75-125			
Lead, total	0.0934	0.0040	mg/L	0.100	ND	93.4	75-125			
Nickel, total	0.100	0.0040	mg/L	0.100	0.0072	93.0	75-125			
Selenium, total	0.0981	0.0040	mg/L	0.100	ND	98.1	75-125			
Silver, total	0.0969	0.0040	mg/L	0.100	ND	96.9	75-125			
Thallium, total	0.0955	0.0020	mg/L	0.100	ND	95.5	75-125			
Vanadium, total	0.0953	0.0200	mg/L	0.100	ND	95.3	75-125			
Zinc, total	0.350	0.0200	mg/L	0.100	0.262	88.1	75-125			
Matrix Spike Dup (1HL0065-MSD1)	**Source: 1HK2018-02**		Prepared: 12/02/24 15:05 Analyzed: 12/04/24 22:25							
Antimony, total	0.100	0.0020	mg/L	0.100	ND	100	75-125	0.0980	20	
Arsenic, total	0.104	0.0040	mg/L	0.100	0.0051	98.5	75-125	3.00	20	
Barium, total	0.522	0.0040	mg/L	0.100	0.415	107	75-125	1.12	20	
Beryllium, total	0.100	0.0040	mg/L	0.100	0.0001	100	75-125	1.27	20	
Cadmium, total	0.0944	0.0008	mg/L	0.100	ND	94.4	75-125	1.05	20	
Chromium, total	0.0908	0.0080	mg/L	0.100	0.0011	89.6	75-125	0.0714	20	
Cobalt, total	0.0985	0.0004	mg/L	0.100	0.0006	97.9	75-125	0.510	20	
Copper, total	0.0893	0.0040	mg/L	0.100	0.0010	88.3	75-125	2.11	20	
Lead, total	0.0937	0.0040	mg/L	0.100	ND	93.7	75-125	0.307	20	
Nickel, total	0.103	0.0040	mg/L	0.100	0.0072	96.1	75-125	3.00	20	
Selenium, total	0.0993	0.0040	mg/L	0.100	ND	99.3	75-125	1.21	20	
Silver, total	0.0997	0.0040	mg/L	0.100	ND	99.7	75-125	2.85	20	
Thallium, total	0.0954	0.0020	mg/L	0.100	ND	95.4	75-125	0.100	20	
Vanadium, total	0.0968	0.0200	mg/L	0.100	ND	96.8	75-125	1.56	20	
Zinc, total	0.358	0.0200	mg/L	0.100	0.262	96.3	75-125	2.32	20	
Post Spike (1HL0065-PS1)	**Source: 1HK2018-02**		Prepared: 12/02/24 15:05 Analyzed: 12/04/24 22:31							
Antimony, total	0.0795		mg/L	0.0800	0.0002	99.1	80-120			
Arsenic, total	0.0825		mg/L	0.0800	0.0050	96.8	80-120			
Barium, total	0.500		mg/L	0.0800	0.407	117	80-120			
Beryllium, total	0.0809		mg/L	0.0800	0.0001	101	80-120			
Cadmium, total	0.0733		mg/L	0.0800	0.00007	91.5	80-120			
Chromium, total	0.0722		mg/L	0.0800	0.0011	88.8	80-120			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HL0065 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Post Spike (1HL0065-PS1)		**Source: 1HK2018-02**	Prepared: 12/02/24 15:05 Analyzed: 12/04/24 22:31							
Cobalt, total	0.0797		mg/L	0.0800	0.0006	98.9	80-120			
Copper, total	0.0726		mg/L	0.0800	0.0010	89.5	80-120			
Lead, total	0.0750		mg/L	0.0800	0.0003	93.4	80-120			
Nickel, total	0.0820		mg/L	0.0800	0.0071	93.7	80-120			
Selenium, total	0.0792		mg/L	0.0800	0.0014	97.2	80-120			
Silver, total	0.0790		mg/L	0.0800	0.00009	98.6	80-120			
Thallium, total	0.0758		mg/L	0.0800	0.0001	94.6	80-120			
Vanadium, total	0.0798		mg/L	0.0800	0.0054	92.9	80-120			
Zinc, total	0.333		mg/L	0.0800	0.256	95.1	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler   Temp: 0.6°C

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Murphy

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
12/10/24 08:20

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

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Fax: 641-792-79

KS 66105
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Fax: 913-831-6778

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Centerville, IA 52544
Phone: 641-437-7023
Fax: 641-437-7040

1HK2021
HLW Engineering
PM: Heather Murphy

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW	REPORT TO:	BILL TO:
SAMPLER: JGH	NAME: TODD WHIPPLE	NAME: LORI LINDSTROM, CFO
SITE NAME: NCIRSWA SLF	COMPANY NAME: HLW ENGINEERING	COMPANY NAME: NCIRSWA
ADDRESS:	ADDRESS: PO BOX 314	ADDRESS: PO BOX 578
CITY/ST/ZIP:	CITY/ST/ZIP: STORY CITY, IA 50248	CITY/ST/ZIP: FORT DODGE, IA 50501
PHONE:	PHONE: 515-733-4144	PHONE:
	FAX: 515-733-4146	Keystone Quote No: (If Applicable)

ANALYSES REQUIRED

LAB USE ONLY
LABORATORY WORK ORDER NO. 1HK2021
SAMPLE TEMPERATURE UPON RECEIPT: 0.6 °C

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	APP I, METALS								SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
MW 31	11/22/24	9:54		1	WATER	G	X									01
MW 32	11/22/24	9:42		1	WATER	G	X									02
GU-4	11/22/24	10:02		1	WATER	G	X									03
GU-5	11/22/24	—	NO SAMPLE													
GU-6	11/22/24	9:22		1	WATER	G	X									04

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Turn-Around: ☐ Standard ☐ Rush ____ Contact Lab Prior to Submission
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date 11-22-24 / Time 9:48	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HL0897

Project Description

6030

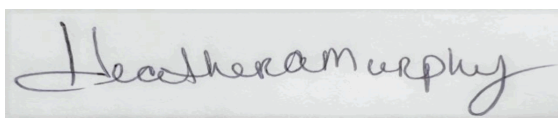
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Monday, December 23, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HL0897

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6030

Project / PO Number: N/A
Received: 12/11/2024
Reported: 12/23/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-25	1HL0897-01	Aqueous	GRAB		12/10/24 13:12	12/11/24 09:50

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CERTIFICATE OF ANALYSIS

1HL0897

Analytical Testing Parameters

Client Sample ID:	MW-25		
Sample Matrix:	Aqueous	**Collected By:**	JGH
Lab Sample ID:	1HL0897-01	**Collection Date:**	12/10/2024 13:12

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260D								
1,1-Dichloroethane	<1.0	1.0	ug/L	1		12/18/24 0000	12/18/24 1848	CSM
Surrogate: Dibromofluoromethane	94.8	Limit: 57-134	% Rec	1		12/18/24 0000	12/18/24 1848	CSM
Surrogate: 1,2-Dichloroethane-d4	105	Limit: 53-140	% Rec	1		12/18/24 0000	12/18/24 1848	CSM
Surrogate: Toluene-d8	91.7	Limit: 86-114	% Rec	1		12/18/24 0000	12/18/24 1848	CSM
Surrogate: 4-Bromofluorobenzene	97.8	Limit: 78-121	% Rec	1		12/18/24 0000	12/18/24 1848	CSM

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260D	1HL1102	1HL1102-BS1	
		1HL1102-BS1	
		1HL1102-BLK1	
		1HL1102-BLK1	
		1HL0897-01	MW-25
		1HL0897-01	MW-25
		1HL1102-MS1	1HL1223-01
		1HL1102-MS1	1HL1223-01
		1HL1102-MSD1	1HL1223-01
		1HL1102-MSD1	1HL1223-01

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HL1102 - EPA 5030B - EPA 8260D										
Blank (1HL1102-BLK1)			Prepared: 12/18/24 00:00 Analyzed: 12/18/24 15:44							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Surrogate: Dibromofluoromethane	*46.6*		ug/L	*50.2*		*92.9*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*51.6*		ug/L	*50.4*		*102*	*53-140*			
Surrogate: Toluene-d8	*46.7*		ug/L	*50.5*		*92.5*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*49.7*		ug/L	*50.2*		*99.1*	*78-121*			
LCS (1HL1102-BS1)			Prepared: 12/18/24 00:00 Analyzed: 12/18/24 13:16							
1,1-Dichloroethane	55.45	1.0	ug/L	50.0		111	73-122			
Surrogate: Dibromofluoromethane	*46.4*		ug/L	*50.2*		*92.5*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*50.6*		ug/L	*50.4*		*100*	*53-140*			
Surrogate: Toluene-d8	*49.0*		ug/L	*50.5*		*97.1*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*49.4*		ug/L	*50.2*		*98.4*	*78-121*			
Matrix Spike (1HL1102-MS1)	**Source: 1HL1223-01**		Prepared: 12/18/24 00:00 Analyzed: 12/19/24 12:17							
1,1-Dichloroethane	477.0	10.0	ug/L	500	ND	95.4	60-131			
Surrogate: Dibromofluoromethane	*475*		ug/L	*502*		*94.5*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*517*		ug/L	*504*		*103*	*53-140*			
Surrogate: Toluene-d8	*491*		ug/L	*505*		*97.2*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*495*		ug/L	*502*		*98.7*	*78-121*			
Matrix Spike Dup (1HL1102-MSD1)	**Source: 1HL1223-01**		Prepared: 12/18/24 00:00 Analyzed: 12/19/24 12:40							
1,1-Dichloroethane	432.2	10.0	ug/L	500	ND	86.4	60-131	9.85	15	
Surrogate: Dibromofluoromethane	*464*		ug/L	*502*		*92.4*	*57-134*			
Surrogate: 1,2-Dichloroethane-d4	*510*		ug/L	*504*		*101*	*53-140*			
Surrogate: Toluene-d8	*492*		ug/L	*505*		*97.4*	*86-114*			
Surrogate: 4-Bromofluorobenzene	*498*		ug/L	*502*		*99.2*	*78-121*			

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HL0897

Definitions

RL:	Reporting Limit
RPD:	Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler   Temp: 0.0ºC

Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:

Heather Murphy

Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
12/23/24 13:12

CHAIN OF CUSTODY RECORD

Keystone LABORATORIES, INC.

☐ 600 E. 17th St. S.
Newton, IA 5020
Phone: 641-792-
Fax: 641-792-7

1HL0897
HLW Engineering
PM: Heather Murphy

, KS 66105
-321-7856
-831-6778

☐ 205 E VanBuren St
Centerville, IA 52544
Phone: 641-437-7023
Fax: 641-437-7040

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW	REPORT TO:	BILL TO:
SAMPLER: JGH	NAME: TODD WHIPPLE	NAME: LORI LINDSTROM
SITE NAME: NCIRSWA SLF	COMPANY NAME: HLW ENGINEERING	COMPANY NAME: NCIRSWA
ADDRESS:	ADDRESS: PO BOX 314	ADDRESS: PO BOX 578
CITY/ST/ZIP:	CITY/ST/ZIP: STORY CITY, IA 50248	CITY/ST/ZIP: FORT DODGE, IA 5050[illegible]
PHONE:	PHONE: 515-733-4144	PHONE:
	FAX: 515-733-4146	Keystone Quote No: (If Applicable)

LAB USE ONLY
LABORATORY WORK ORDER NO.: 1HL0897
SAMPLE TEMPERATURE UPON RECEIPT: 0.0 ice ✓ °C

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	1,1 DICHLOROETHANE								SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
MW 25	12/10/24	13:12		3	WATER	G	X									01

ANALYSES REQUIRED

Relinquished by: (Signature)	Date 12/11/24 Time	Received by: (Signature)	Date Time	Turn-Around: ☒ Standard ☐ Rush Contact Lab Prior to Submission
Relinquished by: (Signature)	Date Time	Received for Lab by: (Signature)	Date 12-11-24 Time 9:50	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Appendix D

Field Turbidity Measurements

NCIRSWA Sanitary Landfill

Field Turbidity Over Time

No-Purge Sampling

Date	Unit	10A	10B	18	19	20	21R	22	25	28	30	31	32	GU-2	GU-3	GU-4	GU-5	GU-6	Max	Min	Median	Average
10/28/14	NTU	246	86.1	8.41	5.87	11.9		4.7											**246.00**	**4.70**	**11.90**	**59.20**
12/3/14	NTU		77.40																**77.40**	**77.40**	**77.40**	**77.40**
3/30/15	NTU			0.21	15.43	14.03		0.52											**15.43**	**0.21**	**0.82**	**6.20**
9/25/15	NTU			8.52	24.5	13.1		1.22											**94.50**	**1.22**	**10.81**	**23.98**
10/16/15	NTU	62.08	9.71																**62.08**	**9.71**	**35.90**	**35.90**
4/13/16	NTU	139.00	7.67	3.37	18.70	9.80		2.31											**139.00**	**2.11**	**6.48**	**23.53**
9/29/16	NTU	157.30	9.19	1.54	46.79	3.93		5.06											**157.30**	**1.54**	**7.13**	**31.72**
12/28/16	NTU							3.37											**3.37**	**3.37**	**3.37**	**3.37**
4/20/17	NTU	22.20	1.54	0.46	27.72	10.93	4.57	0.52											**27.72**	**0.46**	**1.54**	**7.75**
7/17/17	NTU						3.29	0.95											**3.29**	**0.95**	**2.12**	**2.12**
10/18/17	NTU	102.70	1.72	1.33	3.50	47.32	1.37	0.32											**102.70**	**0.32**	**1.55**	**19.86**
1/15/18	NTU					30.00													**30.00**	**30.00**	**30.00**	**30.00**
10/15/18	NTU	37.46	0.60	0.69	32.87	0.77	27.13	0.83											**37.46**	**0.60**	**1.30**	**13.16**
4/9/19	NTU	99.07	0.72	0.81	29.49	18.17	14.71	0.88											**99.07**	**0.72**	**4.09**	**18.76**
8/27/19	NTU													1.50	0.62				**1.50**	**0.62**	**1.06**	**1.06**
9/9/19	NTU														0.70				**0.70**	**0.70**	**0.70**	**0.70**
9/24/19	NTU													9.34	0.85				**9.34**	**0.85**	**5.10**	**5.10**
9/26/19	NTU													36.74	0.92				**36.74**	**0.92**	**18.83**	**18.83**
10/9/19	NTU	170.00	5.52	3.67	8.32	1.55	9.96	1.88			7.87				0.50				**170.00**	**0.50**	**3.67**	**19.47**
1/8/20	NTU			1.66		7.30		2.82											**7.30**	**1.39**	**2.24**	**3.29**
4/1/20	NTU	40.98	2.50	2.31	28.69	1.38	6.66	1.26			48.84				1.01				**51.51**	**1.01**	**2.50**	**17.05**
10/5/20	NTU	12.24	7.04	2.92	4.38	4.91	14.76	1.16			4.64								**15.22**	**1.16**	**4.78**	**6.89**
4/13/21	NTU	59.50	2.53	1.08	2.89	2.61	49.70	1.43			66.70								**66.70**	**0.84**	**2.61**	**20.81**
10/21/21	NTU	12.38	2.35	1.42	19.26	7.43	10.20	5.17			3.94								**19.26**	**1.42**	**7.43**	**7.73**
1/10/22	NTU						7.31												**7.31**	**7.31**	**7.31**	**7.31**
4/19/22	NTU	97.20	1.08	9.58	1.99	8.54	44.60	3.29			45.10								**97.20**	**1.08**	**8.54**	**23.63**
10/18/22	NTU	240.00	9.42	3.89	5.51	4.31	13.80	2.09			605.00								**605.00**	**2.09**	**9.42**	**99.37**
4/11/23	NTU	1000.00	13.10	34.30	41.30	4.68	12.60	5.86			17.80			47.50					**1000.00**	**2.92**	**15.45**	**118.01**
5/18/23	NTU								14.50	1.13									**14.50**	**1.13**	**7.82**	**7.82**
7/7/23	NTU	145.00							30.80	3.78									**145.00**	**3.78**	**30.80**	**59.86**
10/5/23	NTU	9.34	19.57	3.65	3.06	13.23	23.40	2.21	29.67	1.86	2.59				182.70				**182.70**	**1.86**	**9.34**	**26.48**
12/19/23	NTU			1.67		1.39		2.20											**2.20**	**1.39**	**1.67**	**1.75**
4/23/24	NTU	4.92	2.62	3.13	3.02	4.32	23.34	3.26	35.27	4.92	7.58								**35.27**	**2.62**	**4.62**	**9.24**
9/27/24	NTU															2.02	2.26		**2.26**	**2.02**	**2.14**	**2.14**
10/11/24	NTU	48.57	4.63	2.10		8.10	19.05	2.24	9.42	2.01	3.65					1.89	1.89		**48.57**	**1.89**	**3.65**	**9.41**
10/16/24	NTU											2.30	5.25						**5.25**	**2.30**	**3.78**	**3.78**
11/22/24	NTU											2.24	8.60			0.57		3.87	**8.60**	**0.57**	**3.06**	**3.82**
Max		**1000.00**	**86.10**	**34.30**	**46.79**	**47.32**	**49.70**	**5.86**	**35.27**	**4.92**	**605.00**	**2.30**	**8.60**	**47.50**	**182.70**	**2.02**	**2.26**	**3.87**				
Min		**4.92**	**0.60**	**0.21**	**1.99**	**0.77**	**1.37**	**0.32**	**9.42**	**1.13**	**2.59**	**2.24**	**5.25**	**1.50**	**0.50**	**0.57**	**1.89**	**3.87**				
Ave		**135.30**	**13.25**	**4.40**	**17.02**	**9.99**	**16.85**	**2.31**	**23.93**	**2.74**	**73.97**	**2.27**	**6.93**	**23.77**	**26.76**	**1.49**	**2.08**	**3.87**				
Std Dev		**216.38**	**23.96**	**7.18**	**14.32**	**10.52**	**13.56**	**1.59**	**11.27**	**1.56**	**177.54**	**0.04**	**2.37**	**21.87**	**68.76**	**0.80**	**0.26**	**#DIV/0!**				

Appendix E

Summary of Control Limit Exceedances

Spring 2014†		**Fall 2014†**	
MW-17	1,1-dichloroethane	MW-17	1,1-dichloroethane

Spring 2015†		**Fall 2015†**	
MW-15A1**	Dry	MW-15A1**	1,1-dichloroethane
			Benzene
			Bis(2-ethylhexyl)phthalate
			Chloroethane
			cis-1,2-dichloroethene
			Vinyl chloride
MW-17	1,1-dichloroethane	MW-17	1,1-dichloroethane
			Chloroethane

Spring 2016 †		**Fall 2016 †**	
MW-15A1**	1,1-dichloroethane	MW-15A1**	1,1-dichloroethane
	Benzene		Benzene
	Bis(2-ethylhexyl)phthalate		Chloroethane
	Chloroethane		cis-1,2-dichloroethene
	cis-1,2-dichloroethene		Vinyl chloride
	Vinyl chloride		
MW-17**	1,1-dichloroethane	MW-17**	1,1-dichloroethane
			Chloroethane

Spring 2017†		**Fall 2017†**	
*MW-15A1***	1,1-dichloroethane	*MW-15A1***	Dry
	Benzene		
	Chloroethane		
	cis-1,2-dichloroethene		
	Vinyl chloride		
*MW-17***	1,1-dichloroethane	*MW-17***	1,1-dichloroethane
	Chloroethane		Bis(2-ethylhexyl)phthalate

Spring 2018†		**Fall 2018†**	
*MW-15A1***	Not Sampled in Spring	*MW-15A1***	1,1-dichloroethane
			Benzene
			Chloroethane
			cis-1,2-dichloroethene
			Vinyl chloride
*MW-17***	Not Sampled in Spring	*MW-17***	1,1-dichloroethane

Spring 2019†		**Fall 2019†**	
*MW-15A1***	1,1-dichloroethane	*MW-15A1***	1,1-dichloroethane
	Benzene		Chloroethane
	Chloroethane		cis-1,2-dichloroethene
	cis-1,2-dichloroethene		Vinyl chloride
	Vinyl chloride		
*MW-17***	1,1-dichloroethane	*MW-17***	none

Spring 2020†		Fall 2020†	
*MW-15A1***	1,1-dichloroethane	*MW-15A1***	1,1-dichloroethane
	Benzene		Benzene
	Chloroethane		Chloroethane
	cis-1,2-dichloroethene		cis-1,2-dichloroethene
	Vinyl chloride		Vinyl chloride
*MW-17***	none	*MW-17***	none

Spring 2021†		Fall 2021†	
*MW-15A1***	dry	*MW-15A1***	dry
*MW-17***	none	*MW-17***	none
MW-21R	none	MW-21R	arsenic

Spring 2022†		Fall 2022	
*MW-15A1***	dry	*MW-15A1***	dry
*MW-17***	1,1-dichloroethane	*MW-17***	1,1-dichloroethane
	cis-1,2-dichloroethene		Bis(2-ethylhexyl)phthalate
			cis-1,2-dichloroethene
MW-21R**	arsenic	MW-21R**	arsenic

Spring 2023		Fall 2023	
MW-21R**	arsenic	MW-21R**	arsenic

Spring 2024		Fall 2024	
MW-21R**	none	MW-21R**	arsenic

*** Monitoring well is an Assessment or Interim Corrective Action monitoring point and water quality should be compared to GWPS, rather than site control limits.*
† = Control Limits are not yet established for all inorganic compounds. Only VOC information is considered accurate at this time.

Appendix F

Assessment Monitoring Results Summary

Bis (2-ethylhexyl)phthalate (ug/L*)

Date	**MW-21R**
4/11/14	NT
10/28/14	NT
3/31/15	NT
9/25/15	NT
4/13/16	NT
9/30/16	NT
4/20/17	NT
10/19/2017	NT
10/15/2018	NT
4/9/2019	NT
10/9/2019	NT
4/1/2020	NT
10/5/2020	NT
4/13/2021	NT
10/21/2021	NT
4/19/2022	<6
10/18/2022	NT
4/11/2023	<6
10/5/2023	NT
4/23/2024	NT
10/11/2024	NT

ND = Non-detected NT = Not Tested

Appendix G

Leachate Collection System Information

Appendix G.1- Leachate Volume, Pumped to POTW

Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	Date	NCIRSWA Flow MGD	
01/01/24	0.002800	02/01/24	0.005900	03/01/24	0.015200	04/01/24	0.008900	05/01/24	0.015500	06/01/24	0.004500	07/01/24	0.003700	08/01/24	0.004200	09/01/24	0.004100	10/01/24	0.002100	11/01/24	0.003600	12/01/24	0.003400	
01/02/24	0.001900	02/02/24	0.005900	03/02/24	0.015200	04/02/24	0.008900	05/02/24	0.015500	06/02/24	0.004500	07/02/24	0.004800	08/02/24	0.004200	09/02/24	0.004100	10/02/24	0.002100	11/02/24	0.003600	12/02/24	0.002600	
01/03/24	0.001900	02/03/24	0.005900	03/03/24	0.015200	04/03/24	0.008900	05/03/24	0.015500	06/03/24	0.004900	07/03/24	0.004800	08/03/24	0.004200	09/03/24	0.003400	10/03/24	0.002100	11/03/24	0.003600	12/03/24	0.002600	
01/04/24	0.001900	02/04/24	0.005900	03/04/24	0.015200	04/04/24	0.004000	05/04/24	0.015500	06/04/24	0.013200	07/04/24	0.004800	08/04/24	0.004200	09/04/24	0.003400	10/04/24	0.002100	11/04/24	0.006600	12/04/24	0.002600	
01/05/24	0.001900	02/05/24	0.005900	03/05/24	0.015200	04/05/24	0.003400	05/05/24	0.015500	06/05/24	0.003700	07/05/24	0.004800	08/05/24	0.003000	09/05/24	0.003400	10/05/24	0.002100	11/05/24	0.006600	12/05/24	0.002600	
01/06/24	0.001900	02/06/24	0.005900	03/06/24	0.015200	04/06/24	0.003400	05/06/24	0.007500	06/06/24	0.003700	07/06/24	0.004800	08/06/24	0.003000	09/06/24	0.003400	10/06/24	0.002100	11/06/24	0.001700	12/06/24	0.002600	
01/07/24	0.001900	02/07/24	0.005900	03/07/24	0.005100	04/07/24	0.003400	05/07/24	0.007500	06/07/24	0.003700	07/07/24	0.004800	08/07/24	0.003000	09/07/24	0.003400	10/07/24	0.010400	11/07/24	0.014700	12/07/24	0.002600	
01/08/24	0.001900	02/08/24	0.005900	03/08/24	0.005300	04/08/24	0.003500	05/08/24	0.007500	06/08/24	0.003700	07/08/24	0.003200	08/08/24	0.003000	09/08/24	0.003400	10/08/24	0.005200	11/08/24	0.011500	12/08/24	0.002600	
01/09/24	0.001900	02/09/24	0.004000	03/09/24	0.005300	04/09/24	0.003500	05/09/24	0.010500	06/09/24	0.003700	07/09/24	0.003200	08/09/24	0.003000	09/09/24	0.014400	10/09/24	0.001600	11/09/24	0.011500	12/09/24	0.005700	
01/10/24	0.002500	02/10/24	0.003100	03/10/24	0.005300	04/10/24	0.003500	05/10/24	0.004800	06/10/24	0.004400	07/10/24	0.003200	08/10/24	0.003000	09/10/24	0.005500	10/10/24	0.001600	11/10/24	0.011500	12/10/24	0.005700	
01/11/24	0.003100	02/11/24	0.003100	03/11/24	0.008600	04/11/24	0.003500	05/11/24	0.004800	06/11/24	0.004400	07/11/24	0.003200	08/11/24	0.003000	09/11/24	0.006200	10/11/24	0.001600	11/11/24	0.004900	12/11/24	0.005700	
01/12/24	0.001300	02/12/24	0.004500	03/12/24	0.008600	04/12/24	0.003500	05/12/24	0.004800	06/12/24	0.004400	07/12/24	0.003200	08/12/24	0.003000	09/12/24	0.006200	10/12/24	0.001600	11/12/24	0.004900	12/12/24	0.002900	
01/13/24	0.001300	02/13/24	0.004500	03/13/24	0.008600	04/13/24	0.003500	05/13/24	0.003600	06/13/24	0.004400	07/13/24	0.003200	08/13/24	0.003000	09/13/24	0.006200	10/13/24	0.001600	11/13/24	0.004900	12/13/24	0.002400	
01/14/24	0.001300	02/14/24	0.004500	03/14/24	0.008600	04/14/24	0.003500	05/14/24	0.003600	06/14/24	0.004400	07/14/24	0.003200	08/14/24	0.003000	09/14/24	0.006200	10/14/24	0.002300	11/14/24	0.004900	12/14/24	0.002400	
01/15/24	0.001500	02/15/24	0.004500	03/15/24	0.008600	04/15/24	0.018200	05/15/24	0.003600	06/15/24	0.004400	07/15/24	0.003200	08/15/24	0.002900	09/15/24	0.006200	10/15/24	0.002300	11/15/24	0.004900	12/15/24	0.002400	
01/16/24	0.001500	02/16/24	0.004500	03/16/24	0.008600	04/16/24	0.018200	05/16/24	0.003600	06/16/24	0.004400	07/16/24	0.003200	08/16/24	0.003700	09/16/24	0.007600	10/16/24	0.002300	11/16/24	0.004900	12/16/24	0.001900	
01/17/24	0.001500	02/17/24	0.004500	03/17/24	0.008600	04/17/24	0.018200	05/17/24	0.003600	06/17/24	0.004400	07/17/24	0.002400	08/17/24	0.003700	09/17/24	0.007600	10/17/24	0.002300	11/17/24	0.004900	12/17/24	0.001900	
01/18/24	0.001500	02/18/24	0.004500	03/18/24	0.010200	04/18/24	0.018200	05/18/24	0.003600	06/18/24	0.004600	07/18/24	0.002400	08/18/24	0.003700	09/18/24	0.007600	10/18/24	0.002300	11/18/24	0.005000	12/18/24	0.001900	
01/19/24	0.001500	02/19/24	0.004500	03/19/24	0.010200	04/19/24	0.018200	05/19/24	0.003600	06/19/24	0.004600	07/19/24	0.002400	08/19/24	0.002000	09/19/24	0.007600	10/19/24	0.002300	11/19/24	0.005000	12/19/24	0.001900	
01/20/24	0.001500	02/20/24	0.010200	03/20/24	0.010200	04/20/24	0.018200	05/20/24	0.003600	06/20/24	0.004600	07/20/24	0.002400	08/20/24	0.002000	09/20/24	0.007600	10/20/24	0.002300	11/20/24	0.005000	12/20/24	0.001900	
01/21/24	0.001500	02/21/24	0.010200	03/21/24	0.010200	04/21/24	0.018200	05/21/24	0.005800	06/21/24	0.004600	07/21/24	0.002400	08/21/24	0.002000	09/21/24	0.007600	10/21/24	0.002600	11/21/24	0.005000	12/21/24	0.001900	
01/22/24	0.002100	02/22/24	0.010200	03/22/24	0.010200	04/22/24	0.018800	05/22/24	0.005800	06/22/24	0.004600	07/22/24	0.003800	08/22/24	0.002000	09/22/24	0.007600	10/22/24	0.002600	11/22/24	0.005000	12/22/24	0.001900	
01/23/24	0.002100	02/23/24	0.010200	03/23/24	0.010200	04/23/24	0.018800	05/23/24	0.005800	06/23/24	0.004600	07/23/24	0.003800	08/23/24	0.002000	09/23/24	0.003400	10/23/24	0.002600	11/23/24	0.005000	12/23/24	0.003500	
01/24/24	0.002100	02/24/24	0.010200	03/24/24	0.010200	04/24/24	0.018800	05/24/24	0.005800	06/24/24	0.005100	07/24/24	0.003800	08/24/24	0.002000	09/24/24	0.003400	10/24/24	0.002600	11/24/24	0.005000	12/24/24	0.003500	
01/25/24	0.002100	02/25/24	0.010200	03/25/24	0.008900	04/25/24	0.018800	05/25/24	0.005800	06/25/24	0.005100	07/25/24	0.003800	08/25/24	0.002000	09/25/24	0.003400	10/25/24	0.002600	11/25/24	0.003400	12/25/24	0.003500	
01/26/24	0.002100	02/26/24	0.015200	03/26/24	0.008900	04/26/24	0.018400	05/26/24	0.005800	06/26/24	0.005100	07/26/24	0.003800	08/26/24	0.004100	09/26/24	0.003400	10/26/24	0.002600	11/26/24	0.003400	12/26/24	0.003500	
01/27/24	0.002100	02/27/24	0.015200	03/27/24	0.008900	04/27/24	0.018400	05/27/24	0.005800	06/27/24	0.005100	07/27/24	0.003800	08/27/24	0.004100	09/27/24	0.003400	10/27/24	0.002600	11/27/24	0.003400	12/27/24	0.003500	
01/28/24	0.002100	02/28/24	0.015200	03/28/24	0.008900	04/28/24	0.018400	05/28/24	0.004500	06/28/24	0.005100	07/28/24	0.003800	08/28/24	0.004100	09/28/24	0.003400	10/28/24	0.003600	11/28/24	0.003400	12/28/24	0.003500	
01/29/24	0.005900	02/29/24	0.015200	03/29/24	0.008900	04/29/24	0.015500	05/29/24	0.004500	06/29/24	0.005100	07/29/24	0.003500	08/29/24	0.004100	09/29/24	0.003400	10/29/24	0.003600	11/29/24	0.003400	12/29/24	0.003500	
01/30/24	0.005900			03/30/24	0.008900	04/30/24	0.015500	05/30/24	0.004500	06/30/24	0.005100	07/30/24	0.004200	08/30/24	0.004100	09/30/24	0.002100	10/30/24	0.003600	11/30/24	0.003400	12/30/24	0.006100	
01/31/24	0.005900			03/31/24	0.008900			05/31/24	0.004500			07/31/24	0.004200	08/31/24	0.004100			10/31/24	0.003600			12/31/24	0.006100	
Minimum:	0.001300		0.003100		0.005100		0.003400		0.003600		0.003700		0.002400		0.002000		0.002100		0.001600		0.001700		0.001900	
Maximum:	0.005900		0.015200		0.015200		0.018800		0.015500		0.013200		0.004800		0.004200		0.014400		0.010400		0.014700		0.006100	
Total:	0.070400		0.215400		0.306100		0.354200		0.212300		0.144100		0.111800		0.099400		0.158600		0.084900		0.164600		0.098800	**2,020,600 Gallons**
Average:	0.002271		0.007428		0.009874		0.011807		0.006848		0.004803		0.003606		0.003206		0.005287		0.002739		0.005487		0.003187	
Data Points:	31		29		31		30		31		30		31		31		30		31		30		31	

Appendix G.2 - Leachate Analyses by POTW

Date	NCIRSWA BOD mg/l	NCIRSWA BOD lbs/day	NCIRSWA COD mg/l	NCIRSWA COD lbs/day	NCIRSWA COD Correction Factor	NCIRSWA COD moving CF	NCIRSWA est BOD from COD mg/l	NCIRSWA COD to BOD ratio	NCIRSWA TSS mg/l	NCIRSWA TSS lbs/day	NCIRSWA NH3 mg/l	NCIRSWA NH3 lbs/day
2024-01-11	172	4	870	22	0.20	0.20	172	5.06	86.6	2	289.000	7.47
2024-02-09	147	5	545	18	0.27	0.23	127	3.71	46.0	2	328.000	10.94
2024-03-08	138	6	1,215	54	0.11	0.19	233	8.80	47.5	2	357.000	15.78
2024-04-05	123	3	1,005	28	0.12	0.12	119	8.17	93.0	3	158.000	4.48
2024-04-26	89	14	948	145	0.09	0.11	103	10.65	91.1	14	369.000	56.63
2024-05-10	46	2	261	10	0.18	0.14	35	5.67	28.0	1	81.500	3.26
2024-05-21	47	2	694	34	0.07	0.11	78	14.77	53.1	3	195.000	9.43
2024-06-05	76	2	497	15	0.15	0.13	66	6.54	71.2	2	156.000	4.81
2024-06-19	89	3	515	20	0.17	0.13	68	5.79	41.0	2	173.000	6.64
2024-07-02	49	2	670	27	0.07	0.13	89	13.67	82.1	3	67.700	2.71
2024-07-17	98	2	865	17	0.11	0.12	104	8.83	65.0	1	261.000	5.22
2024-07-30	26	1	255	9	0.10	0.10	25	9.81	26.8	1	104.500	3.66
2024-08-16	45	1	180	6	0.25	0.16	28	4.00	26.9	1	87.200	2.69
2024-09-11	53	3	420	22	0.13	0.19	79	7.92	33.0	2	79.800	4.13
2024-10-09	87	1	743	10	0.12	0.12	90	8.54	27.5	0	143.000	1.91
2024-11-07	19	2	125	15	0.15	0.13	17	6.58	9.7	1	31.850	3.90
2024-12-13	270	5	1,397	28	0.19	0.19	270	5.17	74.7	1	546.000	10.93
Minimum:	19	1	125	6	0.07	0.10	17	3.71	9.7	0	31.850	1.91
Maximum:	270	14	1,397	145	0.27	0.23	270	14.77	93.0	14	546.000	56.63
Total:	1,574	60	11,205	481	2.49	2.50	1,701	133.68	903.2	41	3,427.550	154.60
Average:	93	4	659	28	0.15	0.15	100	7.86	53.1	2	201.621	9.09
Data Points:	17	17	17	17	17	17	17	17	17	17	17	17

Date	NCIRSWA ph SU	NCIRSWA FOG mg/l	NCIRSWA FOG lbs/day	NCIRSWA Temperature Deg C	NCIRSWA Temperature Deg F	NCIRSWA Mercury Hg mg/l	NCIRSWA Mercury ld lbs/day	NCIRSWA Arsenic As mg/l	NCIRSWA Arsenic ld lbs/day	NCIRSWA Cadmium Cd mg/l	NCIRSWA Cadmium ld lbs/day	NCIRSWA Chromium (VI) Cr mg/l
2024-01-11	7.75	16.90	0	6.5	43.7	0.000200	0.000005	-	-	-	-	-
2024-02-09	7.78	47.60	2	12.2	54.0	0.000200	0.000007	-	-	-	-	-
2024-03-08	7.34	32.20	1	8.4	47.1	0.000200	0.000009	-	-	-	-	-
2024-04-05	7.21	9.30	0	9.7	49.5	0.000200	0.000006	0.0800	0.0023	0.020000	0.000567	-
2024-04-26	7.25	65.40	10	12.1	53.8	0.000200	0.000031	-	-	-	-	-
2024-05-10	6.87	10.00	0	12.9	55.2	0.000200	0.000008	-	-	-	-	-
2024-05-21	7.35	9.80	0	14.6	58.3	0.000200	0.000010	-	-	-	-	-
2024-06-05	7.16	16.00	0	17.9	64.2	0.000200	0.000006	-	-	-	-	-
2024-06-19	7.14	9.80	0	17.3	63.1	0.000200	0.000008	-	-	-	-	-
2024-07-02	7.35	9.30	0	18.1	64.6	0.000200	0.000008	-	-	-	-	-
2024-07-17	7.27	16.90	0	20.6	69.1	0.000200	0.000004	0.5000	0.0100	0.100000	0.002002	0.1000
2024-07-30	7.15	9.30	0	19.5	67.1	0.000200	0.000007	-	-	-	-	-
2024-08-16	7.52	20.40	1	19.4	66.9	0.000200	0.000006	-	-	-	-	-
2024-09-11	7.46	11.10	1	18.9	66.0	0.000200	0.000010	-	-	-	-	-
2024-10-09	7.80	26.70	0	17.2	63.0	0.000200	0.000003	0.0800	0.0011	0.020000	0.000267	-
2024-11-07	7.29	9.30	1	12.2	54.0	0.000200	0.000025	-	-	-	-	-
2024-12-13	7.52	25.50	1	7.8	46.0	0.000200	0.000004	-	-	-	-	-
Minimum:	6.87	9.30	0	6.5	43.7	0.000200	0.000003	0.0800	0.0011	0.020000	0.000267	0.1000
Maximum:	7.80	65.40	10	20.6	69.1	0.000200	0.000031	0.5000	0.0100	0.100000	0.002002	0.1000
Total:	125.21	345.50	20	245.3	985.5	0.003400	0.000155	0.6600	0.0133	0.140000	0.002836	0.1000
Average:	7.37	20.32	1	14.4	58.0	0.000200	0.000009	0.2200	0.0044	0.046667	0.000945	0.1000
Data Points:	17	17	17	17	17	17	17	3	3	3	3	1

Date	NCIRSWA Chromium (VI) ld lbs/day	NCIRSWA Lead Pb mg/l	NCIRSWA Lead ld lbs/day	NCIRSWA Silver Ag mg/l	NCIRSWA Silver ld lbs/day	NCIRSWA Zinc Zn mg/l	NCIRSWA Zinc ld lbs/day	NCIRSWA Molybdenum Mo mg/l	NCIRSWA Molybdenum ld lbs/day	NCIRSWA Sulfate mg/l	NCIRSWA Sulfate ld lbs/day	NCIRSWA Barium mg/l
2024-01-11	-	-	-	-	-	0.0400	0.0010	-	-	700.00	18.10	-
2024-02-09	-	-	-	-	-	0.0400	0.0013	-	-	-	-	-
2024-03-08	-	-	-	-	-	0.0400	0.0018	-	-	-	-	-
2024-04-05	-	0.10000	0.00284	0.02000	0.00057	0.0400	0.0011	0.0500	0.0014	-	-	-
2024-04-26	-	-	-	-	-	0.0736	0.0113	-	-	900.00	138.11	-
2024-05-10	-	-	-	-	-	0.0400	0.0016	-	-	610.00	24.42	-
2024-05-21	-	-	-	-	-	0.0400	0.0019	-	-	620.00	29.99	-
2024-06-05	-	-	-	-	-	0.2130	0.0066	-	-	420.00	12.96	-
2024-06-19	-	-	-	-	-	0.0457	0.0018	-	-	460.00	17.65	-
2024-07-02	-	-	-	-	-	0.1880	0.0075	-	-	520.00	20.82	-
2024-07-17	0.0020	0.50000	0.01001	0.25000	0.00500	0.1740	0.0035	-	-	530.00	10.61	1.000
2024-07-30	-	-	-	-	-	0.6280	0.0220	-	-	460.00	16.11	-
2024-08-16	-	-	-	-	-	0.1940	0.0060	-	-	330.00	10.18	-
2024-09-11	-	-	-	-	-	0.0400	0.0021	-	-	180.00	9.31	-
2024-10-09	-	0.10000	0.00133	0.20000	0.00267	0.0400	0.0005	0.0500	0.0007	-	-	-
2024-11-07	-	-	-	-	-	0.0400	0.0049	-	-	-	-	-
2024-12-13	-	-	-	-	-	0.0800	0.0016	-	-	-	-	-
Minimum:	0.0020	0.10000	0.00133	0.02000	0.00057	0.0400	0.0005	0.0500	0.0007	180.00	9.31	1.000
Maximum:	0.0020	0.50000	0.01001	0.25000	0.00500	0.6280	0.0220	0.0500	0.0014	900.00	138.11	1.000
Total:	0.0020	0.70000	0.01418	0.47000	0.00824	1.9563	0.0765	0.1000	0.0021	5,730.00	308.25	1.000
Average:	0.0020	0.23333	0.00473	0.15667	0.00275	0.1151	0.0045	0.0500	0.0010	520.91	28.02	1.000
Data Points:	1	3	3	3	3	17	17	2	2	11	11	1

Date	NCIRSWA Benzene mg/l	NCIRSWA Carbon Tetrachloride mg/l	NCIRSWA Chlordane mg/l	NCIRSWA Chlorobenzene mg/l	NCIRSWA Chloroform mg/l	NCIRSWA o-Creosol mg/l	NCIRSWA m-Creosol mg/l	NCIRSWA p-Creosol mg/l	NCIRSWA Creosol mg/l	NCIRSWA 2,4-D Acid mg/l	NCIRSWA 1,4-Dichlorobenzene mg/l	NCIRSWA 1,2-Dichloroethane mg/l
2024-01-11	-	-	-	-	-	-	-	-	-	-	-	-
2024-02-09	-	-	-	-	-	-	-	-	-	-	-	-
2024-03-08	-	-	-	-	-	-	-	-	-	-	-	-
2024-04-05	-	-	-	-	-	-	-	-	-	-	-	-
2024-04-26	-	-	-	-	-	-	-	-	-	-	-	-
2024-05-10	-	-	-	-	-	-	-	-	-	-	-	-
2024-05-21	-	-	-	-	-	-	-	-	-	-	-	-
2024-06-05	-	-	-	-	-	-	-	-	-	-	-	-
2024-06-19	-	-	-	-	-	-	-	-	-	-	-	-
2024-07-02	-	-	-	-	-	-	-	-	-	-	-	-
2024-07-17	0.1000	0.1000	0.00176	0.1000	0.1000	0.050	0.050	0.050	0.050	0.10000	0.1000	0.1000
2024-07-30	-	-	-	-	-	-	-	-	-	-	-	-
2024-08-16	-	-	-	-	-	-	-	-	-	-	-	-
2024-09-11	-	-	-	-	-	-	-	-	-	-	-	-
2024-10-09	-	-	-	-	-	-	-	-	-	-	-	-
2024-11-07	-	-	-	-	-	-	-	-	-	-	-	-
2024-12-13	-	-	-	-	-	-	-	-	-	-	-	-
Minimum:	0.1000	0.1000	0.00176	0.1000	0.1000	0.050	0.050	0.050	0.050	0.10000	0.1000	0.1000
Maximum:	0.1000	0.1000	0.00176	0.1000	0.1000	0.050	0.050	0.050	0.050	0.10000	0.1000	0.1000
Total:	0.1000	0.1000	0.00176	0.1000	0.1000	0.050	0.050	0.050	0.050	0.10000	0.1000	0.1000
Average:	0.1000	0.1000	0.00176	0.1000	0.1000	0.050	0.050	0.050	0.050	0.10000	0.1000	0.1000
Data Points:	1	1	1	1	1	1	1	1	1	1	1	1

Date	NCIRSWA 1,1-Dichloroethylene mg/l	NCIRSWA 1,2-Dinitrotoluene mg/l	NCIRSWA Endrin mg/l	NCIRSWA Heptachlor(+epoxides) mg/l	NCIRSWA Hexachlorobenzene mg/l	NCIRSWA Hexachlorobutadiene mg/l	NCIRSWA Hexachloroethane mg/l	NCIRSWA Lindane mg/l	NCIRSWA Methoxchlor mg/l	NCIRSWA Methyl Ethyl Ketone mg/l	NCIRSWA Nitrobenzene mg/l	NCIRSWA Pentachlorophenol mg/l
2024-01-11	-	-	-	-	-	-	-	-	-	-	-	-
2024-02-09	-	-	-	-	-	-	-	-	-	-	-	-
2024-03-08	-	-	-	-	-	-	-	-	-	-	-	-
2024-04-05	-	-	-	-	-	-	-	-	-	-	-	-
2024-04-26	-	-	-	-	-	-	-	-	-	-	-	-
2024-05-10	-	-	-	-	-	-	-	-	-	-	-	-
2024-05-21	-	-	-	-	-	-	-	-	-	-	-	-
2024-06-05	-	-	-	-	-	-	-	-	-	-	-	-
2024-06-19	-	-	-	-	-	-	-	-	-	-	-	-
2024-07-02	-	-	-	-	-	-	-	-	-	-	-	-
2024-07-17	0.1000	0.0500	0.00009	0.00009	0.0500	0.0500	0.0500	0.00	0.00200	5.00	0.0500	0.050
2024-07-30	-	-	-	-	-	-	-	-	-	-	-	-
2024-08-16	-	-	-	-	-	-	-	-	-	-	-	-
2024-09-11	-	-	-	-	-	-	-	-	-	-	-	-
2024-10-09	-	-	-	-	-	-	-	-	-	-	-	-
2024-11-07	-	-	-	-	-	-	-	-	-	-	-	-
2024-12-13	-	-	-	-	-	-	-	-	-	-	-	-
Minimum:	0.1000	0.0500	0.00009	0.00009	0.0500	0.0500	0.0500	0.00	0.00200	5.00	0.0500	0.050
Maximum:	0.1000	0.0500	0.00009	0.00009	0.0500	0.0500	0.0500	0.00	0.00200	5.00	0.0500	0.050
Total:	0.1000	0.0500	0.00009	0.00009	0.0500	0.0500	0.0500	0.00	0.00200	5.00	0.0500	0.050
Average:	0.1000	0.0500	0.00009	0.00009	0.0500	0.0500	0.0500	0.00	0.00200	5.00	0.0500	0.050
Data Points:	1	1	1	1	1	1	1	1	1	1	1	1

Date	NCIRSWA Pyridine mg/l	NCIRSWA Selenium mg/l	NCIRSWA Tetrachloroethylene mg/l	NCIRSWA Toxaphene mg/l	NCIRSWA Trichloroethylene mg/l	NCIRSWA 2,4,5-Trichlorophenol mg/l	NCIRSWA 2,4,6-Trichlorophenol mg/l	NCIRSWA 2,4,5-TP (Silvex) mg/l	NCIRSWA Vinyl Chloride mg/l	NCIRSWA Chloride ld lbs/day	NCIRSWA Selenium lbs/day	NCIRSWA Chloride composite mg/l
2024-01-11	-	-	-	-	-	-	-	-	-	14.74	-	570.00
2024-02-09	-	-	-	-	-	-	-	-	-	20.12	-	603.00
2024-03-08	-	-	-	-	-	-	-	-	-	36.69	-	830.00
2024-04-05	-	0.10000	-	-	-	-	-	-	-	9.10	0.003	321.00
2024-04-26	-	-	-	-	-	-	-	-	-	113.56	-	740.00
2024-05-10	-	-	-	-	-	-	-	-	-	6.97	-	174.00
2024-05-21	-	-	-	-	-	-	-	-	-	20.95	-	433.00
2024-06-05	-	-	-	-	-	-	-	-	-	9.57	-	310.00
2024-06-19	-	-	-	-	-	-	-	-	-	13.54	-	353.00
2024-07-02	-	-	-	-	-	-	-	-	-	17.37	-	434.00
2024-07-17	0.0500	0.50000	0.2000	0.00176	0.2000	0.0500	0.0500	0.10000	0.1000	12.21	0.010	610.00
2024-07-30	-	-	-	-	-	-	-	-	-	8.09	-	231.00
2024-08-16	-	-	-	-	-	-	-	-	-	6.11	-	198.00
2024-09-11	-	-	-	-	-	-	-	-	-	10.08	-	195.00
2024-10-09	-	0.10000	-	-	-	-	-	-	-	5.15	0.001	386.00
2024-11-07	-	-	-	-	-	-	-	-	-	19.00	-	155.00
2024-12-13	-	-	-	-	-	-	-	-	-	19.42	-	970.00
Minimum:	0.0500	0.10000	0.2000	0.00176	0.2000	0.0500	0.0500	0.10000	0.1000	5.15	0.001	155.00
Maximum:	0.0500	0.50000	0.2000	0.00176	0.2000	0.0500	0.0500	0.10000	0.1000	113.56	0.010	970.00
Total:	0.0500	0.70000	0.2000	0.00176	0.2000	0.0500	0.0500	0.10000	0.1000	342.66	0.014	7,513.00
Average:	0.0500	0.23333	0.2000	0.00176	0.2000	0.0500	0.0500	0.10000	0.1000	20.16	0.005	441.94
Data Points:	1	3	1	1	1	1	1	1	1	17	3	17

Appendix G.3 – Industrial User Wastewater Discharge Permit with Fort Dodge

June 28, 2024

Nik Myers
Operations Manager
North Central Iowa Regional Solid Waste Agency (NCIRSWA)
2150 South 22nd Street
Fort Dodge, IA 50501

RE: Permit Amendment, Fort Dodge Wastewater Discharge Permit No. NCSIU-2021-05

Dear Mr. Myers:

Enclosed is a copy of the **NCIRSWA Industrial User Wastewater Discharge Permit**. Key permit details are described in the attached **Memorandum**. Please replace page 9 of your permit with the enclosed page 9.

If you have any questions, please contact me at mbemrich@uswatercorp.net or 515-227-8695.

Michelle Bemrich

Michelle Bemrich
IPP Coordinator, USW Utility Group

cc: City of Fort Dodge
Travis Pender, Project Manager, USW Utility Group

Enclosure(s)

MEMORANDUM

DATE: June 28, 2024

TO: City of Fort Dodge Industrial User Wastewater Discharge Permit No. NCSIU-2021-05
North Central Iowa Regional Solid Waste Agency

LOCATION: North Central Iowa Regional Solid Waste Agency
2150 South 22nd Street
Fort Dodge, IA 50501

FROM: Michelle Bemrich, IPP Coordinator, USW Utility Group

RE: Discharge Permit Amendment Details

This permit is being amended as a recommendation brought forth by the Environmental Protection Agency. USW Utility Group and the City of Fort Dodge perform required sampling, monitoring, analyses, and data collection on behalf of the Industrial Users. It is advised that Industrial Users will be held responsible to complete their self-monitoring requirements when USW Utility Group and the City of Fort Dodge is unable to provide required monitoring. These responsibilities include sampling, monitoring, and analyses of samples within the minimum required frequency specified in *40 CFR 403.12(h)(1),* 2 times per year. If the Industrial User must sample and self-monitor, the Industrial User will also be expected to submit a periodic monitoring report to the City of Fort Dodge.

Taking the above into account, the following revision has been made to the permit:

1. In Section 7. **Responsibility For Sampling, Monitoring, and Analysis**, Removal of the statement, "Permitee shall not be responsible for any sampling, monitoring, or analysis except for N/A". This statement is amended to state, "In the event the City is unable to perform the sampling, the Permittee shall be responsible for sampling at the frequencies specified in *40 CFR 403.12(h)(1)."*

INDUSTRIAL USER WASTEWATER DISCHARGE PERMIT AMENDMENT

CITY OF FORT DODGE, IOWA

Name / Address of Permittee	**Location of Facility**
North Central Iowa Regional Solid Waste Agency	North Central Iowa Regional Solid Waste Agency
2150 South 22nd Street	2150 South 22nd Street
Fort Dodge, IA 50501	Fort Dodge, IA 50501

Permit Number:	NCSIU-2021-05
Issue Date:	January 1, 2021
Expiration Date:	December 31, 2025
Renewal Application Date:	July 1, 2025

Pursuant to the authority of City of Fort Dodge Municipal Code Section **Chapter 13.24.250 Wastewater contribution permits** (Ord. 1863 § 30, 1994), the Director for the City of Fort Dodge has issued the above-referenced Permit. Pursuant to the same authority and to **Chapter 13.24.260 Permit modifications**, the Director hereby amends said permit as specified in the accompanying memo. The following has been developed and will be implemented as an amendment to the existing wastewater discharge permit issued to North Central Iowa Regional Solid Waste Agency, Permit No. NCSIU-2021-05.

This permit is amended to include the Industrial User will be responsible for the sampling, monitoring, and analysis of wastewater if USW Utility Group and the City of Fort Dodge are unable to perform such requirements. The Industrial User will also be expected to submit a periodic monitoring report if held responsible for any sampling and self-monitoring activities.

For the City of Fort Dodge:

By: ______________________ Date: 6/27/2024

David Fierke, City Manager, City of Fort Dodge, IA

Hexachloroethane	One (1) time per year	Grab	Effluent Sampling Station
Lead	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Lindane	One (1) time per year	Grab	Effluent Sampling Station
Mercury	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Methoxchlor	One (1) time per year	Grab	Effluent Sampling Station
Methyl Ethyl Ketone	One (1) time per year	Grab	Effluent Sampling Station
Nitrobenzene	One (1) time per year	Grab	Effluent Sampling Station
Pentachlorophenol	One (1) time per year	Grab	Effluent Sampling Station
Pyridine	One (1) time per year	Grab	Effluent Sampling Station
Selenium	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Silver	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Tetrachloroethylene	One (1) time per year	Grab	Effluent Sampling Station
Toxaphene	One (1) time per year	Grab	Effluent Sampling Station
Trichloroethylene	One (1) time per year	Grab	Effluent Sampling Station
2,4,5-Trichlorophenol	One (1) time per year	Grab	Effluent Sampling Station
2,4,6-Trichlorophenol	One (1) time per year	Grab	Effluent Sampling Station
2,4,5-TP (Silvex)	One (1) time per year	Grab	Effluent Sampling Station
Vinyl Chloride	One (1) time per year	Grab	Effluent Sampling Station

1. RESPONSIBILITY FOR SAMPLING, MONITORING AND ANALYSIS

Monitoring samples shall be collected downstream of any pretreatment facilities, prior to dilution with any non-regulated wastewater stream and prior to discharge to the City's sanitary sewer system.

Sampling, monitoring, and analysis under this permit will be as follows (check all thatapply):

☐ **Sampling and monitoring are not required because this is a Non-Significant Categorical user.**

☐ **Sampling, monitoring, and analysis shall be performed by the Permittee.**

☒ **Sampling, monitoring, and analysis shall be performed by the City in lieu of Permittee as provided in 40 CFR 403.12(g)(1).** In the event the City is unable to perform the sampling, the Permittee shall be responsible for sampling at the frequencies specified in **40 CFR 403.12(h).**

☒ **Flow monitoring equipment shall be provided and maintained by** the Permittee **at the following location (s):** Effluent Sampling Station.

☒ **Composite sampler(s) shall be provided and maintained by** the Permittee **at the following location(s):** Effluent Sampling Station.

FORT DODGE

INDUSTRIAL USER WASTEWATER DISCHARGE PERMIT

CITY OF FORT DODGE, IOWA

Name / Address of Permittee	Location of Facility
North Central Iowa Regional Solid Waste Agency	North Central Iowa Regional Solid Waste Agency
2150 South 22nd Street	2150 South 22nd Street
Fort Dodge, IA 50501	Fort Dodge, IA 50501

SIC Code:	4953 – REFUSE SYSTEMS
Permit Number:	NCSIU-2021-05
Issue Date:	January 1, 2021
Expiration Date:	December 31, 2025
Renewal Application Date:	July 1, 2025

Permit term shall not exceed five (5) years post issue date, per 40 CFR 403.8(f)(1). This permit is issued for a period of five (5) years.

Renewal application must be received in the Pretreatment Office at least 180 days prior to expiration, per City Code 13.24.270.

The City of Fort Dodge hereby authorizes the above-named Permittee to discharge wastewater into the City's sanitary sewer system in accordance with the effluent limitations, monitoring requirements, and other terms set forth in this permit. The Permittee will be responsible for providing appropriate wastewater pretreatment and wastewater monitoring facilities as required to comply with this permit.

This permit is issued pursuant to City Code Section 13.24.250, City Ordinance No. 1863, Iowa Administrative Code [567] Chapter 62, and Title 40, Part 403 of the Code of Federal Regulations. The permit is non-transferable and shall not be sold or reassigned to a new owner or different user without prior approval from the City as per City Code Section 13.24.275. The City reserves the right to modify this permit for good cause at any time as provided in City Code Section 13.24.260.

Compliance with this permit does not relieve the Permittee from its obligation to comply with other applicable regulations under local, state, or federal laws, including any such regulations or laws that may become effective during the term of this permit. Noncompliance with any term or condition of this permit shall constitute a violation of City Ordinance No. 1863 and may result in revocation of the permit as provided in City Code Section 13.24.315.

Authorized by: ______________________ Date: 1/13/2021
David Fierke, City Manager, City of Fort Dodge, IA

Authorized by: Mitzi Brunsvold Date: 1/14/2021
Mitzi Brunsvold, Signatory Authority, NCIRSWA

1. DESCRIPTION OF FACILITY AND PRETREATMENT PROCESS

   The North Central Iowa Regional Solid Waste Agency (NCIRSWA) operates a landfill with leachate collection. The leachate gravity flows from the waste to a lift station which pumps it to a manhole. The manhole, which also receives domestic wastewater from the office/shop facilities, drains to a small lift station that pumps the waste to the POTW.

2. DISCHARGE LOCATION

   Effluent Sampling Station

3. CLASSIFICATION OF FACILITY (check one)

   ☒ **Non-Categorical Significant Industrial User (NCSIU).** Includes users that discharge an average of 25,000 gallons per day or more of process wastewater to the City's wastewater treatment plant; users with waste streams that make up 5 percent or more of the hydraulic or organic load capacity of the City's wastewater treatment plant; and any other users determined by the City to have a reasonable potential for adversely affecting the City's wastewater treatment plant or for violating any pretreatment standard.

   ☐ **Categorical Industrial User (CIU).** Includes users subject to Categorical Pretreatment Standards per 40 CFR 403.6. Specific categories are listed in 40 CFR Parts 405-471.

   ☐ **Middle Tier Categorical Industrial User.** Includes categorical users designated by the City as a middle tier CIU per 40 CFR 403.12(e)(3). To qualify, the user's discharge must be less than 5,000 gpd and must not exceed 0.01 percent of the hydraulic, organic, or pollutant load capacity of the City's wastewater treatment plant. In addition, the user must not have been in significant noncompliance at any time in the past two years and must not have significant variations in flows or pollutant levels that would cause unrepresentative data during the reporting period.

   ☐ **Non-Significant Categorical Industrial User (NSCIU).** Includes categorical users designated by the City as a non-significant CIU per 40 CFR 403.3(v)(2). To qualify, the user must never discharge more than 100 gallons per day of categorical wastewater (excludes sanitary, non-contact cooling, and boiler blowdown wastewater unless specifically included in the categorical standard). In addition, the user must have consistently met all applicable pretreatment standards; and must never discharge any untreated concentrated wastewater; and must submit an annual certification per 40 CFR 403.12(q).

4. CATEGORICAL PRETREATMENT STANDARDS

This facility is subject to the following Categorical Pretreatment Standards:

National Categorical Pretreatment Standard	Code Section of 40 CFR Rules
N/A	

5. EFFLUENT LIMITATIONS

You are prohibited from discharging wastewater to the City's wastewater collection system and treatment plant except in compliance with the following effluent limits:

Conventional Pollutant Effluent Limitations

Parameter	30-Day Average	Daily Maximum	Location
Flow	0.00936 MGD	0.02400 MGD	Effluent Sampling Station
BOD	50.0 lb/day	150 lb/day	Effluent Sampling Station
TSS	72.0 lb/day	180 lb/day	Effluent Sampling Station
Ammonia Nitrogen (NH_3)	14.4 lb/day	21.6 lb/day	Effluent Sampling Station
pH	NA	5.5 – 9.5 S.U.	Effluent Sampling Station
Fats, Oils, and Greases (FOG)	150 mg/L	200 mg/L	Effluent Sampling Station

Concentrations of BOD5, TSS, Ammonia Nitrogen, and Fats, Oils, and Greases in excess of the limits are subject to surcharge fees per City Code Chapter 13.12.
NOTE: Permittee must also comply with the "Prohibited Discharge Standards" in City Code 13.24.180 and "Local Limits" for metals and other specific pollutants in City Code 13.24.210.

Local Limits Effluent Limitations

Parameter	30-Day Average (lb/day)	Daily Maximum (lb/day)	Location
Mercury	0.0004	0.0006	Effluent Sampling Station
Zinc	0.2737	0.4147	Effluent Sampling Station
Chlorides**	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Arsenic	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Cadmium	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Lead	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Molybdenum	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Selenium	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station
Silver	*Will monitor compliance with 13.24.210	*Will monitor compliance with 13.24.210	Effluent Sampling Station

***13.24.210 Specific pollutant limitations**
No industry shall discharge wastewater containing pollutants which in combination with other discharges would cause the loadings at the introduction into the treatment plant to exceed the limits in 13.24.210.
**Chlorides mass limit will be determined after startup of the City's Reverse Osmosis system. Compliance will be enforced when limits are applied.

Sulfates Effluent Limitations

Parameter	30-Day Average (mg/L)	Daily Maximum (lb/day)	Location
Sulfates	Monitor Only	Monitor Only	Effluent Sampling Station

Toxicity Characteristics Leaching Procedure (TCLP)

Parameter	EPA Hazardous Waste No.	CAS No.	Regulatory Limit (mg/L)
Arsenic	D004	7440-38-2	5.0
Barium	D005	7440-38-3	100.0
Benzene	D018	71-43-2	0.5
Cadmium	D004	7440-43-9	1.0

Carbon Tetrachloride	D019	56-23-5	0.5
Chlordane	D020	57-74-9	0.03
Chlorobenzene	D021	108-90-7	100.0
Chloroform	D022	67-66-3	6.0
Chromium	D007	7440-47-3	5.0
o-Cresol	D023	95-48-7	200.0
m-Cresol	D024	108-39-4	200.0
p-Cresol	D025	106-44-5	200.0
Cresol	D026	-	200.0
2,4-D Acid	D016	94-75-7	10.0
1,4-Dichlorobenzene	D027	106-46-7	7.5
1,2-Dichloroethane	D028	107-06-2	0.5
1,1-Dichloroethylene	D029	75-35-4	0.7
2,4-Dinitrotoluene	D030	121-14-2	0.1
Endrin	D012	72-20-8	0.02
Heptachlor (and its epoxide)	D031	76-44-8	0.008
Hexachlorobenzene	D032	118-74-1	0.13
Hexachlorobutadiene	D033	87-68-3	0.5
Hexachloroethane	D034	67-72-1	3.0
Lead	D008	7439-92-1	5.0
Lindane	D013	58-89-9	0.4
Mercury	D009	7439-97-6	0.2
Methoxchlor	D014	72-43-5	10.0
Methyl Ethyl Ketone	D035	78-93-3	200.0
Nitrobenzene	D036	98-95-3	2.0
Pentachlorophenol	D037	87-86-5	100.0
Pyridine	D038	110-86-1	5.0
Selenium	D010	7782-49-2	1.0
Silver	D011	7440-22-4	5.0
Tetrachloroethylene	D039	127-18-4	0.7
Toxaphene	D015	8001-35-2	0.5
Trichloroethylene	D040	79-01-6	0.5
2,4,5-Trichlorophenol	D041	95-95-4	400.0
2,4,6-Trichlorophenol	D042	88-06-2	2.0
2,4,5-TP (Silvex)	D017	93-72-1	1.0
Vinyl Chloride	D043	75-01-4	0.2

6. MONITORING REQUIREMENTS

The monitoring requirements under this permit are summarized as follows:

Conventional Pollutant Monitoring

Parameter	Monitoring Frequency	Sample Type	Monitoring Location
Flow*	Weekly - derived from Weekly Pump Run Time Data, multiplied by average pumping rate, divided across number of days of week, or time since last pump reading	Calculated (as derived by dividing Weekly Pump Run Time Data, multiplied by average pumping rate, divided across number of days of week, or time since last pump reading)	Effluent Sampling Station
BOD	One (1) time per month	24-Hour Composite	Effluent Sampling Station
TSS	One (1) time per month	24-Hour Composite	Effluent Sampling Station
Ammonia Nitrogen (NH_3)	One (1) time per month	24-Hour Composite	Effluent Sampling Station
Fats, Oils, and Greases (FOG)	One (1) time per month	Grab	Effluent Sampling Station
pH	One (1) time per month	Grab	Effluent Sampling Station

* Permittee shall report annual pump rate test information to City for use in this calculation.

Local Limits Effluent Monitoring

Parameter	Monitoring Frequency	Sample Type	Monitoring Location
Mercury	One (1) time per month	24-Hour Composite	Effluent Sampling Station
Zinc	One (1) time per month	24-Hour Composite	Effluent Sampling Station
Chlorides*	One (1) time per month	24-Hour Composite	Effluent Sampling Station
Arsenic	Two (2) times per year	24-Hour Composite	Effluent Sampling Station
Cadmium	Two (2) times per year	24-Hour Composite	Effluent Sampling Station
Lead	Two (2) times per year	24-Hour Composite	Effluent Sampling Station
Molybdenum	Two (2) times per year	24-Hour Composite	Effluent Sampling Station

Selenium	Two (2) times per year	24-Hour Composite	Effluent Sampling Station
Silver	Two (2) times per year	24-Hour Composite	Effluent Sampling Station

*Chlorides mass limit will be determined after startup of the City's Reverse Osmosis system. Compliance will be enforced when limits are applied.

Sulfates Effluent Monitoring

Parameter	Monitoring Frequency	Sample Type	Location
Sulfates	One (1) time per month	24-Hour Composite	Effluent Sampling Station

Toxicity Characteristics Leaching Procedure (TCLP)

Parameter	Monitoring Frequency	Sample Type	Monitoring Location
Arsenic	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Barium	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Benzene	One (1) time per year	Grab	Effluent Sampling Station
Cadmium	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Carbon Tetrachloride	One (1) time per year	Grab	Effluent Sampling Station
Chlordane	One (1) time per year	Grab	Effluent Sampling Station
Chlorobenzene	One (1) time per year	Grab	Effluent Sampling Station
Chloroform	One (1) time per year	Grab	Effluent Sampling Station
Chromium	One (1) time per year	24-Hour Composite	Effluent Sampling Station
o-Creosol	One (1) time per year	Grab	Effluent Sampling Station
m-Creosol	One (1) time per year	Grab	Effluent Sampling Station
p-Creosol	One (1) time per year	Grab	Effluent Sampling Station
Creosol	One (1) time per year	Grab	Effluent Sampling Station
2,4-D Acid	One (1) time per year	Grab	Effluent Sampling Station
1,4-Dichlorobenzene	One (1) time per year	Grab	Effluent Sampling Station
1,2-Dichloroethane	One (1) time per year	Grab	Effluent Sampling Station
1,1-Dichloroethylene	One (1) time per year	Grab	Effluent Sampling Station
2,4-Dinitrotoluene	One (1) time per year	Grab	Effluent Sampling Station
Endrin	One (1) time per year	Grab	Effluent Sampling Station
Heptachlor (and its epoxide)	One (1) time per year	Grab	Effluent Sampling Station
Hexachlorobenzene	One (1) time per year	Grab	Effluent Sampling Station
Hexachlorobutadiene	One (1) time per year	Grab	Effluent Sampling Station

Hexachloroethane	One (1) time per year	Grab	Effluent Sampling Station
Lead	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Lindane	One (1) time per year	Grab	Effluent Sampling Station
Mercury	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Methoxchlor	One (1) time per year	Grab	Effluent Sampling Station
Methyl Ethyl Ketone	One (1) time per year	Grab	Effluent Sampling Station
Nitrobenzene	One (1) time per year	Grab	Effluent Sampling Station
Pentachlorophenol	One (1) time per year	Grab	Effluent Sampling Station
Pyridine	One (1) time per year	Grab	Effluent Sampling Station
Selenium	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Silver	One (1) time per year	24-Hour Composite	Effluent Sampling Station
Tetrachloroethylene	One (1) time per year	Grab	Effluent Sampling Station
Toxaphene	One (1) time per year	Grab	Effluent Sampling Station
Trichloroethylene	One (1) time per year	Grab	Effluent Sampling Station
2,4,5-Trichlorophenol	One (1) time per year	Grab	Effluent Sampling Station
2,4,6-Trichlorophenol	One (1) time per year	Grab	Effluent Sampling Station
2,4,5-TP (Silvex)	One (1) time per year	Grab	Effluent Sampling Station
Vinyl Chloride	One (1) time per year	Grab	Effluent Sampling Station

1. RESPONSIBILITY FOR SAMPLING, MONITORING AND ANALYSIS

Monitoring samples shall be collected downstream of any pretreatment facilities, prior to dilution with any non-regulated wastewater stream and prior to discharge to the City's sanitary sewer system.

Sampling, monitoring, and analysis under this permit will be as follows (check all thatapply):

☐ **Sampling and monitoring are not required because this is a Non-Significant Categorical user.**

☐ **Sampling, monitoring, and analysis shall be performed by the Permittee.**

☒ **Sampling, monitoring, and analysis shall be performed by the City in lieu of Permittee as provided in 40 CFR 403.12(g)(1).** In the event the City is unable to perform the sampling, the Permittee shall be responsible for sampling at the frequencies specified in **40 CFR 403.12(h).**

☒ **Flow monitoring equipment shall be provided and maintained by** the Permittee **at the following location (s):** Effluent Sampling Station.

☒ **Composite sampler(s) shall be provided and maintained by** the Permittee **at the following location(s):** Effluent Sampling Station.

If routine sampling, monitoring, or analysis is performed by the City in lieu of Permittee, the Permittee may be required to reimburse the City for expenses incurred. The Permittee may also be required to reimburse the City for the costs of providing and maintaining flow monitoring equipment or composite samplers. All samples and measurements shall be taken at the monitoring locations specified in this permit (unless otherwise noted) and must be representative of the conditions being monitored. The Permittee shall not change, alter, or remove any monitoring or sampling equipment without prior approval from the City. Sampling and monitoring equipment provided by the Permittee shall be maintained by the Permittee in good working order at Permittee's own expense. The Permittee shall immediately notify the City of any problems and promptly repair or replace any sampling or monitoring equipment that is not functioning properly. Spare parts shall be kept available at the Permittee's facility as necessary to make routine repairs. Flow monitoring equipment shall be calibrated at least once a year to ensure accuracy. The calibration shall be performed by a qualified third party acceptable to the City. The Permittee will be responsible for securing the third party to perform the calibration. The calibration shall ensure that accuracy is consistent with the accepted capability for that type of flow monitoring device and does not deviate by more than ten percent from true discharge rates throughout the range of expected discharge volumes. Calibration reports shall be submitted to the Pretreatment Office at least annually and more often if monitoring problems indicate the need for more frequent calibration.

Permittee shall be equipped with a sampling station at a point of effluent discharge. The sampling station shall have a sink, running hot water, locking sampler, flow meter, drain and light source. The station maybe in-house or at an exterior location. An exterior location must be enclosed, heated and adequately accessible. All samples shall be kept refrigerated at 4 degrees Celsius. If Permittee is out of compliance with this ordinance, the Control Authority may request renovations or relocation of said sampling stations.

8. TEST METHODS. *40 CFR 403.12(g)(5)*

Samples must be analyzed using approved methods specified in 40 CFR Part 136 and amendments thereto. Recognized laboratory manuals such as "Standard Methods for the Examination of Water and Wastewater" (current edition) may be used as a reference.

9. USE OF CERTIFIED LABORATORIES. *IAC 567-63.1(4)*

All testing must be done by laboratories certified by the State of Iowa under one or more of Iowa's environmental laboratory certification programs in accordance with IAC 567 Chapter 83. Routine on-site monitoring for pH, temperature, dissolved oxygen, total residual chlorine, and settleable solids, are excluded from this requirement (reference IAC 567-63.1(4)).

10. RECORDKEEPING. *40 CFR 403.12(o)* and *IAC 567-63.2*

The City shall maintain records of all monitoring activities in accordance with 40 CFR 403.12(o) and IAC 567-63.2. The records shall include: (1) Date, time, and place of sampling; (2) Name of person who collected the samples or took the measurements; (3) Method of sampling used; (4) Dates when samples were analyzed; (5) Name of person who performed the analysis; (6) Analytical techniques used; (7) Results of the analysis; and (8) Name and identification number of Iowa-certified testing laboratory that did the analysis. The City shall keep these records on-site at its facility and retain them for a minimum of three years. These records shall be available for the Permittee to review during normal working hours but do not need to be submitted to the Permittee unless specifically requested. Permittee shall keep Operation and Maintenance Records of their wastewater treatment facility, and shall furnish them at City's request, in order to establish Permittee's adequacy in operating and maintaining their facility to meet the discharge requirements specified herein.

11. PERIODIC MONITORING REPORTS. *40 CFR 403.12(e) and (h)*

The Permittee will be responsible for periodic monitoring reports as follows (check one):

☒ **Periodic monitoring reports are not required.** Permittee is exempt under 40 CFR 403.12(g)(1) and is not required to submit periodic monitoring reports to the City because either: (1) the Facility is a Non-Significant Industrial User; or (2) Sampling and analysis is performed by the City in lieu of the Permittee and the information for the reports is collected by the City itself

☐ **Periodic monitoring reports are required.** Permittee is required to submit periodic monitoring reports to the City as specified in 40 CFR 403.12(e) for Categorical Industrial Users, or 40 CFR 403.12(h), for Non-Categorical Significant Industrial Users. These code sections require the reports to be submitted once every six months on June 30 and December 31. The reports may be required more frequently if deemed necessary by the City or may be reduced to not less than once a year for a "Middle Tier" Categorical Industrial User as allowed under CFR 403.12(e)(3). For this permit, it has been determined that the monitoring reports will be required at intervals of one time per month. The reports shall be due no later than 15 days following the end of each monthly monitoring period.

Monitoring reports may be submitted by any means acceptable to the City. The reports shall include a summary of the monitoring data collected during each month. The data shall be arranged in tabular form with column headings similar to the forms used by the Iowa Department of Natural Resources. Days should be listed in the left-hand column with the first day of the month at the top and last day at the bottom. Flow data should be reported in the next column. The rest of the columns are to be used for reporting test data for other parameters such as CBOD and TSS. The data in each column shall be tabulated at the bottom of the page to show the average, maximum, and minimum values for each parameter. If the Permittee monitors any pollutants more frequently than required by this permit, the data from such monitoring shall be included in the monitoring reports per 40 CFR 403.12(g)(6) and shall be used in determining the average, maximum, and minimum values.

All monitoring reports must be signed and dated and include the following certification statement found in 40 CFR 403.6(a)(2)(ii):

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and

belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

The above certification must be signed by a responsible corporate officer or manager at the facility in accordance with 40 CFR 403.12(l) unless the Permittee provides the City with written authorization for other individuals to sign on behalf of the corporate officer or manager as specified in 40 CFR 403.12(l)(3).

12. SAMPLING AND SURVEILLANCE BY CITY. *40 CFR 403.8(f)(2)(v)*

The City will randomly sample and analyze effluent from the Permittee's facility and conduct surveillance inspections to identify noncompliance with pretreatment standards as specified in 40 CFR 403.8(F)(2)(f). The sampling and surveillance will be done at least one time per year but may be done more frequently if deemed necessary by the City or may be reduced to once every two years for a "Middle Tier" Categorical Industrial User as allowed under 40 CFR 403.8(f)(2)(v)(c). The City may choose not perform sampling and surveillance of this facility if it is classified as a Non Significant Categorical Industrial User, however, the City must conduct an evaluation one time per year to determine if the facility continues to meet the criteria for this classification as specified in 40 CFR 403.8(f)(2)(v)(B). The City reserves the right to do random sampling and surveillance at any time it deems necessary. The Permittee may be required to reimburse the City for expenses incurred in performing the random sampling, analysis, and surveillance inspections.

13. ACCESS BY CITY.

The City or its duly authorized representative(s) shall be allowed to enter the Permittee's premises at reasonable times as necessary to collect effluent samples or conduct surveillance inspections. The City shall be allowed access to all sampling and monitoring locations, areas where wastewater treatment is performed, and any areas where pollutants could enter the sewer. The Permittee is responsible for maintaining access to all sampling and monitoring locations and shall keep the sampling and monitoring locations cleared of snow and ice, as necessary. Permittee may also be required to erect shelter buildings over sampling manholes, flow monitoring structures, and other outdoor monitoring locations where deemed necessary by the City.

14. SLUG CONTROL PLAN. *40 CFR 403.8(f)(2)(vi) and City Code 13.24.240*

A slug discharge is an accidental spill, release, bypass, or other non-routine discharge that has a reasonable potential to cause interference or pass through at the City's wastewater treatment plant causing or contributing to noncompliance resulting in violate of any regulation or National Pollution Discharge Elimination System (NPDES) permit limit by the City. A slug control plan is a management strategy to prevent slug discharges and mitigate adverse impacts. Federal code Section 40 CFR 403.8(f)(2)(vi) requires the City to evaluate each industrial user at least one time to determine if the facility is required to have a slug control plan or implement other measures to prevent slug discharges. This evaluation has resulted in the following determination under this permit (check one):

☐ **This facility does not need a slug control plan.** The facility does not have a reasonable potential to cause slug discharges or has implemented appropriate measures to prevent slug discharges.

☒ **This facility already has a satisfactory slug control plan on file with the City.**

☐ **This facility must submit a slug control plan.** The Permittee is required to submit a slug control plan to the City within______120_____days after this permit is issued.

Slug control plans are required to contain the following elements: (1) Description of discharge practices including non-routine batch discharges; (2) Description of storage facilities for all chemicals; (3) Procedures for immediately notifying the City of any slug discharge with follow-up written notification within five days; and (4) Procedures for preventing adverse impacts from spills including inspection and maintenance of chemical storage areas, material handling areas, loading and unloading operations, control of site run-off, worker training, spill containment structures and/or measures and equipment for emergency response. If the facility has other plans or reports that contain the information needed for a slug control plan these other plans or reports may be used as attachments to the slug control plan. Examples of other plans or reports that may be used include "Spill Prevention and Countermeasure (SPCC) Plans" and "Hazardous Chemical Inventory Reports".

The Permittee is required to notify the City immediately of any changes at its facility that could affect the potential for a slug discharge so the City may re-evaluate slug control measures if necessary.

15. NOTICE OF POTENTIAL PROBLEMS, INCLUDING SLUG LOADING. *40 CFR 403.12(f)*

Permit holder must immediately notify the City of any discharges that could cause problems with the City's wastewater treatment facilities including spills, slug loadings, and discharges that would violate a prohibited discharge standard under 40 CFR 403.5. The Permittee shall additionally provide follow-up written notification of such problems to the City within five (5) days as required in 40 CFR 403.8(f)(2)(vi)(c).

16. NOTICE OF VIOLATION AND REPEAT SAMPLING. *40 CFR 403.12(g) (2)*

If sampling performed by the Permittee indicates a violation, the Permittee shall notify the City within 24 hours of becoming aware of the violation as provided in 40 CFR 403.12(g)(2). The Permittee shall also repeat the sampling and analysis for the parameter that had the violation and submit the results of the repeat analysis to the City within 30 days after becoming aware of the violation. If the sampling was performed by the City in lieu of the Permittee, the repeat sampling and analysis will be done by the City unless it notifies the Permittee of the violation and requires the Permittee to perform the repeat analysis. Repeat sampling will not be required if the parameter that had the violation is regularly sampled and tested at least once a month.

17. NOTIFICATION OF CHANGED DISCHARGE. *40 CFR 403.12(j) and City Code 13.24.230*

The Permittee shall promptly notify the City in advance of any substantial change in the volume or character of any pollutants in its effluent discharge. This includes pollutants subject to the hazardous waste notification requirements in 40 CFR 403.12(p) as described below.

18. NOTIFICATION OF HAZARDOUS WASTE DISCHARGE. *40 CFR 403.12(p) City Code 13.24.235*

If the Permittee discharges more than fifteen kilograms per month of any substance to the City's treatment plant that would be considered hazardous waste under 40 CFR 261, the Permittee must submit a one-time written notification to the City of Fort Dodge, the EPA Regional Waste Management Division, and the Iowa Department of Natural Resources. Written notification is also required if the Permittee discharges any amount of any substance that would be considered "acute" hazardous waste as specified in 40 CFR 261.30(d) or 261.33(e). The notification must include the name of the hazardous waste as set forth in 40 CFR 261, the EPA hazardous waste number, and type of discharge (continuous, batch, or other). If the amount of hazardous waste exceeds 100 kilograms per month, the notification shall also include: (1) an identification of the hazardous constituents in the wastes; (2) an estimate of the mass and concentration of hazardous constituents discharged during that calendar month; and (3) an estimate of the mass of constituents expected to be discharged during the following twelve months. All notifications must be accompanied by a certification that the Permittee has a waste reduction program in place to reduce the volume and toxicity of hazardous wastes generated to a degree it has determined to be economically practical. The notification must be submitted within 180 days after the discharge of hazardous waste begins and is also required within 90 days after the effective date of any rule changes that reclassify existing wastes as hazardous wastes. The notification needs to be submitted only once for each hazardous waste that is discharged, however, if there are any changes in the volume or character of the waste a notification of "changed discharge" must be submitted as specified in 40 CFR 403.12(j). Pollutants already reported under the self-monitoring requirements of 40 CFR 403.12(b), (d), and (e) are exempt from the notification requirements.

19. UPSET NOTIFICATION. *40 CFR 403.16*

An Upset is defined as an exceptional incident in which there is unintentional and temporary noncompliance with pretreatment standards due to factors beyond the reasonable control of the Permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed or inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation. If the Permittee experiences an upset that results in temporary noncompliance, the Permittee shall inform the City within 24 hours of becoming aware of the upset and provide a follow-up written report to the City within five (5) days. The report shall contain: (1) a description of the upset and its cause; (2) the duration of noncompliance including exact dates and times and/or anticipated time the noncompliance is expected to continue if the problem has not yet been corrected; (3) steps taken or planned to reduce, eliminate, and prevent any further upsets or noncompliance. An upset may be used as an affirmative defense in enforcement proceedings if the Permittee can establish that the noncompliance was caused by an upset and can also demonstrate that the pretreatment facility was being operated in a prudent and workman-like manner at the time the upset occurred. The Permittee shall have the burden of proof in establishing that an upset occurred.

20. BYPASS NOTIFICATION. *40 CFR 403.17*

A bypass is an intentional diversion of a waste stream from any portion of a treatment facility. All bypasses are prohibited except for emergency bypasses and planned bypasses. Emergency bypasses will only be permitted if they are essential to prevent loss of life, personal injury, or severe property damage and there is no feasible alternative to the bypass. Planned bypasses will only be permitted if they are essential for maintenance purposes and do not cause any violations of pretreatment standards. If the Permittee knows in advance of the need for a bypass, it shall submit written notice to the City at least ten (10) days prior to the date of the bypass if possible. If a bypass results in noncompliance (even a planned bypass for maintenance purposes) or an unanticipated bypass occurs, the Permittee must inform the City within 24 hours after becoming aware of the noncompliance and must submit a follow-up written report to the City within five days. The report shall contain: (1) a description of the bypass and its cause; (2) the duration of bypass including exact dates and times and/or anticipated time the bypass is expected to continue if the problem has not yet been corrected; (3) steps taken or planned to reduce, eliminate, and prevent any further bypasses.

21. SPECIAL REPORTS FOR CATEGORICAL USERS. *40 CFR 403.12(b), (c), and (d)*

Categorical Industrial Users are required to submit the following reports:

Baseline Monitoring Report (BMR). 40 CRF 403.12(b). New facilities that will be subject to a categorical standard must submit a baseline monitoring report to the City at least 90 days prior to commencement of discharge. Existing facilities that become subject to a new categorical standard after the facility was built must submit a baseline report to the City within 180 days after the effective date of the new standard. Baseline reports shall contain all the information listed in 40 CFR 403.12(b) (1) through (5).

For existing facilities, the baseline reports shall additionally contain a certification by a qualified professional as required in 40 CFR 403.12(b) (60). The certification shall indicate whether applicable pretreatment standards are being met, and, if not, specify whether additional pretreatment facilities are required to meet the standards. If the facility is unable to meet the pretreatment standards, it must submit a compliance schedule to the City as required in 40 CFR 403.12(b) (7). The compliance schedule shall contain dates for major events leading to the construction of a new wastewater pretreatment facility or upgrade of an existing facility as necessary to achieve compliance. Examples of major events include hiring of an engineer, begin design, complete design, start construction, complete construction, performance testing, and final compliance.

Compliance Schedule Progress Reports. 40 CFR 403.12(c). If an existing facility is subject to a compliance schedule under 40 CFR 403.12(b)(7), it must submit progress reports to the City no later than 14 days after each date in the schedule and no more than 9 months apart. Progress reports shall indicate the status of the project and whether or not it is on schedule. If the project is falling behind, the report shall indicate the reason for the delay, steps being taken to return to schedule, and a statement of when the project is expected to be back on schedule. The City will review these reports to track the progress of the work.

90-Day Compliance Report. 40 CFR 403.12(d). New facilities that are subject to a categorical standard must submit a compliance report to the City within 90 days after commencement of discharge. Existing facilities that became subject to a new categorical standard must submit a compliance report to the City within 90 days after the final compliance date specified in a categorical standard or within 90 days after the compliance date specified by the City, whichever is earlier. Compliance reports shall include flow measurements and pollutant measurements along with their applicable pretreatment limits and certification by a qualified professional indicating whether the pretreatment standards are being met. If the standards are not being met, the report must specify how compliance will be achieved.

The Baseline Monitoring Report and 90-Day Compliance Report must include the certification statement in 40 CFR 403.6(a) (2) (ii) and be signed in accordance with the signatory requirements in 40 CFR 403.12(l).

22. CERTIFICATION BY NON-SIGNIFICANT CATEGORICAL USERS. *40 CFR 403.12(q)*

Non-Significant Categorical Industrial Users must submit an annual certification to the City as follows:

Based on my inquiry of the person or persons directly responsible for managing compliance with the categorical Pretreatment Standards under 40 CFR_______________. I certify that, to the best of my knowledge and belief that during the period from_________, to____________________[months, days, year]:

(a) The facility described as____(facility name) met the definition of a Non-Significant Categorical Industrial User as described in §403.3(v)(2);

(b) The facility complied with all applicable Pretreatment Standards and requirements during this reporting period; and

(c) The facility did not discharge more than 100 gallons of total categorical wastewater on any given day during this reporting period. This compliance certification is based upon the following information:

The certification statement for non-significant categorical users must be signed in accordance with the signatory requirements in 40 CFR 403.12(l).

23. PROHIBITED DISCHARGES. *40 CFR 403.5 and City Code 13.24.180*

The Permittee shall not discharge any pollutants prohibited under 40 CFR 403.5 or City Code 13.24.180. Prohibited discharges include, but are not limited to, the following:

(a) Pollutants which create a fire or explosion hazard including gasoline, benzene, solvents, and other substances with a closed cup flashpoint of less than 60 degrees Centigrade (140 degrees Fahrenheit).

(b) Corrosive substances or wastewater having a pH above 9.5 or less than 5.5.

(c) Solid or viscous pollutants including grease, sludge, garbage, fax, wax, tar, rags, wood, etc., which may obstruct flow or interfere with the treatment works.

(d) Any pollutant in an amount that will cause interference at the City's treatment works, including oxygen demanding pollutants such as BOD.

(e) Heat in amounts which will inhibit biological activity at the treatment works or cause the temperature at the treatment works to exceed 40 degrees Centigrade (104 degrees Fahrenheit), but in no case wastewater having a temperature higher than 65 degrees Centigrade (150 degrees Fahrenheit).

(f) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through the treatment works.

(g) Toxic liquids, solids, gases, vapors, or fumes that may cause health or safety problems.

(h) Any wastewater containing medical wastes or radioactive wastes.

(i) Any wastewater with an objectionable color not removed in the treatment process including dyes.

(j) Any trucked or hauled pollutants, except at discharge points designated by the City.

(k) Any substance that may interfere with the City's treatment works or cause violation of its NPDES permit.

24. SIGNIFICANT NONCOMPLIANCE. *40 CFR 403.8(f)(2)(viii)*

The Permittee will be considered to be in "significant non-compliance" for any of the following:

(a) Chronic Permit Violations. These are violations in which 66 percent or more of the measurements for the same parameter during a 6-month period exceeded the discharge limit for that parameter.

(b) Technical Review Criteria (TRC) Violations. These are violations in which 33 percent or more of the measurements for the same parameter during a 6-month period were equal to or greater than the discharge limit multiplied by the applicable TRC factor (TRC = 1.4 for BOD, TSS, fats, oil, and grease, and 1.2 for all other pollutants except pH).

(c) Any other serious violation of a pretreatment standard or requirement if the City determines that the violation caused significant interference or noncompliance at the City's wastewater treatment plant.

(d) Any discharge of a pollutant that has caused imminent risk to human health or welfare, or endangered the environment, or resulted in the City exercising its emergency authority to halt or prevent such a discharge under 40 CFR 403.8(f)(l)(vi)(B).

(e) Failure to meet a compliance schedule deadline within 90 days after the completion date in the schedule.

(f) Failure to submit a required report within 45 days after the due date.

(g) Failure to accurately report noncompliance or violations.

(h) Any other violation or group of violations that adversely affect the operation of the City's treatment plant.

25. ANNUAL PUBLICATION. *40 CFR 403.8(f)(2)(viii)*

The public notification requirement in 40 CFR 403.8(f) (2) (viii) requires the City to annually publish a list of Industrial Users who were in significant noncompliance at any time during the previous twelve (12) months. The list must be published in a newspaper having the largest circulation in the area. The Permittee is hereby advised that significant noncompliance with this permit may result in publication of its name in a newspaper.

26. DUTY TO HALT OR PREVENT DISCHARGE. *40 CFR 403.8(f)(1)(vi)(B)*

The Permittee shall immediately halt and/or prevent discharge of pollutants to the City upon informal notice by the City that the discharge presents an imminent risk to the health or welfare of persons, endangers the environment, or threatens to interfere with the operation of the City's wastewater treatment plant.

27. DILUTION.

The Permittee shall not dilute its effluent with potable water or any other water in an attempt to meet the effluent limits in this permit. Dilution will not be allowed as a substitute for proper treatment.

28. ENFORCEMENT PROCEDURE. *40 CFR 403.8(f)(l)(vi)(A) and City Code13.12, 13.24.350*

(a) Surcharges: The Program Administrator shall levy surcharges for any discharge(s) that exceed BOD, TSS, Ammonia, Nitrogen, or FOG per City Code 13.12.

(b) Surcharge Rates: The rates for BOD, TSS, Ammonia Nitrogen or FOG shall be according to those rates found per City Code 13.12.

(c) Violations and Enforcement: Noncompliance with this permit shall constitute a violation of City Ordinance No. 1863 and may result in assessment of penalties or fines in amounts of up to $1,000 per day per violation as provided in City Code Section 13.24.350 and 40 CFR 403.8(f)(l)(vi)(A). Continued noncompliance may result in enforcement proceedings, administrative orders, compliance schedules, and/or renovation of this permit as provided in City Code Section 13.24.315.

The attached chart (provided at the end of this permit) further outlines types of violations and specifies POTW actions (initial and escalated), timeframes, and the officials responsible for completing the actions. This chart shall be considered a part of this Discharge Permit.

29. RECOVERY OF COSTS.

In addition to basic charges for normal sewer service, the Permittee shall be responsible for the following additional costs:

(a) Costs for the City to provide or maintain flow meters or composite samplers on behalf of the Permittee.

(b) Costs for the City to perform routine sampling, monitoring, or analysis on behalf of the Permittee.

(c) Costs for the City to perform random sampling, analysis, and surveillance per 40 CFR 403.8(f) (2) (v).

(d) Costs of any loss, damage, or expense incurred by the City because of Permittee's discharge.

(e) Costs of any cleaning or repair work required because of Permittee's discharge.

(f) Assessment of penalties or fines for violations of this permit or City Ordinance.

(g) Costs incurred to publish permittee's name in a newspaper as required in 40 CFR 403.8(f)(2)(viii) if the Permittee was in significant noncompliance at any time during the previous 12 months.

(h) Surcharges for CBOD5 or Total Suspended Solids (TSS) in excess of 250 mg/L per City Code 13.12.

(i) Surcharges for Oil/Grease in excess of 100 mg/L per City Code 13.12.

(j) Surcharges for Ammonia Nitrogen in excess of 20 mg/L per City Code 13.12.

30. CONTINUATION OF EXPIRED PERMITS.

An expired permit will continue to be effective and enforceable until a new permit is issued if the Permittee filed for renewal at least 180 days prior to the permit's expiration date and the delay in reissuing a new permit was not caused by any fault of the Permittee.

ANTICIPATED ENFORCEMENT ACTIONS/PROCEDURES

Unpermitted Discharge

Type of Violation	Industrial Pretreatment Program Action	Timeframe	Responsible Official	Expected Action from User	Escalated Action if Needed
Unpermitted Discharge (Unaware of Requirement)	Notice of Non-Compliance	Within 30 Days of Discovery of Discharge	Pretreatment Coordinator	File Permit Application	Notice of Violation; Suspend Service Until Permit Is Issued
Unpermitted Discharge (Aware of Requirement)	Notice of Violation with Penalty Assessed	Within 30 Days of Discovery of Discharge	Director	File Permit Application	Suspend Service Until Permit Is Issued
Unpermitted Discharge (Resulting in Violation at WPCF)	Order to Cease Process Causing Violation; Notice of Violation with penalty per day per violation per established tiered penalty structure	Order to Cease Immediately; Notice of Violation within 15 days	Director	File Permit Application; Report Steps Taken to Prevent Violation	Suspend Service Until Permit Issued
Unpermitted Discharge (Resulting in Endangerment)	Suspend Service; Notice of Violation with penalty per day per violation per established tiered penalty structure	Suspend Service Immediately; Notice of Violation within 15 days	Director	File Permit Application; Report Steps Taken to Prevent Future Endangerment	Not Applicable

Permit Limit Violations

Type of Violation	Industrial Pretreatment Program Action	Timeframe	Responsible Official	Expected Action from User	Escalated Action if Needed
Permit Limits Violation Single Event (Minor)	Notice of Non-Compliance or Notice of Violation	Within 30 days of receiving data	Pretreatment Coordinator or Director	Conduct Additional Monitoring and Return to Compliance	Notice of Violation with Penalty
Permit Limits Violation	Notice of Violation with penalty per day per violation per established tiered penalty structure	Within 30 days of Receiving Data	Director	Conduct Additional Monitoring and Return to Compliance	Second Notice of Violation with Increased Penalty
Permit Limits Violation Significant Non-Compliance	Notice of Violation with penalty per day per violation per established tiered penalty structure	Within 30 days of Receiving Data	Director	Report cause of Non-Compliance and Steps Taken to Prevent Violation	Enforceable Schedule; Suspend Service if Inadequate Action is Taken
Permit Limits Violation (Resulting in Violation at WPCF)	Order to Cease Process Causing Violation Notice of Violation with penalty per day per violation per established tiered penalty structure	Order to Cease Immediately Notice of Violation Within 15 days of Discovering Violation	Director	Report cause of Non-Compliance and Steps Taken to Prevent Violation	Suspend Service Until Resolved; Enforceable Schedule

Other Violations

Type of Violation	Industrial Pretreatment Program Action	Timeframe	Responsible Official	Expected Action from User	Escalated Action if Needed
Permit Limits Violation results in Endangerment	Suspend Service Notice of Violation penalty per day per violation per established tiered penalty structure	Suspend Service Immediately Notice of Violation within 15 days of Discovering Violation	Director	File for Reissuance of Permit	Not Applicable
Self-Monitoring Violations	Notice of Non-Compliance or Notice of Violation	Within 30 Days of Discovery	Pretreatment Coordinator or Director	Conduct Missed Sampling	Second Notice of Violation with minimum Penalty equal to Cost of Missed Testing
Reporting Violations Late Report	Notice of Non-Compliance	Within 30 days of the Report Due Date	Pretreatment Coordinator	Submit Report	Notice of Violation Penalty Assessed Possible SNC if over 30 days
Reporting Violations Incomplete or Inaccurate Reports	Notice of Non-Compliance	Within 30 days of Report Submission	Pretreatment Coordinator	Submit Revised Report	Notice of Violation Penalty Assessed
Reporting Violations Intentional Falsification	Referred to District Attorney	As soon as suspected	Director	Not Applicable	Not Applicable

Other Violations (Continued)

Type of Violation	Industrial Pretreatment Program Action	Timeframe	Responsible Official	Expected Action from User	Escalated Action if Needed
Violation of Permit Conditions	Notice of Violation with penalty per day per violation per established tiered penalty structure	Within 30 Days of Discovery	Director	Varies	Second Notice of Violation with Increased Penalty
Violation of Permit Conditions (Resulting in Violation at WPCF or Endangerment of WPCF Personnel)	Suspend Service Notice of Violation with penalty per day per violation per established tiered penalty structure	Suspend Service Immediately Notice of Violation Within 715 days	Director	Steps taken to Avoid Reoccurrence	Not Applicable