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January 27, 2025

Iowa Department of Natural Resources
Attn: Michael W. Smith, P.E.
Environmental Engineer Senior
Land Quality Bureau
502 East 9th Street
Des Moines, Iowa 50319-0034

Dear Mr. Smith,

On behalf of the Rathbun Area Solid Waste Management Commission, Hall Engineering Company is submitting herewith the 2024 Annual Water Quality Report for the Appanoose County Sanitary Landfill, Closure Permit No. 04-SDP-01-76C.

If you have any questions or comments regarding the Report, please contact me at nbuss@hall-engineering.us or by telephone at (641)437-4477.

Very truly yours,

HALL ENGINEERING COMPANY

Nancy J. Buss

Nancy J. Buss, P.E.

Copy: Dane Blozovich, Director
RASWC Transfer Station

Appanoose County Sanitary Landfill

North Unit
Permit No. 04-SDP-01-76C
Appanoose County - NW 1/4, NE 1/4, SE 1/4 Section 27, T 68 N, R 18 W

Rathbun Area Solid Waste Management Commission

2024 Annual Water Quality Report

January 2025

Prepared by:
Hall Engineering Company
PO Box 825
Centerville, Iowa 52544

I hereby certify that this engineering document was prepared by me or under my direct personal supervision and that I am a duly licensed Professional Engineer under the laws of the State of Iowa.

Nancy J. Buss
Nancy J. Buss (Jan 27, 2025 11:55 CST)

Nancy J. Buss, P.E. Registration No. 18186

Date:________________

My license renewal date is December 31, 2026.
Pages or sheets covered by this seal:
All Pages in Bound Document except as follows:

> This Annual Water Quality Report contains groundwater testing Analytical Reports prepared by Eurofins and Statistical Analysis Reports of groundwater monitoring data prepared by Foth Infrastructure & Environment, LLC. The work performed by Eurofins and Foth is not included under this Engineer Certification.

2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
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Table of Contents

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Acronyms/Abbreviations:

ACM = Assessment of Corrective Measures
CAMP = Corrective Action Monitoring Plan
CL = Control Limit - Mean plus Two Standard Deviations
DO = Dissolved Oxygen
DQR = Double Quantification Rule
GWPS = Groundwater Protection Standard
LEL = Lower Explosive Limit
LCL = Lower Confidence Limit
LN = Lognormal
MCL = EPA Maximum Contaminant Level
N = Normal
NC = No Change
NP = Non-Parametric
ORP = Oxidation Reduction Potential
P = Parametric
PL = Prediction Limit
RL = Reporting Limit
SS = DNR Statewide Standard for a protected groundwater source
SSI = Statistically Significant Increase above background
SSL = Statistically Significant Level above groundwater protection standard
TBD = To Be Determined
UCL = Upper Confidence Limit

Executive Summary
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Period of Report Coverage

The report herein provides the results of groundwater monitoring during the May 2024 and October 2024 semi-annual sampling events and the statistical evaluation of all monitoring results from December 2018 through October 2024.

North Unit.

The May 2024 sampling event included the Appendix I constituents and total suspended solids at background monitoring locations MW-51 and PZ-12 and assessment monitoring locations MW-27 and MW-50R. MW-51, PZ-12, and MW-27 were sampled for sulfide. MW-27 was sampled for the historically detected Appendix II constituents beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde.

The October 2024 sampling event included the Appendix I constituents and total suspended solids at background monitoring locations MW-51 and MW-60 and assessment monitoring locations MW-27 and MW-50R. MW-51, MW-60, and MW-27 were sampled for sulfide. MW-27 was sampled for the historically detected Appendix II constituents beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde.

South Unit.

The Closure Permit Revision dated February 7, 2020 (Doc # 96951) removed the South Unit from the requirements of the Hydrogeologic Monitoring System Plan.

Report Priority

The Spring 2024 statistical evaluation used interwell prediction limits to assess statistically significant increases (SSIs) over background for analytes that have been detected above the reporting limit in the combined background data set of MW-51 and PZ-12 from December 2018 through May 2024. These analytes were antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, sulfide, thallium, vanadium, and zinc. No prediction limit exceedances were identified at MW-50R and MW-27 in the May 2024 sampling event.

The Fall 2024 statistical evaluation used interwell prediction limits to assess SSIs for analytes that have been detected above the reporting limit in the combined background data set of MW-51, PZ-12 and MW-60 from December 2018 through October 2024. These analytes were antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, sulfide thallium, vanadium, and zinc. No prediction limit exceedances were identified at MW-50R and MW-27 in the October 2024 sampling event.

The Spring statistical evaluation used the double quantification rule (DQR) to evaluate SSIs over background for the Appendix II constituents which have not been detected above the reporting limit in the combined background data set of MW-51 and PZ-12. DQR detections were identified for benzine and cis-1,2-dichloroethene at MW-27 in the May 2024 sampling event. In lieu of retesting, SSIs were declared.

The Fall 2024 statistical evaluation used the double quantification rule (DQR) to evaluate SSIs over background for the Appendix II constituents which have not been detected above the reporting limit in the combined background data set of MW-51, PZ-12, and MW-60. A DQR detection was identified for cis-1, 2-dichloroethene at MW-27 in the October 2024 sampling event.

The Spring 2024 statistical analysis evaluated the SSIs benzene and cis-1,2-dichloroethene at MW-27 for statistically significant levels (SSLs) over the Groundwater Protection Standards (GWPS). SSLs were not identified.

The Fall 2024 statistical analysis evaluated the SSI cis-1,2-dichloroethene at MW-27. An SSL was not identified.

The historically detected Appendix II pesticides beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, and endrin aldehyde at assessment well MW-27 were detected at concentrations less than the method detection limit during the May and October 2024 sampling events.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a “never-detected” constituent and has been repeatedly detected in PZ-12, retesting was not recommended, and the May 2024 results were not included in the background data set. A new background well has been installed and will replace PZ-12.

The background data set and practical quantitation limits (PQLs) were reviewed starting with the Spring 2023 statistical evaluation to determine if PQLs have been lowered over time, and if earlier non-detect data with elevated PQLs should be removed from background data. Non-detected background samples with a PQL of at least two times the maximum detected background concentration are recommended for removal. Data set adjustments were recommended for removal of non-detect silver and thallium background results with a PQL of 0.004 mg/L.

In September 2023, 1,4-phenylenediamine was sampled at MW-27, MW-50R, MW-51, and PZ-12 as part of the 5-year resampling for the full Appendix II list. Due to low laboratory control sample and laboratory control sample duplicate recoveries, the 1,4-phenylenediamine data in MW-27, MW-50R, MW-51, and PZ-12 were validator-qualified R (rejected). Resampling was not recommended for the rejected 1,4-phenylendiamine data at MW-51 and PZ-12 since these are background monitoring wells and background monitoring for 1,4-phenylendiamine is not required for project compliance. Resampling was conducted for 1,4-phenylendiamine at MW-27 and MW-50R in May 2024. The May 2024 1,4-phenylendiamine data in MW-27 and MW-50R was validator-qualified (rejected) again due to low laboratory control samples and laboratory control sample duplicate recoveries. Further resampling was not recommended for the rejected 1,4-phenylendiamine data at MW-27 and MW 50R since 1,4-phenylendiamine was sampled and analyzed in September 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylendiamine has historically not been detected at these wells, and the laboratory indicated 1,4-phenylendiamine is a poor performing analyte.

The total suspended solids (TSS) concentration in groundwater samples at background MW-51 in May and October 2024 were below the limit of 5 mg/L. The May 2024 TSS concentration at background PZ-12 was above the limit at 75 mg/L. The new background well MW-60 was installed in July and the October TSS concentration was slightly above the limit at 6 mg/L. No background data set adjustments were recommended for MW-51 and MW-60 based on review of TSS data from the May and October 2024 sampling events.

The Spring and Fall 2024 statistical analysis of the groundwater monitoring data collected during the respective sampling events are included in Appendix 3.

It is recommended that the assessment monitoring program continue with the Spring 2025 sampling event. The spring sampling will include the following analytes:

MW-51 – Appendix I list, sulfide, TSS
MW-60 – Appendix I list, sulfide, TSS
MW-50R – Appendix I list, TSS
MW-27 – Appendix I list, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, TSS

Based on the following 2024 statistical evaluation summary, IDNR review of the AWQR is not considered an urgent matter.

- Assessment monitoring continues when Appendix II concentrations are above background values but below the GWPS.
- All Appendix II constituents detected at assessment well MW-27 and MW-50R were not below the interwell prediction limits and laboratory reporting limits for three consecutive sampling events. MW-27 and MW-50R will not exit assessment monitoring.
- During the Spring statistical evaluation, SSIs were identified at assessment well MW-27 for benzene, cis-1,2-dichloroethene.
- During the Fall statistical evaluation, SSIs were identified at assessment well MW-27 for cis-1,2-dichloroethene.
- There were no identified SSLs at assessment MW-27.
- Due to ongoing intermittent acetone detection, low groundwater level, and slow recharge rate at background well PZ-12, MW-60 was installed in July as a replacement background well for PZ-12 in accordance with the 2013 Work Plan for Assessing Background Metals that was approved by IDNR on March 4, 2013.
- The Fall TSS concentration in replacement MW-60 was 6 mg/L, slightly above the acceptable limit.
- The Spring and Fall TSS data for MW-51 were below the 5 mg/L limit.
- Corrective measures begin when Appendix II constituents are detected at statistically significant levels above the GWPS.

There is no known impact on any rules schedule that would be effected by the time period for IDNR review of the AWQR.

There is no action or activity that is on hold due to completion of IDNR review or comment of the AWQR.

Site Status and Applicable Rules
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See Figure No. 1 – Site Plan in Appendix Two

The Appanoose County Landfill closure construction and compliance report was approved by the Department through issuance of a Closure Permit on May 27, 2008. The Landfill stopped accepting solid waste on November 30, 2007. There are no waste disposal, recycling or composting activities being conducted at the closed landfill site. Landfill cover maintenance and groundwater monitoring are the only related landfill activities being conducted at this time.

The landfill property is currently leased by Indian Hills Community College as a farm for a Sustainable Agriculture Program. The use of the landfill “footprints” are restricted to hay production.

The closure and post closure care of the landfill follow the rules of IAC Chapter 113 effective 1/15/2003 and Chapter 113 effective 12/10/2007. The Revised Closure Permit identifies the applicable IAC rules.

Closure Permit No. 6, dated February 7, 2020, removed the South Unit from the requirements of the HMSP.

Due to ongoing intermittent acetone detection, low groundwater level, and slow recharge rate at background well PZ-12, MW-60 was installed as a replacement background well for PZ-12.

Site Background
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Site History

The landfill that closed in 2007 (North Unit) and the landfill that closed in 1985 (South Unit) are located in areas that were previously mined for limestone. Mining at the South Unit was terminated in 1974. The landfill operation was developed and first permitted by the Iowa Department of Natural Resources in 1975. The South Unit was operated from 1975 until 1985, at which time landfill operations were transferred to the North Unit. Mining at the North Unit was terminated in 1984 and the landfill operation was developed and first permitted by the DNR in 1985. The Rathbun Area Solid Waste Management Commission operated the North Unit from July 1989 to December 2007. Prior to July 7, 1989, landfill operations were owned and operated by a privately owned corporation. The property upon which the landfills were located was leased from private land owners. On July 7, 1989 the land lease rights and the landfill operations were sold to the Rathbun Area Solid Waste Management Commission (RASWC). The RASWC purchased the property upon which the North Unit is located together with contiguous land for purposes of landfill expansion in 1995. The approximate “footprint” of the South Unit was purchased by the RASWC in 1998.

The RASWC submitted a certification of Risk Assessment and was conditionally exempted from providing and implementing a leachate control system at both landfill units under DNR letter dated September 26, 1995 and the Closure Permit issued on May 27, 2008.

A development and operational plan for vertical expansion over the North Unit was approved by the Department of Natural Resources in 1996.

In 1998/1999, two foot of additional cover was placed over the South Unit to correct deficiencies in the final cover that was placed in 1985, and to improve drainage.

The North Unit ceased operation on December 1, 2007. Closure of the landfill was completed on September 28, 2008.

Summary of Hydrogeologic Investigation and Groundwater Flow Assessment

A hydrogeologic investigation of the Appanoose County landfill was conducted from 1989 to 1992 by Maxim Technologies/Patzig Laboratories for development of a Hydrologic Monitoring System Plan. The hydrogeologic investigation determined that vertical groundwater flow at the Unit is minimal and that groundwater flow is predominantly lateral. The horizontal groundwater flow is North and East toward Shoal Creek. The study concluded that there does not appear to be either extensive or continuous direct paths for contaminant migration from the two landfill Units via groundwater. However, the investigation did identify some potential routes through zones of mine spoil fill, glacial outwash, and limestone stringers with greater permeability for possible groundwater movement.

The landfill Units are located in the geomorphic region known as the Southern Iowa Drift Plain. The exploratory soil borings encountered soil profiles consisting of fill, slope wash, alluvium, loess, Pre-Illinoian glacial till, and Pre- Illinoian glacial outwash deposits.

Areas impacted by previous quarrying operations were backfilled with mine spoil placed during active mining operations. The fill consisted primarily of clay shale with silty sand clay. The fill was encountered at depths 2 to 37 feet below existing grades. Falling head permeability tests indicated vertical permeability of the fill materials to range from 5.6 x 10^{-6} to 1.3 x 10^{-8} cm/sec. The cohesive fill material was considered an aquiclude.

Slope wash material was encountered underlying the fill. The slope wash was cohesive and consisted of clayey silt to silty clay, containing trace concentrations of sand. The slope wash was 4 to 11 feet thick and was encountered at depths 11 to 35 feet below existing grades. Falling head permeability tests indicated a vertical permeability of 5.6 x 10^{-6} to 6.5 x 10^{-8} cm/sec. The cohesive slope wash was considered an aquiclude. The study concluded that horizontal permeability may be 2 to 3 orders of magnitude greater than vertical permeability due to the layering of the slope wash soils.

Alluvium was encountered underlying the slope wash and consisted of silty sandy clay changing with depth to a granular silty clayey sand. The alluvium was 6 to 26 feet thick and encountered from 9 to 38 feet below existing grades. Analysis of the grain size distribution indicated permeability of the alluvium to be in the order of 10^{-2} to 10^{-4} cm/sec. Falling head permeability tests indicated the cohesive alluvium to be relatively impermeable and to be considered an aquiclude. As the sand content and permeability increases, the granular alluvium could become an aquifer with moderate permeability; however, the soil type was not continuous or extensive enough to be considered a potential water supply aquifer.

There was 2 to 4 feet of loess encountered in some areas forming a thin mantle; however, mining operations and erosion have likely removed the loess over much of the site. The cohesive loess consisted of brown silty clay and is considered to be a moderately permeable soil that often exhibits a perched groundwater condition wherein vertical water movement downward is restricted by underlying less permeable soils.

Pre-Illinoian glacial till was encountered in areas not previously worked by the quarrying operations. The Pre-Illinoian glacial till was predominantly cohesive and consisted of brown to gray sandy clay. Random isolated sandy zones and sand seams were encountered through the glacial till. The thickness of the glacial till was variable ranging from as little as 3 feet in areas that were previously mined to as much as 79 feet thick and extended from near the surface to depths of 30 to 40 feet below existing grades. Falling head permeability tests indicated vertical permeability of 1.4 x 10^{-8} to 2.9 x 10^{-8} cm/sec. The Pre-Illinoian glacial till, void of sandy zones and sand seams, is considered to be relatively impermeable and would be considered an aquiclude. The sandy zones and sand seams within the glacial till may provide pathways for groundwater migration; however, no extensive or continuous sandy zones or sand seams were encountered.

Granular Pre-Illinoian glacial outwash was encountered underlying the Pre-Illinoian glacial till. The glacial outwash consisted of brown clayey fine to coarse sand containing trace concentrations of gravel. Glacial outwash was 3 to 10 foot thick and encountered at depths 18 to 28 feet below existing grade. The glacial outwash would be considered an aquifer; however, it was neither continuous nor extensive enough to be considered a potential water supply aquifer.

The exploratory test borings encountered the Pennsylvanian bedrock system beneath the overburden soils. The Pennsylvanian bedrock consisted of undifferentiated formations of clay shale, sandstone, and limestone.

The bedrock formations encountered were predominantly clay shale which ranged in color from brown-gray to maroon and changed with depth to gray and dark gray. The clay shale was encountered at depths ranging from near the surface to as much as 79 feet below existing grades. The clay shale is relatively impermeable and considered to be an aquiclude.

Four to 6 foot thick brown sandstone formations were encountered at depths ranging from 15 feet to 32 feet below existing grades and contained inter- bedded limestone and clay shale formations. The sandstone would be relatively permeable and considered an aquifer. However, due to the localized nature and limited extent, the sandstone was not considered a potential water supply aquifer.

One to 6 foot thick limestone seams were encountered in many of the test borings. The limestone was encountered at elevations ranging from 950 to 970 feet msl, and are likely the same formations that were mined in the quarry operations. Other minor limestone seams were encountered at elevations ranging from 910 to 930 feet msl, approximately 20 to 40 feet below the mined limestone. Permeability of the limestone ranged from 1×10^{-3} to 7×10^{-5} cm/sec, and the limestone formations are considered to be local aquifers. Limestone formations encountered within the Pennsylvanian bedrock are generally discontinuous and confined by clay shale. The limestone foundations encountered at the site were not considered major water supply aquifers such as the underlying Mississippian limestone formation. The Mississippian bedrock formation was considered to be the first regional bedrock aquifer in this area and is located about 450 feet below ground at this site.

Horizontal groundwater flow within the uplands appeared to be within the Pre-Illinoian glacial till with the majority of the flow occurring within random sand seams and very sandy zones. Due to the low hydraulic conductivity of the Pre- Illinoian glacial till, it was expected that the volume of flow from the glacial till would be relatively small.

Horizontal groundwater flow in the lowlands would be predominantly within the slope wash and alluvial deposits, and would be both perpendicular and parallel to stream flow. The perpendicular flow would be toward or away from Shoal Creek depending on the stage of the stream and parallel flow would be in a downstream direction. Groundwater levels in the lowlands would tend to be a subdued reflection of the Shoal Creek stage level.

Isolated bedrock stringers of permeable limestone and sandstone are present near or below the elevation of Shoal Creek. Water level measurements indicated that the permeable bedrock stringers are in hydraulic connection to Shoal Creek and adjacent groundwater.

Vertical groundwater flow measurements at the North Unit indicated the groundwater table to be in the glacial till near elevation 1010 feet msl, approximately 10 feet below ground surface on the up gradient side, and within the slope wash/alluvial deposits on the down gradient side near elevation 941 feet msl.

Vertical groundwater flow measurements at the South Unit indicated the groundwater table to be in the glacial till near elevation 1000 feet msl, approximately 10 feet below ground surface on the up gradient side. On the down gradient side, the groundwater table would be within the glacial till, if present, or within underlying interbedded limestone stringers of the Pennsylvanian bedrock near elevation 931 feet msl, approximately 33 to 55 feet below ground surface.

A typical hydrogeologic cross-section of the North Unit is provided in Figure No. 3 of Appendix Two. Groundwater contours for the North Unit were developed based on groundwater elevations measured in May and October 2024 and are superimposed on topographic maps in Figure No. 4A and 4B of Appendix Two. The leachate levels within the waste unit of the North Unit have been included for developing groundwater contours as directed by the Department. As indicated on the groundwater contour map for the North Unit, the major component of groundwater flow is from West to North and East.

Hydrologic Monitoring System Plan Update

Due to ongoing intermittent acetone detection, low groundwater level, and slow recharge rate at background well PZ-12, MW-60 was installed in July as a replacement background well for PZ-12 in accordance with the 2013 Work Plan for Assessing Background Metals that was approved by IDNR on March 4, 2013. MW-60 was added to the HMSP in Permit Revision 8 on August 30, 2024. PZ-12 was removed from the HMSP in Permit Revision 9 on September 16, 2024.

Table 1
Monitoring Program Summary
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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 January 1, 2024		
						Detection	Assessment	Corrective Action
MW-51	Bedrock (limestone/clay shale)	Background	NC	None	None	0	2	0
PZ-12	Bedrock (limestone/clay shale)	Background	See Comment Note 1	None	None	0	1	0
MW-60	Bedrock (limestone/shale)	Background	NC	None	None	0	1	0
MW-27	Bedrock (limestone/clay shale)	Assessment	NC	cis-1, 2-dichloroethene, benzene	None	0	2	0
MW-50R	Bedrock (limestone/clay shale)	Assessment	NC	None	None	0	2	0

Comments:

1. Based on the intermittent acetone detection, low groundwater level, and slow recharge rate at PZ-12, a new background well, MW-60 was installed in July. MW-60 was added to the Monitoring Network in Permit Revision No. 8. PZ-12 was removed from the Monitoring Network in Permit Revision No. 9.

Site Figures
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The following site figures are presented in Appendix Two.

Figure No. 1 is an aerial photograph of the landfill site and illustrates the HMSP monitoring network for the North Unit as approved in the August 30, 2024 8th revision and September 16, 2024 9th revision to the Closure Permit. The landfill property line and permitted boundary are also identified.

Figure No. 2 is a topographic map of the North Unit showing the hydrologic monitoring system location, and the approximate waste disposal boundary.

Figure No. 3 is a cross-section of the North Unit showing the hydrogeologic strata across the landfill from background well MW-51 to assessment well MW-27. Groundwater elevations measured in October 2024 at MW-51 and MW-27 are shown together with leachate elevations measured at LF-1.

Figure No. 4A and 4B present groundwater contours for the North Unit superimposed on a topographic map based upon groundwater elevations in May and October 2024 respectively. The leachate elevations within the waste unit have been included for developing groundwater contours as directed by the Department.

Figure No. 5 identifies the explosive gas monitoring locations.

Table 2
Monitoring Program Implementation Schedule
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	Recent Sampling Dates and Constituents					**Upcoming Sampling Dates and Constituents**		**Full Appendix II Sample Dates**	
Monitoring Well	**05/21/2023**	**08/13/2023**	**09/25/2023 & 09/26/2023**	**05/28/2024**	**10/06/2024**	**May 2025**	**September 2025**	**Previously Collected**	**Next Event**
MW-51	Appendix I, sulfide, TSS		Appendix II, sulfide, TSS	Appendix I, sulfide, TSS	Appendix I, TSS, sulfide	Appendix I, sulfide, TSS	Appendix I, TSS, sulfide	12/2, 3, 8/2008; 9/23/2013, 9/24/2018, 9/25,26/2023	
PZ-12	Appendix I, sulfide, TSS	Acetone	See Comment Note 1	Appendix I, sulfide, TSS	Appendix I, TSS, sulfide	Appendix I, sulfide, TSS	Appendix I, TSS, sulfide	9/24, 27/2018, 10/16/2018, 09/25,26/2023	
MW-60					Appendix I, TSS, sulfide	Appendix I, TSS, sulfide	Appendix I, TSS, sulfide		
MW-27	Appendix I, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, TSS		Appendix II, TSS	Appendix I, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, 1,4-phenylenediamine, TSS	Appendix I, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, TSS	Appendix I, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, TSS	Appendix I, sulfide, beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, TSS	12/2, 3, 8/2008; 9/23/2013; 9/24/2018, 9/25/2023	Fall 2028
MW-50R	Appendix I, TSS		Appendix II, TSS	Appendix I, 1,4-phenylenediamine, TSS	Appendix I, TSS	Appendix I, TSS	Appendix I, TSS	12/2, 3, 8/2008; 9/23/2013; 9/24/2018, 9/25/2023	Fall 2028

Comments:

1. Extreme drought conditions resulted in low groundwater elevation and slow recharge rate at PZ-12. Hall Engineering Company contacted Foth Infrastructure & Engineering, LLC and IDNR on September 26, 2023. Foth recommended discontinuing sampling at PZ-12 since it is a background well and the Appendix II list was sampled at background MW-51. IDNR emailed it's concurrence. PZ-12 was sampled for the following constituents: on 09/25/2023, semivolatile organic compounds, organochlorine pesticides, and TSS; on 09/26/2023, volatile organic compounds. Nonhalogenated organics, herbicides, total metals, mercury, cyanide, and sulfide were not sampled at PZ-12
2. Based on the intermittent acetone detection, low groundwater level, and slow recharge rate at PZ-12, a new background well, MW-60 was installed in July. MW-60 was added to the Monitoring Network in Permit Revision No. 8. PZ-12 was removed from the Monitoring Network in Permit Revision No. 9.

Table 3
Monitoring Well Maintenance and Performance Revaluation Schedule
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Compliance with:	Monitoring Calendar Years						
	2010	2011	2012	2013	2014	2015	2016
567 IAC 113.21(2)"a"(12/11/02) biennial evaluation of high and low water levels	Completed	Completed	Completed	Completed	Completed	Completed	Completed
567 IAC 113.21(2)"b"(12/11/02) biennial evaluation of changes in the hydrologic setting and flow paths	Completed	Completed	Completed	Completed	Completed	Completed	Completed
567 IAC 113.21(2)"c"(12/11/02) annual well depths	Completed	Completed	Completed	Completed	Completed	Completed	Completed
567 IAC 113.21(2)"d"(12/11/02) five year in-situpermeability test to compare test data to original data.	Completed						
567 IAC 113.26(1)"m"(2)(12/11/02) Waste separation from ground water	Completed	Completed	Completed	*	*	*	*

Compliance with:	Monitoring Calendar Years							
	2017	2018	2019	2020	2021	2022	2023	2024
567 IAC 113.10(2)"f"(1) biennial evaluation of high and low water levels	Completed	Completed	Completed		Completed	Completed	Completed	Completed
567 IAC 113.10(2)"f"(2) biennial evaluation of changes in the hydrologic setting and flow paths	Completed		Completed		Completed		Completed	
567 IAC 113.10(2)"f"(3) annual well depths	Completed	Completed	Completed	Completed	Completed	Completed	Completed	Completed
567 IAC 113.10(2)"f"(4) biennial evaluation of well recharge rates and chemistry	Completed		Completed		Completed		Completed	
567 IAC 113.6(2)"i" Waste separation from ground water	*	*	*	*	*	*	*	*

Comments: Prior to the issuance of Amendment No. 4 to the Closure Permit, the requirements for monitoring well maintenance and performance re-evaluation followed rule 567 IAC 113.21(2)(12/11/02). Permit Amendment No. 4, superseded by Variance Request approved 4/12/17, authorized changes to the monitoring well maintenance and performance re-evaluation plan to meet the requirements of 567 IAC 113.10(2)"f" (7/4/07)

* DNR correspondence of 3/4/2013 required leachate elevations measured in MW-LF-1 be included in the data used to determine groundwater elevations.

Table 4
Monitoring Well Maintenance and Performance Report
2024 Annual Water Quality Report
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Comments:

Revision No. 1 to the Closure Permit changed the monitoring well maintenance and performance reevaluation plan to meet the requirements of IAC 113.10(2)"f" (effective 10/1/07).

Subrule IAC 113.10(2)f(1) requires a biennial examination of horizontal and vertical acceptability of well location and exposure of the screened interval to the atmosphere. The next biennial examination of horizontal and vertical acceptability will be included in the 2025 AWQR.

Subrule IAC 113.10(2)f(2) requires a biennial evaluation of water level conditions in the monitoring wells to ensure that the effects of waste disposal or well operation have not resulted in changes in the hydrologic setting and resultant flow paths. Table 4 provides water level elevations in the monitoring wells during the May and October 2024 sampling events. The next biennial evaluation of water level condition in the monitoring wells will be included in the 2025 AWQR.

Figure No. 4A and No. 4B of Appendix Two illustrate water table contours at the North Site using monitoring well water elevations and the leachate well water elevation for May and October 2024. The leachate level within the waste unit has been included for developing groundwater contours for the North Site as directed by the Department in its March 4, 2013 review comments of the 2012 AWQR. Examination of the water table contours indicates that background wells MW-51 and MW-60 remain upgradient. The groundwater flow direction remains northerly and easterly toward Shoal Creek. The water table contour data indicates that no significant impacts or changes in groundwater hydrology or groundwater flow paths have occurred.

Subrule IAC 113.10(2)f(3) requires annual well depth measurements (for wells without dedicated sampling pumps) to ensure the wells are physically intact and not filling with sediment. Table 4 illustrates the original well depth measurement and the May and October 2024 well depth measurements for the monitoring wells included in the current HMSP. All 2024 well depth measurements were within 2 feet of the original well depths. MW-51 and MW-27 indicate some well sedimentation when compared to original well depth; however, the well depth measurements have remained reasonably constant during the past 23 sampling rounds. Based on these observations, the wells are not filling with sediment and remain physically intact.

Subrule IAC 113.10(2)f(4) requires biennial evaluation of well recharge rates and chemistry to determine if well deterioration is occurring. The next biennial evaluation of well recharge rates and chemistry to determine if well deterioration is occurring will be included in the 2025 AWQR.

No monitoring well maintenance activities are recommended at this time.

Table 4
Monitoring Well Maintenance and Performance Summary
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
Permit No. 04-SDP-01-76C

(includes all wells, underdrains etc.)

Well	Top of casing	Top of Screen	Total Depth		Date of Measurements		Maximum Depth Discrepancy (ft)	Baseline Recharge (gpm)/date	Current Recharge Rate	
					5/28/2024	10/6/2024				% Change
MW-51	1020.95	957.89	73.06	Groundwater Level (ft)	36.00	38.35	1.88	0.084 9/29/2017		
				Groundwater Elevation (Ft MSL)	984.95	982.60				
				Measured Well Depth (ft)	71.18	-				
				Submerged screen	Y	Y				
PZ-12	1010.12	976.56	42.56	Groundwater Level (ft)	38.13	-	0.49	0.015 9/29/2017		
				Groundwater Elevation (Ft MSL)	971.99	-				
				Measured Well Depth (ft)	42.07	-				
				Submerged screen	N	-				
MW-60	995.02	875.02	135	Groundwater Level (ft)	-	61.41	0.02			
				Groundwater Elevation (Ft MSL)	-	933.61				
				Measured Well Depth (ft)	-	134.98				
				Submerged screen	-	Y				
MW-27	968.62	935.33	43.29	Groundwater Level (ft)	30.93	31.11	0.59	0.053 9/29/2017		
				Groundwater Elevation (Ft MSL)	937.69	937.51				
				Measured Well Depth (ft)	42.70	-				
				Submerged screen	Y	Y				
MW-50R	967.37	929.20	48.17	Groundwater Level (ft)	32.87	34.61	0.08	0.045 9/29/2017		
				Groundwater Elevation (Ft MSL)	934.50	932.76				
				Measured Well Depth (ft)	48.09	-				
				Submerged screen	Y	Y				

Groundwater Underdrain Piezometer

Well		Date of Measurements	
	bottom of waste (feet MSL)		
	Groundwater Elevation (feet MSL)		
	Separation distance (feet)		

Comments: Revision No. 6 to the Closure Permit dated February 7, 2020 removed the South Unit from the HMSP.

Table 5
Background and GWPS Summary
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
Permit No. 04-SDP-01-76P

Constituent (1)	CAS #	Units	Samples	Detections (2)	Min (3)	Max (3)	Mean (3)	Note	Background Level	Statistical Test	GWPS	Source (4)
Interwell Background/GWPS (Dec. 2008 - Oct. 2024)												
2,3,4,6-Tetrachlorophenol	58-90-2	ug/L	5	1	0.623 J	5.5 (1/2 RL)	4.12	J-Flagged Only	**10.0 (RL)**	DQR	**N/A**	N/A
4,4'-DDE	72-55-9	ug/L	5	1	0.00313 J	0.03555 (1/2 RL)	0.0213	J-Flagged Only	**0.064 (RL)**	DQR	**0.51**	SS
Acetone (5)	67-64-1	ug/L	35	16	3.27 J	36	8.75		**10.0 (RL)**	DQR	**6300**	SS
Antimony	7440-36-0	mg/L	27	9	0.0005 (1/2 RL)	0.0062	0.0013		**0.0062**	Non-Parametric (1-of-2)	**0.006**	MCL
Arsenic	7440-38-2	mg/L	25	11	0.00061 J	0.00874	0.00277		**0.00874**	Non-Parametric (1-of-2)	**0.01**	MCL
Barium	7440-39-3	mg/L	52	51	0.005 (1/2 RL)	2.18	0.086		**2.18**	Non-Parametric (1-of-2)	**2.18**	Background
Beryllium	7440-41-7	mg/L	26	1	0.000422 J	0.002 (1/2 RL)	0.00055	J-Flagged Only	**0.001 (RL)**	DQR	**0.004**	MCL
Cadmium	7440-43-9	mg/L	52	30	0.000046 J	0.0142	0.0011		**0.001614**	Parametric (Lognormal, 1-of-2)	**0.005**	MCL
Carbon Disulfide	75-15-0	ug/L	29	1	0.5 (1/2 RL)	2.5 (1/2 RL)	0.59		**1.00 (RL)**	DQR	**700**	SS
Chromium	7440-47-3	mg/L	53	11	0.000836 J	0.0305	0.0037		**0.0305**	Non-Parametric (1-of-2)	**0.1**	MCL
cis-1,2-Dichloroethene (6)	156-59-2	ug/L	37	1	0.5 (1/2 RL)	2.9	0.62		**1.00 (RL)**	DQR	**70**	MCL
Cobalt	7440-48-4	mg/L	52	35	0.000036 J	0.0524	0.00677		**0.04714**	Parametric (Lognormal, 1-of-2)	**0.0524**	Background
Copper	7440-50-8	mg/L	52	26	0.000734 J	0.136	0.0084		**0.136**	Non-Parametric (1-of-2)	**1.3**	MCL
delta-BHC	319-86-8	ug/L	7	2	0.00255 J	0.03555 (1/2 RL)	0.0179	J-Flagged Only	**0.064 (RL)**	DQR	**2.1**	SS
Endosulfan II	33213-65-9	ug/L	5	1	0.00244 J	0.03555 (1/2 RL)	0.0209	J-Flagged Only	**0.064 (RL)**	DQR	**42**	SS
Endrin Aldehyde	7421-93-4	ug/L	7	1	0.0104 J	0.03555 (1/2 RL)	0.0210	J-Flagged Only	**0.064 (RL)**	DQR	**2.1**	SS
Lead	7439-92-1	mg/L	52	28	0.000118 J	0.0878	0.0040		**0.0878**	Non-Parametric (1-of-2)	**0.0878**	Background
m/p-Cresol	15831-10-4	ug/L	5	1	1.24 J	5.5 (1/2 RL)	4.19	J-Flagged Only	**10.0 (RL)**	DQR	**70**	SS
Methoxychlor	72-43-5	ug/L	5	1	0.0176 (1/2 RL)	0.03555 (1/2 RL)	0.0242	J-Flagged Only	**0.064 (RL)**	DQR	**40**	MCL
Nickel	7440-02-0	mg/L	52	42	0.00137 J	0.112	0.0145		**0.0517**	Parametric (Lognormal, 1-of-2)	**0.1**	SS
Pentachlorophenol	87-86-5	ug/L	5	1	2.55 J	5.5 (1/2 RL)	4.50	J-Flagged Only	**10.0 (RL)**	DQR	**1**	MCL
Selenium	7782-49-2	mg/L	53	8	0.000965 J	0.0188	0.0039		**0.0188**	Non-Parametric (1-of-2)	**0.05**	MCL
Silver	7440-22-4	mg/L	25	1	0.0005 (1/2 RL)	0.00175	0.00055		**0.00175**	Non-Parametric (1-of-2)	**0.1**	SS
Sulfide	18496-25-8	mg/L	23	8	0.05 (1/2 RL)	13.4	1.93		**13.4**	Non-Parametric (1-of-2)	**13.4**	Background
Thallium	7440-28-0	mg/L	25	2	0.0005 (1/2 RL)	0.00242	0.00059		**0.00242**	Non-Parametric (1-of-2)	**0.00242**	Background
Total Suspended Solids	TSS	mg/L	37	36	0.625 J	72	12.7		**N/A**	N/A	**N/A**	N/A
Vanadium	7440-62-2	mg/L	53	21	0.000758 J	0.0686	0.0049		**0.0686**	Non-Parametric (1-of-2)	**0.0686**	Background
Zinc	7440-66-6	mg/L	52	45	0.00621 J	0.977	0.1365		**0.977**	Non-Parametric (1-of-2)	**2**	SS

Comments:

DQR = double quantification rule

N/A = not applicable

RL = reporting limit taken as the laboratory practical quantitation limit (PQL)

(1) List contains constituents detected above the laboratory minimum detection limit (MDL) in the background data set (MW-51, MW-60, and PZ-12).

(2) The number of detections includes J-flagged data (concentrations above the MDL but below the RL).

(3) Non-detect concentrations are included in the calculation of minimum, maximum, and mean; 1/2 the RL was utilized for non-detect concentrations.

Table 5
Background and GWPS Summary
2024 Annual Water Quality Report
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Comments Continued:

(4) Sources are either the Maximum Contaminant Level promulgated under Section 1412 of the Safe Drinking Water Act in 40 CFR Part 141 (MCL) or the 567 IAC Chapter 137 Statewide Standards for a Protected Groundwater Source (SS). For barium, cobalt, lead, thallium, and vanadium, where background is higher than the MCL or SS, the GWPS is background. For sulfide, where there is no MCL or SS, the GWPS is background. Background as the GWPS is the *one-sample* test confidence limit method where the fixed GWPS is the background upper tolerance limit with 95% confidence and 95% coverage. N/A = not applicable; constituent does not have a MCL or SS and using background as the GWPS is not applicable due to limited detections.

(5) Acetone was newly detected above the RL in background in May 2018 and intermittently detected above the RL in 2019, 2020, and 2023. Except for the Sep. 2023 acetone detect in PZ-12, retest samples were collected each time acetone was detected above the RL, and the retests did not confirm the single acetone detections identified between 2018 and 2023. Therefore, acetone continues to be evaluated using the DQR. For PZ-12, background dataset adjustments have been considered and recommended due to acetone detections as further discussed below. Starting in Oct. 2024, background monitoring was discontinued at PZ-12 .

(6) As noted in the statistical memorandums, a single detection above the RL of cis-1,2-dichloroethene occurred at upgradient well MW-51 during Sep. 2011 at a concentration of 2.9 ug/L. IDNR agreed in their March 4, 2013 letter (IDNR, 2013) that "as a single, unconfirmed detection the double quantification rule does not indicate a statistically significant increase for cis-1,2-dichloroethene; therefore no further action is required." Therefore, statistical comparisons for cis-1,2-dichloroethene in the downgradient wells continue to be evaluated using the DQR.

- No new constituents were detected at the background monitoring locations in 2024.
- The background data sets consist of MW-51, MW-60, and PZ-12. MW-60 was installed as a new background monitoring well in Jul. 2024 to replace PZ-12. Starting in Oct. 2024, background monitoring was discontinued at PZ-12 and initiated at MW-60. The historical PZ-12 background data was retained at this time. As more data is obtained from MW-60, consideration will be given as to whether to continue retaining the historical PZ-12 results in the combined background data set. The following background data set adjustments were recommended in 2024.
    - At background well PZ-12, a single volatile organic compound (VOC) detection was identified for acetone in May 2024. Since acetone is considered a "never-detected" constituent and has been repeatedly detected in PZ-12, retesting was not recommended, and the May 2024 results were not included in the background data set. As noted above, MW-60 replaced PZ-12 as a background monitoring well starting in Oct. 2024.
- The previously approved background data set adjustments, as detailed in the statistical reports, were maintained in 2024.

Table 6
Summary of Well/Detected Constituent Pairs With No Previous SSIs
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
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Comments: This table is not applicable. The compliance wells are both in assessment monitoring. See Table 7 for assessment monitoring results.

Summary of Prediction Limits and Health Standards
2024 Annual Water Quality Report
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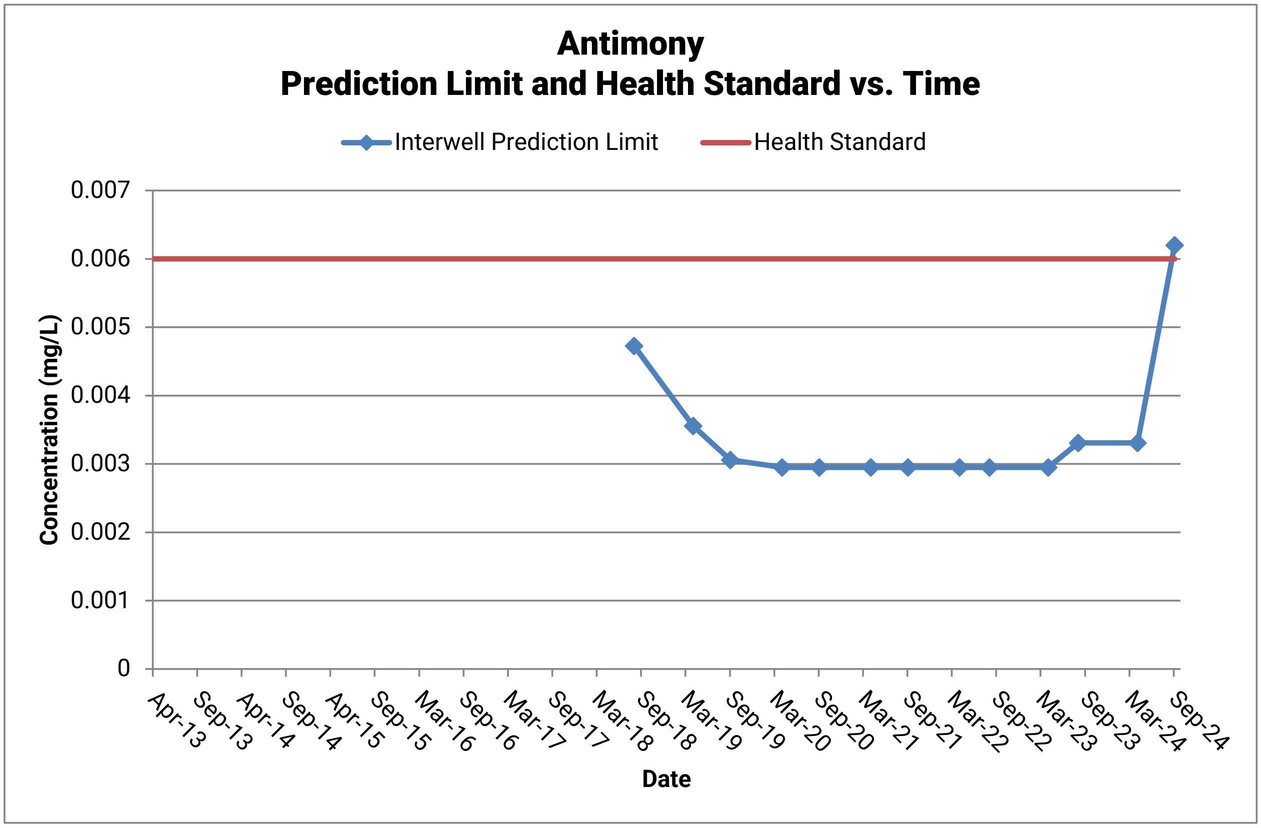
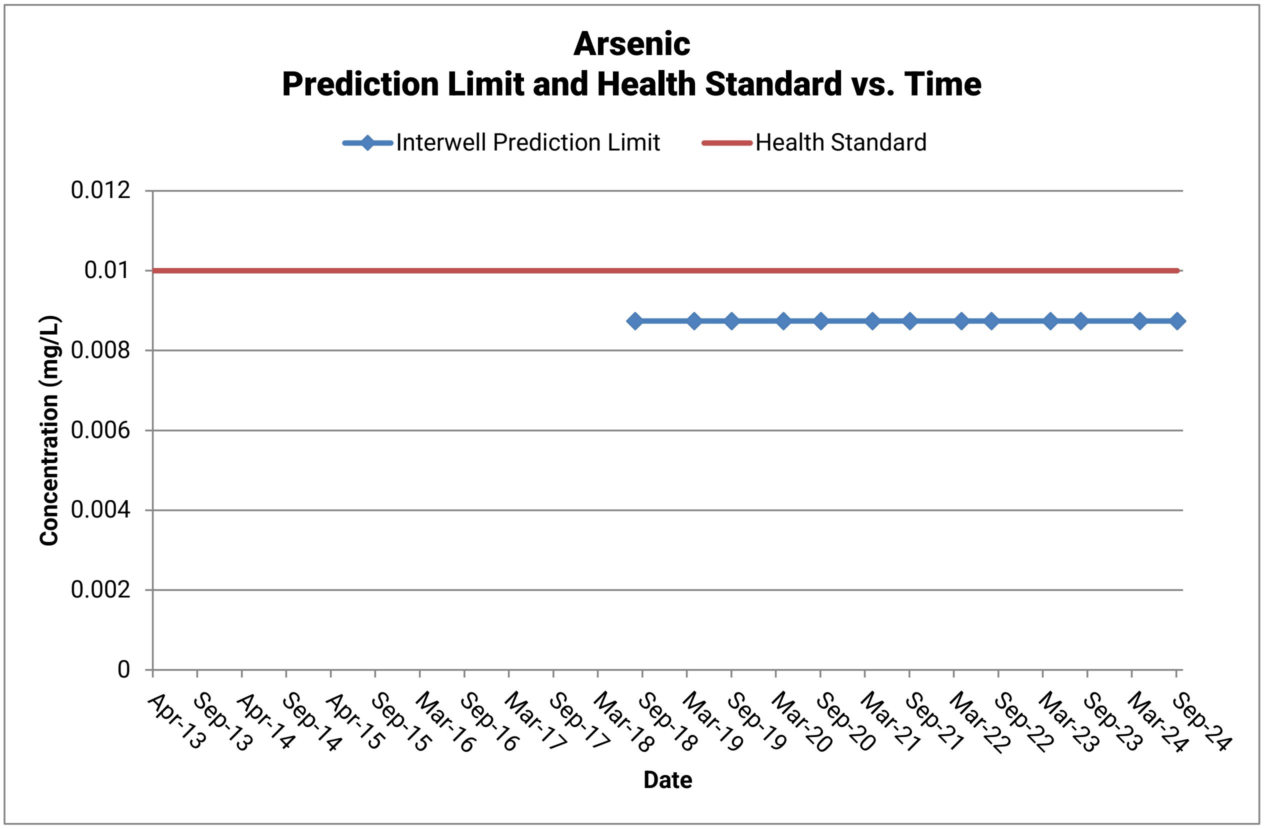
Permit No. 04-SDP-01-76P





Summary of Prediction Limits and Health Standards
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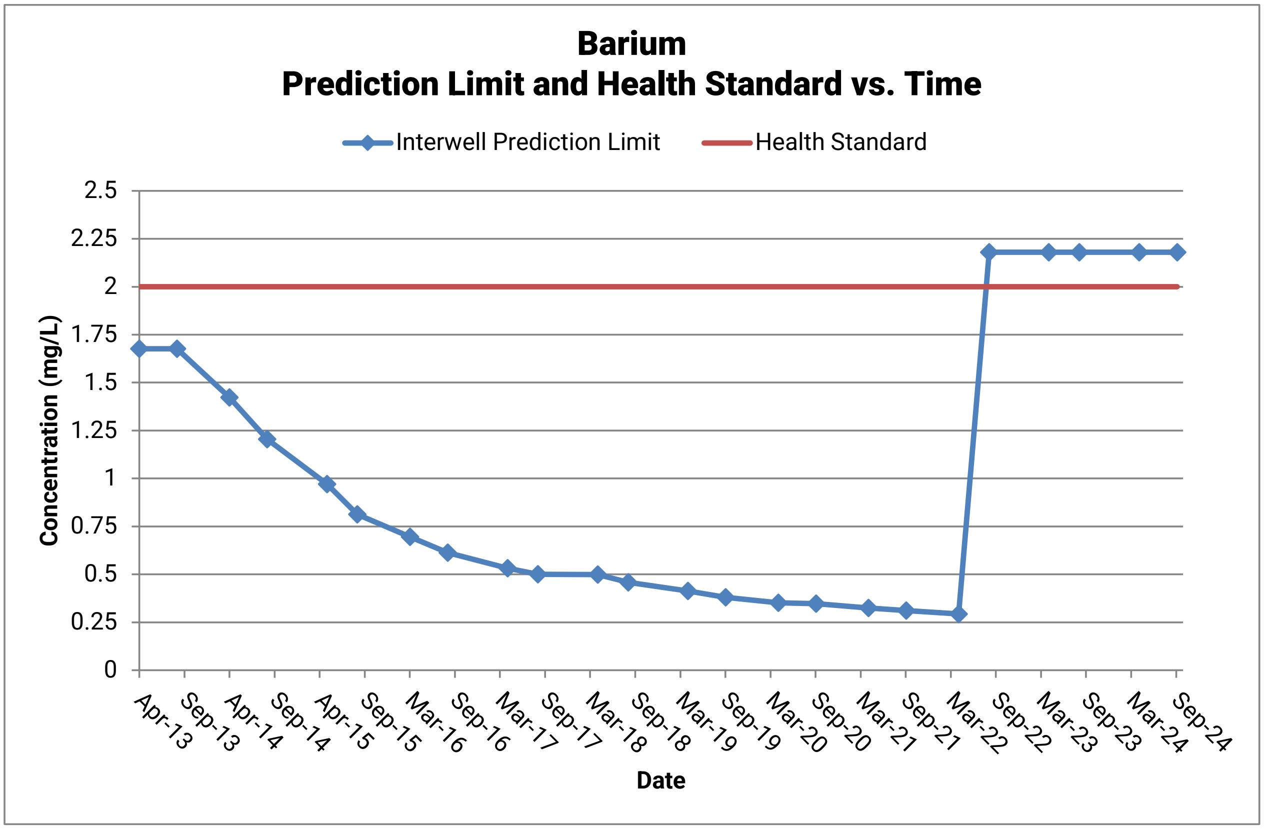

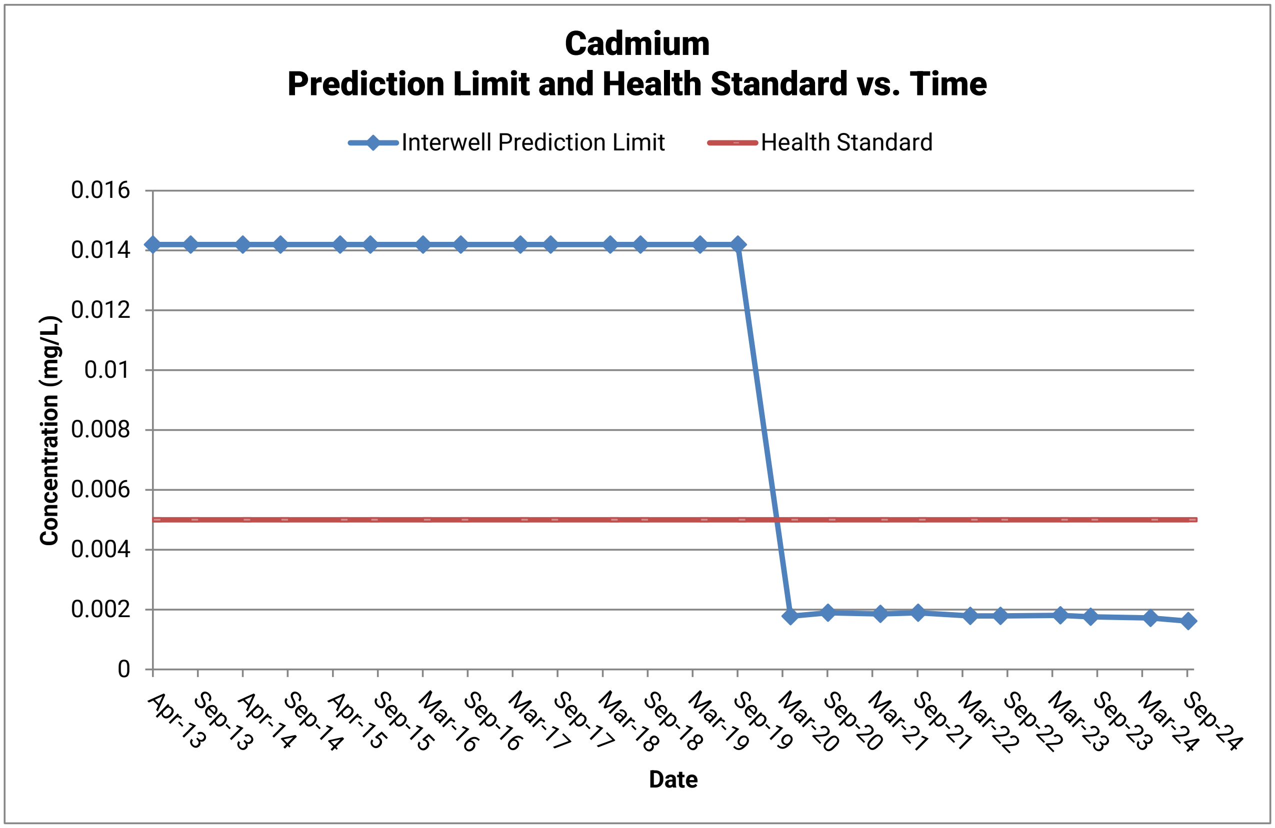

Summary of Prediction Limits and Health Standards
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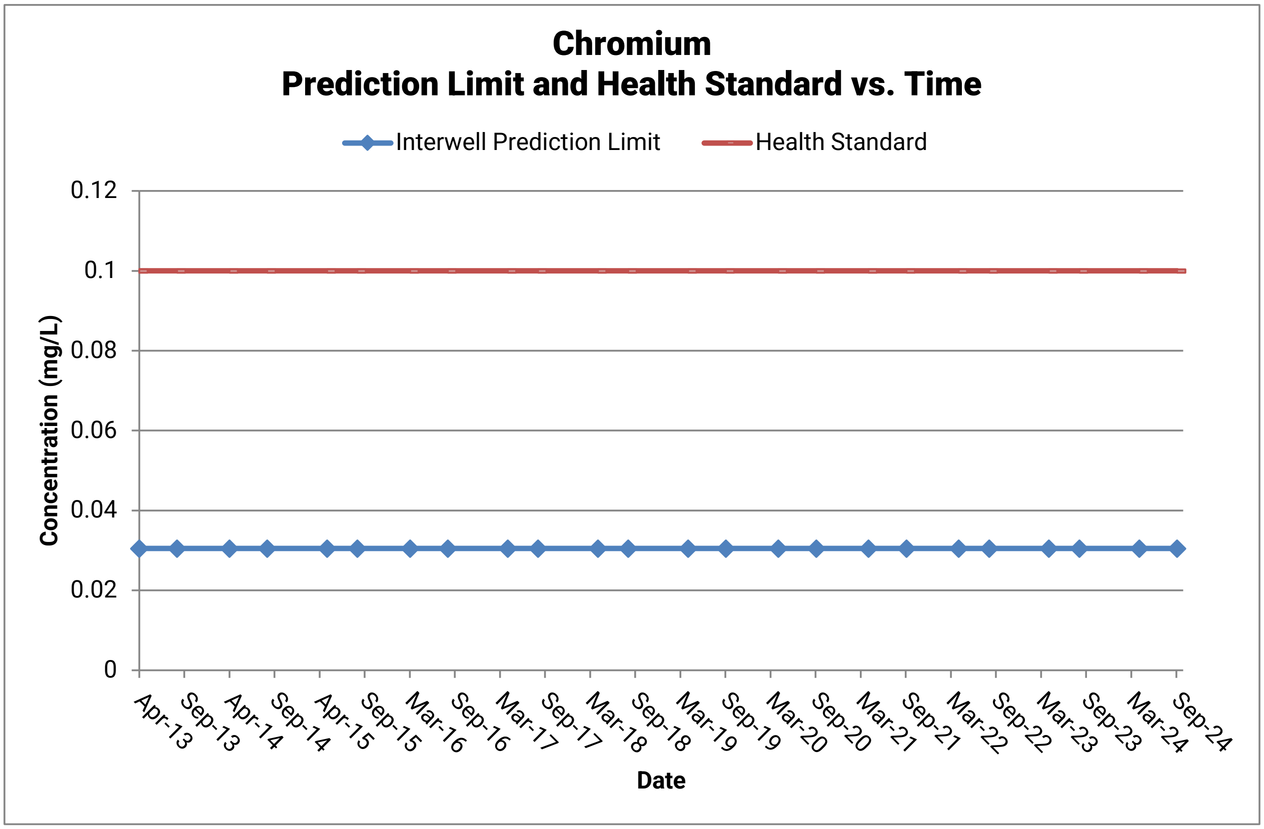

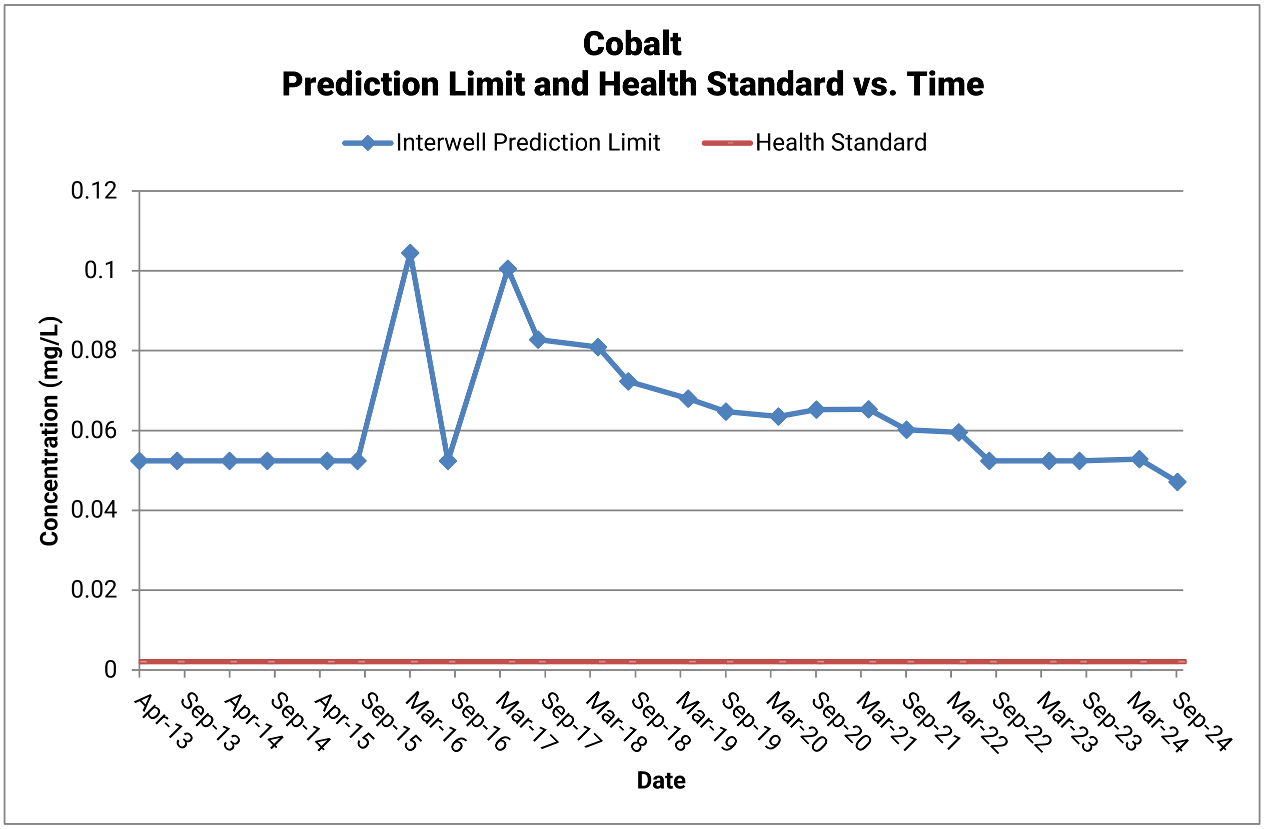

Summary of Prediction Limits and Health Standards
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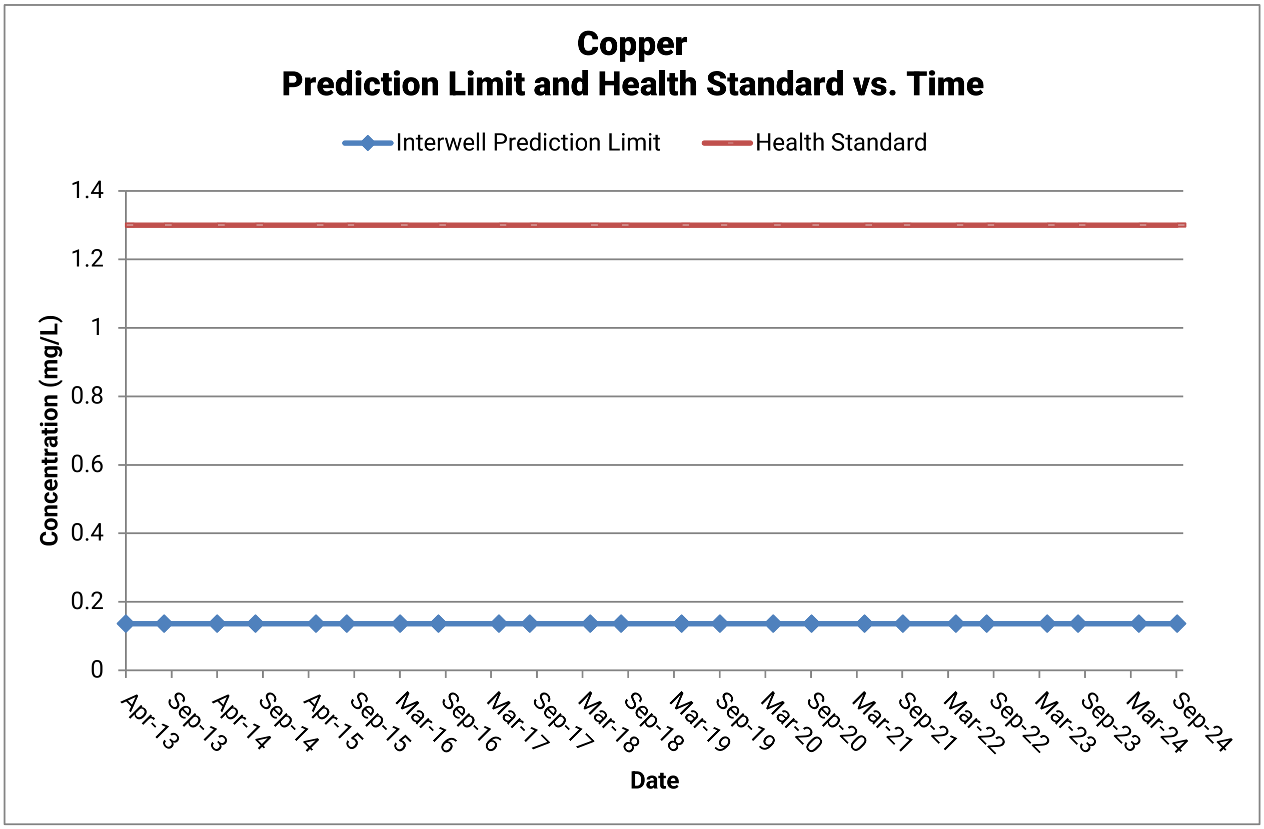

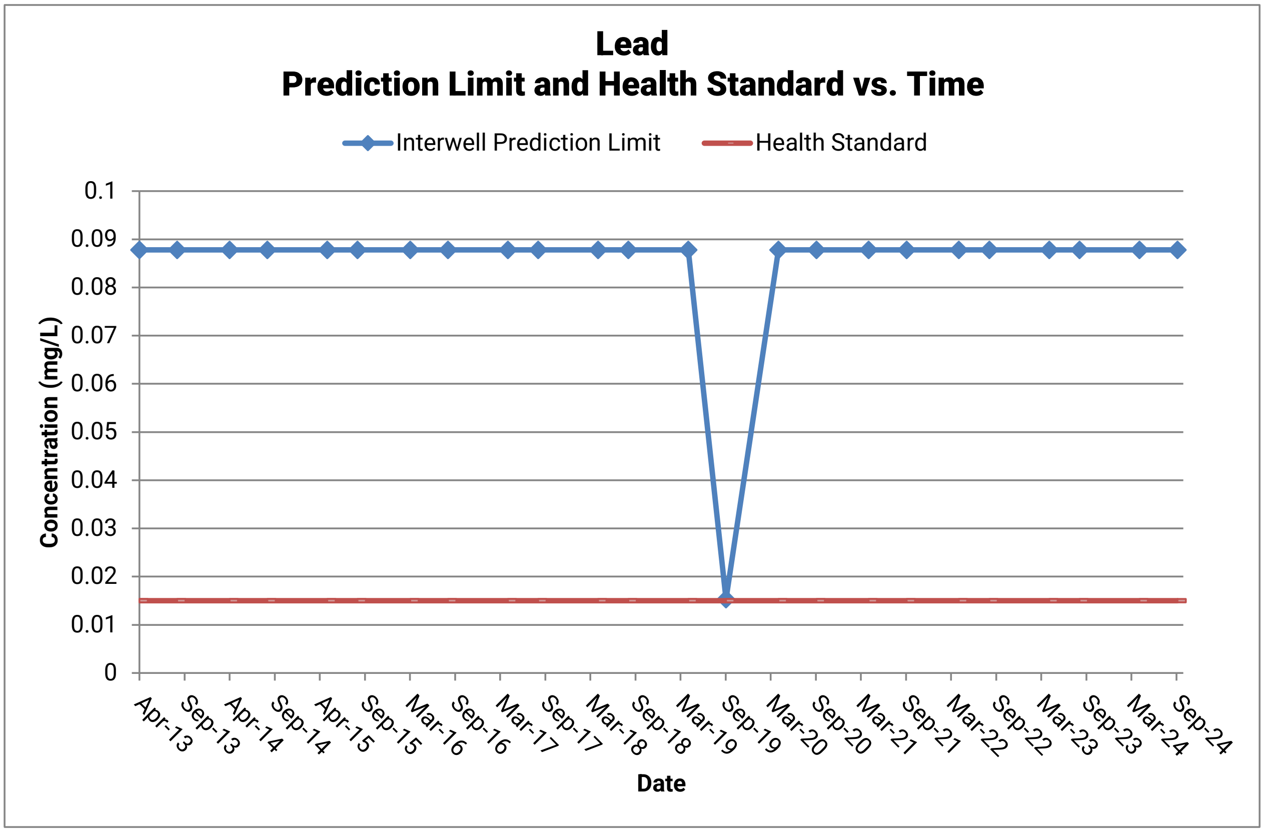

Summary of Prediction Limits and Health Standards
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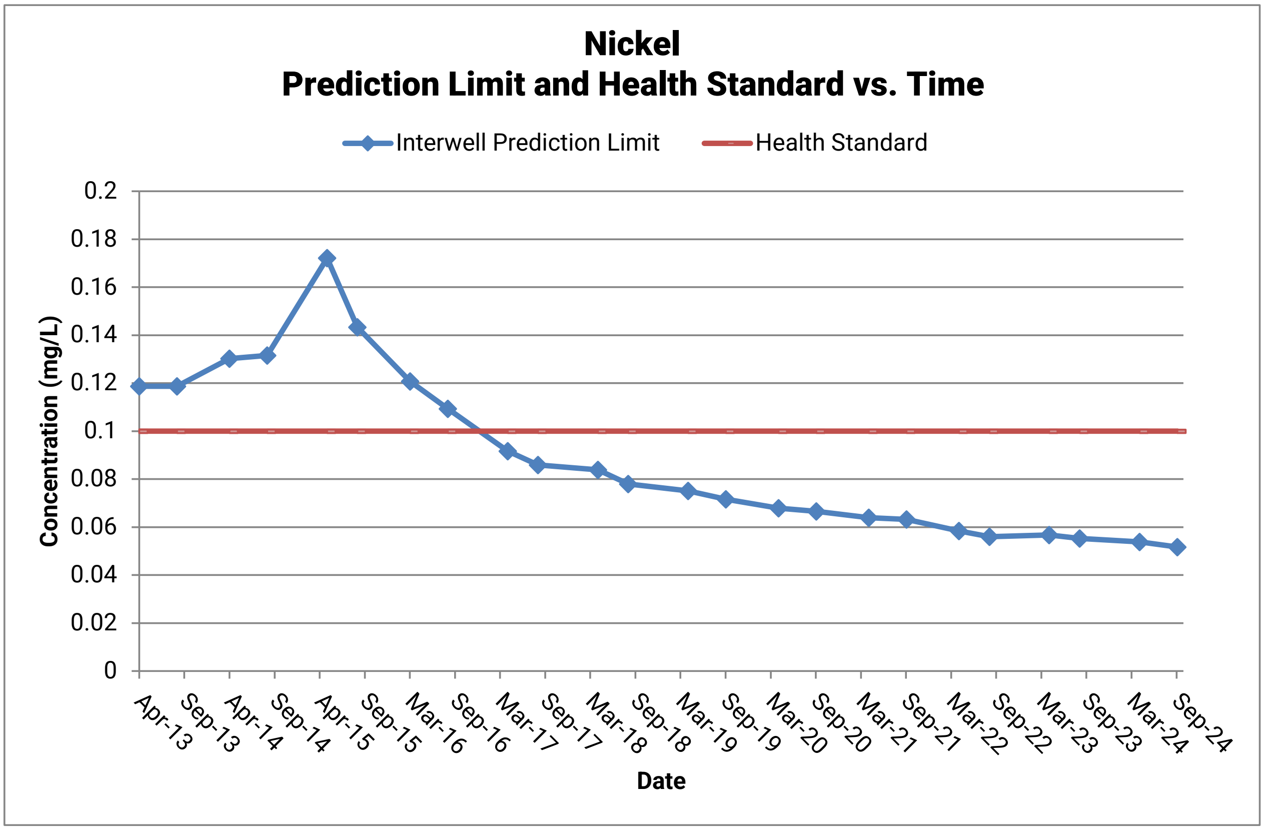

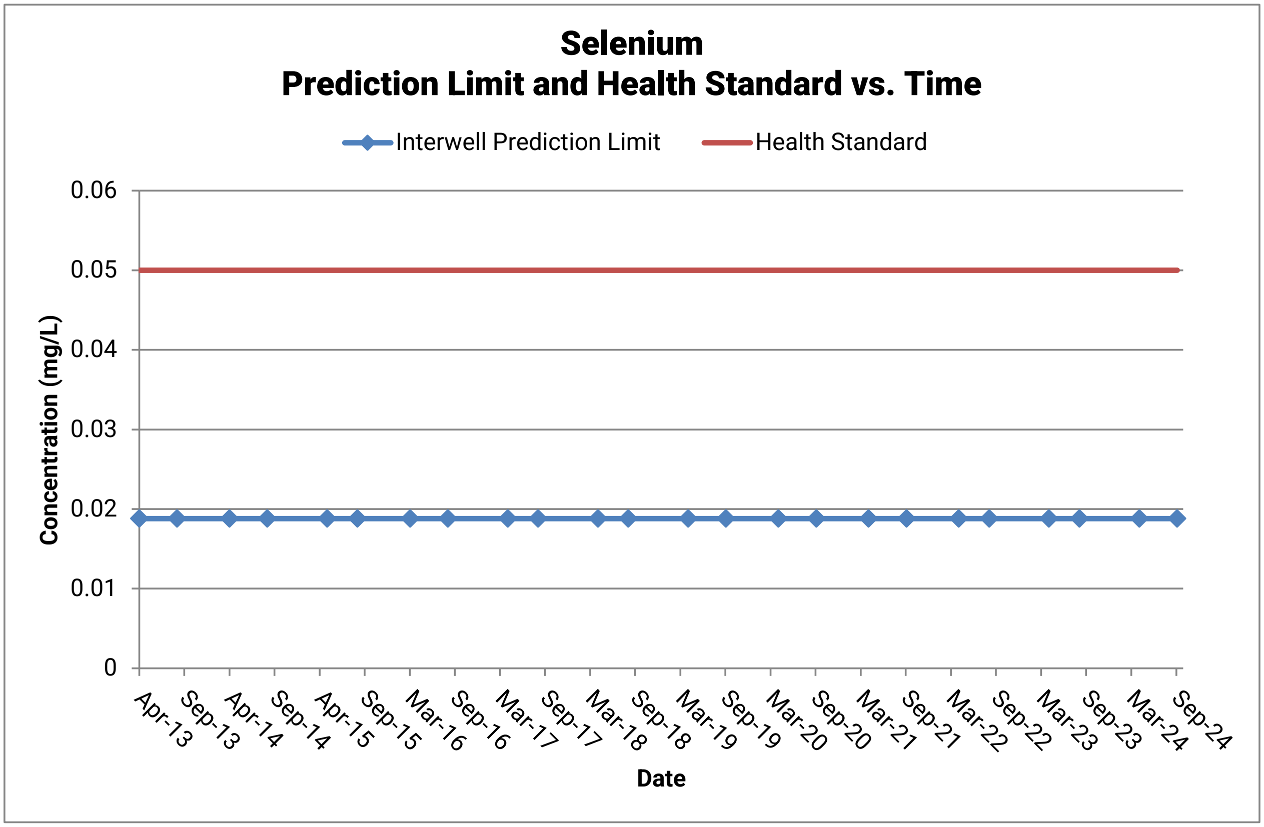

Summary of Prediction Limits and Health Standards
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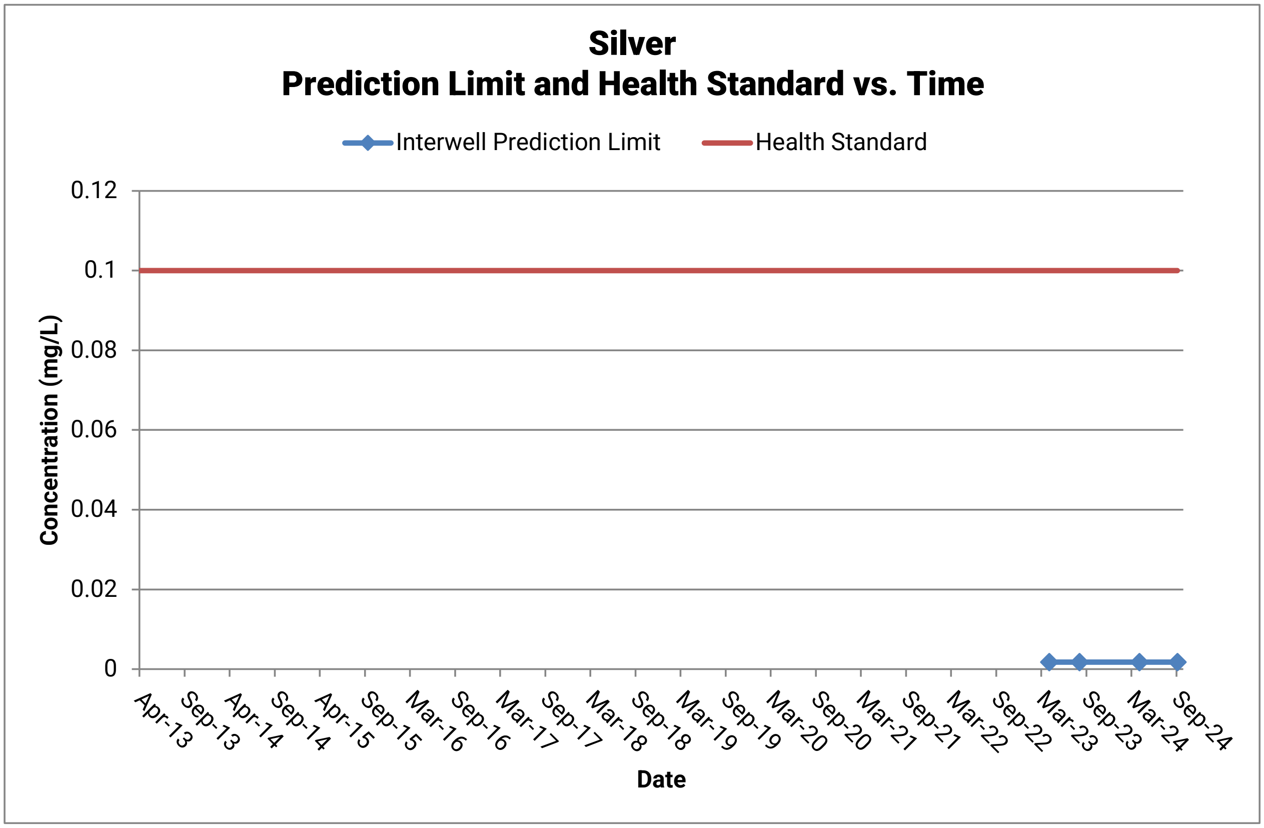

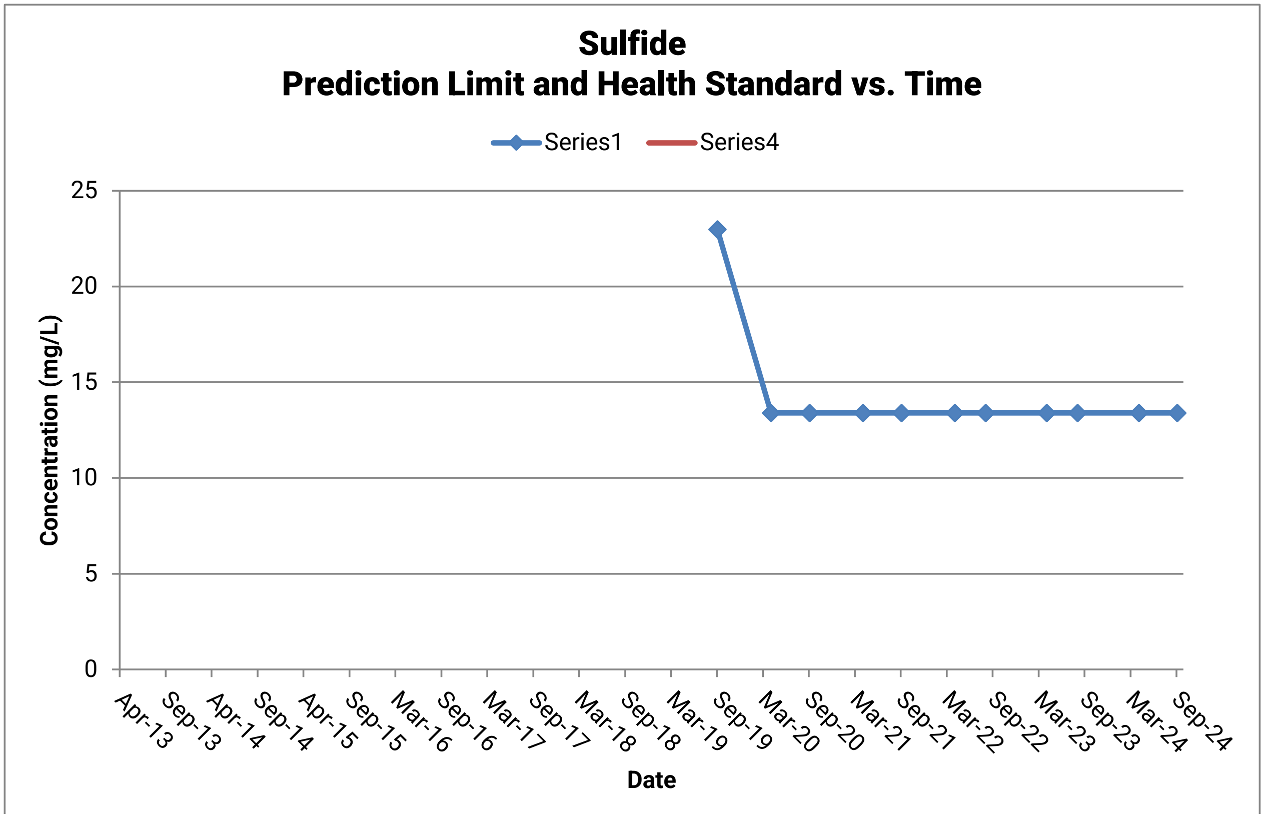

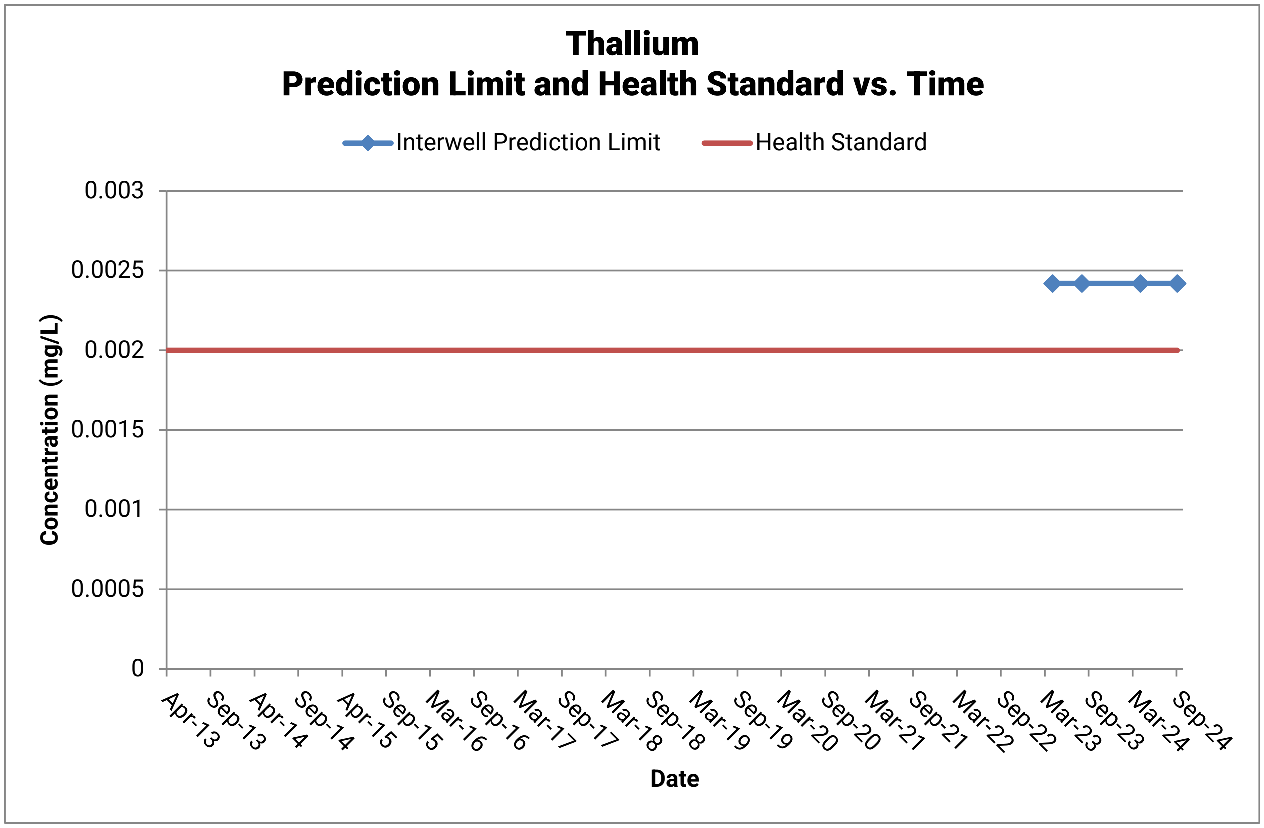
Thallium
Prediction Limit and Health Standard vs. Time
Interwell Prediction Limit
Health Standard
0.003
0.0025
0.002
0.0015
0.001
0.0005
0
Concentration (mg/L)
Apr-13
Sep-13
Apr-14
Sep-14
Apr-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
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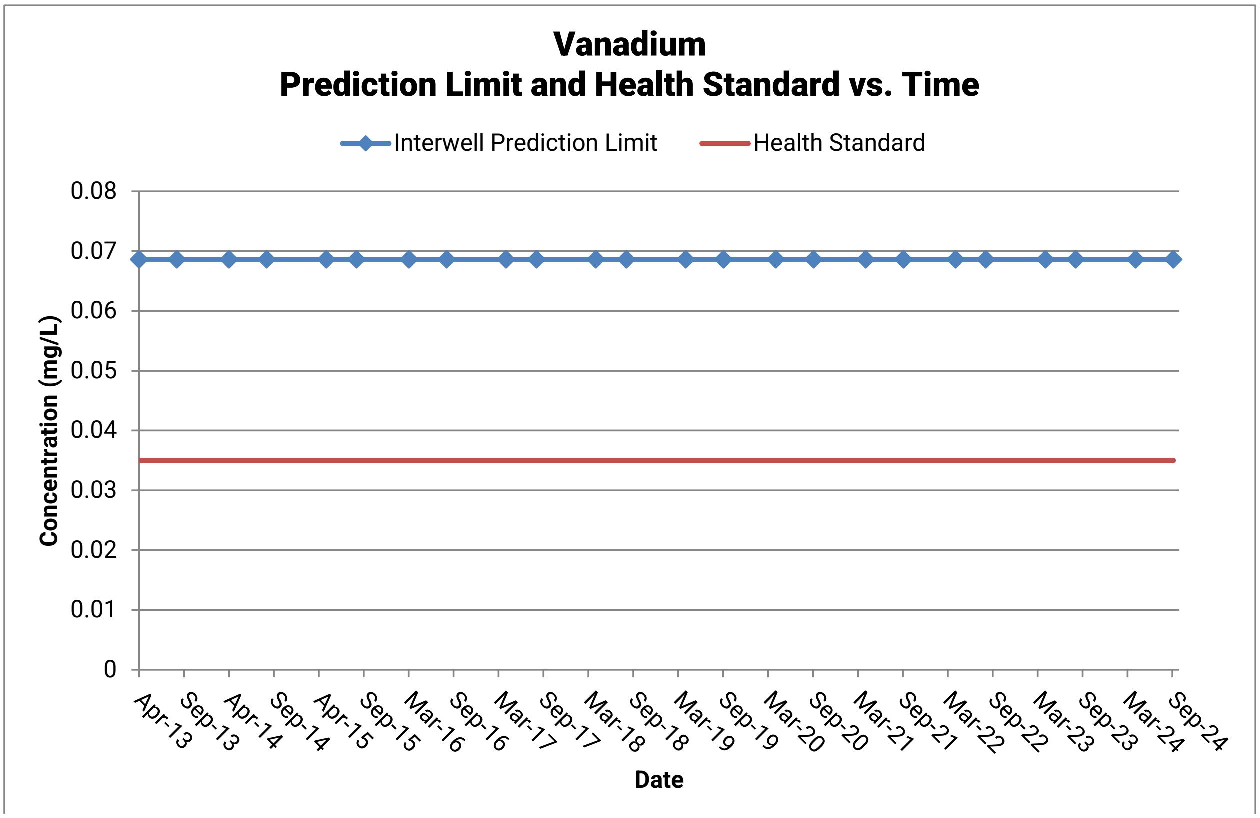
Sep-23
Mar-24
Sep-24
Date


Vanadium
Prediction Limit and Health Standard vs. Time
Interwell Prediction Limit
Health Standard
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
Concentration (mg/L)
Apr-13
Sep-13
Apr-14
Sep-14
Apr-15
Sep-15
Mar-16
Sep-16
Mar-17
Sep-17
Mar-18
Sep-18
Mar-19
Sep-19
Mar-20
Sep-20
Mar-21
Sep-21
Mar-22
Sep-22
Mar-23
Sep-23
Mar-24
Sep-24
Date

Summary of Prediction Limits and Health Standards
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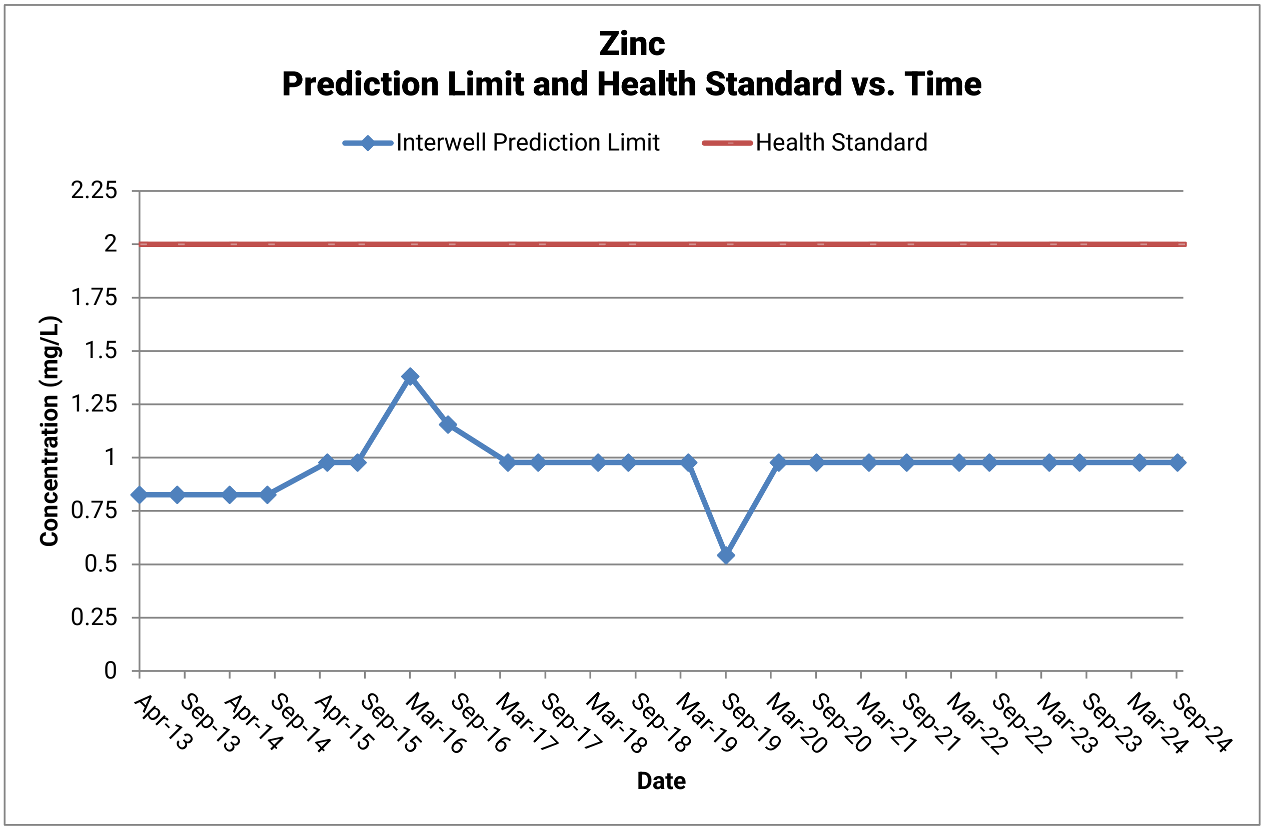

Summary of Prediction Limits and Health Standards
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Summary of Prediction Limits and Health Standards
2024 Annual Water Quality Report
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Comments:

- The following graphs depict the interwell prediction limits calculated for statistical analyses starting with the Apr. 2013 event. Note that the sampling methodology was modified from high-volume techniques to no-purge sampling using HydraSleeve™ samplers starting with the Sep. 2016 event.
- Wells included in the background data sets and the sources of the background and health standards are presented in Table 5.
- Antimony and arsenic were newly detected above the RL in the combined background data set in May 2018, sulfide was newly detected above the RL in background in Oct. 2019, and silver and thallium were newly detected above the RL in background in May 2023. Prediction limits were calculated for antimony and arsenic starting with the Fall 2018 statistical evaluation, for sulfide starting with the Fall 2019 evaluation, and for silver and thallium starting with the Spring 2023 evaluation. Note that there is no MCL or SS for sulfide; therefore, no health standard was included with this graph. The GWPS for sulfide is background (as the *one-sample* test confidence limit method where the fixed GWPS is the background upper tolerance limit with 95% confidence and 95% coverage).
- The initial decreasing trend in the prediction limit for antimony was attributed to the relatively small background size evaluated using parametric methods and not to decreasing trends in the individual well/analyte data. Antimony switched to a non-parametric prediction limit in 2020 and has remained relatively consistent from 2021-2023. The slight increase in Sep. 2023 was due to the maximum concentration for the non-parametric prediction limit slightly increasing (concentration of 0.00331 mg/L detected at MW-51 in Sep. 2023). Similarly, the increase in Oct. 2024 was due to the addition of MW-60 to the background monitoring network which resulted in a change in the maximum concentration for the non-parametric limit. The maximum concentration identified in the background data set occurred with the Oct. 2024 result at MW-60.
- The decreasing trends in the prediction limits for barium (Sep. 2013 - May 2022), cobalt (May 2017 - May 2022), and nickel (May 2015 - Oct. 2024) are attributed to the relatively small background sizes evaluated using parametric methods and not to decreasing trends in the individual well/analyte data. The rate of change has been decreasing as background sizes increase over time. For barium, a significant increase in the background prediction limit occurred in Sep. 2022 due to a change from a parametric to non-parametric method, then remained consistent as the non-parametric limit from 2023-2024. For cobalt, the background prediction limit changed from a lognormal parametric to a non-parametric method in Sep. 2022, remained a non-parametric prediction limit in 2023, then changed back to a lognormal parametric method in May and Oct. 2024. While no significant change in the background prediction limit was identified when the prediction limit changed from non-parametric in Sep. 2023 to lognormal parametric in May 2024, a slight decrease in the lognormal parametric prediction limit occurred in Oct. 2024.
- For cadmium, the decrease in the interwell prediction limit in 2020 occurred due to a change from non-parametric to lognormal parametric methods. With this change, the background limit for cadmium is below the health standard. From 2021-2024, the interwell prediction limit continued to be evaluated using a lognormal parametric method, and the limits remained relatively consistent.
- For lead and zinc, notable decreases in the interwell prediction limits occurred with the Fall 2019 statistical evaluation due to a change from non-parametric to lognormal parametric methods. In 2020, the interwell prediction limits for lead and zinc changed back to non-parametric methods and remained non-parametric from 2021-2024.
- For sulfide, the decrease in the interwell prediction limit in 2020 occurred due to a change from a parametric to a non-parametric method. From 2021-2024, the interwell prediction limits continued to be evaluated using a non-parametric method and remained consistent.

Table 7
Summary of Ongoing and Newly Identified SSIs
2024 Annual Water Quality Report
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							Sample Dates		
Well	**Constituent (1)**	**Units**	**Most Recent Result (Oct. 2024)**	**Background Standard (2)**	**Lower Confidence Limit**	**GWPS (2)**	**Initial Exceedance (above background)**	**Resample**	**# Events to Complete 5th Background Sample or Completion Date**
North Unit Assessment Monitoring Locations									
MW-27	1,1-Dichloroethane	ug/L	0.223 J	1.00	N/A	140	N/A	N/A	Dec. 2009
	Arsenic	mg/L	0.000907 J	0.00874	N/A	0.01	Fall 2019	N/S	May 2019
	Barium	mg/L	0.0669	2.18	N/A	2.18	N/A	N/A	Dec. 2009
	cis-1,2-Dichloroethene	ug/L	**2.00 ***	1.00	1.9	70	Fall 2010	N/S	Dec. 2009
	Cobalt	mg/L	0.00108	0.04714	N/A	0.0524	Fall 2010	N/S	Dec. 2009
	Copper	mg/L	0.00330 J	0.136	N/A	1.3	N/A	N/A	Dec. 2009
	Lead	mg/L	0.000309 J	0.0878	N/A	0.0878	N/A	N/A	Dec. 2009
	Nickel	mg/L	0.0180	0.0517	N/A	0.1	Fall 2010	N/S	Dec. 2009
	Total Suspended Solids	mg/L	5.33	N/A	N/A	N/A	N/A	N/A	Sep. 2016
	Zinc	mg/L	0.175	0.977	N/A	2	N/A	N/A	Dec. 2009
MW-50R	Arsenic	mg/L	0.00130 J	0.00874	N/A	0.01	N/A	N/A	May 2019
	Barium	mg/L	0.0532	2.18	N/A	2.18	Fall 2010	N/S	Dec. 2009
	Chromium	mg/L	0.00120 J	0.0305	N/A	0.1	N/A	N/A	Dec. 2009
	Cobalt	mg/L	0.00136	0.04714	N/A	0.0524	Spring 2010	N/S	Dec. 2009
	Lead	mg/L	0.00150	0.0878	N/A	0.0878	Spring 2011	N/S	Dec. 2009
	Thallium	mg/L	0.000615 J	0.00242	N/A	0.00242	N/A	N/A	May 2019
	Total Suspended Solids	mg/L	21.3	N/A	N/A	N/A	N/A	N/A	Sep. 2016
	Zinc	mg/L	0.0547	0.977	N/A	2	N/A	N/A	Dec. 2009

* Current result is above background, if confirmed by resample an SSI will be identified.

** For assessment monitoring locations, all current results are below background. If confirmed by a second event, location may return to detection monitoring in accordance with IAC 113.10(6)e. However, three consecutive events will be utilized to make the determination to return to detection monitoring to limit frequent fluctuation of wells moving between the detection and assessment monitoring program.

*** LCL has exceeded the GWPS, this well/constituent pair is now identified as an SSL.

**** Non-MSWLF Unit source of the SSI identified.

Comments:

N/A = Not applicable.

N/S = Not resampled; SSI was declared in lieu of conducting resample.

(1) List contains constituents detected above the laboratory minimum detection limit (MDL) in Oct. 2024 and includes J-flagged concentrations.

(2) Source of background standards and GWPS values are presented in Table 5. If constituent isn't listed in Table 5 (indicating constituent hasn't been detected in background), then the background standard is the laboratory RL and the GWPS is the MCL or the SS if there's no MCL. N/A = not applicable; for GWPS, constituent does not have a MCL or SS and using background as the GWPS is not applicable due to limited detections.

- No SSIs were identified at MW-50R. An SSI was identified for cis-1,2-dichloroethene in MW-27. An SSL was not identified.
- The Fall 2024 statistical evaluation did not identify assessment monitoring locations with all Appendix II constituents below the interwell prediction limit or laboratory reporting limit for three consecutive sampling events. As a result, MW-27 and MW-50R will not exit assessment monitoring at this time. Semiannual assessment monitoring for the Appendix I and detected Appendix II constituents will be continued at MW-27 and MW-50R in Spring 2025. In accordance with Special Provision X.4.a.3, the next 5-year full Appendix II resampling is scheduled for Fall 2028.

Table 8
Summary of Ongoing and Newly Identified SSLs
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
Permit No. 04-SDP-01-76C

Comments: This table is not applicable. No SSLs have been identified

Table 9
Analytical Data Summary
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
Permit No. 04-DSP-01-76C

Constituent (CAS #)			**MW-51**	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
	Sample Date	**Units**	**Bkgrnd**	**Bkgrnd**	**Bkgrnd**	**DwnGrad**	**DwnGrad**
Antimony (Total) (7440-36-0) MCL = 0.006 mg/L	2008-12	mg/L	< 0.001			< 0.001	< 0.001
	2013-09	mg/L				< 0.01	< 0.01
	2018-05	mg/L	**0.00216**	**0.00128**		< 0.001	**0.0031**
	2018-09	mg/L	**0.000795 J**	**0.00295**		< 0.001	< 0.001
	2019-05	mg/L	<0.000530	<0.000530		<0.000530	**0.00112**
	2019-10	mg/L	<0.000530	**0.000626 J**		<0.000530	<0.000530
	2020-05	mg/L	<0.000580	<0.000580		<0.000580	<0.000580
	2020-10	mg/L	<0.000510	**0.001310**		<0.000510	<0.000510
	2021-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2021-10	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2022-05	mg/L	<0.000690	<0.000690		<0.000690	<0.000690
	2022-09	mg/L	<0.000690	<0.000690		<0.000690	<0.000690
	2023-05	mg/L	<0.00100	<0.00100		<0.00100	<0.00100
	2023-10	mg/L	**0.00331**			<0.00100	<0.00100
	2024-05	mg/L	<0.00100	<0.00100		<0.00100	**0.00112 J**
	2024-10	mg/L	**0.00112 J**		**0.00620**	<0.00100	<0.00100
Arsenic (Total) (7440-38-2) MCL = 0.010 mg/L	2008-12	mg/L	< 0.004			< 0.004	< 0.002
	2013-09	mg/L				< 0.01	< 0.01
	2018-05	mg/L	< 0.002	**0.00874**		**0.00249**	0.00234
	2018-09	mg/L	< 0.002	**0.00564**		**0.00116 J**	0.0018 J
	2019-05	mg/L	<0.000750	**0.00593**		**0.00526**	0.00366
	2019-10	mg/L	<0.000750	**0.00516**		**0.0101**	0.00584
	2020-05	mg/L	<0.000880	**0.00666**		**0.0147**	**0.00257**
	2020-10	mg/L	<0.000880	**0.010100**		**0.0044**	**0.00249**
	2021-05	mg/L	<0.000750	**0.00616**		**0.0122**	**0.00163 J**
	2021-10	mg/L	<0.000750	**0.0051**		**0.012**	**0.00251**
	2022-05	mg/L	<0.000750	**0.00272**		**0.00589**	**0.000828 J**
	2022-09	mg/L	<0.000750	**0.00271**		**0.00294**	**0.00173 J**
	2023-05	mg/L	**0.000610 J**	**0.00262**		**0.00681**	**0.00177 J**
	2023-10	mg/L	<0.000530			**0.00726**	**0.00227**
	2024-05	mg/L	<0.000530	**0.00202**		**0.00184 J**	**0.00195 J**
	2024-10	mg/L	<0.000530		**0.00492**	**0.000907 J**	**0.00130 J**
Barium (Total) (7440-39-3) MCL = 2 mg/L	2008-12	mg/L	**0.0748**			**0.0267**	**0.224**
	2009-05	mg/L	**0.0757**			**0.141**	**0.149**
	2009-07	mg/L	**0.0738**			**0.136**	**0.161**
	2009-09	mg/L	< 0.01			**0.0591**	**0.0897**
	2009-12	mg/L	**0.116**			**0.0517**	**0.241**
	2010-09	mg/L	**0.14**			**0.0728**	**0.205**
	2011-03	mg/L	**0.0233**			**0.0558**	**0.141**
	2011-09	mg/L	**0.0236**			**0.0509**	**0.114**
	2012-03	mg/L				**0.0368**	**0.13**
	2012-09	mg/L				**0.0879**	**0.154**
	2012-10	mg/L	**0.0149**				
	2013-05	mg/L		**0.321**		**0.0496**	**0.14**
	2013-07	mg/L		**2.18**			
	2013-09	mg/L	**0.162**	**0.0504**			
	2013-09	mg/L				**0.0577**	**0.126**
	2013-12	mg/L		**0.188**			
	2014-04	mg/L		**0.142**		**0.0272**	**0.117**
	2014-09	mg/L		**0.0341**		**0.0548**	**0.129**
	2015-04	mg/L	**0.0131**	**0.0260**		**0.0596**	**0.138**
	2015-09	mg/L	**0.00867**	**0.0195**		**0.0367**	**0.135**
	2016-04	mg/L	**0.00862**	**0.0186**		**0.0685**	**0.0793**
	2016-09	mg/L	**0.00697**	**0.0416**		**0.07**	**0.0859**
	2017-05	mg/L	**0.00855**	**0.0246**		**0.0628**	**0.115**
	2017-09	mg/L	**0.0087**			**0.0535**	**0.0602**
	2018-05	mg/L	**0.0144**	**0.116**		**0.0954**	**0.0484**
	2018-09	mg/L	**0.0107**	**0.0665**		**0.0608**	**0.0469**
	2019-05	mg/L	**0.00821**	**0.02360**		**0.0807**	**0.0685**
	2019-10	mg/L	**0.00863**	**0.04470**		**0.0714**	**0.0475**
	2020-05	mg/L	**0.00927**	**0.03280**		**0.938**	**0.0738**
	2020-10	mg/L	**0.00684**	**0.101000**		**0.0671**	**0.77**

			MW-51	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
	2021-05	mg/L	**0.00794**	**0.0353**		**0.0844**	**0.0568**
	2021-10	mg/L	**0.00788**	**0.0316**		**0.0919**	**0.0884**
	2022-05	mg/L	**0.0430**	**0.0233**		**0.0843**	**0.0386**
	2022-09	mg/L	**0.0127**	**0.0245**		**0.0795**	**0.0332**
	2023-05	mg/L	**0.00663**	**0.0153**		**0.0819**	**0.0509**
	2023-10	mg/L	**0.00743**			**0.0850**	**0.0735**
	2024-05	mg/L	**0.00555**	**0.0176**		**0.0903**	**0.0635**
	2024-10	mg/L	**0.00631**		**0.0203**	**0.0669**	**0.0532**
Beryllium (Total) (7440-41-7) MCL = 0.004 mg/L	2008-12	mg/L	< 0.004			< 0.004	< 0.004
	2013-09	mg/L				< 0.001	< 0.001
	2018-05	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2018-09	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2019-05	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2019-10	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2020-05	mg/L	<0.000270	<0.000270		<0.000270	<0.00270
	2020-10	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2021-05	mg/L	<0.000270	<0.000270		<0.000270	<0.00270
	2021-10	mg/L	<0.000270	<0.000270		<0.000270	**0.000666 J**
	2022-05	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2022-09	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2023-05	mg/L	**0.000422 J**	**0.000429 J**		<0.000330	<0.000330
	2023-10	mg/L	<0.000330			<0.000330	<0.000330
	2024-05	mg/L	<0.000330	<0.000330		<0.000330	<0.000330
	2024-10	mg/L	<0.000330		<0.000330	<0.000330	<0.000330
Cadmium (Total) (7440-43-9) MCL = 0.0500 mg/L	2008-12	mg/L	< 0.001			< 0.001	**0.0014**
	2009-05	mg/L	< 0.005			< 0.005	< 0.005
	2009-07	mg/L	< 0.005			< 0.005	< 0.005
	2009-09	mg/L	< 0.005			< 0.005	< 0.005
	2009-12	mg/L	< 0.005			< 0.005	< 0.005
	2010-09	mg/L	< 0.005			< 0.005	< 0.005
	2011-03	mg/L	< 0.0050			< 0.0050	< 0.0050
`	2011-09	mg/L	< 0.0050			< 0.0050	< 0.0050
	2012-03	mg/L				< 0.005	< 0.005
	2012-09	mg/L				< 0.005	< 0.005
	2012-10	mg/L	< 0.005				
	2013-05	mg/L		< 0.005		< 0.005	< 0.005
	2013-07	mg/L		**0.0142**			
	2013-09	mg/L	< 0.005	< 0.005			
	2013-09	mg/L				< 0.005	< 0.005
	2013-12	mg/L		< 0.0050			
	2014-04	mg/L		**0.00105**		**0.000247 J**	**0.000117 J**
	2014-09	mg/L		**0.000565**		< 0.0005	< 0.0005
	2015-04	mg/L	< 0.000500	**0.000274 J**		< 0.000500	< 0.000500
	2015-09	mg/L	< 0.0005	< 0.0005		< 0.0005	< 0.0005
	2016-04	mg/L	< 0.0005	**0.000206 J**		**0.000056 J**	< 0.0005
	2016-09	mg/L	**0.000046 J**	**0.000379 J**		**0.000149 J**	< 0.0005
	2017-05	mg/L	**0.000109 J**	**0.000277 J**		< 0.0005	< 0.0005
	2017-09	mg/L	**0.000116 J**			**0.000167 J**	**0.000074 J**
	2018-05	mg/L	**0.000137 J**	**0.000653**		< 0.0005	**0.000113 J**
	2018-09	mg/L	**0.000098 J**	**0.000585**		**0.000238 J**	**0.000228 J**
	2019-05	mg/L	<0.0000770	**0.000389 J**		**0.000304 J**	<0.0000770
	2019-10	mg/L	**0.0000840 J**	**0.000982**		**0.000144**	<0.0000390
	2020-05	mg/L	**0.000137**	**0.00033**		**0.000113**	<0.0000390
	2020-10	mg/L	<0.0000490	**0.001130**		**0.0000500 J**	**0.0000590 J**
	2021-05	mg/L	**0.000263**	**0.000564**		**0.000613**	**0.000177**
	2021-10	mg/L	**0.000115**	**0.000844**		**0.000189**	**0.000807**
	2022-05	mg/L	**0.000152**	**0.000296**		**0.000256**	**0.000101**
	2022-09	mg/L	**0.0000840 J**	**0.000461**		**0.000173**	**0.000103**
	2023-05	mg/L	**0.000239 B**	**0.000395 B**		**0.000154 JB**	<0.000100
	2023-10	mg/L	<0.000100			**0.000319**	<0.000100
	2024-05	mg/L	<0.000400	**0.000176 J**		**0.000326**	**0.000328**
	2024-10	mg/L	<0.000100		**0.000146 J**	<0.000100	<0.000100
Chromium (Total) (7440-47-3) MCL = 0.100 mg/L	2008-12	mg/L	< 0.01			< 0.01	**0.0197**
	2009-05	mg/L	< 0.005			< 0.005	< 0.005
	2009-07	mg/L	< 0.005			< 0.005	< 0.005
	2009-09	mg/L	< 0.005			< 0.005	< 0.005
	2009-12	mg/L	**0.0108**			< 0.005	**0.054**
	2010-09	mg/L	**0.0095**			**0.0092**	**0.0326**
	2011-03	mg/L	< 0.0050			**0.0055**	**0.0120**
	2011-09	mg/L	< 0.0050			< 0.0050	< 0.0050

			MW-51	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
	2012-03	mg/L				< 0.005	< 0.005
	2012-09	mg/L				**0.0089**	< 0.005
	2012-10	mg/L	< 0.005				
	2013-05	mg/L		**0.0156**		< 0.005	< 0.005
	2013-07	mg/L		**0.0305**			
	2013-09	mg/L	**0.0078**	< 0.005			
	2013-12	mg/L		< 0.0050			
	2014-04	mg/L		< 0.0200		< 0.0200	< 0.0200
	2014-09	mg/L		< 0.005		< 0.005	< 0.005
	2015-04	mg/L	< 0.00500	< 0.00500		< 0.00500	< 0.00500
	2015-09	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2016-04	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2016-09	mg/L	< 0.005	**0.000836 J**		0.000717 J	< 0.005
	2017-05	mg/L	< 0.005	**0.00205 J**		< 0.005	< 0.005
	2017-09	mg/L	**0.00191 J**			< 0.005	0.000806 J
	2018-05	mg/L	< 0.005	**0.00132 J**		0.00127 J	0.00387 J
	2018-09	mg/L	< 0.005	**0.00117 J**		0.00089 J	< 0.005
	2019-05	mg/L	<0.000980	<0.000980		<0.000980	<0.000980
	2019-10	mg/L	<0.000980	<0.000980		<0.000980	<0.000980
	2020-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2020-10	mg/L	<0.00110	<0.00110		**0.00115 J**	<0.00110
	2021-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2021-10	mg/L	<0.00110	**0.00110 J**		<0.00110	<0.00110
	2022-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2022-09	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2023-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2023-10	mg/L	<0.00110			<0.00110	**0.00159 J**
	2024-05	mg/L	<0.00120	<0.00120		<0.00120	**0.00132 J**
	2024-10	mg/L	<0.00120		<0.00120	<0.00120	**0.00120 J**
Cobalt (Total) (7440-48-4) SS = 0.0021 mg/L	2008-12	mg/L	< 0.004			< 0.004	0.0203
	2009-05	mg/L	< 0.005			0.0081	0.005
	2009-07	mg/L	< 0.005			**0.0101**	0.005
	2009-09	mg/L	< 0.005			0.0122	0.0078
	2009-12	mg/L	< 0.005			0.01	0.037
	2010-09	mg/L	< 0.005			0.0183	0.0269
	2011-03	mg/L	< 0.0050			0.0172	0.0147
	2011-09	mg/L	< 0.0050			0.0225	0.0111
	2012-03	mg/L				0.0095	0.0117
	2012-09	mg/L				0.0233	0.0109
	2012-10	mg/L	< 0.005				
	2013-05	mg/L		**0.0346**		0.0117	0.0089
	2013-07	mg/L		**0.0524**			
	2013-09	mg/L	< 0.005	**0.0215**			
	2013-09	mg/L				**0.0173**	**0.0077**
	2013-12	mg/L		**0.0336**			
	2014-04	mg/L		**0.0255**		**0.00720**	**0.00527 J**
	2014-09	mg/L		**0.0213**		**0.0164**	**0.00649**
	2015-04	mg/L	**0.000523**	**0.00661**		**0.0112**	**0.00560**
	2015-09	mg/L	**0.000091 J**	**0.0058**		**0.00948**	**0.00403**
	2016-04	mg/L	< 0.0005	**0.00506**		**0.0192**	**0.00361**
	2016-09	mg/L	**0.000036 J**	**0.00459**		**0.0221**	**0.00272**
	2017-05	mg/L	**0.00011 J**	**0.00189**		**0.0159**	**0.00189**
	2017-09	mg/L	**0.000318 J**			**0.00228**	**0.00251**
	2018-05	mg/L	**0.00013 J**	**0.00726**		**0.0346**	**0.000656**
	2018-09	mg/L	**0.00015 J**	**0.00655**		**0.00582**	**0.00114**
	2019-05	mg/L	**0.000258 J**	**0.01120**		**0.018**	**0.0017**
	2019-10	mg/L	**0.000274 J**	**0.01210**		**0.0201**	**0.00107**
	2020-05	mg/L	<0.0000910	**0.00992**		**0.0154**	**0.00102**
	2020-10	mg/L	<0.0000910	**0.018000**		**0.0193**	**0.00161**
	2021-05	mg/L	**0.0000970 J**	**0.0125**		**0.0133**	**0.000596**
	2021-10	mg/L	**0.000221 J**	**0.0121**		**0.0137**	**0.00194**
	2022-05	mg/L	<0.000190	**0.0107**		**0.00974**	**0.000348 J**
	2022-09	mg/L	**0.000230 J**	**0.00954**		**0.0129**	**0.00128**
	2023-05	mg/L	**0.000366 J**	**0.0102**		**0.0100**	**0.000503**
	2023-10	mg/L	<0.000170			**0.0124**	**0.00173**
	2024-05	mg/L	<0.000170	**0.0131**		**0.00821**	**0.00221**
	2024-10	mg/L	<0.000170		**0.00453 J**	**0.00108**	**0.00136**

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Copper (Total) (7440-50-8) MCL = 1.3 mg/L	2008-12	mg/L	**0.0041**			< 0.004	**0.02**
	2009-05	mg/L	< 0.01			< 0.01	< 0.01
	2009-07	mg/L	< 0.01			< 0.01	< 0.01
	2009-09	mg/L	< 0.01			< 0.01	< 0.01
	2009-12	mg/L	< 0.01			< 0.01	**0.0315**
	2010-09	mg/L	< 0.01			< 0.01	**0.0191**
	2011-03	mg/L	< 0.0100			< 0.0100	< 0.0100
	2011-09	mg/L	< 0.0100			< 0.0100	< 0.0100
	2012-03	mg/L				**0.0119**	< 0.01
	2012-09	mg/L				**0.0137**	< 0.01
	2012-10	mg/L	< 0.01				
	2013-05	mg/L		**0.0768**		< 0.01	< 0.01
	2013-07	mg/L		**0.136**			
	2013-09	mg/L	**0.0118**	< 0.01			
	2013-09	mg/L				< 0.01	< 0.01
	2013-12	mg/L		**0.0146**			
	2014-04	mg/L		**0.00638 J**		< 0.0200	< 0.0200
	2014-09	mg/L		**0.00964**		**0.000828 J**	< 0.002
	2015-04	mg/L	**0.000734 J**	**0.00204**		**0.00131 J**	< 0.00200
	2015-09	mg/L	**0.00114 J**	**0.00118 J**		**0.00175 J**	**0.000497 J**
	2016-04	mg/L	< 0.005	**0.00286 J**		< 0.005	< 0.005
	2016-09	mg/L	< 0.005	**0.00673**		**0.00151 J**	< 0.005
	2017-05	mg/L	< 0.005	**0.00243 J**		< 0.005	< 0.005
	2017-09	mg/L	< 0.005			**0.00499 J**	< 0.005
	2018-05	mg/L	**0.00379 J**	**0.00847**		**0.00351 J**	< 0.005
	2018-09	mg/L	**0.0021 J**	**0.00491 J**		**0.00195 J**	< 0.005
	2019-05	mg/L	<0.00200	<0.00200		<0.00200	<0.00200
	2019-10	mg/L	<0.00200	**0.00924**		<0.00200	<0.00200
	2020-05	mg/L	<0.00320	**0.00715**		<0.00320	<0.00320
	2020-10	mg/L	<0.00150	**0.013700**		<0.00150	<0.00150
	2021-05	mg/L	**0.00196 J**	**0.0125**		<0.00140	<0.00140
	2021-10	mg/L	<0.00140	<0.00140		<0.00140	<0.00140
	2022-05	mg/L	<0.00180	**0.00263 J**		<0.00180	<0.00180
	2022-09	mg/L	<0.00180	**0.00518**		<0.00180	<0.00180
	2023-05	mg/L	<0.00180	**0.00199 J**		<0.00180	<0.00180
	2023-10	mg/L	**0.00192 J**			<0.00180	<0.00180
	2024-05	mg/L	<0.00180	**0.00227 J**		**0.00195 J**	**0.00359 J**
	2024-10	mg/L	<0.00180		<0.00180	**0.00330 J**	<0.00180
Lead (Total) (7439-92-1) MCL = 0.015 mg/L	2008-12	mg/L	< 0.004			< 0.004	**0.0775**
	2009-05	mg/L	< 0.005			< 0.005	< 0.005
	2009-07	mg/L	< 0.005			< 0.005	< 0.005
	2009-09	mg/L	< 0.005			< 0.005	< 0.005
	2009-12	mg/L	< 0.005			< 0.005	**0.0506**
	2010-09	mg/L	< 0.005			< 0.005	**0.0421**
	2011-03	mg/L	< 0.0050			< 0.0050	**0.0136**
	2011-09	mg/L	< 0.0050			< 0.0050	< 0.0050
	2012-03	mg/L				< 0.005	< 0.005
	2012-09	mg/L				< 0.005	< 0.005
	2012-10	mg/L	< 0.005				
	2013-05	mg/L		**0.0384**		< 0.005	< 0.005
	2013-07	mg/L		**0.0878**			
	2013-09	mg/L	**0.0057**	< 0.005			
	2013-09	mg/L				< 0.005	< 0.005
	2013-12	mg/L		< 0.0050			
	2014-04	mg/L		**0.00273 J**		< 0.00400	< 0.00400
	2014-09	mg/L		**0.00247**		**0.000192 J**	**0.000276 J**
	2015-04	mg/L	**0.000391 J**	**0.00130**		**0.000256 J**	**0.000327 J**
	2015-09	mg/L	**0.000118 J**	**0.000558**		**0.00029 J**	< 0.0005
	2016-04	mg/L	< 0.0005	**0.00139**		< 0.0005	< 0.0005
	2016-09	mg/L	< 0.0005	**0.00193**		**0.000964**	**0.00114**
	2017-05	mg/L	< 0.0005	**0.00188**		< 0.0005	**0.000324 J**
	2017-09	mg/L	< 0.0005			< 0.0005	**0.00273**
	2018-05	mg/L	**0.000757**	**0.00387**		**0.000631**	**0.000351 J**
	2018-09	mg/L	**0.000462 J**	**0.00266**		**0.000348 J**	< 0.0005
	2019-05	mg/L	<0.00270	**0.00140**		**0.000617**	**0.000732**
	2019-10	mg/L	<0.000270	**0.00320**		<0.000270	<0.000270
	2020-05	mg/L	<0.000270	**0.00161**		<0.000270	<0.00270
	2020-10	mg/L	<0.000110	**0.005200**		<0.000110	<0.000110
	2021-05	mg/L	**0.000389 J**	**0.0025**		**0.000224 J**	**0.000725**
	2021-10	mg/L	<0.000210	**0.00327**		**0.000454 J**	**0.000837**

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2022-05	mg/L	<0.000240	**0.00114**		<0.000240	<0.000240
	2022-09	mg/L	<0.000240	**0.00203**		**0.000340 J**	**0.00245**
	2023-05	mg/L	**0.000579**	**0.000957**		**0.000329 J**	<0.000240
	2023-09	mg/L	**0.000376 J**			**0.000435 J**	**0.00228**
	2024-05	mg/L	<0.000260	**0.000734**		**0.000604**	**0.00585**
	2024-10	mg/L	<0.000260		**0.00195**	**0.000309 J**	**0.00150**
Nickel (Total) (7440-02-0) SS = 0.1 mg/L	2008-12	mg/L	**0.007**			**0.021**	**0.0357**
	2009-05	mg/L	< 0.005			**0.0564**	**0.0081**
	2009-07	mg/L	< 0.005			**0.0574**	**0.0067**
	2009-09	mg/L	< 0.005			**0.0468**	**0.0079**
	2009-12	mg/L	**0.0099**			**0.0383**	**0.0723**
	2010-09	mg/L	**0.0129**			**0.0494**	**0.0449**
	2011-03	mg/L	< 0.0050			**0.0616**	**0.0201**
	2011-09	mg/L	< 0.0050			**0.0501**	**0.0095**
	2012-03	mg/L				**0.028**	**0.0126**
	2012-09	mg/L				**0.0535**	**0.0112**
	2012-10	mg/L	< 0.005				
	2013-05	mg/L		**0.0793**		**0.0255**	**0.0089**
	2013-07	mg/L		**0.112**			
	2013-09	mg/L	**0.0176**	**0.0521**			
	2013-09	mg/L				**0.0354**	**0.0066**
	2013-12	mg/L		**0.0460**			
	2014-04	mg/L		**0.0355 J**		**0.0177 J**	**0.00775 J**
	2014-09	mg/L		**0.0391**		**0.0301**	**0.00594**
	2015-04	mg/L	**0.00160 J**	**0.00974**		**0.0258**	**0.00543**
	2015-09	mg/L	**0.00137 J**	**0.0072**		**0.0198**	**0.00401 J**
	2016-04	mg/L	< 0.005	**0.00669**		**0.0339**	**0.0031 J**
	2016-09	mg/L	< 0.005	**0.0161**		**0.0356**	**0.0033 J**
	2017-05	mg/L	**0.00302 J**	**0.00975**		**0.0313**	**0.00319 J**
	2017-09	mg/L	**0.00574**			**0.0382**	**0.00348 J**
	2018-05	mg/L	**0.00768**	**0.0133**		**0.04**	**0.00236 J**
	2018-09	mg/L	< 0.05	**0.00857 J**		**0.0291 J**	< 0.05
	2019-05	mg/L	**0.00952**	**0.01720**		**0.0271**	**0.00283 J**
	2019-10	mg/L	**0.00795**	**0.01620**		**0.0268**	**0.00190 J**
	2020-05	mg/L	**0.00518**	**0.01380**		**0.0266**	<0.00190
	2020-10	mg/L	**0.0067**	**0.021900**		**0.0259**	<0.00190
	2021-05	mg/L	**0.00654**	**0.0154**		**0.023**	<0.00190
	2021-10	mg/L	**0.00709**	**0.0173**		**0.0248**	**0.00311 J**
	2022-05	mg/L	**0.00464 J**	**0.0139**		**0.0190**	<0.00190
	2022-09	mg/L	**0.00576**	**0.0119**		**0.0182**	**0.00259 J**
	2023-05	mg/L	**0.00736**	**0.0179**		**0.0226**	**0.00208 J**
			MW-51	**PZ-12**		**MW-27**	**MW-50R**
	2023-09	mg/L	**0.00664**			**0.0196**	**0.00448 J**
	2024-05	mg/L	**0.00246 J**	**0.0160**		**0.0184**	<0.00210
	2024-10	mg/L	**0.00601**		<0.00210	**0.0180**	<0.00210
Selenium (Total) (7782-49-2) MCL = 0.05 mg/L	2008-12	mg/L	**0.0051**			< 0.004	< 0.004
	2009-05	mg/L	< 0.015			< 0.015	< 0.015
	2009-07	mg/L	< 0.015			< 0.015	< 0.015
	2009-09	mg/L	< 0.015			< 0.015	< 0.015
	2009-12	mg/L	< 0.015			< 0.015	< 0.015
	2010-09	mg/L	< 0.015			< 0.015	< 0.015
	2011-03	mg/L	< 0.0150			< 0.0150	< 0.0150
	2011-09	mg/L	< 0.0150			< 0.0150	< 0.0150
	2012-03	mg/L				< 0.015	< 0.015
	2012-09	mg/L				< 0.015	< 0.015
	2012-10	mg/L	< 0.015				
	2013-05	mg/L		< 0.015		< 0.015	< 0.015
	2013-07	mg/L		**0.0188**			
	2013-09	mg/L	< 0.015	< 0.015			
	2013-09	mg/L				< 0.015	< 0.015
	2013-12	mg/L		< 0.0150			
	2014-04	mg/L		< 0.00500		< 0.00500 J	< 0.00500 J
	2014-09	mg/L		< 0.005		< 0.005	< 0.005
	2015-04	mg/L	< 0.00500	< 0.00500		< 0.00500	< 0.00500
	2015-09	mg/L	**0.00411 J**	< 0.005		< 0.005	< 0.005
	2016-04	mg/L	**0.0018 J**	< 0.005		< 0.005	< 0.005
	2016-09	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2017-05	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2017-09	mg/L	< 0.005			< 0.005	< 0.005
	2018-05	mg/L	< 0.005	< 0.005		< 0.005	< 0.005

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2018-09	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2019-05	mg/L	<0.00100	<0.00100		<0.00100	<0.00100
	2019-10	mg/L	<0.00100	**0.00105 J**		<0.00100	<0.00100
	2020-05	mg/L	<0.00100	<0.00100		<0.00100	<0.00100
	2020-10	mg/L	<0.00100	**0.00146 J**		<0.00100	<0.00100
	2021-05	mg/L	<0.000960	<0.000960		<0.000960	<0.000960
	2021-10	mg/L	<0.000960	**0.000965**		**0.00111 J**	**0.00150 J**
	2022-05	mg/L	<0.000960	<0.000960		<0.000960	<0.000960
	2022-09	mg/L	<0.000960	<0.000960		<0.000960	<0.000960
	2023-05	mg/L	**0.00148 J**	<0.00140		<0.00140	<0.00140
	2023-10	mg/L	<0.00140			<0.00140	<0.00140
	2024-05	mg/L	<0.00140	<0.00140		<0.00140	<0.00140
	2024-10	mg/L	<0.00140		<0.00140	<0.00140	<0.00140
Silver (Total) (7440-22-4) SS = 0.1 mg/L	2008-12	mg/L	< 0.004			< 0.004	< 0.004
	2013-09	mg/L				< 0.007	< 0.007
	2018-05	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2018-09	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2019-05	mg/L	<0.000370	<0.000370		<0.000370	<0.000370
	2019-10	mg/L	<0.000370	<0.000370		<0.000370	<0.000370
	2020-05	mg/L	<0.000370	<0.000370		<0.000370	<0.000370
	2020-10	mg/L	<0.000370	<0.000370		<0.000370	<0.000370
	2021-05	mg/L	<0.000420	<0.000420		<0.000420	<0.000420
	2021-10	mg/L	<0.000420	<0.000420		<0.000420	0.000722 J
	2022-05	mg/L	<0.000490	<0.000490		<0.000490	<0.000490
	2022-09	mg/L	<0.000490	<0.000490		<0.000490	<0.000490
	2023-05	mg/L	**0.00175**	<0.000500		<0.000500	<0.000500
	2023-10	mg/L	<0.000500			<0.000500	<0.000500
	2024-05	mg/L	<0.00200	<0.000500		<0.000500	<0.000500
	2024-10	mg/L	<0.000500		<0.000500	<0.000500	<0.000500
Thallium (Total) (7440-28-0) MCL = 0.002 mg/L	2008-12	mg/L	< 0.004			< 0.004	< 0.004
	2013-09	mg/L				< 0.02	< 0.02
	2018-05	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2018-09	mg/L	< 0.001	< 0.001		< 0.001	< 0.001
	2019-05	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2019-10	mg/L	<0.000270	<0.000270		<0.000270	<0.000270
	2020-05	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2020-10	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2021-05	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2021-10	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2022-05	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2022-09	mg/L	<0.000260	<0.000260		<0.000260	<0.000260
	2023-05	mg/L	**0.00242 F1**	**0.00327**		**0.000323 J**	<0.000260
	2023-10	mg/L	<0.000260			<0.000260	<0.000260
	2024-05	mg/L	<0.000570	<0.000570		<0.000570	<0.000570
	2024-10	mg/L	**0.000919 J**		<0.000570 ^+	<0.000570 ^+	**0.000615 J**
Vanadium (Total) (7440-62-2) SS = 0.035 mg/L	2008-12	mg/L	< 0.01			< 0.01	**0.0384**
	2009-05	mg/L	< 0.01			< 0.01	< 0.01
	2009-07	mg/L	< 0.01			< 0.01	< 0.01
	2009-09	mg/L	< 0.01			< 0.01	< 0.01
	2009-12	mg/L	< 0.01			< 0.01	**0.0554**
	2010-09	mg/L	**0.0134**			**0.0298**	**0.052**
	2011-03	mg/L	< 0.0100			< 0.0100	< 0.0100
	2011-09	mg/L	< 0.0100			< 0.0100	< 0.0100
	2012-03	mg/L				< 0.01	< 0.03
	2012-09	mg/L				< 0.01	< 0.01
	2012-10	mg/L	< 0.01				
	2013-05	mg/L		**0.0284**		< 0.01	< 0.03
	2013-07	mg/L		**0.0686**			
	2013-09	mg/L	**0.0108**	< 0.01			
	2013-09	mg/L				< 0.01	< 0.01
	2013-12	mg/L		< 0.0100			
	2014-04	mg/L		**0.00335 J**		< 0.0500	< 0.0500
	2014-09	mg/L		**0.00268 J**		**0.000564 J**	< 0.005
	2015-04	mg/L	**0.000980 J**	**0.000896 J**		**0.00238 J**	< 0.00500
	2015-09	mg/L	< 0.005	**0.000758 J**		**0.000653 J**	< 0.005
	2016-04	mg/L	< 0.005	**0.000856 J**		**0.000569 J**	< 0.005
	2016-09	mg/L	< 0.005	**0.00172 J**		**0.00109 J**	**0.000306 J**
	2017-05	mg/L	< 0.005	**0.00136 J**		< 0.005	< 0.005
	2017-09	mg/L	< 0.005			**0.00128 J**	**0.001 J**
	2018-05	mg/L	< 0.005	**0.00175 J**		**0.00113 J**	**0.000574 J**

			MW-51	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
	2018-09	mg/L	< 0.005	**0.0019 J**		**0.000747 J**	< 0.005
	2019-05	mg/L	<0.000820	**0.00176 J**		<0.000820	<0.000820
	2019-10	mg/L	<0.000820	**0.00288 J**		<0.000820	<0.000820
	2020-05	mg/L	<0.000820	<0.000820		<0.000820	<0.000820
	2020-10	mg/L	<0.000850	**0.002820**		<0.000850	<0.000850
	2021-05	mg/L	<0.00110	**0.00129 J**		<0.00110	<0.00110
	2021-10	mg/L	<0.00110	**0.00434 J**		<0.00110	<0.00110
	2022-05	mg/L	<0.00110	**0.00149 J**		<0.00110	<0.00110
	2022-09	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2023-05	mg/L	<0.00110	<0.00110		<0.00110	<0.00110
	2023-10	mg/L	<0.00110			<0.00110	**0.00132 J**
	2024-05	mg/L	<0.00110	<0.00110		<0.00110	**0.00208 J**
	2024-10	mg/L	<0.00110		**0.00111 J**	<0.00110	<0.00110
Zinc (Total) (7440-66-6) SS = 2 mg/L	2008-12	mg/L	**0.0189**			**0.0101**	**0.0157**
	2009-05	mg/L	< 0.05			< 0.05	< 0.05
	2009-07	mg/L	< 0.05			< 0.05	**0.0514**
	2009-09	mg/L	**0.0568**			< 0.05	< 0.05
	2009-12	mg/L	< 0.05			< 0.05	**0.132**
	2010-03	mg/L				< 0.05	
	2010-09	mg/L	< 0.05			< 0.05	**0.0808**
	2011-03	mg/L	< 0.0500			< 0.0500	< 0.0500
	2011-09	mg/L	< 0.0500			< 0.0500	< 0.0500
	2012-03	mg/L				< 0.05	**0.117**
	2012-09	mg/L				< 0.05	< 0.05
	2012-10	mg/L	< 0.05				
	2013-05	mg/L		**0.207**		< 0.05	< 0.05
	2013-07	mg/L		**0.826**			
	2013-09	mg/L	**0.326**	**0.31**			
	2013-09	mg/L				< 0.05	< 0.05
	2013-12	mg/L		**0.251**			
	2014-04	mg/L		**0.248**		**0.0143 J**	< 0.0200
	2014-09	mg/L		**0.402**		**0.0514**	< 0.01
	2015-04	mg/L	**0.395**	**0.977**		**0.0433**	**0.00769 J**
	2015-09	mg/L	**0.091**	**0.0256**		**0.0305**	**0.00816 J**
	2016-04	mg/L	**0.011**	**0.00621 J**		< 0.01	< 0.01
	2016-09	mg/L	**0.008 J**	**0.0211**		**0.00648 J**	**0.00829 J**
	2017-05	mg/L	**0.0258**	**0.0202**		< 0.02	< 0.02
	2017-09	mg/L	**0.0215**			< 0.02	**0.0138 J**
	2018-05	mg/L	**0.038**	**0.0366**		**0.011 J**	< 0.02
	2018-09	mg/L	**0.0232**	**0.0206**		< 0.02	< 0.02
	2019-05	mg/L	**0.0204**	**0.02800**		**0.0289**	**0.0143 J**
	2019-10	mg/L	**0.0308**	**0.03470**		**0.0134 J**	**0.0172 J**
	2020-05	mg/L	**0.0437**	**0.0131 J**		**0.0143 J**	<0.0100
	2020-10	mg/L	<0.0256	**0.025700**		<0.0100	**0.187 J**
	2021-05	mg/L	**0.944**	**0.0180 J**		**0.0173 J**	**0.0437**
	2021-10	mg/L	**0.0878**	**0.0395**		**0.0253**	**0.0202**
	2022-05	mg/L	**0.822**	**0.0109 J**		**0.542**	**0.103**
	2022-09	mg/L	**0.0391**	**0.0170 J**		**0.0143 J**	**0.0244**
	2023-05	mg/L	**0.0700**	**0.0331**		**0.0158 J**	**0.00847 J**
	2023-10	mg/L	**0.136**			**0.0249**	**0.0397**
	2024-05	mg/L	**0.101**	**0.0592**		**0.088**	**0.0542**
	2024-10	mg/L	**0.885**		**0.0119 J**	**0.175**	**0.0547**
Total Suspended Solids (TSS)	2014-09	mg/L	**17.5**			**25**	**61**
	2015-04	mg/L	**14.9**			**10.0**	**37.5**
	2015-09	mg/L	**3.25**			**34.3**	**19**
	2016-04	mg/L	**0.625 J**	**11.1**		**29.4**	**17.5**
	2016-09	mg/L	**2.13**	**27.5**		**41.6**	**13.6**
	2017-05	mg/L	**3.5**	**62**		**45.3**	**28**
	2017-09	mg/L	**5.85**			**37.1**	**147**
	2018-05	mg/L	**8**	**72**		**21.8**	**19.6**
	2018-09	mg/L	**16.3**	**10.9**		**60.8**	**7.88**
	2019-05	mg/L	**2.25**	**7.00000**		**58**	**286**
	2019-10	mg/L	**2.13**	**7.50000**		**37**	**44**
	2020-05	mg/L	**1.38 J**	**18.00000**		**45**	**14.0 J**
	2020-10	mg/L	**3.25**	**15.60000**		**12.3**	**56**
	2021-05	mg/L	**2.5**	**19**		**59**	
	2021-10	mg/L	**1.00 J**	**15.5**		**63.3**	**13.1**
	2022-05	mg/L	**3.75**	**40**		**19.5**	**7.00**
	2022-09	mg/L	**1.13 J**	**13.8**		**29.0**	**27.0**
	2023-05	mg/L	**0.875 J**	**7.50**		**31.0**	**17.3**

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2023-09	mg/L	**1.38 J**			**54.5**	**57.3**
	2024-05	mg/L	**1.63 J**	**75.0**		**65.5**	**241.0**
	2024-10	mg/L	<3.70		**6.00**	**5.33**	**21.3**
Acetone (67-64-1) SS = 6300 ug/L	2018-05	ug/L	**11.1**	**36**		**10.4**	**9.94 J**
	2018-08	ug/L	< 10	< 10		< 10	
	2018-09	ug/L	**4.59 J**	< 10		< 10	< 10
	2019-05	ug/L	**4.32 J**	**9.90 J**		<3.10	**20.2**
	2019-10	ug/L	**12.2**	**14.40000**		<3.10	**8.87 J**
	2020-01	ug/L	<3.10	<3.10			
	2020-05	ug/L	**3.27 J**	**25.70000**		<3.10	<3.10
	2020-07	ug/L		**6.19 J**			
	2020-10	ug/L	<15.5	**13.700000**		<3.10	**111**
	2021-01	ug/L		**5.20 J**			
	2021-05	ug/L	<3.10	**5.89 J**		6.27 J	**18.2**
	2021-10	ug/L	<3.10	**4.49 J**		<3.10	**12.7**
	2022-05	ug/L	<3.10	**5.04 J**		<3.10	**17.8**
	2022-09	ug/L	<3.10	**10.1**		**6.45 J**	**33.6**
	2023-05	ug/L	<3.10	**13.8**		**42.3**	**3.63 J**
	2023-08	ug/L		**7.98 J**			
	2023-09	ug/L	<3.10	**20.8**		**20.3**	**24.7**
	2024-05	ug/L	<3.10	**26.3**		<3.10	**7.07 J**
	2024-10	ug/L	<3.10		**8.79 J**	<3.10	<3.10
Acrylonitrile (107-13-1) SS = 0.32 ug/L	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2019-10	ug/L	<2.20	<2.20		<2.20	<2.20
	2020-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2020-10	ug/L	<11	<2.20		<2.20	<2.20
	2021-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2021-10	ug/L	<2.20	<2.20		<2.20	<2.20
	2022-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2022-09	ug/L	<2.20	<2.20		<2.20	<2.20
	2023-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2023-09	ug/L	<2.20	<2.20		<2.20	<2.20
	2024-05	ug/L	<2.20	<2.20		<2.20	<2.20
	2024-10	ug/L	<2.20		<2.20	<2.20	<2.20
Benzene (71-43-2) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 0.5	< 0.5		**0.889**	< 0.5
	2018-09	ug/L	< 0.5	< 0.5		**0.22 J**	< 0.5
	2019-05	ug/L	<0.220	<0.220		**0.608**	<0.220
	2019-10	ug/L	<0.220	<0.220		**0.708**	<0.220
	2020-05	ug/L	<0.220	<0.220		**0.744**	<0.220
	2020-10	ug/L	<1.10	<0.220		**0.427 J**	<0.220
	2021-05	ug/L	<0.220	<0.220		**0.815**	<0.220
	2021-10	ug/L	<0.220	<0.220		**0.558**	<0.220
	2022-05	ug/L	<0.220	<0.220		**0.858**	<0.220
	2022-09	ug/L	<0.220	<0.220		**0.221 J**	<0.220
	2023-05	ug/L	<0.220	<0.220		**0.971**	<0.220
	2023-09	ug/L	<0.220	<0.220		**0.977**	<0.220
	2024-05	ug/L	<0.220	<0.220		**0.856**	<0.220
	2024-10	ug/L	<0.220		<0.220	<0.220	<0.220
Bromochloromethane (74-97-5) SS = 90 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2019-10	ug/L	<0.540	<0.540		<0.540	<0.540
	2020-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2020-10	ug/L	<2.70	<0.540		<0.540	<0.540
	2021-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2021-10	ug/L	<0.540	<0.540		<0.540	<0.540
	2022-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2022-09	ug/L	<0.540	<0.540		<0.540	<0.540
	2023-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2023-09	ug/L	<0.540	<0.540		<0.540	<0.540
	2024-05	ug/L	<0.540	<0.540		<0.540	<0.540
	2024-10	ug/L	<0.540		<0.540	<0.540	<0.540

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Bromodichloromethane (75-27-4) SS = 80 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2019-10	ug/L	<0.390	<0.390		<0.390	<0.390
	2020-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2020-10	ug/L	<1.95	<0.390		<0.390	<0.390
	2021-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2021-10	ug/L	<0.390	<0.390		<0.390	<0.390
	2022-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2022-09	ug/L	<0.390	<0.390		<0.390	<0.390
	2023-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2023-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2024-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2024-10	ug/L	<0.390		<0.390	<0.390	<0.390
Bromoform; Tribromomethane (75-25-2) SS = 80 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2019-10	ug/L	<0.780	<0.780		<0.780	<0.780
	2020-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2020-10	ug/L	<3.90	<0.780		<0.780	<0.780
	2021-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2021-10	ug/L	<0.780	<0.780		<0.780	<0.780
	2022-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2022-09	ug/L	<0.780	<0.780		<0.780	<0.780
	2023-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2023-09	ug/L	<0.780	<0.780		<0.780	<0.780
	2024-05	ug/L	<0.780	<0.780		<0.780	<0.780
	2024-10	ug/L	<0.780		<0.780	<0.780	<0.780
Carbon disulfide (75-15-0) SS = 700 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2019-10	ug/L	<0.450	**1.08000**		<0.450	<0.450
	2020-01	ug/L		<0.450			
	2020-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2020-10	ug/L	<2.25	<0.450		<0.450	<0.450
	2021-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2021-10	ug/L	<0.450	<0.450		<0.450	<0.450
	2022-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2022-09	ug/L	<0.450	<0.450		<0.450	<0.450
	2023-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2023-09	ug/L	<0.450	<0.450		<0.450	<0.450
	2024-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2024-10	ug/L	<0.450		<0.450	<0.450	<0.450
Carbon tetrachloride (56-23-5) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 2	< 2		< 2	< 2
	2018-09	ug/L	< 2	< 2		< 2	< 2
	2019-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2019-10	ug/L	<0.650	<0.650		<0.650	<0.650
	2020-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2020-10	ug/L	<3.25	<0.650		<0.650	<0.650
	2021-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2021-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2021-10	ug/L	<0.650	<0.650		<0.650	<0.650
	2022-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2022-09	ug/L	<0.650	<0.650		<0.650	<0.650
	2023-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2023-09	ug/L	<0.650	<0.650		<0.650	<0.650
	2024-05	ug/L	<0.650	<0.650		<0.650	<0.650
	2024-10	ug/L	<0.650		<0.650	<0.650	<0.650
Chlorobenzene (108-90-7) MCL = 100 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2019-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2019-10	ug/L	<0.400	<0.400		<0.400	<0.400
	2020-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2020-10	ug/L	<2.00	<0.400		<0.400	<0.400
	2020-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2020-10	ug/L	<2.00	<0.400		<0.400	<0.400
	2021-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2021-10	ug/L	<0.400	<0.400		<0.400	<0.400
	2022-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2022-09	ug/L	<0.400	<0.400		<0.400	<0.400
	2023-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2023-09	ug/L	<0.400	<0.400		<0.400	<0.400
	2024-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2024-10	ug/L	<0.400		<0.400	<0.400	<0.400
Chloroethane; Ethyl chloride (75-00-3) SS = 2800 ug/L	2008-12	ug/L	< 1			**1.4**	< 1
	2009-05	ug/L	< 1			**1.8**	**1.4**
	2009-07	ug/L	< 1			< 1	< 1
	2009-09	ug/L	< 1			< 1	**2**
	2009-12	ug/L	< 1			**1.8**	**3.9**
	2010-09	ug/L	< 1			< 1	< 1
	2011-03	ug/L	< 1.0			< 1.0	**6.5**
	2011-09	ug/L	< 1.0			< 1.0	**4.8**
	2012-03	ug/L	< 1			< 1	**6.1**
	2012-09	ug/L	< 1			**1.4**	**2.8**
	2013-05	ug/L				< 1	**3.4**
	2013-09	ug/L				< 1	**1.9**
	2014-04	ug/L				< 4.00	**2.23 J**
	2014-09	ug/L				**0.499 J**	**2.76 J**
	2015-04	ug/L				**0.485 J**	**2.56 J**
	2015-09	ug/L				**0.647 J**	**2.08 J**
	2016-04	ug/L				**0.214 J**	**1.72 J**
	2016-09	ug/L				< 4	< 4
	2017-05	ug/L				**0.513 J**	**0.627 J**
	2017-09	ug/L				**0.436 J**	**0.258 J**
	2018-05	ug/L	< 4	< 4		< 4	< 4
	2018-09	ug/L	< 4	< 4		< 4	< 4
	2019-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2019-10	ug/L	<0.790	<0.790		<0.790	<0.790
	2020-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2020-10	ug/L	<3.95	<0.790		<0.790	**0.898 J**
	2021-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2021-10	ug/L	<0.790	<0.790		<0.790	<0.790
	2022-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2022-09	ug/L	<0.790	<0.790 *+		<0.790 *+	<0.790 *+
	2023-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2023-09	ug/L	<0.790	<0.790		<0.790	<0.790
	2024-05	ug/L	<0.790	<0.790		<0.790	<0.790
	2024-10	ug/L	<0.790		<0.790	<0.790	<0.790
Chloroform; Trichloromethane (67-66-3) SS = 80 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 3	< 3		< 3	< 3
	2018-09	ug/L	< 3	< 3		< 3	< 3
	2019-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2019-10	ug/L	<1.30	<1.30		<1.30	<1.30
	2020-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2020-10	ug/L	<6.50	<1.30		<1.30	<1.30
	2021-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2021-10	ug/L	<1.30	<1.30		<1.30	<1.30
	2022-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2022-09	ug/L	<1.30	<1.30		<1.30	<1.30
	2023-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2023-09	ug/L	<1.30	<1.30		<1.30	<1.30
	2024-05	ug/L	<1.30	<1.30		<1.30	<1.30
	2024-10	ug/L	<1.30		<1.30	<1.30	<1.30
Dibromochloromethane; Chlorodibromomethane (124-48-1) SS = 80 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<0.750	<0.750		<0.750	<0.750

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2019-10	ug/L	<0.750	<0.750		<0.750	<0.750
	2020-05	ug/L	<0.750	<0.750		<0.750	<0.750
	2020-10	ug/L	<3.75	<0.750		<0.750	<0.750
	2021-05	ug/L	<0.750	<0.750		<0.750	<0.750
	2021-10	ug/L	<0.750	<0.750		<0.750	<0.750
	2022-05	ug/L	<0.750	<0.750		<0.750	<0.750
	2022-09	ug/L	<0.750	<0.750		<0.750	<0.750
	2023-05	ug/L	<0.750	<0.750		<0.750	<0.750
	2023-09	ug/L	<0.750	<0.750		<0.750	<0.750
	2024-05	ug/L	<0.750	<0.750		<0.750	<0.750
	2024-10	ug/L	<0.750		<0.750	<0.750	<0.750
1,2-Dibromo-3-chloropropane (96-12-8) MCL - 0.2 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2019-10	ug/L	<1.20	<1.20		<1.20	<1.20
	2020-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2020-10	ug/L	<6.00	<1.20		<1.20	<1..20
	2021-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2021-10	ug/L	<1.20	<1.20		<1.20	<1.20
	2022-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2022-09	ug/L	<1.20	<1.20		<1.20	<1.20
	2023-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2023-09	ug/L	<1.20	<1.20		<1.20	<1.20
	2024-05	ug/L	<1.20	<1.20		<1.20	<1.20
	2024-10	ug/L	<1.20		<1.20	<1.20	<1.20
1,2-Dibromoethane (106-93-4) SS = 0.05 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2019-10	ug/L	<0.340	<0.340		<0.340	<0.340
	2020-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2020-10	ug/L	<1.70	<0.340		<0.340	<0.340
	2021-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2021-10	ug/L	<0.340	<0.340		<0.340	<0.340
	2022-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2022-09	ug/L	<0.340	<0.340		<0.340	<0.340
	2023-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2023-09	ug/L	<0.340	<0.340		<0.340	<0.340
	2024-05	ug/L	<0.340	<0.340		<0.340	<0.340
	2024-10	ug/L	<0.340		<0.340	<0.340	<0.340
o-Dichlorobenzene; 1,2-Dichlorobenzene (95-50-1) MCL = 600 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2019-10	ug/L	<0.370	<0.370		<0.370	<0.370
	2020-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2020-10	ug/L	<1.85	<0.370		<0.370	<0.370
	2021-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2021-10	ug/L	<0.370	<0.370		<0.370	<0.370
	2022-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2022-09	ug/L	<0.370	<0.370		<0.370	<0.370
	2023-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2023-09	ug/L	<0.370	<0.370		<0.370	<0.370
	2024-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2024-10	ug/L	<0.370		<0.370	<0.370	<0.370
p-Dichlorobenzene; 1,4-Dichlorobenzene (106-46-7) MCL = 75 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.230	<0.230		<0.230	<0.230
	2019-10	ug/L	<0.230	<0.230		<0.230	<0.230
	2020-05	ug/L	<0.230	<0.230		<0.230	<0.230
	2020-10	ug/L	<1.15	<0.230		<0.230	<0.230
	2021-05	ug/L	<0.230	<0.230		<0.230	<0.230
	2021-10	ug/L	<0.230	<0.230		<0.230	<0.230
	2022-05	ug/L	<0.230	<0.230		<0.230	<0.230

			MW-51	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
	2022-09	ug/L	<0.230	<0.230		<0.230	<0.230
	2023-05	ug/L	<0.230	<0.230		<0.230	<0.230
	2023-09	ug/L	<0.230	<0.230		<0.230	<0.230
	2024-05	ug/L	<0.230	<0.230		<0.230	<0.230
	2024-10	ug/L	<0.230		<0.230	<0.230	<0.230
trans-1,4-Dichloro-2-butene (110-57-6) SS = 1.8 ug/L	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2019-10	ug/L	<1.10	<1.10		<1.10	<1.10
	2020-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2020-10	ug/L	<5.50	<1.10		<1.10	<1.10
	2021-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2021-10	ug/L	<1.10	<1.10		<1.10	<1.10
	2022-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2022-09	ug/L	<1.10	<1.10		<1.10	<1.10
	2023-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2023-09	ug/L	<1.10	<1.10		<1.10	<1.10
	2024-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2024-10	ug/L	<1.10		<1.10	<1.10	<1.10
1,1-Dichloroethane (75-34-3) SS = 140 ug/L	2008-12	ug/L	< 1			**1.2**	< 1
	2009-05	ug/L	< 1			< 1	< 1
	2009-07	ug/L	< 1			**1.1**	< 1
	2009-09	ug/L	< 1			**1.2**	< 1
	2009-12	ug/L	< 1			< 1	< 1
	2010-09	ug/L	< 1			< 1	< 1
	2011-03	ug/L	< 1.0			**1.0**	< 1.0
	2011-09	ug/L	< 1.0			< 1.0	< 1.0
	2012-03	ug/L	< 1			< 1	< 1
	2012-09	ug/L	< 1			< 1	< 1
	2013-05	ug/L				< 1	< 1
	2013-09	ug/L				< 1	< 1
	2014-04	ug/L				< 1.00	< 1.00
	2014-09	ug/L				**0.384 J**	< 1
	2015-04	ug/L				**0.263 J**	
	2015-09	ug/L				**0.475 J**	
	2016-04	ug/L				**0.363 J**	
	2016-09	ug/L				**0.359 J**	
	2017-05	ug/L				**0.316 J**	
	2017-09	ug/L				**0.503 J**	
	2018-05	ug/L	< 1	< 1		**0.476 J**	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.220	<0.220		<0.220	<0.220
	2019-10	ug/L	<0.220	<0.220		**0.371 J**	<0.220
	2020-05	ug/L	<2.220	<0.220		**0.303 J**	<0.220
	2020-10	ug/L	<1.10	<0.220		**0.399 J**	<0.220
	2021-05	ug/L	<0.220	<0.220		<0.220	<0.220
	2021-10	ug/L	<0.220	<0.220		<0.220	<0.220
	2022-05	ug/L	<0.220	<0.220		<0.220	<0.220
	2022-09	ug/L	<0.220	<0.220		<0.220	<0.220
	2023-05	ug/L	<0.220	<0.220		**0.256 J**	<0.220
	2023-09	ug/L	<0.220	<0.220		<0.220	<0.220
	2024-05	ug/L	<0.220	<0.220		**0.241 J**	<0.220
	2024-10	ug/L	<0.220		<0.220	**0.223 J**	<0.220
1,2-Dichloroethane (107-06-2) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2019-10	ug/L	<0.390	<0.390		<0.390	<0.390
	2020-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2020-10	ug/L	<1.95	<0.390		<0.390	<0.390
	2021-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2021-10	ug/L	**0.821 J**	<0.210		**1.72**	**0.280 J**
	2022-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2022-09	ug/L	<0.390	<0.390		<0.390	<0.390
	2023-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2023-09	ug/L	<0.390	<0.390		<0.390	<0.390
	2024-05	ug/L	<0.390	<0.390		<0.390	<0.390
	2024-10	ug/L	<0.390		<0.390	<0.390	<0.390

			MW-51	PZ-12	MW-60	MW-27	MW-50R
1,1-Dichloroethylene (75-35-4) MCL = 7 ug/L 1,1-Dichloroethene	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 2	< 2		< 2	< 2
	2018-09	ug/L	< 2	< 2		< 2	< 2
	2019-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2019-10	ug/L	<0.560	<0.560		<0.560	<0.560
	2020-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2020-10	ug/L	<2.80	<0.560		<0.560	<0.560
	2021-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2021-10	ug/L	<0.560	<0.560		<0.560	<0.560
	2022-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2022-09	ug/L	<0.560	<0.560		<0.560	<0.560
	2023-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2023-09	ug/L	<0.560	<0.560		<0.560	<0.560
	2024-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2024-10	ug/L	<0.560		<0.560	<0.560	<0.560
cis-1,2-Dichloroethylene (156-59-2) MCL - 70 ug/L cis-1,2-Dichloroethene	2008-12	ug/L	< 1			**2.7**	< 1
	2009-05	ug/L	< 1			**2.2**	< 1
	2009-07	ug/L	< 1			**3.2**	< 1
	2009-09	ug/L	< 1			**1.9**	< 1
	2009-12	ug/L	< 1			**2.2**	< 1
	2010-09	ug/L	< 1			**2.8**	< 1
	2011-03	ug/L	< 1.0			**3.5**	< 1.0
	2011-09	ug/L	**2.9 (1)**			< 1.0	< 1.0
	2012-03	ug/L	< 1			< 1	< 1
	2012-09	ug/L	< 1			**2.9**	< 1
	2013-05	ug/L				**1**	< 1
	2013-09	ug/L				**2.4**	< 1
	2014-04	ug/L				**0.499 J**	< 1.00
	2014-09	ug/L				**1.47**	**0.175 J**
	2015-04	ug/L				**1.71**	
	2015-09	ug/L				**3.34**	
	2016-04	ug/L				**2.77**	
	2016-09	ug/L				**3.2**	
	2017-05	ug/L				**2.08**	
	2017-09	ug/L				**2.99**	
	2018-05	ug/L	< 1	< 1		**3.65**	< 1
	2018-09	ug/L	< 1	< 1		**2.96**	< 1
	2019-05	ug/L	<0.210	<0.210		**1.89**	<0.210
	2019-10	ug/L	<0.210	<0.210		**2.43**	<0.210
	2020-05	ug/L	<0.210	<0.210		**2.15**	<0.210
	2020-10	ug/L	<1.05	<0.210		**3.08**	**0.241 J**
	2021-05	ug/L	<0.210	<0.210		**2.23**	<0.210
	2021-10	ug/L	**0.821 J**	<0.210		**1.72**	**0.280 J**
	2022-05	ug/L	<0.210	<0.210		**2.18**	<0.210
	2022-09	ug/L	<0.210	<0.210		**2.46**	<0.210
	2023-05	ug/L	<0.210	<0.210		**2.44**	<0.210
	2023-09	ug/L	<0.210	<0.210		**2.00**	<0.210
	2024-05	ug/L	<0.210	<0.210		**2.24**	<0.210
	2024-10	ug/L	<0.210		<0.210	**2.00**	<0.210
trans-1,2-Dichloroethylene (156-60-5) MCL = 100 ug/L trans-1,2-Dichloroethene	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2019-10	ug/L	<0.270	<0.270		<0.270	<0.270
	2020-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2020-10	ug/L	<1.35	<0.270		<0.270	<0.270
	2021-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2021-10	ug/L	<0.270	<0.270		<0.270	<0.270
	2022-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2022-09	ug/L	<0.270	<0.270		<0.270	<0.270
	2023-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2023-09	ug/L	<0.270	<0.270		<0.270	<0.270
	2024-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2024-10	ug/L	<0.270		<0.270	<0.270	<0.270
1,2-Dichloropropane (78-87-5) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2019-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2019-10	ug/L	<0.270	<0.270		<0.270	<0.270
	2020-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2020-10	ug/L	<1.35	<0.270		<0.270	<0.270
	2021-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2021-10	ug/L	<0.270	<0.270		<0.270	<0.270
	2022-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2022-09	ug/L	<0.270	<0.270		<0.270	<0.270
	2023-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2023-09	ug/L	<0.270	<0.270		<0.270	<0.270
	2024-05	ug/L	<0.270	<0.270		<0.270	<0.270
	2024-10	ug/L	<0.270		<0.270	<0.270	<0.270
cis-1,3-Dichloropropene (10061-01-5) SS = 1.8 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2019-10	ug/L	<0.250	<0.250		<0.250	<0.250
	2020-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2020-10	ug/L	<1.25	<0.250		<0.250	<0.250
	2021-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2021-10	ug/L	<0.250	<0.250		<0.250	<0.250
	2022-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2022-09	ug/L	<0.250	<0.250		<0.250	<0.250
	2023-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2023-09	ug/L	<0.250	<0.250		<0.250	<0.250
	2024-05	ug/L	<0.250	<0.250		<0.250	<0.250
	2024-10	ug/L	<0.250		<0.250	<0.250	<0.250
trans-1,3-Dichloropropene (10061-02-6)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2019-10	ug/L	<0.560	<0.560		<0.560	<0.560
	2020-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2020-10	ug/L	<2.80	<0.560		<0.560	<0.560
	2021-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2021-10	ug/L	<0.560	<0.560		<0.560	<0.560
	2022-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2022-09	ug/L	<0.560	<0.560		<0.560	<0.560
	2023-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2023-09	ug/L	<0.560	<0.560		<0.560	<0.560
	2024-05	ug/L	<0.560	<0.560		<0.560	<0.560
	2024-10	ug/L	<0.560		<0.560	<0.560	<0.560
Ethylbenzene (100-41-4) MCL = 700 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2019-10	ug/L	<0.310	<0.310		<0.310	<0.310
	2020-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2020-10	ug/L	<1.55	<0.310		<0.310	<0.310
	2021-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2021-10	ug/L	<0.310	<0.310		<0.310	<0.310
	2022-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2022-09	ug/L	<0.310	<0.310		<0.310	<0.310
	2023-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2023-09	ug/L	<0.310	<0.310		<0.310	<0.310
	2024-05	ug/L	<0.310	<0.310		<0.310	<0.310
	2024-10	ug/L	<0.310		<0.310	<0.310	<0.310
2-Hexanone; Methyl butyl (591-78-6)	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2019-10	ug/L	<2.00	<2.00		<2.00	<2.00
	2020-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2020-10	ug/L	<10.0	<2.00		<2.00	<2.00
	2021-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2021-10	ug/L	<2.00	<2.00		<2.00	<2.00
	2022-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2022-09	ug/L	<2.00	<2.00		<2.00	<2.00

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2023-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2023-09	ug/L	<2.00	<2.00		<2.00	<2.00
	2024-05	ug/L	<2.00	<2.00		<2.00	<2.00
	2024-10	ug/L	<2.00		<2.00	<2.00	<2.00
Methyl bromide; Bromomethane (74-83-9) SS = 10 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 4	< 4		< 4	< 4
	2018-09	ug/L	< 4	< 4		< 4	< 4
	2019-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2019-10	ug/L	<1.10	<1.10		**3.10 J**	<1.10
	2020-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2020-10	ug/L	<5.50	<1.10		<.10	<1.10
	2021-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2021-10	ug/L	<1.10	<1.10		<1.10	<1.10
	2022-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2022-09	ug/L	<1.10	<1.10 *+		<1.10 *+	<1.10 *+
	2023-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2023-09	ug/L	<1.10	<1.10		<1.10	<1.10
	2024-05	ug/L	<1.10	<1.10		<1.10	<1.10
	2024-10	ug/L	<1.10		<1.10	<1.10	<1.10
Methyl chloride; Chloromethane (74-87-3)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 3	< 3		< 3	< 3
	2018-09	ug/L	< 3	< 3		< 3	< 3
	2019-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2019-10	ug/L	<0.610	<0.610		<0.610	<0.610
	2020-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2020-10	ug/L	<3.05	<0.610		<0.610	<0.610
	2021-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2021-10	ug/L	<0.610	<0.610		<0.610	<0.610
	2022-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2022-09	ug/L	<0.610	<0.610 *+		<0.610 *+	<0.610 *+
	2023-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2023-09	ug/L	<0.610	<0.610		<0.610	<0.610
	2024-05	ug/L	<0.610	<0.610		<0.610	<0.610
	2024-10	ug/L	<0.610		<0.610	<0.610	<0.610
Methylene bromide; Dibromomethane (74-95-3) SS = 70 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2019-10	ug/L	<0.330	<0.330		<0.330	<0.330
	2020-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2020-10	ug/L	<1.65	<0.330		<0.330	<0.330
	2021-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2021-10	ug/L	<0.330	<0.330		<0.330	<0.330
	2022-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2022-09	ug/L	<0.330	<0.330		<0.330	<0.330
	2023-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2023-09	ug/L	<0.330	<0.330		<0.330	<0.330
	2024-05	ug/L	<0.330	<0.330		<0.330	<0.330
	2024-10	ug/L	<0.330		<0.330	<0.330	<0.330
Methylene chloride (75-09-2) SS = 5 ug/L	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 5	< 5		< 5	< 5
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2019-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2019-10	ug/L	<1.70	<1.70		<1.70	<1.70
	2020-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2020-10	ug/L	<8.50	<1.70		<1.70	<1.70
	2021-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2021-10	ug/L	<1.70	<1.70		<1.70	<1.70
	2022-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2022-09	ug/L	<1.70	<1.70		<1.70	<1.70
	2023-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2023-09	ug/L	<1.70			<1.70	<1.70
	2024-05	ug/L	<1.70	<1.70		<1.70	<1.70
	2024-10	ug/L	<1.70		<1.70	<1.70	<1.70

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Methyl ethyl ketone; MEK; 2 - Butanone (78-93-3) SS = 4000 ug/L	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2019-10	ug/L	<2.10	<2.10		<2.10	<2.10
	2020-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2020-10	ug/L	<10.5	<2.10		<2.10	<2.10
	2021-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2021-10	ug/L	<2.10	<2.10		<2.10	<2.10
	2022-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2022-09	ug/L	<2.10	<2.10		<2.10	<2.10
	2023-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2023-09	ug/L	<2.10	<2.10		<2.10	<2.10
	2024-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2024-10	ug/L	<2.10		**3.53 J**	<2.10	<2.10
Methyl iodide; Iodomethane (74-88-4)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2019-10	ug/L	<7.00	<7.00		<7.00	<7.00
	2020-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2020-10	ug/L	<35.0	<7.00		<7.00	<7.00
	2021-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2021-10	ug/L	<7.00	<7.00		<7.00	<7.00
	2022-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2022-09	ug/L	<7.00	<7.00		<7.00	<7.00
	2023-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2023-09	ug/L	<7.00	<7.00		<7.00	<7.00
	2024-05	ug/L	<7.00	<7.00		<7.00	<7.00
	2024-10	ug/L	<7.00		<7.00	<7.00	<7.00
4-Methyl-2-pentanone (108-10-1) SS = 560 ug/L	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2019-10	ug/L	<2.10	<2.10		<2.10	<2.10
	2020-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2020-10	ug/L	<10.5	<2.10		<2.10	<2.10
	2021-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2021-10	ug/L	<2.10	<2.10		<2.10	<2.10
	2022-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2022-09	ug/L	<2.10	<2.10		<2.10	<2.10
	2023-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2023-09	ug/L	<2.10	<2.10		<2.10	<2.10
	2024-05	ug/L	<2.10	<2.10		<2.10	<2.10
	2024-10	ug/L	<2.10		<2.10	<2.10	<2.10
Styrene (100-42-5) MCL = 100 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2019-10	ug/L	<0.370	<0.370		<0.370	<0.370
	2020-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2020-10	ug/L	<1.85	<0.370		<0.370	<0.370
	2021-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2021-10	ug/L	<0.370	<0.370		<0.370	<0.370
	2022-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2022-09	ug/L	<0.370	<0.370		<0.370	<0.370
	2023-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2023-09	ug/L	<0.370	<0.370		<0.370	<0.370
	2024-05	ug/L	<0.370	<0.370		<0.370	<0.370
	2024-10	ug/L	<0.370		<0.370	<0.370	<0.370
1,1,1,2-Tetrachloroethane (630-20-6) SS = 70 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2019-10	ug/L	<0.380	<0.380		<0.380	<0.380

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2020-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2020-10	ug/L	<1.90	<0.380		<0.380	<0.380
	2021-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2021-10	ug/L	<0.380	<0.380		<0.380	<0.380
	2022-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2022-09	ug/L	<0.380	<0.380		<0.380	<0.380
	2023-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2023-09	ug/L	<0.380	<0.380		<0.380	<0.380
	2024-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2024-10	ug/L	<0.380		<0.380	<0.380	<0.380
1,1,2,2-Tetrachloroethane (79-34-5) SS = 0.3 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2019-10	ug/L	<0.470	<0.470		<0.470	<0.470
	2020-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2020-10	ug/L	<2.35	<0.470		<0.470	<0.470
	2021-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2021-10	ug/L	<0.470	<0.470		<0.470	<0.470
	2022-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2022-09	ug/L	<0.470	<0.470		<0.470	<0.470
	2023-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2023-09	ug/L	<0.470	<0.470		<0.470	<0.470
	2024-05	ug/L	<0.470	<0.470		<0.470	<0.470
	2024-10	ug/L	<0.470		<0.470	<0.470	<0.470
Tetrachloroethylene (127-18-4) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2019-10	ug/L	<0.480	<0.480		<0.480	<0.480
	2020-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2020-10	ug/L	<2.40	<0.480		<0.480	<0.480
	2021-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2021-10	ug/L	<0.480	<0.480		<0.480	<0.480
	2022-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2022-09	ug/L	<0.480	<0.480		<0.480	<0.480
	2023-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2023-09	ug/L	<0.480	<0.480		<0.480	<0.480
	2024-05	ug/L	<0.480	<0.480		<0.480	<0.480
	2024-10	ug/L	<0.480		<0.480	<0.480	<0.480
Toluene (108-88-3) MCL = 1000 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2019-10	ug/L	<0.430	<0.430		<0.430	<0.430
	2020-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2020-10	ug/L	<2.15	<0.430		<0.430	<0.430
	2021-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2021-10	ug/L	<0.430	<0.430		<0.430	<0.430
	2022-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2022-09	ug/L	<0.430	<0.430		<0.430	<0.430
	2023-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2023-09	ug/L	<0.430	<0.430		<0.430	<0.430
	2024-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2024-10	ug/L	<0.430		<0.430	<0.430	<0.430
1,1,1-Trichloroethane (71-55-6) MCL = 200 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2019-10	ug/L	<0.190	<0.190		<0.190	<0.190
	2020-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2020-10	ug/L	<0.950	<0.190		<0.190	<0.190
	2021-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2021-10	ug/L	<0.190	<0.190		<0.190	<0.190
	2022-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2022-09	ug/L	<0.190	<0.190		<0.190	<0.190

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2023-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2023-09	ug/L	<0.190	<0.190		<0.190	<0.190
	2024-05	ug/L	<0.190	<0.190		<0.190	<0.190
	2024-10	ug/L	<0.190		<0.190	<0.190	<0.190
1,1,2-Trichloroethane (79-00-5) MCL = 5 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2019-10	ug/L	<0.450	<0.450		<0.450	<0.450
	2020-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2020-10	ug/L	<2.35	<0.450		<0.450	<0.450
	2021-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2021-10	ug/L	<0.450	<0.450		<0.450	<0.450
	2022-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2022-09	ug/L	<0.450	<0.450		<0.450	<0.450
	2023-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2023-09	ug/L	<0.450	<0.450		<0.450	<0.450
	2024-05	ug/L	<0.450	<0.450		<0.450	<0.450
	2024-10	ug/L	<0.450		<0.450	<0.450	<0.450
Trichloroethylene (79-01-6) MCL = 5 ug/L	2008-12	ug/L	< 1			**1**	< 1
	2009-05	ug/L	< 1			**1.1**	< 1
	2009-07	ug/L	< 1			**1.5**	< 1
	2009-09	ug/L	< 1			**1.3**	< 1
	2009-12	ug/L	< 1			< 1	< 1
	2010-09	ug/L	< 1			**1.2**	< 1
	2011-03	ug/L	< 1.0			< 1.0	< 1.0
	2011-09	ug/L	< 1.0			< 1.0	< 1.0
	2012-03	ug/L	< 1			< 1	< 1
	2012-09	ug/L	< 1			< 1	< 1
	2013-05	ug/L				< 1	< 1
	2013-09	ug/L				< 1	< 1
	2014-04	ug/L				< 1.00	< 1.00
	2014-09	ug/L				**0.245 J**	< 1
	2015-04	ug/L				< 1.00	
	2015-09	ug/L				**0.275 J**	
	2016-04	ug/L				**0.304 J**	
	2016-09	ug/L				< 1	
	2017-05	ug/L				< 1	
	2017-09	ug/L				< 1	
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2019-10	ug/L	<0.430	<0.430		<0.430	<0.430
	2020-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2020-10	ug/L	<2.15	<0.430		<0.430	<0.430
	2021-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2021-10	ug/L	<0.430	<0.430		<0.430	<0.430
	2022-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2022-09	ug/L	<0.430	<0.430		<0.430	<0.430
	2023-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2023-09	ug/L	<0.430	<0.430		<0.430	<0.430
	2024-05	ug/L	<0.430	<0.430		<0.430	<0.430
	2024-10	ug/L	<0.430		<0.430	<0.430	<0.430
Trichlorofluoromethane (75-69-4) SS = 2000 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 4	< 4		< 4	< 4
	2018-09	ug/L	< 4	< 4		< 4	< 4
	2019-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2019-10	ug/L	<0.380	<0.380		<0.380	<0.380
	2020-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2020-10	ug/L	<1.90	<0.380		<0.380	<0.380
	2021-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2021-10	ug/L	<0.380	<0.380		<0.380	<0.380
	2022-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2022-09	ug/L	<0.380	<0.380 *+		<0.380 *+	<0.380 *+
	2023-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2023-09	ug/L	<0.380	<0.380		<0.380	<0.380
	2024-05	ug/L	<0.380	<0.380		<0.380	<0.380
	2024-10	ug/L	<0.380		<0.380	<0.380	<0.380

			MW-51	PZ-12	MW-60	MW-27	MW-50R
1,2,3-Trichloropropane (96-18-4) SS = 0.0058 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2019-10	ug/L	<0.590	<0.590		<0.590	<0.590
	2020-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2020-10	ug/L	<2.95	<0.590		<0.590	<0.590
	2021-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2021-10	ug/L	<0.590	<0.590		<0.590	<0.590
	2022-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2022-09	ug/L	<0.590	<0.590		<0.590	<0.590
	2023-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2023-09	ug/L	<0.590 F2	<0.590		<0.590	<0.590
	2024-05	ug/L	<0.590	<0.590		<0.590	<0.590
	2024-10	ug/L	<0.590		<0.590	<0.590	<0.590
Vinyl acetate (108-05-4)	2008-12	ug/L	< 5			< 5	< 5
	2013-09	ug/L				< 5	< 5
	2018-05	ug/L	< 10	< 10		< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2019-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2019-10	ug/L	<2.50	<2.50		<2.50	<2.50
	2020-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2020-10	ug/L	<12.5	<2.50		<2.50	<2.50
	2021-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2021-10	ug/L	<2.50	<2.50		<2.50	<2.50
	2022-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2022-09	ug/L	<2.50	<2.50		<2.50	<2.50
	2023-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2023-09	ug/L	<2.50	<2.50		<2.50	<2.50
	2024-05	ug/L	<2.50	<2.50		<2.50	<2.50
	2024-10	ug/L	<2.50		<2.50	<2.50	<2.50
Vinyl chloride (75-01-4) MCL = 2 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-05	ug/L	< 1	< 1		< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2019-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2019-10	ug/L	<0.180	<0.180		<0.180	<0.180
	2020-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2020-10	ug/L	<0.900	<0.180		<0.180	<0.180
	2021-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2021-10	ug/L	<0.180	<0.180		<0.180	<0.180
	2022-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2022-09	ug/L	<0.180	<0.180 *+		<0.180 *+	<0.180 *+
	2023-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2023-09	ug/L	<0.180	<0.180		<0.180	<0.180
	2024-05	ug/L	<0.180	<0.180		<0.180	<0.180
	2024-10	ug/L	<0.180		<0.180	<0.180	<0.180
Xylene (total) (1330-20-7) MCL = 10,000 ug/L	2008-12	ug/L	< 2			< 2	< 2
	2013-09	ug/L				< 2	< 2
	2018-05	ug/L	< 3	< 3		< 3	< 3
	2018-09	ug/L	< 3	< 3		< 3	< 3
	2019-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2019-10	ug/L	<0.400	<0.400		<0.400	<0.400
	2020-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2020-10	ug/L	<2.00	<0.400		<0.400	<0.400
	2021-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2021-10	ug/L	<0.400	<0.400		<0.400	<0.400
	2022-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2022-09	ug/L	<0.400	<0.400		<0.400	<0.400
	2023-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2023-09	ug/L	<0.400	<0.400		<0.400	<0.400
	2024-05	ug/L	<0.400	<0.400		<0.400	<0.400
	2024-10	ug/L	<0.400		<0.400	<0.400	<0.400
Acenaphthene (83-32-9) SS = 420 ug/L	2008-12	ug/L	F			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.640			<0.615	<0.640

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Acenaphthylene (208-96-8) SS = 210 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.720			<0.692	<0.720
Acetonitrile; Methyl cyanide (75-05-8)	2008-12	ug/L	< 10			< 10	< 10
	2013-09	ug/L				< 10	< 10
	2018-09	mg/L	< 10	< 10		< 10	< 10
	2023-09	mg/L	<0.570			<0.570	<0.570
Acetophenone (98-86-2)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.690			<0.663	<0.690
2-Acetylaminofluorene; 2-AAF (53-96-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.70			<2.60	<2.70
Acrolein (107-02-8)	2008-12	ug/L	< 10			< 10	< 10
	2013-09	ug/L				< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2023-09	ug/L	<3.60	<3.60		<3.60	<3.60
Aldrin (309-00-2) SS = 0.01 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0161 J**	< 0.034
	2019-02	ug/L	<0.00495			<0.00495	
	2023-09	ug/L	<0.0320			<0.0320	<0.0314
Allyl chloride (107-05-1)	2008-12	ug/L	< 0			< 0	< 0
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 2	< 2		< 2	< 2
	2023-09	ug/L	<0.700	<0.700		<0.700	<0.700
4-Aminobiphenyl (92-67-1) SS = 0.0083 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.20			<2.12	<2.20
Anthracene (120-12-7) SS = 2100 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.870			<0.837	<0.870
Benzo[a]anthracene (56-55-3) SS = 0.24 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.850			<0.817	<0.850
Benzo[b]fluoranthene (205-99-2) SS = 0.24 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<4.90			<4.71	<4.90
Benzo[k]fluoranthene (207-08-9) SS = 0.24 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.20			<2.12	<2.20
Benzo[ghi]perylene (191-24-2) SS = 21 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<6.30			<6.06	<6.30
Benzo[a]pyrene (50-32-8) SS = 2.0 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<8.10			<7.79	<8.10
Benzyl alcohol (100-51-6) SS = 700 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.30			<1.25	<1.30
alpha-BHC (319-84-6) SS = 0.028 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.00757 J**	< 0.034
	2019-02	ug/L	<0.00187			**0.00595 J**	
	2023-09	ug/L	<0.0290			<0.0290	0.0284
beta-BHC (319-85-7) SS = 0.042 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0339**	< 0.034
	2019-02	ug/L	<0.00527			**0.0279 J**	
	2019-05	ug/L	<0.00500	<0.00495		<0.00500	

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2019-10	ug/L				<0.00490	
	2021-05	ug/L				<0.0370	
	2021-10	ug/L				<0.0140	
	2022-05	ug/L				<0.0440	
	2022-09	ug/L				<0.0430	
	2023-09	ug/L	<0.0370			<0.0370	<0.0363
	2024-05	ug/L				<0.0349	
	2024-10	ug/L				<0.0383	
delta-BHC (319-86-8) SS = 2.1 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0515**	**0.00579 J**
	2019-02	ug/L	<0.00253			**0.00998 J**	
	2019-05	mg/L	**0.00255 J**	**0.00304 J**		**0.00315 J**	
	2019-10	mg/L				**0.00363 J**	
	2021-05	ug/L				<0.0270	
	2021-10	ug/L				<0.0161	
	2022-05	ug/L				<0.0321	
	2022-09	ug/L				<0.0314	
	2023-09	ug/L	<0.0270			<0.0270	<0.0265
	2024-05	ug/L				<0.0255	
	2024-10	ug/L				<0.0292	
gamma-BHC; Lindane (58-89-9) MCL = 0.2 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0117 J**	< 0.034
	2019-02	ug/L	<0.00209			<0.00209	
	2023-09	ug/L	<0.0360			<0.0360	<0.0353
Bis(2-chloroethoxy)methane (111-91-1)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.760			<0.731	<0.760
Bis(2-chloroethyl) ether (111-44-4) SS = 0.16 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.820			<0.788	<0.820
Bis-(2-chloro-1-methylethyl) (108-60-1) SS = 300 ug/L	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
Bis(2-ethylhexyl) phthalate (117-81-7) SS = 6 ug/L	2013-09	ug/L				**11**	< 8
	2013-12	ug/L				< 10	
	2014-04	ug/L				< 10.3 J	
	2014-09	ug/L				< 10	
	2015-04	ug/L				< 10.2 J	
	2015-09	ug/L				< 10.3 J	
	2016-04	ug/L				< 10.4 J	
	2016-09	ug/L				< 10.9	
	2017-05	ug/L				< 10.2	
	2017-09	ug/L				< 10.3	
	2018-05	ug/L				< 10.3	
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.50			<5.29	<5.50
4-Bromophenyl phenyl ether (101-55-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.700			<0.673	<0.700
Butyl benzyl phthalate; Benzyl (85-68-7) SS = 140 ug/L	2008-12	ug/L				< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.40			<5.19	<5.40
Chlordane MCL = 2 ug/L	2008-12	ug/L				< 0.1	< 0.1
	2013-09	ug/L				< 0.1	< 0.1
	2018-09	ug/L	< 2.11	< 2.25		< 2.11	< 2.13
	2019-02	ug/L	<0.0703			<0.0703	
	2023-09	ug/L	<0.810			<0.810	<0.794
p-Chloroaniline (106-47-8) SS = 28 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
Chlorobenzilate (510-15-6)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.60			<3.46	<3.60
p-Chloro-m-cresol; 4-Chloro- (59-50-7) SS = 700 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L					
2-Chloronaphthalene (91-58-7) SS = 560 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.640			<0.615	<0.640
2-Chlorophenol (95-57-8) SS = 40 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.540			<0.519	<0.540
4-Chlorophenyl phenyl ether (7005-72-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.690			<0.663	<0.690
Chloroprene (126-99-8)	2008-12	ug/L	< 0			< 0	< 0
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2023-09	ug/L	<0.230	<0.230		<0.230	<0.230
Chrysene (218-01-9) SS = 24 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.870			<0.837	<0.870
m/p-Cresol mixtures (15831-10-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
o-Cresol; 2-methylphenol (95-48-7) SS = 35 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.650			<0.625	<0.650
Cyanide (57-12-5) SS = 200 ug/L	2008-12	mg/L	< 0.007			< 0.007	< 0.007
	2013-09	mg/L				< 0.005	< 0.005
	2018-09	mg/L	< 0.01	< 0.01		< 0.01	< 0.01
	2023-10	mg/L	<0.00430			<0.00430	<0.00430
2,4-D; 2,4-Dichlorophenoxyacetic (94-75-7) MCL = 70 ug/L	2008-12	ug/L	< 2			< 2	< 2
	2013-12	ug/L				< 2	< 2
	2018-09	ug/L	< 1.07	< 1.18		**0.834 J**	< 1.05
	2023-10	ug/L	<0.328			<0.332	<0.353
4,4-DDD (72-54-8) SS = 0.73 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		< 0.0337	**0.00795 J**
	2019-02	ug/L	<0.00198			<0.00198	
	2023-09	ug/L	<0.0270			<0.0270	<0.0265
4,4-DDE (72-55-9) SS = 0.51 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	**0.00313 J**	< 0.036		< 0.0337	< 0.034
	2019-02	ug/L	<0.00231			**0.00410 J**	
	2023-09	ug/L	<0.0270			<0.0270	<0.0265
4,4-DDT (50-29-3) SS = 0.51 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0288 J**	< 0.034
	2019-02	ug/L	<0.00418			<0.00418	
	2023-09	ug/L	<0.0420			<0.0420	<0.0412
Diallate (2303-16-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<4.00			<3.85	<4.00
Dibenz[a,h]anthracene (53-70-3) SS = 0.024 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.90			<3.75	<3.90
Dibenzofuran (132-64-9) SS = 7 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2008-12	ug/L	< 8			< 8	< 8
	2023-09	ug/L	<0.740			<0.712	<0.740
Di-n-butyl phthalate (84-74-2) SS = 700 ug/L	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.60			<5.38	<5.60
m-Dichlorobenzene (541-73-1) SS = 600 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1

			MW-51	PZ-12	MW-60	MW-27	MW-50R
3,3-Dichlorobenzidine (91-94-1) SS = 0.39 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.40			<1.35	<1.40
Dichlorodifluoromethane (75-71-8) SS = 1000 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 3	< 3		< 3	< 3
	2023-09	ug/L	<0.250	<0.250		<0.250	<0.250
2,4-Dichlorophenol (120-83-2) SS = 20 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.850			<0.817	<0.850
2,6-Dichlorophenol (87-65-0)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.690			<0.663	<0.690
1,3-Dichloropropane (142-28-9)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2023-09	ug/L	<0.400	<0.400		<0.400	<0.400
2,2-Dichloropropane (594-20-7)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 4	< 4		< 4	< 4
	2023-09	ug/L	<0.690	<0.690		<0.690	<0.690
1,1-Dichloropropene (563-58-6)	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 1	< 1		< 1	< 1
	2023-09	ug/L	<0.430	<0.430		<0.430	<0.430
Dieldrin (60-57-1) SS = 0.011 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.042**	< 0.034
	2019-02	ug/L	<0.00220			**0.0125 J**	
	2019-05	ug/L	<0.00208	<0.00206		<0.00208	
	2019-10	ug/L				<0.00204	
	2021-05	ug/L				<0.0260	
	2021-10	ug/L				<0.0129	
	2022-05	ug/L				<0.0310	
	2022-09	ug/L				<0.0302	
	2023-09	ug/L	<0.0260			<0.0260	<0.0255
	2024-05	ug/L				<0.0245	
	2024-10	ug/L				<0.0191	
Diethyl phthalate (84-66-2) SS = 5600 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.70			<1.63	<1.70
0,0-Diethyl 0-2-pyrazinyl (297-97-2)	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
Dimethoate (60-51-5) SS = 1.4 ug/L	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				**0.7**	< 0.4
	2013-12	ug/L				< 0.32	
	2014-04	ug/L				< 10.3	
	2014-09	ug/L				< 10	
	2015-04	ug/L				< 10.2	
	2015-09	ug/L				< 10.3	
	2016-04	ug/L				< 10.4	
	2016-09	ug/L				< 10.9	
	2017-05	ug/L				< 10.2	
	2017-09	ug/L				**1.45 J**	
	2018-05	ug/L				< 10.3	
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.60			<3.46	<3.60
p-(Dimethylamino)azobenzene (60-11-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.20			<2.12	<2.20
7,12-Dimethylbenz[a]anthracene (57-97-6)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.90			<1.83	<1.90

			MW-51	PZ-12	MW-60	MW-27	MW-50R
3,3-Dimethylbenzidine (119-93-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.50			<1.44	<1.50
2,4-Dimethylphenol (105-67-9) SS = 100 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.580			<0.558	<0.580
Dimethyl phthalate (131-11-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.00			<0.962	<1.00
m-Dinitrobenzene (99-65-0) SS = 1 ug/L	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
4,6-Dinitro-o-cresol 4,6- (534-52-1)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
2,4-Dinitrophenol (51-28-5) SS = 14 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 20.8	< 22		< 21.1	< 20.2
	2023-09	ug/L	<13.0			<12.5	<13.0
2,4-Dinitrotoluene (121-14-2) SS = 0.25 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<6.40			<6.15	<6.40
2,6-Dinitrotoluene (606-20-2) SS = 0.26 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.520			<0.500	<0.520
Dinoseb; DNBP (88-85-7) SS = 7 ug/L	2008-12	ug/L	< 0.5			< 0.5	< 0.5
	2013-12	ug/L				< 0.5	< 0.5
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.40			<2.31	<2.40
Di-n-octyl phthalate (117-84-0) SS = 140 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 20.8	< 22		< 21.1	< 20.2
	2023-09	ug/L	<7.00			<6.73	<7.00
Diphenylamine (122-39-4) SS = 180 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<6.00			<5.77	<6.00
Disulfoton (298-04-4) SS = 0.7 ug/L	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.40			<2.31	<2.40
Endosulfan I (959-98-8) SS = 42 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0237 J**	< 0.034
	2019-02	ug/L	<0.00220			<0.00220	
	2023-09	ug/L	<0.0330			<0.0330	<0.0324
Endosulfan II (33213-65-9) SS = 42 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	**0.00244 J**		< 0.0337	< 0.034
	2019-02	ug/L	<0.00209			<0.00209	
	2023-09	ug/L	<0.0290			<0.0290	<0.0284
Endosulfan sulfate (1031-07-8)	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0766**	< 0.034
	2019-02	ug/L	<0.00275			**0.00328 J**	
	2019-05	ug/L	<0.00260	<0.00258		<0.00260	
	2019-10	ug/L				<0.00255	
	2021-05	ug/L				<0.0300	
	2021-10	ug/L				<0.00903	
	2022-05	ug/L				<0.0357	
	2022-09	ug/L				<0.0349	
	2023-09	ug/L	<0.0300			<0.0300	<0.0294
	2024-05	ug/L				<0.0283	
	2024-10	ug/L				<0.0164	
Endrin (72-20-8) MCL = 2 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.121**	**0.00214 J**

			MW-51	PZ-12	MW-60	MW-27	MW-50R
	2019-02	ug/L	<0.00209			**0.00600 J**	
	2019-05	ug/L	<0.00198	<0.00196		**0.00926 J**	
	2019-10	ug/L				**0.0135 J**	
	2021-05	ug/L				<0.0260	
	2021-10	ug/L				<0.0108	
	2022-05	ug/L				<0.0310	
	2022-09	ug/L				<0.0302	
	2023-09	ug/L	<0.0260			<0.0260	<0.0255
	2024-05	ug/L				<0.0245	
	2024-10	ug/L				<0.0255	
Endrin aldehyde (7421-93-4) SS = 2.1 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	**0.0104 J**	< 0.036		**0.0344**	< 0.034
	2019-02	ug/L	<0.00802			<0.00802	
	2019-05	ug/L	<0.00760	<0.00753		**0.00819 J**	
	2019-10	ug/L				<0.00745	
	2021-05	ug/L				<0.0290	
	2021-10	ug/L				<0.0103	
	2022-05	ug/L				<0.0345	
	2022-09	ug/L				<0.0337	
	2023-09	ug/L	<0.0290			<0.0290	<0.0284
	2024-05	ug/L				<0.0274	
	2024-10	ug/L				<0.0246	
Ethyl methacrylate (97-63-2)	2008-12	ug/L	< 10			< 10	< 10
	2013-09	ug/L				< 10	< 10
	2018-09	ug/L	< 2	< 2		< 2	< 2
	2023-09	ug/L	<0.680	<0.680		<0.680	<0.680
Ethyl methanesulfonate (62-50-0)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.60			<3.46	<3.60
Famphur (52-85-7)	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.80			<3.65	<3.80
Fluoranthene (206-44-0) SS = 280 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.70			<1.63	<1.70
Fluorene (86-73-7) SS = 280 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.790			<0.760	<0.790
Heptachlor (76-44-8) MCL = 0.4 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.0295 J**	**0.003 J**
	2019-02	ug/L	<0.00286			<0.00286	
	2023-09	ug/L	<0.0330			<0.0330	<0.0324
Heptachlor epoxide (1024-57-3) MCL = 0.2 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 0.0337	< 0.036		**0.00969 J**	< 0.034
	2019-02	ug/L	<0.00670			**0.0175 J**	
	2023-09	ug/L	<0.0290			<0.0290	<0.0284
Hexachlorobenzene (118-74-1) SS = 1 ug/L	2008-12	ug/L	< 8			< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.700			<0.673	<0.700
Hexachlorobutadiene (87-68-3) SS = 1 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.860			<0.827	<0.860
Hexachlorocyclopentadiene (77-47-4) SS = 50 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.10			<4.90	<5.10
Hexachloroethane (67-72-1) SS = 1 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.970			<0.933	<0.970

			MW-51	**PZ-12**	**MW-60**	**MW-27**	**MW-50R**
Hexachloropropene (1888-71-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.60 *1			<2.50 *1	<2.60 *1
Indeno(1,2,3-cd)pyrene (193-39-5) SS = 0.24 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<4.20			<4.04	<4.20
Isobutyl alcohol (78-83-1) SS = 2100 ug/L	2008-12	mg/L				< 1	< 1
	2013-12	mg/L				< 1	< 1
	2018-09	mg/L	< 10	< 10		< 10	< 10
	2023-09	mg/L	<0.550			<0.550	<0.550
Isodrin (465-73-6)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<4.70			<4.52	<4.70
Isophorone (78-59-1) SS = 100 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.930			<0.894	<0.930
Isosafrole (120-58-1)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.30			<2.21	<2.30
Kepone (143-50-0)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.00			<0.962	<1.00
Mercury (7439-97-6) MCL = 2 ug/L	2008-12	mg/L	< 0.0005			< 0.0005	< 0.0005
	2013-09	mg/L				< 0.0002	< 0.0002
	2018-09	mg/L	< 0.0002	< 0.0002		< 0.0002	< 0.0002
	2023-10	mg/L	<0.000140			0.00014	<0.000140
Methacrylonitrile (126-98-7)	2008-12	ug/L	< 0			< 0	< 0
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2023-09	ug/L	<3.30	<3.30		<3.30	<3.30
Methapyrilene (91-80-5)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.760			<0.731	<0.760
Methoxychlor (72-43-5) MCL = 40 ug/L	2008-12	ug/L				< 0.05	< 0.05
	2013-09	ug/L				< 0.05	< 0.05
	2018-09	ug/L	**0.0179 J**	< 0.036		< 0.0337	< 0.034
	2019-02	ug/L	<0.00231			**0.00465 J**	
	2023-09	ug/L	<0.0410			<0.0410	<0.0402
3-Methylcholanthrene (56-49-5)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.320			<0.308	<0.320
Methyl methacrylate (80-62-6)	2008-12	ug/L	< 0			< 0	< 0
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 2	< 2		< 2	< 2
	2023-09	ug/L	<0.760	<0.760		<0.760	<0.760
Methyl methanesulfonate (66-27-3) SS = 1.8 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.30			<3.17	<3.30
2-Methylnaphthalene (91-57-6) SS = 28 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.590			<0.567	<0.590
Methyl parathion (298-00-0) SS = 1 ug/L	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.30			<2.21	<2.30
Naphthalene (91-20-3) SS = 100 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2023-09	ug/L	<3.00	<3.00		<3.00	<3.00
1,4-Naphthoquinone (130-15-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.60			<3.46	<3.60

			MW-51	PZ-12	MW-60	MW-27	MW-50R
1-Naphthylamine (134-32-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.50			<2.40	<2.50
2-Naphthylamine (91-59-8) SS = 0.097 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.10			<2.02	<2.10
o-Nitroaniline; 2-Nitroaniline (88-74-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.90			<5.67	<5.90
m-Nitroaniline; 3-Nitroanile (99-09-2)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.70			<2.60	<2.70
p-Nitroaniline; 4-Nitroaniline (100-01-6)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.30			<1.25	<1.30
Nitrobenzene (98-95-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.800			<0.769	<0.800
o-Nitrophenol; 2-Nitrophenol (88-75-5)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<6.80			<6.54	<6.80
p-Nitrophenol; 4-Nitrophenol (100-02-7) SS = 60 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<7.60			<7.31	<7.60
N-Nitrosodi-n-butylamine (924-16-3)	2008-12	ug/L	< 8			< 8	< 8
SS = 0.032 ug/L	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.90			<3.75	<3.90
N-Nitrosodiethylamine (55-18-5)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.40			<3.27	<3.40
N-Nitrosodimethylamine (62-75-9) SS = 0.0034 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.720			<0.692	<0.720
N-Nitrosodiphenylamine (86-30-6) SS = 36 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.750			<0.721	<0.750
N-Nitrosodipropylamine (621-64-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
N-Nitrosomethylethalamine (10595-95-6) SS = 0.008 ug/L	2013-12	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<4.90			<4.71	<4.90
N-Nitrosopiperidine (100-75-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.70			<2.60	<2.70
N-Nitrosopyrrolidine (930-55-2) SS = 0.083 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.60			<3.46	<3.60
5-Nitro-o-toluidine (99-55-8)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.80			<2.69	<2.80
Parathion (56-38-2)	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
Pentachlorobenzene (608-93-5)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.80			<2.69	<2.80

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Pentachloronitrobenzene (82-68-8)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.80			<5.58	<5.80
Pentachlorophenol (87-86-5) SS = 1 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	**2.55 J**	< 11		< 10.5	< 10.1
	2023-09	ug/L	<9.60			<9.23	<9.60
Phenacetin (62-44-2)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.90			<1.83	<1.90
Phenanthrene (85-01-8) SS = 210 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.790			<0.760	<0.790
Phenol (108-95-2) SS = 2000 ug/L	2008-12	mg/L	< 0.008			< 0.008	< 0.008
	2013-09	mg/L				< 0.008	< 0.008
	2014-09	mg/L	< 0.0188			< 0.0184	< 0.0192
	2015-09	mg/L	< 0.018			< 0.0204	< 0.018
	2016-09	mg/L	< 0.0192			< 0.018	< 0.0192
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<1.10			<1.06	<1.10
p-Phenylenediamine (106-50-3)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2024-05	ug/L				<1.86	<1.90
Phorate (298-02-2) SS = 1.4 ug/L	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.20			<3.08	<3.20
Polychlorinated biphenyls (1336-36-3) SS = 0.5 ug/L PCBs - Aroclor 1016	2008-12	ug/L				< 0.1	< 0.1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 41.7	< 0.833		< 40.8	< 0.816
	2023-09	ug/L	<0.170			<0.170	<0.167
PCBs - Aroclor 1221	2008-12	ug/L				< 0.2	< 0.2
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 41.7	< 0.833		< 40.8	< 0.816
	2023-09	ug/L	<0.170			<0.170	<0.167
PCBs - Aroclor 1232	2008-12	ug/L				< 0.2	< 0.2
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 41.7	< 0.833		< 40.8	< 0.816
	2023-09	ug/L	<0.170			<0.170	<0.167
PCBs - Aroclor 1242	2008-12	ug/L				< 0.2	< 0.2
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 41.7	< 0.833		< 40.8	< 0.816
	2023-09	ug/L	<0.170			<0.170	<0.167
PCBs - Aroclor 1248	2008-12	ug/L				< 0.2	< 0.2
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 41.7	< 0.833		< 40.8	< 0.816
	2023-09	ug/L	<0.110			<0.110	<0.108
PCBs - Aroclor 1254	2008-12	ug/L				< 0.1	< 0.1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 0.833	< 0.833		< 0.816	< 0.816
	2023-09	ug/L	<0.110			<0.110	<0.108
PCBs - Aroclor 1260	2008-12	ug/L				< 0.1	< 0.1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 0.833	< 0.833		< 0.816	< 0.816
	2023-09	ug/L	<0.110			<0.110	<0.108
Pronamide (23950-58-5) SS = 5 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.70			<2.60	<2.70
Propionitrile; Ethyl cyanide (107-12-0)	2008-12	ug/L	< 0			< 0	< 0
	2013-09	ug/L				< 10	< 10
	2018-09	ug/L	< 10	< 10		< 10	< 10
	2023-09	ug/L	<3.40	<3.40		<3.40	<3.40
Pyrene (129-00-0) SS = 210 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.790			<0.760	<0.790

			MW-51	PZ-12	MW-60	MW-27	MW-50R
Safrole (94-59-7)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<2.80			<2.69	<2.80
Silvex; 2,4,5-TP (93-72-1) SS = 50 ug/L	2008-12	ug/L	< 0.5			< 0.5	< 0.5
	2013-12	ug/L				< 0.5	< 0.5
	2018-09	ug/L	< 1.07	< 1.18		< 1.09	< 1.05
	2023-10	ug/L	<0.0892			<0.0902	<0.0960
Sulfide (18496-25-8)	2008-12	mg/L	< 0.1			< 0.1	< 0.1
	2013-09	mg/L				< 0.05	< 0.05
	2018-09	mg/L	**13.4**	**0.768 J**		**1.2**	< 1
	2019-10	mg/L	<0.231	**5.54000**			
	2020-05	mg/L	<0.231	**1.95000**		**0.243**	
	2020-05	mg/L	<10.0	<10.0		<10.0	
	2021-05	mg/L	<0.231	**0.670 J**			
	2021-10	mg/L	<0.231	**1.03**		<0.231	
	2022-05	mg/L	<0.231	**1.61**		<0.231	
	2022-09	mg/L	<0.231	**0.398 J**		<0.231	
	2023-05	mg/L	<0.231	<0.231		<0.231	
	2023-09	mg/L	<0.231			<0.231	<0.231
	2024-05	mg/L	<1.41	<1.41		<1.41	
	2024-10	mg/L	<1.41		<1.41	<1.41	
2,4,5-T; 2,4,5- (93-76-5) SS = 70 ug/L	2008-12	ug/L	< 0.5			< 0.5	< 0.5
	2013-12	ug/L				< 0.5	< 0.5
	2018-09	ug/L	< 1.07	< 1.18		< 1.09	< 1.05
	2023-10	ug/L	<0.154			<0.156	<0.166
1,2,4,5-Tetrachlorobenzene (95-94-3) SS = 2.1 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<0.540			<0.519	<0.540
2,3,4,6-Tetrachlorophenol (58-90-2)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	**0.623 J**	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.30			<5.10	<5.30
Tin (7440-31-5) SS = 4200 ug/L	2008-12	mg/L	< 0.25			< 0.25	< 0.25
	2013-09	mg/L				< 0.05	< 0.05
	2018-09	mg/L	< 0.005	< 0.005		< 0.005	< 0.005
	2023-10	mg/L	<0.00230			<0.00230	<0.00230
o-Toluidine (95-53-4) SS = 11 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
Toxaphene (8001-35-2) SS = 3 ug/L	2008-12	ug/L				< 0.1	< 0.1
	2013-09	ug/L				< 0.2	< 0.2
	2018-09	ug/L	< 2.11	< 2.25		< 2.11	< 2.13
	2019-02	ug/L	<0.0637			<0.0637	
	2023-09	ug/L	<0.690			<0.690	<0.676
1,2,4-Trichlorobenzene (120-82-1) MCL = 70 ug/L	2008-12	ug/L	< 1			< 1	< 1
	2013-09	ug/L				< 1	< 1
	2018-09	ug/L	< 5	< 5		< 5	< 5
	2023-09	ug/L	<0.750	<0.750		<0.750	<0.750
2,4,5-Trichlorophenol (95-95-4) SS = 700 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.30			<5.10	<5.30
2,4,6-Trichlorophenol (88-06-2) SS = 16 ug/L	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<5.00			<4.81	<5.00
0,0,0-Triethyl phosphorothioate (126-68-1)	2008-12	ug/L	< 0.4			< 0.4	< 0.4
	2013-09	ug/L				< 0.4	< 0.4
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1
	2023-09	ug/L	<3.20			<3.08	<3.20
sym-Trinitrobenzene (99-35-4)	2008-12	ug/L	< 8			< 8	< 8
	2013-09	ug/L				< 8	< 8
	2018-09	ug/L	< 10.4	< 11		< 10.5	< 10.1

MCL = USEPA Maximum Contaminant Level
SS = Iowa Statewide Standards
Comments: (insert clarifications or notes as needed) This is landfill data since December 2007.

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- Data validation reports detailing any resampling, data qualifiers added as a result of data validation, and an overall assessment of the data are included in Appendix A. In 2024, the overall data assessments indicated that method criteria, precision, accuracy, representativeness, comparability, completeness, and suitability for intended use were acceptable.
- Resampling was not considered or recommended based on the data quality reviews for the Oct. 2024 sampling event. However, resampling was recommended based on the data quality review for the May 2024 sampling event as further discussed below.
- In Spring 2024, the resampled 1,4-phenylenediamine (or p-phenylenediamine) results at MW-27 and MW-50R were rejected due to low laboratory control sample/laboratory control sample duplicate (LCS/LCSD) recovery. As detailed in the Spring 2024 statistical evaluation, 1,4-phenylenediamine was sampled at MW-27 and MW-50R in Sep. 2023 as part of the 5-year resampling for the full Appendix II list and the results were rejected due to low LCS/LCSD recovery. The 2023 AWQR recommended resampling 1,4-phenylenediamine at MW-27 and MW-50R during the next semiannual sampling event in lieu of conducting an independent resampling event. The May 2024 1,4-phenylenediamine results at MW-27 and MW-50R were rejected again. Further resampling was not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed in Sep. 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylenediamine has not been detected at these wells, and the laboratory indicated 1,4-phenylenediamine is a poor performing analyte.
- Field duplicates are not collected as part of the quality assurance/quality control (QA/QC) program for this site. Field and trip blank samples were collected analyzed as part of the May and Oct. 2024 sampling event. Details regarding the field and trip blank QA/QC review are provided in the validation reports in Appendix A.

Sample Turbidity

- In an effort to reduce Total Suspended Solids (TSS) in the groundwater samples, no-purge sampling using HydraSleeve™ samplers was continued at the downgradient and background monitoring wells in May and Oct. 2024.
- No background data set adjustments were recommended based on a review of the May and Oct. 2024 TSS data. Note MW-60 was installed as a new background monitoring well in Jul. 2024 to replace PZ-12. As a result, background monitoring consisted of MW-51 and PZ-12 in May 2024 and MW-51 and MW-60 in Oct. 2024. At MW-51, the May and Oct. 2024 TSS concentrations were below the 5 mg/L limit for acceptable sample quality. At PZ-12 in May 2024, TSS was above the limit with a concentration of 75 mg/L. As discussed in Table 5, the May 2024 results at PZ-12 were not included in the background data set due to ongoing acetone detections. At MW-60 in Oct. 2024, TSS only slightly exceeded the limit with a concentration of 6 mg/L; therefore, no background dataset adjustments were recommended.
- The 2024 background review indicated that turbidity does not impact the overall representativeness of the background data. For PZ-12 in May 2024, turbidity impacts were not further evaluated since the PZ-12 data was not included in the background dataset due to ongoing acetone detections. PZ-12 was replaced by MW-60 starting in Oct. 2024. The 2024 background data is suitable for use in interwell statistical comparisons.
- The 2024 TSS concentrations of 65.5 mg/L (May 2024) and 5.33 mg/L (Oct. 2024) in MW-27 and 241 mg/L (May 2024) and 21.3 mg/L (Oct. 2024) in MW-50R were greater than the 5 mg/L level for satisfactory sample quality. The IDNR noted in the Unnumbered Permit Amendment (IDNR, 2014) that a TSS level of 5 mg/L may be unattainable and concluded that if extra measures were conducted, the IDNR would consider higher levels for TSS as satisfactory. No additional actions or removal of data were recommended for the downgradient monitoring wells in 2024. The following additional actions have been conducted to address turbidity: no-purge sampling techniques have been utilized since the Sep. 2016 event. The higher TSS concentrations identified in May 2024 occurred due to ongoing low groundwater elevations and slow recharge due to drought conditions, which resulted in lower recovery in the HydraSleeve™ samplers and/or the need to utilize additional HydraSleeve™ samplers with limited stabilization time after placement.

Table 10
Historic SSI and SSL since January 1, 2018
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Key: gray = SSI; black = SSL **Well**	**Constituent**	Spring 2018	Fall 2018	Spring 2019	Fall 2019	Spring 2020	Fall 2020	Spring 2021	Fall 2021	Spring 2022	Fall 2022	Spring 2023	Fall 2023	Spring 2024	Fall 2024
MW-27	cis-1,2-Dichlorethene	▨	▨	▨	▨	▨	▨	▨		▨	▨	▨	▨	▨	▨
MW-27	benzene			▨	▨	▨		▨	▨	▨		▨	▨	▨	
MW-27	acetone				▨							▨	▨		
MW-27	arsenic					▨		▨	▨						
MW-50R	acetone			▨			▨	▨	▨	▨	▨		▨		

Comments:

Table 11
Corrective Action Trend Analysis
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Comments: This table is not applicable. Characterization for corrective action begins when Appendix II constituents are detected at statistically significant levels (SSLs) above the GWPS. No SSLs have been identified.

Recommendations
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In May 2024, no prediction limit exceedances were identified at assessment wells MW-27 and MW-50R. DQR detections were identified for benzene and cis-1,2-dichlorethene at MW-27. SSIs were declared for benzene and cis-1,2-dichloroethene at MW-27. The DQR detections at MW-27 and MW-50R were evaluated for SSLs; no SSLs were identified.

In October 2024, no prediction limit exceedances were identified at assessment wells MW-27 and MW-50R. A DQR detection was identified for cis-1,2-dicholorethene at MW-27. An SSI was declared for cis-1,2-dicholorethene at MW-27. The DQR detection at MW-27 was evaluated for an SSL; no SSL was identified.

The May and October 2024 TSS concentrations at MW-51 were below the 5 mg/L limit for acceptable sample quality and the October 2024 TSS concentration at MW-60 was slightly above the limit at 6mg/L; therefore, no background data set adjustment was recommended.

The TSS concentration at PZ-12 was above the limit for acceptable sample quality in the May and September 2023 sampling events. The detected metals concentrations were within the range of historical concentrations, and a correlation between TSS and metals constituents appears to be marginal. TSS does not appear to be influencing the concentrations of the Appendix I and Appendix II metals and no data set adjustment was recommended for PZ-12.

It is recommended that semi-annual assessment and background monitoring for the Appendix I and detected Appendix II constituents continue at the North Unit until detected Appendix II constituents fall below the interwell prediction limit (for constituents which are detected in the background data set) and below the laboratory reporting limit (for constituents which are not detected in the background data set) for three consecutive sampling events.

The next 5 year full Appendix II resampling is scheduled for Fall 2028.

Table 12A
Historical Leachate Well Water Level Conditions
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NORTH UNIT

MSL Datum

	Date	Groundwater Elevation	Date		Groundwater Elevation	Date	Groundwater Elevation	Date	Groundwater Elevation	Date	Groundwater Elevation	Date	Groundwater Elevation	Date	Groundwater Elevation
Installed	9/5/1991	969.80	6/21/2005	29.36	989.21	10/28/2007	994.03	1/5/2011	1008.22	2/16/2013	1005.62	3/21/2015	1005.19	5/20/2019	1005.62
	10/24/1991	970.50	8/25/2005	29.13	989.44	11/3/2007	990.95	2/22/2011	1010.63	3/16/2013	1007.00	4/13/2015	1004.76	10/14/2019	1003.97
	11/15/1991	970.37	9/27/2005	29.09	989.48	12/6/2007	995.32	3/30/2011	1008.68	4/9/2013	1008.17	5/15/2015	1004.77	5/6/2020	1002.32
	7/29/2003	987.96	10/10/2005	30.54	988.03	1/9/2008	995.41	4/23/2011	1007.92	5/23/2013	1007.26	6/13/2015	1004.85	10/12/2020	1001.48
	8/30/2003	988.60	11/1/2005	28.88	989.69	2/6/2008	996.24	5/21/2011	1007.92	6/21/2013	1006.92	7/13/2015	1004.92	5/16/2021	1002.71
	10/27/2003	989.37	12/20/2005	28.28	990.29	3/22/2008	996.29	6/20/2011	1007.85	7/16/2013	1005.75	8/21/2015	1005.04	10/10/2021	1001.46
	11/21/2003	989.67	1/24/2006	28.95	989.62	4/23/2008	996.75	7/21/2011	1007.57	8/16/2013	1005.48	9/29/2015	1004.97	5/24/2022	1000.80
	12/8/2003	990.02	2/13/2006	28.64	989.93	5/28/2008	996.54	8/20/2011	1007.39	9/26/2013	1005.27	10/13/2015	1004.90	9/25/2022	999.99
	1/31/2004	989.75	4/11/2006	28.38	990.19	6/23/2008	996.50	9/22/2011	1007.09	10/12/2013	1005.08	11/20/2015	1004.88	5/21/2023	1000.20
	2/28/2004	989.97	5/23/2006	28.52	990.05	7/31/2008	998.87	10/18/2011	1007.09	11/16/2013	1005.05	12/17/2015	1004.87	9/25/2023	999.88
	3/30/2004	988.77	6/29/2006	28.43	990.14	8/26/2008	1002.39	11/19/2011	1006.98	12/17/2013	1005.01	1/16/2016	1004.90	5/28/2024	999.75
	4/15/2004	989.95	7/25/2006	27.11	991.46	10/20/2009	1006.41	12/17/2011	1007.29	1/11/2014	1005.56	2/20/2016	1004.80	10/6/2024	999.17
	5/17/2004	989.88	8/23/2006	27.01	991.56	12/1/2009	1007.71	1/21/2012	1007.31	2/15/2014	1005.90	3/18/2016	1004.49		
	6/28/2004	989.95	10/4/2006	26.48	992.09	1/31/2010	1007.11	2/25/2012	1007.57	3/22/2014	1006.95	4/26/2016	1004.32		
	7/19/2004	989.57	11/9/2006	25.51	993.06	2/20/2010	1008.38	3/27/2012	1007.77	4/8/2014	1007.12	5/21/2016	1004.30		
	8/31/2004	988.92	11/20/2006	26.13	992.44	3/29/2010	1007.63	4/20/2012	1008.16	5/16/2014	1006.95	6/16/2016	1004.31		
	9/22/2004	988.62	12/15/2006	26.23	992.34	4/29/2010	1009.13	5/15/2012	1008.11	6/21/2014	1006.57	7/16/2016	1004.22		
	10/25/2004	990.07	1/20/2007	25.92	992.65	5/24/2010	1008.74	6/15/2012	1007.65	7/18/2014	1005.62	8/29/2016	1003.57		
	11/17/2004	989.16	2/12/2007	25.92	992.65	6/30/2010	1008.26	7/13/2012	1006.56	8/16/2014	1004.95	9/21/2016	1003.29		
	12/17/2004	989.68	3/26/2007	24.98	993.59	7/27/2010	1002.39	8/11/2012	1005.72	9/17/2014	1003.46	10/20/2016	1003.94		
	1/31/2005	988.99	4/18/2007	24.55	994.02	8/19/2010	1008.62	9/25/2012	1005.75	10/16/2014	1005.61	11/18/2016	1003.27		
	2/28/2005	989.57	5/29/2007	23.54	995.03	9/7/2010	1007.76	10/13/2012	1005.77	11/14/2014	1005.56	5/22/2017	1004.52		
	3/28/2005	989.17	6/14/2007	24.5	994.07	10/20/2010	1008.42	11/14/2012	1005.49	12/19/2014	1005.67	9/21/2017	1003.25		
	4/30/2005	989.24	7/18/2007	25.4	993.17	11/9/2010	1008.24	12/22/2013	1005.80	1/17/2015	1005.69	5/29/2018	1002.65		
	5/25/2005	989.52	8/28/2007	26.95	991.62	12/8/2010	1008.05	1/19/2013	1005.80	2/12/2015	1005.57	9/24/2018	1002.76		

Graph 12B
Historical Leachate Well Water Level Conditions
2024 Annual Water Quality Report
Appanoose County Sanitary Landfill
Permit No. 04-SDP-01-76C
NORTH UNIT

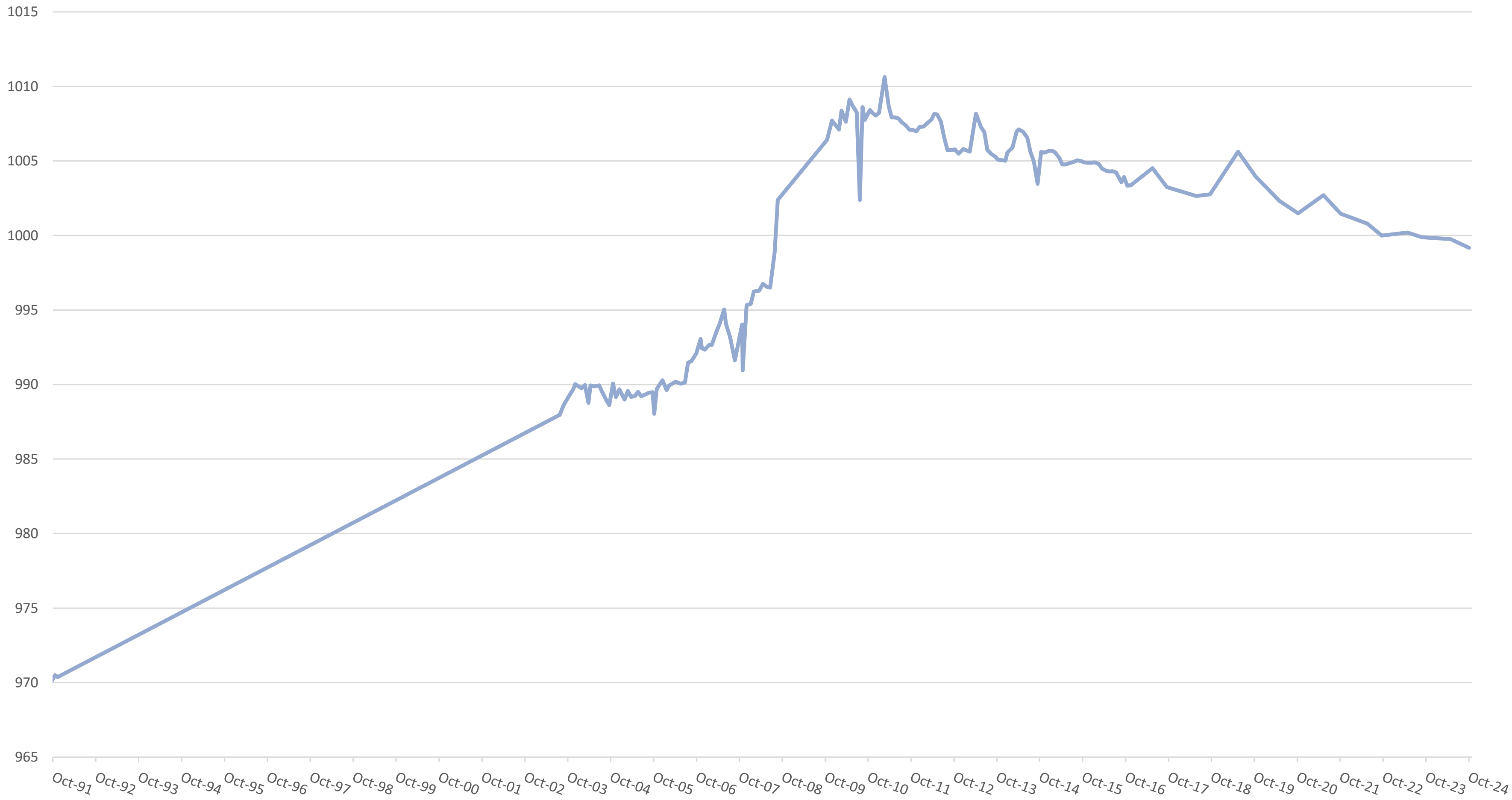


Table 13
Gas Monitoring Summary
2024 Gas Monitoring Report
Apanoose County Sanitary Landfill
Permit No. 04-SDP-01-76C

Monitoring Points			Methane Results (% LEL)			
Name	Type	Description	4/22/24 - S (N)		10/11/24 - S (N)	
IHCC Farm Bldg.	Indoor	Equipment Strorage	0		0	
MW-51	Monitoring Well	North Unit - background	0	N	0	N
PZ-12	Monitoring Well	North Unit - background	1.0	N		
MW-60	Monitoring Well	North Unit - background			0	N
MW-27	Monitoring Well	North Unit - assessment	1.9	N	2.0	N
MW-50R	Monitoring Well	North Unit - assessment	2.4	N	1.6	N
GP-1	Gas Probe	North Unit	0	N	0	N
GP-2	Gas Probe	South Unit	0	N	0	N

S(Y/N) - Was screen submerged, yes or no or blank is non-applicable

Comments: Explosive gas monitoring locations are shown on Figure No. 5 in Appendix Two. An annual Report of Explosive Gases Monitoring was submitted to the IDNR on November 14, 2024 in accordance with the Closure Permit Special Provision X.9.

Revision No. 6 to the Closure Permit dated February 7, 2020 discontinued explosive gas monitoring at all monitoring wells and gas probes at the South Unit.

APPENDIX ONE

Reporting Period Documentation

1. Data Validation Reports
2. Groundwater Sampling Field Sheet

Data Validation Report
North Unit
Spring 2024 Semiannual Groundwater Event

Data Validation Report

Project Name:	Appanoose County Sanitary Landfill (24R014.00)
Task Name:	2024-05
Data Set Description:	Spring 2024 Semiannual Groundwater Event – North Unit
Laboratory(s):	Eurofins – Cedar Falls, IA and Cleveland, OH
Laboratory Sample Delivery Group (SDG) ID(s):	310-282195-1
Sample Collection Dates:	5/25/2024
Sample Analysis Dates:	5/30/2024 – 6/12/2024
Sample Matrices:	Groundwater
Sample IDs Reviewed:	See Table 1
Verification and Validation Stage, 100% data:	☐ 1 ☒ 2A ☐ 2B ☐ 3 ☐ 4
Verified and Validated By:	Hannah Dubbs, Project Environmental Scientist 6/20/2024

The analytical data were validated to verify that laboratory quality assurance and quality control (QA/QC) procedures were documented and to evaluate the overall quality of the data reported. The analytical report includes four investigative groundwater samples collected via no-purge sampling techniques by Hall Engineering at the Appanoose County Sanitary Landfill on May 28, 2024; samples are listed in Table 1. The data were collected in accordance with the *Hydrologic Monitoring System Plan* (Patzig Laboratories, 1992), Iowa Department of Natural Resources (IDNR) Sanitary Disposal Closure Permit Number 04-SDP-01-76C, and 567 Iowa Administrative Code (IAC) 113.10.

Validation Summary

Stage 2A data validation was performed on 100% of the data from this sample delivery group (SDG), with review tasks and items of note documented in the summary table below.

Validation Task and Description	Review Notes	Action
Chain of Custody (COC) and Sample Receipt Form Confirm relinquish & receipt signatures. Confirm that parameters and analytical methods match COC.	All appropriate relinquish and receipt signatures were present. Parameters and analytical methods analyzed matched the COC and current sampling program.	Not applicable
Case Narrative	The quality control issues noted in the case narratives were reviewed and found acceptable. Issues either were addressed in the comments below, had no impact on investigative samples, or were corrected/qualified by the laboratory. No additional actions are required. Note: continuing calibration verification (CCV) evaluation is not part of Stage 2A validation.	Not applicable

Validation Task and Description	Review Notes	Action
Sample Condition Upon Receipt Confirm samples are in acceptable condition and no discrepancies noted. Confirm that preservation meets method requirements.	Samples were received by Eurofins in acceptable conditions. In addition, the sulfide sample shipments from Eurofins – Cedar Falls, IA to Eurofins – Barberton, OH were received in acceptable conditions.	Not applicable
Methods Requested Confirm methods match project requirements and lab provided all methods ordered.	The methods ordered and analyzed were performed in accordance with the project requirements. Methods include United States Environmental Protection Agency (USEPA) 8260D Volatile Organic Compounds (VOCs), USEPA 8270E Semivolatile Organic Compounds (SVOCs), USEPA 8081B Organochlorine Pesticides, USEPA 6020B Total Metals, USEPA 9034 Sulfide, and United States Geological Survey (USGS) I-3765-85 Total Suspended Solids (TSS).	Not applicable
Analytes Requested Confirm analytes ordered match project requirements and lab provided all analytes ordered.	The analytes requested were analyzed in accordance with the project requirements. The laboratory provided all analytes ordered.	Not applicable
Holding Times Confirm laboratory performed extractions and analyses within method-required holding times.	Eurofins performed extractions and analyses within the method-required holding times.	Not applicable
Blanks Confirm no detections in laboratory method blanks, field blanks, and trip blanks.	Table 3 presents analytes detected in the field blank. No detections were found in the method and trip blanks for this SDG. Toluene was detected in the Field Blank at a concentration of 0.438 J micrograms per liter (ug/L). In accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2020a) for VOCs, when the blank contamination concentration is J-flagged, associated non-detect sample results are not qualified.	No qualifiers assigned
Surrogates or deuterated monitoring compounds For *organic analyses only*, confirm surrogates analyzed and surrogate recovery within QC limits.	Table 4 presents surrogate recoveries that were outside control limits. Qualifiers are assigned in Table 8. The nitrobenzene-d5 and 2-fluorobiphenyl base/neutral surrogate recoveries for MW-50R were below the acceptance limits, indicating potential low bias for the base/neutral SVOC compounds in MW-50R. In accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2020a) for SVOCs, when base/neutral SVOC surrogate recovery is greater than or equal to (≥) the expanded lower acceptance limit [10 percent (%)] but less than (<) the specified lower acceptance limit, non-detect base/neutral SVOC results in the parent sample are qualified UJ.	Qualifier assigned

Validation Task and Description	Review Notes	Action
Matrix Spike/Matrix Spike Duplicates (MS/MSDs) Confirm MS/MSDs analyzed at the frequency specified by project requirements and MS/MSD percent recovery within lab-specified limits. Confirm, for Organic analytes, MSD relative percent difference (RPD) within limits. For inorganic analytes, lab replicate RPD within limits.	MS/MSD quality control samples are not required for this project. As a result, no MS/MSD samples were collected or submitted for analysis. Insufficient sample volume was available to perform MS/MSD analysis; therefore, the laboratory did not perform MS/MSD analysis for samples associated with 310-282195-1.	Not applicable
Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Confirm LCS analyzed and LCS/LCSD recovery and RPD within lab-specified limits.	LCS/LCSD quality control samples are not required for this project. Where analyzed and reported by the laboratory, LCS/LCSD results associated with method batches in 310-282195-1-1 are reviewed under Stage 2A validation guidelines. Table 6 presents LCS/LCSD recoveries and RPDs that were outside the control limits. Qualifiers are presented in Table 8. The 1,4-phenylenediamine LCS/LCSD recoveries associated with prep batch 423001 were below the recovery limits, indicating potential low bias. In accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2020a) for SVOCs, when LCS/LCSD recoveries are below the lower acceptance limit, associated non-detect results are qualified R (i.e., MW-27, MW-50R). MW-27 and MW-50R were resampled for 1,4-phenylenediamine in May 2024 due to low LCS/LCSD recoveries in September 2023. MW-27 and MW-50R were initially sampled for 1,4-phenylenediamine in September 2023 as part of the five-year resampling of the full Appendix II list. Resampling is not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed at these wells as part of the five-year resampling of the full Appendix II list; 1,4-phenylenediamine has not been detected at these wells; and Eurofins indicated 1,4-phenylenediamine is a poor performing analyte.	Qualifiers assigned
Laboratory Duplicates Confirm lab duplicates analyzed and RPD within lab-specified limits.	Laboratory duplicate quality control samples are not required for this project. Where analyzed and reported by the laboratory, laboratory duplicate results associated with the samples in 310-82195-1 are reviewed under Stage 2A validation guidelines. Table 7 is intended to present the laboratory duplicate sample RPDs that were outside the RPD limits. Laboratory duplicate sample RPDs were within control limits for this SDG.	Not applicable

Abbreviations:
% = percent
≥ = greater than or equal to
< = less than

Abbreviations Continued:
CCV = continuing calibration verification
COC = chain of custody
EDD = electronic data deliverable
LCS = laboratory control sample
LCSD = laboratory control sample duplicate
MS = matrix spike
MSD = matrix spike duplicate
RPD = relative percent difference
SDG = sample delivery group
SVOC = semivolatile organic compound
TSS = total suspended solids
ug/L = micrograms per liter
USEPA = United States Environmental Protection Agency
USGS = United States Geological Survey
VOC = volatile organic compound

Overall Assessment of Data

Item	Acceptable		Comments
	Yes	No	
1. Method Criteria	X		Samples were collected, preserved, shipped/delivered, and analyzed within the method protocols.
2. Precision	X		Not applicable for field precision since field duplicates were not collected. Laboratory precision was evaluated through MS/MSD, LCS/LCSD, and laboratory duplicate RPDs. MS/MSDs, LCS/LCSDs and laboratory duplicate sample RPDs were within control limits for this SDG.
3. Accuracy	X		Accuracy was evaluated through surrogate, MS/MSD, and LCS/LCSD recovery. MS/MSD samples were not analyzed for this SDG. With the exceptions identified below, the % recoveries for surrogate and LCS/LCSD samples were within control limits. The nitrobenzene-d5 and 2-fluorobiphenyl base/neutral surrogate recoveries for MW-50R were below the acceptance limits, indicating potential low bias for the base/neutral SVOC compounds in MW-50R. A qualifier was not assigned since the base-neutral SVOC in MW-50R was non-detect. Details are provided in the Surrogates Review Notes. The 1,4-phenylenediamine LCS/LCSD recoveries associated with prep batch 423001 were below the recovery limits, indicating potential low bias. Accuracy impacts on individual results were low compared to the total number of analyses. MW-27 and MW-50R were resampled for 1,4-phenylenediamine in May 2024 due to low LCS/LCSD recoveries in September 2023. As summarized in Table 8, the non-detect 1,4-phenylenediamine results associated with prep batch 423001 (i.e. MW-27 and MW-50R). Resampling was not recommended. Details are provided in the LCS/LCSD Review Notes.

Item	Acceptable		Comments
	Yes	No	
4. Representativeness	X		Sampling was conducted in accordance with the sample collection procedures described in the approved Hydrologic Monitoring System Plan and/or Standard Operating Procedures (SOP)for HydraSleeve^{TM} sampling.
5. Comparability	X		Collection techniques, measurement procedures, methods, and reporting were equivalent to currently approved procedures and are comparable to historical data.
6. Completeness	X		Valid analytical results exceeded 90%.
7. Suitability for Intended Use	X		No evidence of gross contamination or significant issues with the method criteria, precision, accuracy, representativeness, comparability, or completeness were identified.

Overall, the data reported are of good quality, and the results for the QA/QC measurements used by the laboratories during the analysis of the samples were generally acceptable. Some sample results required qualification during data validation because method-specific QA/QC criteria were not met; results may be qualified for more than one reason. Qualified data are usable (unless qualified as rejected [R]), represent data of good quality and reasonable confidence, and have an acceptable degree of uncertainty (i.e., may be less precise or less accurate than unqualified data). Table 2 provides a definition of the qualifiers that may be assigned by the validator and/or retained from the laboratory. A summary of the validation qualifiers is provided below.

- No results were qualified as estimated (assigned as J qualifiers), biased high (assigned as J+ qualifiers), biased low (assigned as J- qualifier), non-detect at concentrations less than the reporting limit or less than the sample result (assigned as U qualifier), non-detect with the reporting limit an estimated high or low value (assigned as UJ+ or UJ- qualifiers), or presumptive evidence of presence of an analyte (assigned as N or NJ qualifiers).
- One result (0.3%) was qualified non-detect with the reporting limit an estimated value (UJ).
- Two results (0.6%) were qualified as not usable and rejected (assigned as R qualifier).
- 99.4% of the reported data is usable for project data quality objectives.

Attachment 1

Tables

Table 1
Sample IDs Reviewed

Project Sample ID	Analyzed Lab Sample ID	Project Sample ID Matches Lab Client Sample ID	Lab Sample Date/Time Match COC	Parameters and Analytical Methods Match COC	Within Hold Time	Sample Type
MW-51	310-282195-1	Yes	Yes	Yes	Yes	Normal
PZ-12	310-282195-2	Yes	Yes	Yes	Yes	Normal
MW-27	310-282195-3	Yes	Yes	Yes	Yes	Normal
MW-50R	310-282195-4	Yes	Yes	Yes	Yes	Normal
Trip Blank	310-282195-5	Yes	Yes	Yes	Yes	FB
Field Blank	310-282195-6	Yes	Yes	Yes	Yes	TB

Notes:
FB = field blank
TB = trip blank

Table 2
Explanation of Qualifiers

Qualifier	Explanation
U	The analyte was analyzed for and was not detected above the numerical quantitation limit.
J	The analyte was analyzed for and was positively identified, but the analytical result (i.e., quantitation) is an estimated value. In some cases it is recognized that the estimated value is biased high (J+) suggesting the actual value is lower than estimated; or biased low (J-) suggesting the actual value is higher than estimated.
UJ	The analyte was analyzed for and was not detected above the reporting limit, but the reporting limit is an estimated value.
R	The analyte was analyzed for but may or may not be present and/or quantifiable due to quality control issues. The analytical result is not usable and should be rejected.
N	The analysis indicates presumptive evidence of the presence of the analyte.
NJ	The analysis indicates presumptive evidence of the presence of the analyte, but the numerical value is an estimated quantity.

Notes:
Results qualified as “J” or “UJ” are of acceptable data quality and may be used quantitatively per United States Environmental Protection Agency guidelines.

Table 3
Method, Field, and Trip Blank Exceedances

Lab Report	Blank Type	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Parameter	Result	Units	Lab Qualifier	MDL	RL	Associated Samples
310-282195-1	FB	310-282195-6	Field Blank	423206	N/A	Toluene	0.438	ug/L	J	0.43	1.00	Investigative samples in 310-282195-1

Notes:
FB = field blank
N/A= not applicable
MDL = minimum detection limit
RL = reporting limit
ug/L = micrograms per liter

Table 4
Surrogate Recovery Exceedances

Lab Sample ID	Parent Sample	Parameter	Surrogate % Recovery	% Recovery Limits	
310-282195-4	MW-50R	Nitrobenzene-d5	42	45	129
310-282195-4	MW-50R	2-Fluorobiphenyl	35	39	118

Notes:
% = percent

Table 4
Surrogate Recovery Exceedances

Lab Sample ID	Parent Sample	Parameter	Surrogate % Recovery	% Recovery Limits	
310-282195-4	MW-50R	Nitrobenzene-d5	42	45	129
310-282195-4	MW-50R	2-Fluorobiphenyl	35	39	118

Notes:
% = percent

Table 5

Matrix Spike and Matrix Spike Duplicate Exceedances

Lab Sample ID	Parent Sample	Parameter	MS % Recovery	MSD % Recovery	% Recovery Limits	RPD	RPD Limit
MS/MSD samples were not analyzed for this Sample Delivery Group.							

Notes:
% = percent
MS = matrix spike
MSD = matrix spike duplicate
RPD = relative percent difference

Table 6
Laboratory Control Sample and Laboratory Control Sample Duplicate Exceedances

Lab Sample ID	Associated SDG Batch	Parameter	LCS % Recovery	LCSD % Recovery	% Recovery Limits		RPD	RPD Limit
LCS 310-423001/2-A LCSD 310-423001/3-A	423001	1,4-Phenylenediamine	-0.9	-0.8	20	120	12	35

Notes:
% = percent
LCS = laboratory control sample
LSCD = laboratory control sample duplicate
RPD = relative percent difference

Table 7
Laboratory Duplicate Sample Exceedances

Lab Sample ID	Client Sample ID	Parameter	RPD	RPD Limit
Lab duplicate sample RPDs were within control limits for this Sample Delivery Group.				

Notes:
RPD = relative percent difference

Table 8
Qualified Results from Data Validation

Sample ID	Lab Sample ID	Method	Parameter	Result	Lab Qualifier	Units	Qualified Result	Validator Qualifier	Explanation
MW-50R	310-282195-4	USEPA 8270E	1,4-Phenylenediamine	1.90	U	ug/L	10.0	UJ	Associated SVOC surrogate recoveries were below the lower acceptance limit, indicating low bias. The recoveries were greater than the expanded lower acceptance limit. Qualified UJ since result is non-detect.
				1.90	U	ug/L	1.90	R	Associated LCS and LCSD were below the lower acceptance limit, indicating low bias. Qualified R since result is non-detect.
MW-27	310-282195-3	USEPA 8270E	1,4-Phenylenediamine	1.86	U	ug/L	1.86	R	Associated LCS and LCSD were below the lower acceptance limit, indicating low bias. Qualified R since result is non-detect.

Notes:
This table only lists validator qualified data. Not all laboratory qualified data are listed; only the laboratory qualified data that was validator qualified are included.
LCS = laboratory control sample
LSCD = laboratory control sample duplicate
SVOC = semivolatile organic compound
ug/L = micrograms per liter
USEPA = United States Environmental Protection Agency

Attachment 2

References

References

United States Environmental Protection Agency (USEPA), 2020a. *National Functional Guidelines for Organic Superfund Methods Data Review*. EPA-540-R-20-005. Office of Superfund Remediation and Technology Innovation, Washington, D.C. Revised November 2020.

USEPA, 2020b. *National Functional Guidelines for Inorganic Superfund Methods Data Review*. EPA-542-R-20-006. Office of Superfund Remediation and Technology Innovation, Washington, D.C. Revised November 2020.

Data Validation Report
North Unit
Fall 2024 Semiannual Groundwater Event

Data Validation Report

Project Name:	Appanoose County Sanitary Landfill (24R014.00)
Task Name:	2024-10
Data Set Description:	Fall 2024 Semiannual Groundwater Event – North Unit
Laboratory(s):	Eurofins – Cedar Falls, IA and Cleveland, OH
Laboratory Sample Delivery Group (SDG) ID(s):	310-292199-1
Sample Collection Dates:	10/6/2024
Sample Analysis Dates:	10/8/2024 – 10/18/2024
Sample Matrices:	Groundwater
Sample IDs Reviewed:	See Table 1
Verification and Validation Stage, 100% data:	☐ 1 ☒ 2A ☐ 2B ☐ 3 ☐ 4
Verified and Validated By:	Gina Wilming, Senior Project Manager 11/15/2024

The analytical data were validated to verify that laboratory quality assurance and quality control (QA/QC) procedures were documented and to evaluate the overall quality of the data reported. The analytical report includes four investigative groundwater samples collected via no-purge sampling techniques by Hall Engineering at the Appanoose County Sanitary Landfill on October 6, 2024; samples are listed in Table 1. The data were collected in accordance with the *Hydrologic Monitoring System Plan* (Patzig Laboratories, 1992), Iowa Department of Natural Resources (IDNR) Sanitary Disposal Closure Permit Number 04-SDP-01-76C, and 567 Iowa Administrative Code (IAC) 113.10.

Validation Summary

Stage 2A data validation was performed on 100% of the data from this sample delivery group (SDG), with review tasks and items of note documented in the summary table below.

Validation Task and Description	Review Notes	Action
Chain of Custody (COC) and Sample Receipt Form Confirm relinquish & receipt signatures. Confirm that parameters and analytical methods match COC.	All appropriate relinquish and receipt signatures were present. Parameters and analytical methods analyzed matched the COC and current sampling program.	Not applicable
Case Narrative	The quality control issues noted in the case narratives were reviewed and found acceptable. Issues either were addressed in the comments below, had no impact on investigative samples, or were corrected/qualified by the laboratory. No additional actions are required. Note: continuing calibration verification (CCV) evaluation is not part of Stage 2A validation.	Not applicable

Validation Task and Description	Review Notes	Action
Sample Condition Upon Receipt Confirm samples are in acceptable condition and no discrepancies noted. Confirm that preservation meets method requirements.	Samples were received by Eurofins in acceptable conditions. In addition, the sulfide sample shipments from Eurofins – Cedar Falls, IA to Eurofins – Cleveland, OH were received in acceptable conditions.	Not applicable
Methods Requested Confirm methods match project requirements and lab provided all methods ordered.	The methods ordered and analyzed were performed in accordance with the project requirements. Methods include United States Environmental Protection Agency (USEPA) 8260D Volatile Organic Compounds (VOCs), USEPA 8081B Organochlorine Pesticides, USEPA 6020B Total Metals, USEPA 9034 Sulfide, and United States Geological Survey (USGS) I-3765-85 Total Suspended Solids (TSS).	Not applicable
Analytes Requested Confirm analytes ordered match project requirements and lab provided all analytes ordered.	The analytes requested were analyzed in accordance with the project requirements. The laboratory provided all analytes ordered.	Not applicable
Holding Times Confirm laboratory performed extractions and analyses within method-required holding times.	Eurofins performed extractions and analyses within the method-required holding times.	Not applicable
Blanks Confirm no detections in laboratory method blanks, field blanks, and trip blanks.	Table 3 presents analytes detected in the field blank. No detections were found in the method and trip blanks for this SDG. Qualifiers are assigned in Table 8. Acetone, toluene, and total xylenes were detected in the Field Blank at concentrations of 3.82 J, 0.993 J, and 0.482 J micrograms per liter (ug/L). In accordance with the *National Functional Guidelines for Organic Superfund Methods Data Review* (USEPA, 2020a) for VOCs, when the blank contamination concentration is J-flagged, the J-flagged sample results associated with the blank are assigned a U qualifier and reported at the practical quantification limit (PQL) and associated non-detect sample results are not qualified.	Qualifier assigned
Surrogates or deuterated monitoring compounds For *organic analyses only*, confirm surrogates analyzed and surrogate recovery within QC limits.	Table 4 is intended to present surrogate recoveries that were outside control limits. Surrogate recoveries were within control limits for this SDG.	Not applicable

Validation Task and Description	Review Notes	Action
Matrix Spike/Matrix Spike Duplicates (MS/MSDs) Confirm MS/MSDs analyzed at the frequency specified by project requirements and MS/MSD percent recovery within lab-specified limits. Confirm, for Organic analytes, MSD relative percent difference (RPD) within limits. For inorganic analytes, lab replicate RPD within limits.	MS/MSD quality control samples are not required for this project. As a result, no MS/MSD samples were collected or submitted for analysis. The laboratory did not perform MS/MSD analysis for samples associated with 310-292199-1.	Not applicable
Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Confirm LCS analyzed and LCS/LCSD recovery and RPD within lab-specified limits.	LCS/LCSD quality control samples are not required for this project. Where analyzed and reported by the laboratory, LCS/LCSD results associated with method batches in 310-292199-1-1 are reviewed under Stage 2A validation guidelines. Table 6 is intended to present LCS/LCSD recoveries and RPDs that were outside the control limits. LCS recovery was within the control limit for this SDG. LCSD results were not reported.	Not applicable
Laboratory Duplicates Confirm lab duplicates analyzed and RPD within lab-specified limits.	Laboratory duplicate quality control samples are not required for this project. The laboratory did not perform laboratory duplicate analysis for samples associated with 310-292199-1.	Not applicable

Abbreviations:
CCV = continuing calibration verification
COC = chain of custody
LCS = laboratory control sample
LCSD = laboratory control sample duplicate
MS = matrix spike
MSD = matrix spike duplicate
PQL = practical quantitation limit
QC = quality control
RPD = relative percent difference
SDG = sample delivery group
TSS = total suspended solids
ug/L = micrograms per liter
USEPA = United States Environmental Protection Agency
USGS = United States Geological Survey
VOC = volatile organic compound

Overall Assessment of Data

Item	Acceptable		Comments
	Yes	No	
1. Method Criteria	X		Samples were collected, preserved, shipped/delivered, and analyzed within the method protocols.
2. Precision	X		Not applicable for field precision since field duplicates were not collected. Not applicable for laboratory precisions since MSD, LCSD, and laboratory duplicate analyses were not performed.
3. Accuracy	X		Accuracy is evaluated through surrogate, MS/MSD, and LCS/LCSD recovery. MS/MSD and LCSD samples were not collected or analyzed. The % recoveries for surrogate and LCS samples were within control limits.
4. Representativeness	X		Sampling was conducted in accordance with the sample collection procedures described in the approved Hydrologic Monitoring System Plan and/or Standard Operating Procedures (SOP)for HydraSleeve^{TM} sampling.
5. Comparability	X		Collection techniques, measurement procedures, methods, and reporting were equivalent to currently approved procedures and are comparable to historical data.
6. Completeness	X		Valid analytical results exceeded 90%.
7. Suitability for Intended Use	X		No evidence of gross contamination or significant issues with the method criteria, precision, accuracy, representativeness, comparability, or completeness were identified.

Overall, the data reported are of good quality, and the results for the QA/QC measurements used by the laboratories during the analysis of the samples were generally acceptable. Some sample results required qualification during data validation because method-specific QA/QC criteria were not met; results may be qualified for more than one reason. Qualified data are usable (unless qualified as rejected [R]), represent data of good quality and reasonable confidence, and have an acceptable degree of uncertainty (i.e., may be less precise or less accurate than unqualified data). Table 2 provides a definition of the qualifiers that may be assigned by the validator and/or retained from the laboratory. A summary of the validation qualifiers is provided below.

- No results were qualified as estimated (assigned as J qualifiers), biased high (assigned as J+ qualifiers), biased low (assigned as J- qualifier), non-detect with the reporting limit an estimated, estimated high or estimated low value (assigned as UJ, UJ+, or UJ- qualifiers), presumptive evidence of presence of an analyte (assigned as N or NJ qualifiers), or as not usable and rejected (assigned as R qualifier).
- One result (0.3%) was qualified non-detect at concentrations less than the reporting limit or less than the sample result (assigned as U qualifier).
- 100% of the reported data is usable for project data quality objectives.

Attachment 1

Tables

Table 1
Sample IDs Reviewed

Project Sample ID	Analyzed Lab Sample ID	Project Sample ID Matches Lab Client Sample ID	Lab Sample Date/Time Match COC	Parameters and Analytical Methods Match COC	Within Hold Time	Sample Type
MW-51	310-292199-1	Yes	Yes	Yes	Yes	Normal
MW-60	310-292199-2	Yes	Yes	Yes	Yes	Normal
MW-27	310-292199-3	Yes	Yes	Yes	Yes	Normal
MW-50R	310-292199-4	Yes	Yes	Yes	Yes	Normal
Field Blank	310-292199-5	Yes	Yes	Yes	Yes	FB
Trip Blank	310-292199-6	Yes	Yes	Yes	Yes	TB

Notes:
FB = field blank
TB = trip blank

Table 2
Explanation of Qualifiers

Qualifier	Explanation
U	The analyte was analyzed for and was not detected above the numerical quantitation limit.
J	The analyte was analyzed for and was positively identified, but the analytical result (i.e., quantitation) is an estimated value. In some cases it is recognized that the estimated value is biased high (J+) suggesting the actual value is lower than estimated; or biased low (J-) suggesting the actual value is higher than estimated.
UJ	The analyte was analyzed for and was not detected above the reporting limit, but the reporting limit is an estimated value.
R	The analyte was analyzed for but may or may not be present and/or quantifiable due to quality control issues. The analytical result is not usable and should be rejected.
N	The analysis indicates presumptive evidence of the presence of the analyte.
NJ	The analysis indicates presumptive evidence of the presence of the analyte, but the numerical value is an estimated quantity.

Notes:
Results qualified as “J” or “UJ” are of acceptable data quality and may be used quantitatively per United States Environmental Protection Agency guidelines.

Table 3
Method, Field, and Trip Blank Exceedances

Lab Report	Blank Type	Lab Sample ID	Client Sample ID	Analysis Batch	Prep Batch	Parameter	Result	Units	Lab Qualifier	MDL	RL	Associated Samples
310-292199-1	FB	310-292199-5	Field Blank	435986	N/A	Acetone	3.82	ug/L	J	3.10	10.0	Investigative samples in 310-292199-1
310-292199-1	FB	310-292199-5	Field Blank	435986	N/A	Toluene	0.993	ug/L	J	0.430	1.00	Investigative samples in 310-292199-1
310-292199-1	FB	310-292199-5	Field Blank	435986	N/A	Xylenes, Total	0.482	ug/L	J	0.400	3.00	Investigative samples in 310-292199-1

Notes:
FB = field blank
N/A= not applicable
MDL = minimum detection limit
RL = reporting limit
ug/L = micrograms per liter

Table 4
Surrogate Recovery Exceedances

Lab Sample ID	Parent Sample	Parameter	Surrogate % Recovery	% Recovery Limits
Surrogate recoveries were within control limits for this Sample Delivery Group.				

Notes:
% = percent

Table 5
Matrix Spike and Matrix Spike Duplicate Exceedances

Lab Sample ID	Parent Sample	Parameter	MS % Recovery	MSD % Recovery	% Recovery Limits	RPD	RPD Limit
MS/MSD samples were not analyzed for this Sample Delivery Group.							

Notes:
% = percent
MS = matrix spike
MSD = matrix spike duplicate
RPD = relative percent difference

Table 6
Laboratory Control Sample and Laboratory Control Sample Duplicate Exceedances

Lab Sample ID	Associated SDG Batch	Parameter	LCS % Recovery	LCSD % Recovery	% Recovery Limits	RPD	RPD Limit
LCS recovery was within the control limit for this Sample Delivery Group. LCSD results were not reported.							

Notes:
% = percent
LCS = laboratory control sample
LSCD = laboratory control sample duplicate
RPD = relative percent difference

Table 7
Laboratory Duplicate Sample Exceedances

Lab Sample ID	Client Sample ID	Parameter	RPD	RPD Limit
Laboratory duplicate samples were not analyzed for this Sample Delivery Group.				

Notes:

RPD = relative percent difference

Table 8
Qualified Results from Data Validation

Sample ID	Lab Sample ID	Method	Parameter	Result	Lab Qualifier	Units	Qualified Result	Validator Qualifier	Explanation
MW-60	310-292199-2	USEPA 8260D	Acetone	8.79	J	ug/L	10.0	U	FB result >MDL and <PQL; qualified U and reported at PQL since result is >MDL and <PQL

Notes:
This table only lists validator qualified data. Not all laboratory qualified data are listed; only the laboratory qualified data that was validator qualified are included.
FB = field blank
MDL = method detection limit
PQL = practical quantitation limit
ug/L = micrograms per liter
USEPA = United States Environmental Protection Agency

Attachment 2

References

References

United States Environmental Protection Agency (USEPA), 2020a. *National Functional Guidelines for Organic Superfund Methods Data Review.* EPA-540-R-20-005. Office of Superfund Remediation and Technology Innovation, Washington, D.C. Revised November 2020.

USEPA, 2020b. *National Functional Guidelines for Inorganic Superfund Methods Data Review.* EPA-542-R-20-006. Office of Superfund Remediation and Technology Innovation, Washington, D.C. Revised November 2020.

Spring Sampling Field Reports
North Unit
May 28, 2024

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-51 Weather: 60 degrees F, Sun

Date: May 28, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8 Depth to Tope of Screen (ft): 63.06

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1020.95 Ground Surface Elevation (ft. MSL): 1018.39

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	36.00
Water Elevation (ft. MSL):	NA	NA	984.95

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	5/28/2024						6:02 am
Depth to Water (ft)							36.00
Volume Purged (0 ml)							0 ml
Temp (°C)							13.3
Sp. Cond (umhos/cm)							3037
pH							6.9
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 68 ft +/- Flow Rate: NA Volume Removed: 2870 ml Volume Sampled: 2870 ml

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C

Well/Piezometer: PZ-12
Weather: 60 degrees F, Sun

Date: May 28, 2024
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8
Depth to Tope of Screen (ft): 33.56

Casing Diameter (in): 2
Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1010.12
Ground Surface Elevation (ft. MSL): 1008.06

Field Observations

Locked: ☐ Yes ☒ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	38.13
Water Elevation (ft. MSL):	NA	NA	971.99

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ■ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	5/28/2024						8:42 am
Depth to Water (ft)							38.13
Volume Purged (0 ml)							0 ml
Temp (°C)							12.5
Sp. Cond (umhos/cm)							2102
pH							6.5
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 42 ft. +/-
Flow Rate: NA
Volume Removed: 1870 ml
Volume Sampled: 1870 ml

Odor? ☐ Yes ☒ No
Color? ☐ Yes ☒ No

Comments: Low ground water; could not fill 2nd TSS bottle

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C
Well/Piezometer: MW-50R
Weather: 60 degrees F, Sun
Date: May 28, 2024
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8
Depth to Tope of Screen (ft): 38.17
Casing Diameter (in): 2
Casing Material: PVC
Top of Casing Elevation (ft. MSL): 967.37
Ground Surface Elevation (ft. MSL): 964.20

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	32.87
Water Elevation (ft. MSL):	NA	NA	934.50

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	5/28/2024						11:41 am
Depth to Water (ft)							32.87
Volume Purged (0 ml)							0 ml
Temp (°C)							12.8
Sp. Cond (umhos/cm)							1432
pH							6.6
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 43 ft. +/-
Flow Rate: NA
Volume Removed: 2370 ml
Volume Sampled: 2370 ml
Odor? ☒ Yes ☐ No
Color? ☐ Yes ☒ No
Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C
Well/Piezometer: MW-27
Weather: 60 degrees F, Sun
Date: May 28, 2023
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8
Depth to Tope of Screen (ft): 33.29
Casing Diameter (in): 2
Casing Material: PVC
Top of Casing Elevation (ft. MSL): 968.62
Ground Surface Elevation (ft. MSL): 966.83

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	30.93
Water Elevation (ft. MSL):	NA	NA	937.69

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good conditon

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	5/28/2024						10:36 am
Depth to Water (ft)							31.85
Volume Purged (0 ml)							0 ml
Temp (°C)							12.3
Sp. Cond (umhos/cm)							2164
pH							6.6
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 38 ft. +/-
Flow Rate: NA
Volume Removed: 2870 ml
Volume Sampled: 2870 ml

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C
Well/Piezometer: MW-26
Weather: 60 degrees F, Sun
Date: May 28, 2024
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8
Depth to Tope of Screen (ft): 25.34
Casing Diameter (in): 2
Casing Material: PVC
Top of Casing Elevation (ft. MSL): 1024.76
Ground Surface Elevation (ft. MSL): 1022.92

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	16.54
Water Elevation (ft. MSL):	NA	NA	1008.22

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary:

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☐ Other (specify):

Equipment Name & Description:

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method:

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ( )							
Temp (°C)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: Flow Rate: Volume Removed: Volume Sampled:
Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No
Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-LF-1
Weather: 60 degrees F, Sun

Date: May 28, 2024
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 6
Depth to Tope of Screen (ft): NA

Casing Diameter (in): 2
Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1018.57
Ground Surface Elevation (ft. MSL):

Field Observations

Locked: ☐ Yes ☒ No

	Before Purging	**After Purging**	**Before Sampling**
Depth to Water Level (ft.):	NA	NA	18.82
Water Elevation (ft. MSL):	NA	NA	999.75

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	**End**
Purge Date/Time		

Well Conditions Commentary:

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☐ Other (specify):

Equipment Name & Description:

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method:

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ( )							
Temp (°C)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: Flow Rate: Volume Removed: Volume Sampled:

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments:

Fall Sampling Field Reports
North Unit
October 10, 2024

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-51 Weather: 65 degrees F, Sun

Date: October 6, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8 Depth to Tope of Screen (ft): 63.06

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1020.95 Ground Surface Elevation (ft. MSL): 1018.39

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	38.35
Water Elevation (ft. MSL):	NA	NA	982.60

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	10/06/2024						7:45 am
Depth to Water (ft)							38.35
Volume Purged ( )							0 ml
Temp (°C)							13.1
Sp. Cond (umhos/cm)							2657
pH							7.0
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 68 ft. +/- Flow Rate: NA Volume Removed: 1870 ml Volume Sampled: 1870 ml

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill
Permit No.: 04-SDP-01-76C
Well/Piezometer: MW-60
Weather: 65 degrees F, Sun
Date: October 6, 2024
Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8
Depth to Tope of Screen (ft): 120.00
Casing Diameter (in): 2
Casing Material: PVC
Top of Casing Elevation (ft. MSL): 995.02
Ground Surface Elevation (ft. MSL): 992.68

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	61.41
Water Elevation (ft. MSL):	NA	NA	933.61

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler
☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method:

Field Analysis

							Final Reading
Date/Time	10/06/2024						9:34 am
Depth to Water (ft)							61.41
Volume Purged ( )							0 ml
Temp (°C)							12.5
Sp. Cond (umhos/cm)							3172
pH							7.1
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 128 ft. +/-
Flow Rate: NA
Volume Removed: 1870 ml
Volume Sampled: 1870 ml

Odor? ☐ Yes ☒ No
Color? ☐ Yes ☒ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-50R Weather: 65 degrees F, Sun

Date: October 10, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8 Depth to Tope of Screen (ft): 38.17

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 967.37 Ground Surface Elevation (ft. MSL): 964.20

Field Observations

Locked: ☐ Yes ☒ No

	Before Purging	**After Purging**	**Before Sampling**
Depth to Water Level (ft.):	NA	NA	34.61
Water Elevation (ft. MSL):	NA	NA	932.76

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	**End**
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condtion

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	10/06/2024						11:08 am
Depth to Water (ft)							34.61
Volume Purged ( )							0 ml
Temp (°C)							13.2
Sp. Cond (umhos/cm)							1440
pH							6.8
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 43 ft. +/- Flow Rate: NA Volume Removed: 1370 ml Volume Sampled: 1370 ml

Odor? ☐ Yes ☒ No Color? ☒ Yes ☐ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-27 Weather: 65 degrees F, Sun

Date: October 6, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8 Depth to Tope of Screen (ft): 33.29

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 968.62 Ground Surface Elevation (ft. MSL): 966.83

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	31.11
Water Elevation (ft. MSL):	NA	NA	937.51

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ■ No

	Start	End
Purge Date/Time	NA	NA

Well Conditions Commentary: monitoring well in good condition

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☒ Other (specify): no purge sampling sleeve

Equipment Name & Description: HydraSleeve sampling sleeve, 2 inch diameter, 1 liter, 8 ounce bottom weight, 35 ounce top weight

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☒ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☒ Disposable ☐ Portable

Decontamination Method: NA

Field Analysis

							Final Reading
Date/Time	10/06/2024						10:32 am
Depth to Water (ft)							31.11
Volume Purged ( )							0 ml
Temp (°C)							13.1
Sp. Cond (umhos/cm)							2117
pH							6.7
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: 38 ft. +/- Flow Rate: NA Volume Removed: 2120 ml Volume Sampled: 2120 ml

Odor? ☐ Yes ☒ No Color? ☐ Yes ☒ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-26 Weather: 65 degrees F, Sun

Date: October 6, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 8 Depth to Tope of Screen (ft): 25.34

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1024.76 Ground Surface Elevation (ft. MSL): 1022.92

Field Observations

Locked: ☒ Yes ☐ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	17.11
Water Elevation (ft. MSL):	NA	NA	1007.65

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ■ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary:

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☐ Other (specify):

Equipment Name & Description:

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method:

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ( )							
Temp (°C)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: Flow Rate: Volume Removed: Volume Sampled:

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

Comments:

Groundwater Sampling Field Sheet

Disposal Site Name: Appanoose County Sanitary Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer: MW-LF-1 Weather: 65 degrees F, Sun

Date: October 6, 2024 Sampler Name: Bill Buss

Monitoring Well Details

Construction Data

Borehole Diameter (in): 6 Depth to Tope of Screen (ft): NA

Casing Diameter (in): 2 Casing Material: PVC

Top of Casing Elevation (ft. MSL): 1018.57 Ground Surface Elevation (ft. MSL):

Field Observations

Locked: ☐ Yes ☒ No

	Before Purging	After Purging	Before Sampling
Depth to Water Level (ft.):	NA	NA	19.40
Water Elevation (ft. MSL):	NA	NA	999.17

Screen Submerged? (Depth to Water Level < Depth to Top of Screen) ☐ Yes ☐ No

	Start	End
Purge Date/Time		

Well Conditions Commentary:

Sampling Equipment (check one)

☐ Pump ☐ Interval Sampler

☐ Bailer ☐ Other (specify):

Equipment Name & Description:

Pump Types (check one)

☐ Submersible ☐ Peristaltic ☐ Bladder ☐ Inertial Lift Pump ☐ Other (specify):

Method (check one)

☐ Low Flow ☐ No Purge ☐ Purge

Options (check one)

☐ Dedicated ☐ Disposable ☐ Portable

Decontamination Method:

Field Analysis

							Final Reading
Date/Time							
Depth to Water (ft)							
Volume Purged ( )							
Temp (°C)							
Sp. Cond (umhos/cm)							
pH							
DO (mg/l)							
ORP (mV)							
Turbidity (NTU)							

Equipment Depth: Flow Rate: Volume Removed: Volume Sampled:

Odor? ☐ Yes ☐ No Color? ☐ Yes ☐ No

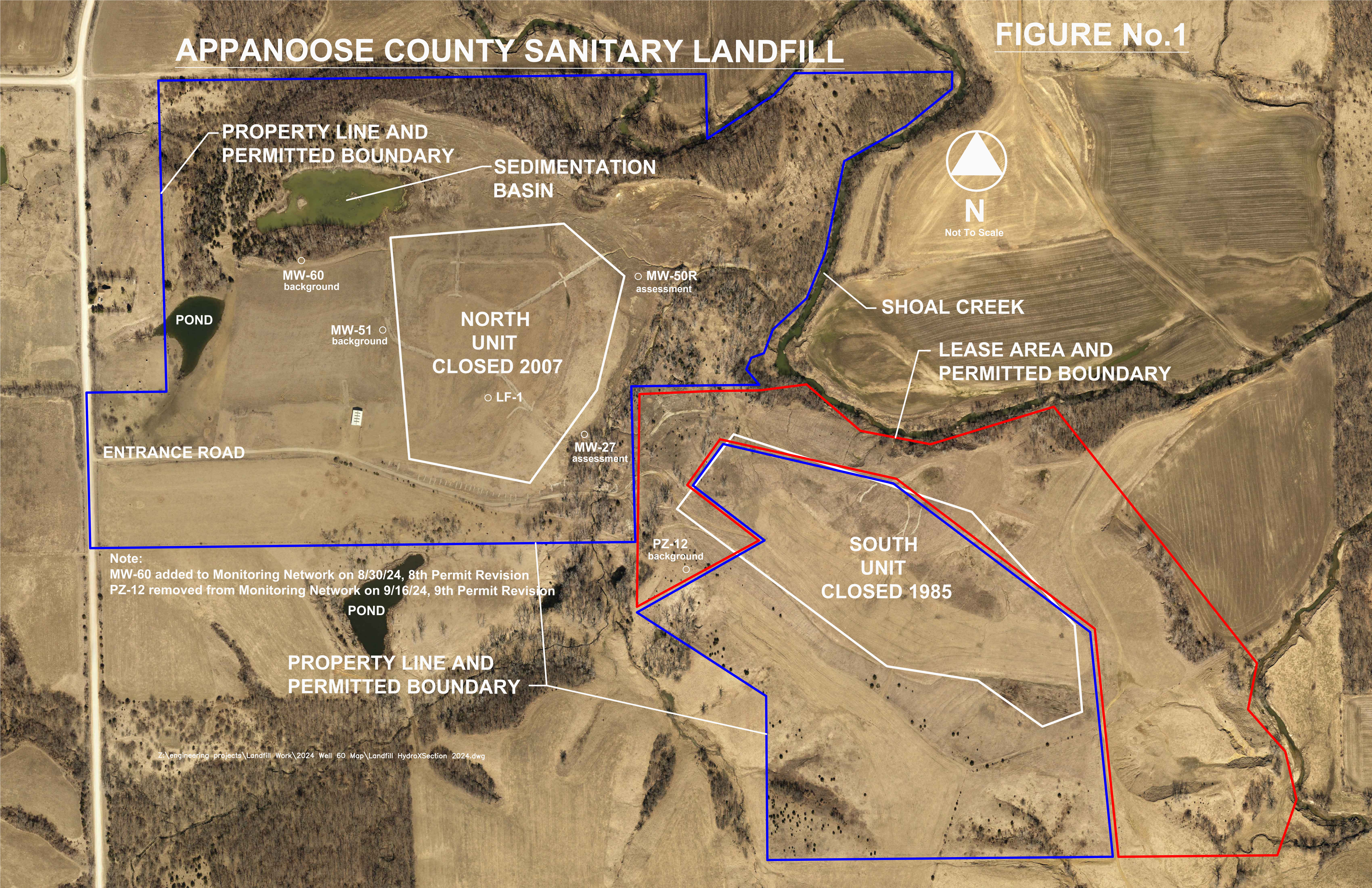
Comments:

APPENDIX TWO

Site Figures

APPANOOSE COUNTY SANITARY LANDFILL

FIGURE No.1

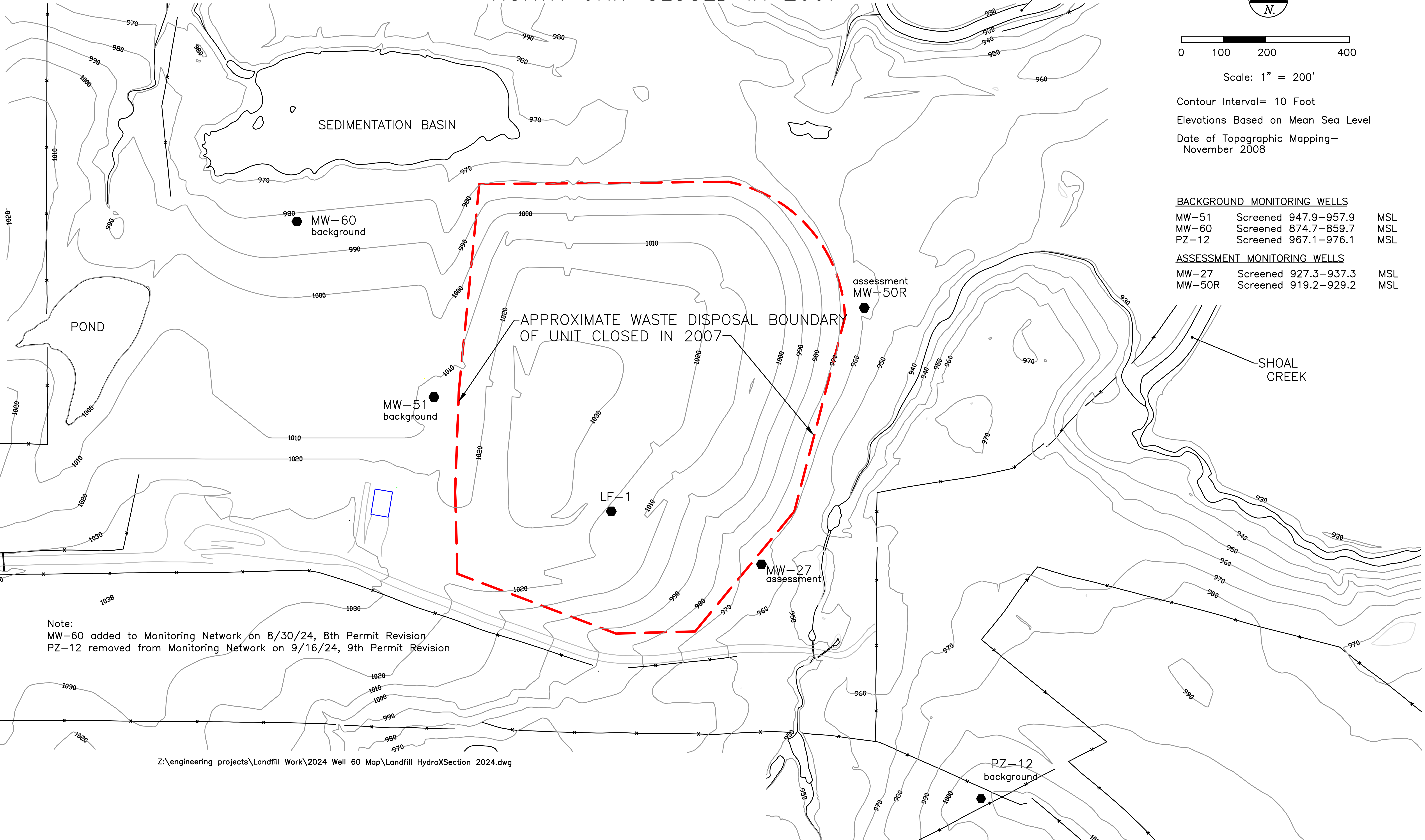


Note:
MW-60 added to Monitoring Network on 8/30/24, 8th Permit Revision
PZ-12 removed from Monitoring Network on 9/16/24, 9th Permit Revision

Z:\engineering projects\Landfill Work\2024 Well 60 Map\Landfill HydroXSection 2024.dwg

GROUNDWATER MONITORING NETWORK
NORTH UNIT CLOSED IN 2007

FIGURE No. 2



Scale: 1" = 200'

Contour Interval= 10 Foot

Elevations Based on Mean Sea Level

Date of Topographic Mapping—
November 2008

BACKGROUND MONITORING WELLS

MW−51	Screened 947.9−957.9	MSL
MW−60	Screened 874.7−859.7	MSL
PZ−12	Screened 967.1−976.1	MSL

ASSESSMENT MONITORING WELLS

MW−27	Screened 927.3−937.3	MSL
MW−50R	Screened 919.2−929.2	MSL

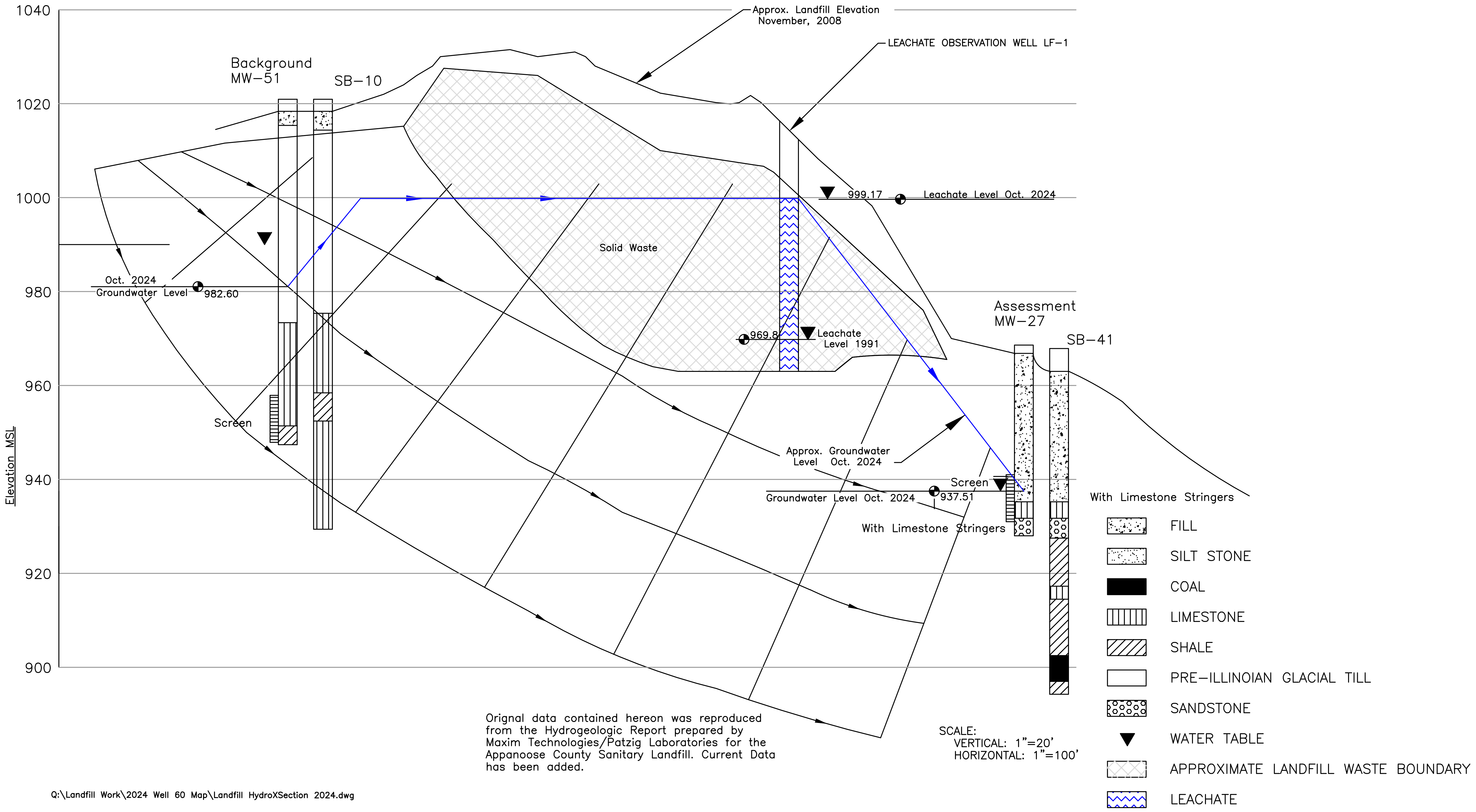
Note:
MW−60 added to Monitoring Network on 8/30/24, 8th Permit Revision
PZ−12 removed from Monitoring Network on 9/16/24, 9th Permit Revision

Z:\engineering projects\Landfill Work\2024 Well 60 Map\Landfill HydroXSection 2024.dwg

TYPICAL HYDROGEOLOGIC CROSS-SECTION

NORTH UNIT CLOSED IN 2007

FIGURE No. 3



Orignal data contained hereon was reproduced from the Hydrogeologic Report prepared by Maxim Technologies/Patzig Laboratories for the Appanoose County Sanitary Landfill. Current Data has been added.

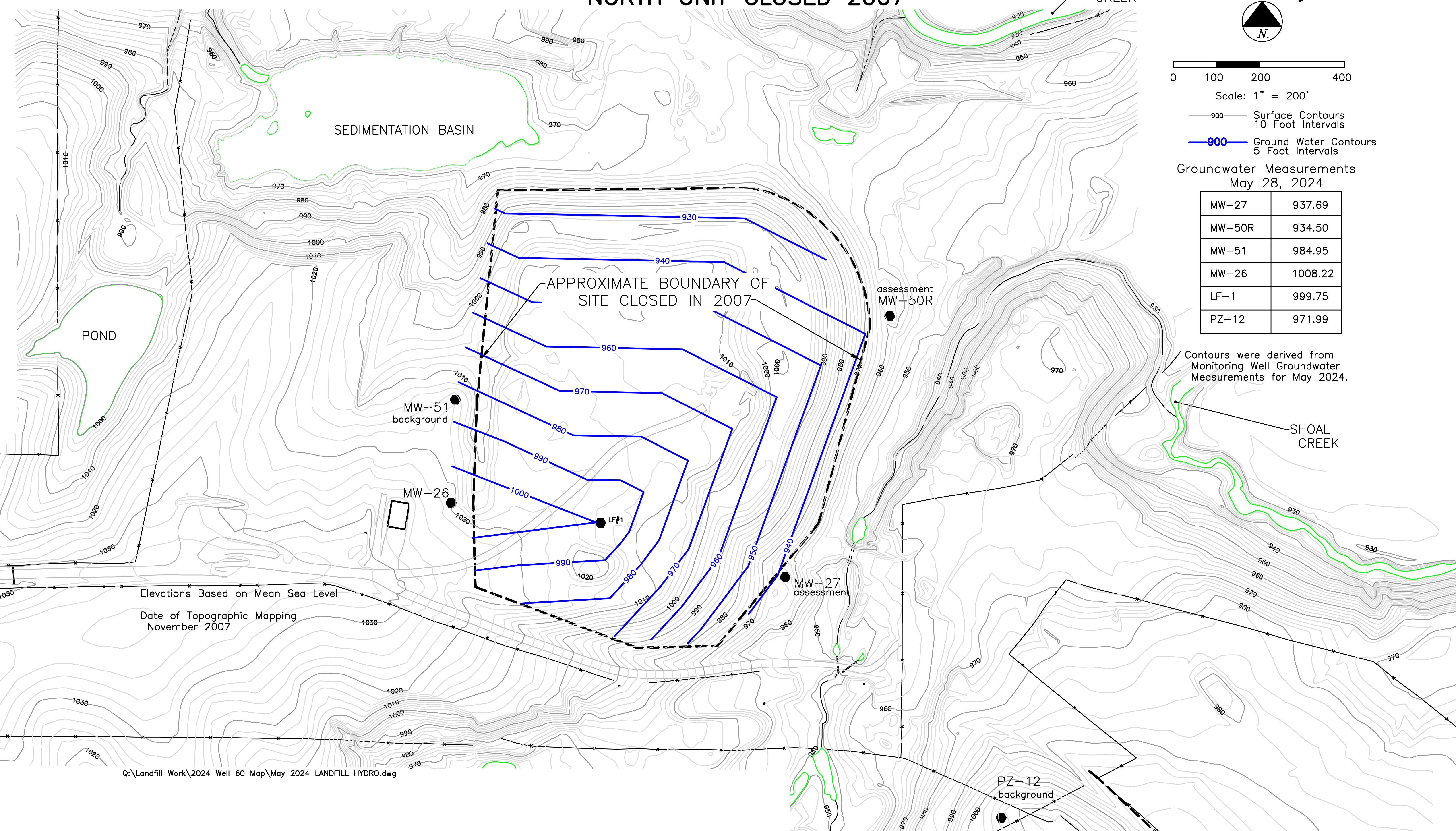
SCALE:
VERTICAL: 1"=20'
HORIZONTAL: 1"=100'

Q:\Landfill Work\2024 Well 60 Map\Landfill HydroXSection 2024.dwg

APPROXIMATE GROUNDWATER CONTOURS
WITH LEACHATE LEVEL INCLUDED
NORTH UNIT CLOSED 2007

FIGURE No. 4A

May



Groundwater Measurements
May 28, 2024

MW-27	937.69
MW-50R	934.50
MW-51	984.95
MW-26	1008.22
LF-1	999.75
PZ-12	971.99

Contours were derived from Monitoring Well Groundwater Measurements for May 2024.

Elevations Based on Mean Sea Level

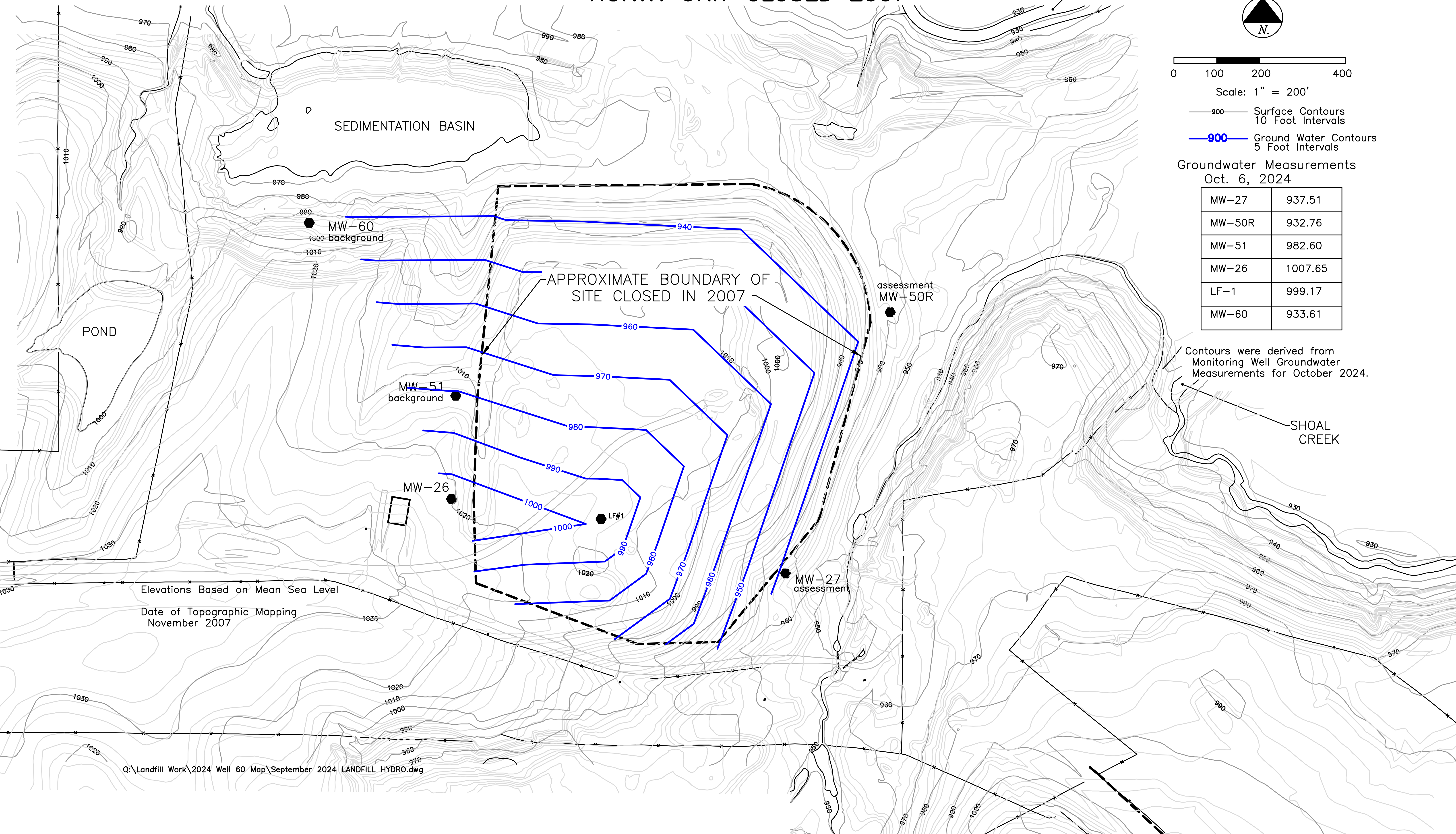
Date of Topographic Mapping
November 2007

Q:\Landfill Work\2024 Well 60 Map\May 2024 LANDFILL HYDRO.dwg

APPROXIMATE GROUNDWATER CONTOURS
WITH LEACHATE LEVEL INCLUDED
NORTH UNIT CLOSED 2007

FIGURE No. 4B

October



Scale: 1" = 200'

900 Surface Contours 10 Foot Intervals

900 Ground Water Contours 5 Foot Intervals

Groundwater Measurements
Oct. 6, 2024

MW-27	937.51
MW-50R	932.76
MW-51	982.60
MW-26	1007.65
LF-1	999.17
MW-60	933.61

Contours were derived from Monitoring Well Groundwater Measurements for October 2024.

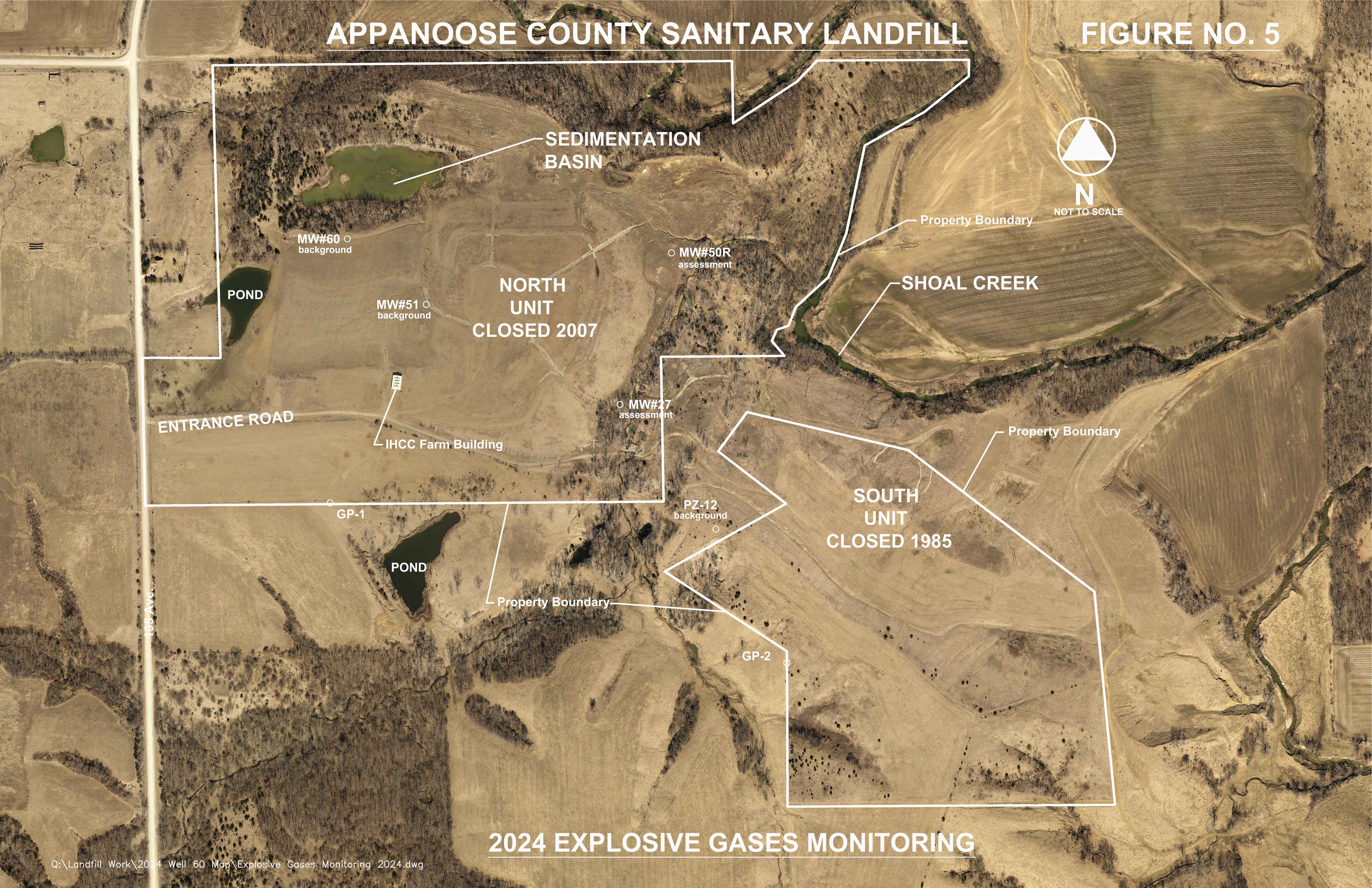
Elevations Based on Mean Sea Level

Date of Topographic Mapping
November 2007

Q:\Landfill Work\2024 Well 60 Map\September 2024 LANDFILL HYDRO.dwg

APPANOOSE COUNTY SANITARY LANDFILL

FIGURE NO. 5



2024 EXPLOSIVE GASES MONITORING

Q:\Landfill Work\2024 Well 60 Map\Explosive Gases Monitoring 2024.dwg

APPENDIX THREE

Spring 2024 Statistical Analysis

Fall 2024 Statistical Analysis

Spring 2024 Statistical Analysis

Foth

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Cedar Rapids, IA 52401
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July 22, 2024

Dane Blozovich
Rathbun Area Solid Waste Commission
2642 Highway J-46
Corydon, IA 50060

RE: Appanoose County Sanitary Landfill - Spring 2024 Statistical Analysis

Dear Dane Blozovich:

1. Organization

This memo addresses the statistical analysis of the groundwater monitoring data collected during the May 2024 sampling event. The statistical methods and results are summarized, with the memo organization given as follows:

Tables

Attachments

Attachment 1	Summary of Analytical Results
Attachment 2	Detailed Discussion of Statistical Methods
Attachment 3	Sanitas Report Output for Prediction Limit Calculations
Attachment 4	Sanitas Report Output for Double Quantification Rule Evaluations
Attachment 5	Sanitas Report Output for Confidence Interval Calculations
Attachment 6	Effective Power and Site-Wide False Positive Rate Discussion

2. Background

The groundwater monitoring locations and status of the Appendix II sampling schedules are summarized in Table 1. The Appendix II analytical results are presented in Attachment 1.

Table 1
Monitoring Locations and Schedule
Dec. 2008 – May 2024 Appendix II Data

Monitoring Location	Monitoring Program	Current Schedule (1) (May 2024)	Appendix II Initiated	Baseline Appendix II Completed (4 Events) (2)	Last Full Appendix II Event Completed
North Unit					
MW-27	Assessment	Appendix II	Dec-08	Sep-09	Sep-23
MW-50R	Assessment	Appendix II	Dec-08	Sep-09	Sep-23
MW-51	Background	Appendix II	Dec-08	Sep-09	Sep-23
PZ-12	Background	Appendix II	Oct-18	-	Sep-23

(1) Assessment and background monitoring locations were sampled for the Appendix I and detected Appendix II constituents in May 2024.

(2) The baseline Appendix II monitoring events (May, Jul. & Sep. 2009) and semiannual monitoring events through Sep. 2017 consisted only of the Appendix II analytes with detections during Dec. 2008 and Sep. 2013.

Semiannual assessment and background monitoring for the Appendix I and detected Appendix II constituents was conducted in May 2024 at the downgradient and background monitoring locations, as indicated in Table 1. At MW-50R, none of the Appendix II constituents not included in the Appendix I list have been detected. At MW-27, the historically detected Appendix II constituents were beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, and sulfide. As further discussed in Section 3.4, 1,4-phenylenediamine (or p-phenylenediamine) was resampled at MW-27 and MW-50R in May 2024 since the September 2023 results were rejected during data validation.

Under the assessment monitoring program of 567 Iowa Administrative Code (IAC) 113.10(6), Appendix II monitoring results are statistically compared to background levels as given in 567 IAC 113.10(6)e and to the groundwater protection standard (GWPS) as given in 567 IAC 113.10(6)g and h. A well may return to detection monitoring when all Appendix II constituents are “shown to be at or below background values, using the statistical procedures in 567 IAC 113.10(4)g for two consecutive sampling events.” Three consecutive sampling events may be utilized to make the determination to return to detection monitoring to limit the frequent fluctuation of wells moving between the detection and assessment monitoring programs. Assessment monitoring continues when Appendix II concentrations are above background values but below the GWPS also using the statistical procedures in 567 IAC 113.10(4)g. Characterization for corrective measures begins when “Appendix II constituents are detected at statistically significant levels above the GWPS.”

Based on December 2008 through May 2024 results, this memo presents an evaluation of statistically significant increases (SSIs) above background and statistically significant levels (SSLs) above the GWPS under the requirements of 567 IAC 113.10(4)g and h. A summary of the results is discussed below.

3. Statistical Methodology

The statistical methods utilized for locations in assessment monitoring were consistent with the methods used in previous updates. Detailed descriptions of the statistical methods are provided in Attachment 2. The combined background data set (MW-51 and PZ-12) was utilized to evaluate SSIs over background.

3.1 Review of Single Background Detections

Single volatile organic compound (VOC) detections were identified for acetone in MW-51 and acetone and carbon disulfide in PZ-12 in October 2019 and for acetone in PZ-12 in May 2020, October 2020, and May 2023. Retesting was conducted in January 2020, July 2020, December 2020, and August 2023. The retest results did not confirm the single detections; therefore, SSIs were not declared. The retest results indicated that MW-51 and PZ-12 remained suitable for monitoring background groundwater quality.

A single VOC detection was identified for acetone in PZ-12 in September 2023. None of the remaining Appendix II VOCs, SVOCs, pesticides, and PCBs were detected above the laboratory practical quantitation limit (PQL). Since Appendix II metals were not sampled in September 2023 at PZ-12, no data set adjustments are recommended based on the acetone detection.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a “never-detected” constituent and has been repeatedly detected in PZ-12, retesting is not recommended, and the May 2024 results will not be included in the background data set. A new background well is being installed and will replace PZ-12.

Since VOCs are considered “never detected” constituents, acetone and carbon disulfide were not added as prediction limit constituents. Downgradient acetone and carbon disulfide results continue to be evaluated using the double quantification rule (DQR).

The background data set adjustments currently and previously recommended and incorporated based on the review of single background detections include:

- Removal of the October 2020 arsenic concentration in PZ-12 (initiated with the Fall 2020 statistical evaluation).
- Removal of the May 2023 arsenic, barium, beryllium, cadmium, cobalt, copper, lead, nickel, thallium, and zinc concentrations in PZ-12 (initiated with the Spring 2023 statistical evaluation).
- The May 2024 results at PZ-12 will not be added to the background data set (initiated with the Spring 2024 statistical evaluation).

These data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.2 Total Suspended Solids and the Background Data Set

To reduce total suspended solids (TSS) in the groundwater samples, no-purge sampling using HydraSleeve™ samplers was continued at the downgradient and background monitoring wells in May 2024. A summary of the TSS results for the high-volume and no-purge sampling events is provided in Table 2.

Table 2
Total Suspended Solids Data (mg/L)

Date	Sampling Technique	MW-27 (Downgradient)	MW-50R (Downgradient)	MW-51 (Background)	PZ-12 (Background)
2014-09	High Volume	25	61	17.5	-
2015-04	High Volume	10.0	37.5	14.9	-
2015-09	High Volume	34.3	19	3.25	-
2016-04	High Volume	29.4	17.5	0.625 J	11.1
2016-09	No-Purge	41.6	13.6	2.13	27.5
2017-05	No-Purge	45.3	28	3.5	62
2017-09	No-Purge	37.1	147 (1)	5.85	-
2018-05	No-Purge	21.8	19.6	8.00	72
2018-09/10	No-Purge	60.8	7.88	16.3	10.9
2019-05	No-Purge	58	286	2.25	7.00
2019-10	No-Purge	37	44	2.13	7.50
2020-05	No-Purge	45	14 J	1.38 J	18
2020-10	No-Purge	12.3	56	3.2	15.6
2021-05	No-Purge	59.0	- (2)	2.50	19.0
2021-10	No-Purge	63.3	13.1	1 J	15.5
2022-05	No-Purge	19.5	7	3.75	40
2022-09	No-Purge	29	27	1.13	13.8
2023-05	No-Purge	31	17.3	0.875 J	7.5
2023-09	No-Purge (3)	54.5 (3)	57.3 (3)	1.38 J	39 (3)
2024-05	No-Purge	65.5	241	1.63 J	75

(1) Lower groundwater elevations due to drought conditions (and therefore, limited water in the well casing) likely contributed to the higher TSS result at MW-50R in Sep. 2017.

(2) The laboratory missed sample login and analysis for TSS at MW-50R in May 2021.

(3) Lower groundwater elevations and slower well recharge due to drought conditions (and therefore, limited water in the well casing) likely contributed to TSS concentrations at MW-27, MW-50R, and PZ-12 in Sep. 2023.

No background data set adjustments are recommended for MW-51 based on review of the TSS data from the May 2024 sampling event. The TSS concentration at MW-51 was below the 5 mg/L limit for acceptable sample quality. At PZ-12, TSS was above the limit with a concentration of 75 mg/L. As discussed in Section 3.1, the May 2024 results at PZ-12 will not be included in the background data set due to ongoing acetone detections. A new background well is being installed and will replace PZ-12.

3.3 Background Data Set Review for Prediction Limits

The background data set and PQLs were reviewed starting with the Spring 2023 statistical evaluation. This consisted of reviewing the PQLs for metals constituents used in the prediction limit evaluation to determine whether PQLs have been lowered over time, and whether some of the earlier non-detect data with elevated PQLs should be removed from the background data due to the increased uncertainty it added. Non-detect background data with a PQL of at least two times the maximum detected background concentration are recommended for removal.

The background data set adjustments previously recommended and incorporated based on the review of PQLs include:

- Removal of non-detect silver and thallium background samples with a PQL of 0.004 mg/L.

These background data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.4 Quality Assurance/Quality Control Summary

Data validation reports detailing any resampling, data qualifiers added because of data validation, and an overall assessment of the data will be submitted in Appendix A of the 2024 Annual Water Quality Report (AWQR).

In September 2023, 1,4-phenylenediamine (or p-phenylenediamine) was sampled at MW-27, MW-50R, MW-51, and PZ-12 as part of the 5-year resampling for the full Appendix II list. Due to low laboratory control sample and laboratory control sample duplicate recoveries, the 1,4-phenylenediamine data in MW-27, MW-50R, MW-51, and PZ-12 were validator-qualified R (i.e., rejected). Resampling was not recommended for the rejected 1,4-phenylenediamine data at MW-51 and PZ-12 since these are background monitoring wells and background monitoring for 1,4-phenylenediamine is not required for compliance with the project requirements. Resampling was conducted for 1,4-phenylenediamine at MW-27 and MW-50R in May 2024. The May 2024 1,4-phenylenediamine data in MW-27 and MW-50R was validator-qualified R (i.e., rejected) again due to low laboratory control sample and laboratory control sample duplicate recoveries. Further resampling is not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed in September 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylenediamine has not been detected at these wells, and the laboratory indicated 1,4-phenylenediamine is a poor performing analyte.

In May 2024, the overall data assessment indicated that method criteria, precision, accuracy, representativeness, comparability, completeness, and suitability for intended use were acceptable.

4. Results of Analysis

4.1 Comparison to Background Levels

4.1.1 Interwell Prediction Limits

Interwell prediction limits were used to formally assess SSIs over background for analytes detected above the reporting limit in the combined background data set. These analytes were antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, sulfide, thallium, vanadium, and zinc. Prediction limits calculated utilizing sample data collected from December 2008 through May 2024 for the combined background data set are summarized in Table 3.

Table 3
Prediction Limit Summary
Dec. 2008 – May 2024 Interwell Data (1)

Chemical Name	Prediction Limit	Units	Prediction Limit Type	Retesting Plan	Prediction Limit Method
Antimony	0.00331	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Arsenic	0.00874	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Barium	2.18	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cadmium	0.001724	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Chromium	0.0305	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cobalt	0.0528	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Copper	0.136	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Lead	0.0878	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Nickel	0.05383	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Selenium	0.0188	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Silver	0.00175	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Sulfide (2)	13.4	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Thallium	0.00242	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Vanadium	0.0686	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Zinc	0.977	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic

(1) Interwell data consists of the Appendix II parameters detected in the combined background data set (MW-51 and PZ-12). Note that background data set adjustments were incorporated in accordance with Section 3.

(2) Sulfide was included only for assessment monitoring locations.

Non-parametric prediction limits were used for antimony, arsenic, barium, chromium, copper, lead, selenium, silver, sulfide, thallium, vanadium, and zinc since either normality assumptions could not be met or there were less than 50% detects in the combined background data set. Parametric prediction limits were used for cadmium, cobalt, and nickel since the assumptions of normality were met with a lognormal transformation and the lognormal limit was accepted as representative of the background distribution.

In the Fall 2023 statistical evaluation, a non-parametric limit was used for cobalt since either normality assumptions could not be met or there were less than 50% detects in the combined background data set. In the current evaluation, a lognormal parametric prediction limit was calculated for cobalt since there were greater than 50% detects in the combined background data set, the assumptions of normality were met with a lognormal transformation, and the lognormal limit was accepted as being representative of the background distribution.

Prediction limit output is included in Attachment 3. No prediction limit exceedances were identified at MW-27 and MW-50R in May 2024.

4.1.2 Double Quantification Rule Evaluation

The DQR was used to evaluate SSIs over background for the Appendix II constituents which have not been detected above the reporting limit in the combined background data set. The DQR output is included in Attachment 4, with a summary of the May 2024 DQR detections listed in Table 4. In lieu of retesting, the SSIs were declared for the single DQR detections listed in Table 4 and evaluated for SSLs in Section 4.2.

Table 4
May 2024 Double Quantification Rule Detections

Well	Constituent(s)
Assessment Monitoring Locations	
MW-27	Benzene; cis-1,2-Dichloroethene

4.1.3 Exiting Assessment Monitoring

Table 5 presents a summary of the assessment monitoring locations and statistical comparisons required for exiting assessment monitoring. As discussed in Section 2, assessment monitoring locations may return to detection monitoring when Appendix II constituents fall below the interwell prediction limit (for constituents which are detected in the background data set) and below the laboratory reporting limit (for constituents which are not detected in the background data set) for three consecutive sampling events.

Table 5
Evaluation to Exit Assessment Monitoring

Monitoring Location	May 2023	Sep. 2023	May 2024
MW-27			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	No	No	No
MW-50R			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	Yes	No	Yes

As shown in Table 5, all Appendix II constituents were not below the interwell prediction limits and laboratory reporting limits for three consecutive sampling events at MW-27 and MW-50R. As a result, MW-27 and MW-50R will not exit assessment monitoring at this time.

4.2 Comparison to the Groundwater Protection Standard

The SSIs identified in Table 4 were evaluated for SSLs over the GWPS per 567 IAC 113.10(6)f and g. Comparisons to the GWPS were evaluated through statistical confidence intervals in assessment mode, with confidence interval output included in Attachment 5 and summarized in Table 6. As shown in Table 6, SSLs were not identified for benzene and cis-1,2-dichloroethene in MW-27.

Table 6
Assessment Monitoring SSL Summary
Dec. 2008 – May 2024 Appendix II Data

Chemical Name	Wells with SSL	Wells without SSL	Groundwater Protection Standard (1)
Assessment Monitoring Locations			
Benzene (ug/L)		MW-27	5
cis-1,2-Dichloroethene (ug/L)		MW-27	70

(1) Values are the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source.

5. Effective Power and Site-Wide False Positive Rate

Statistical power calculations, effective power curves for the 1-of-2 prediction limit plan, and the current site-wide false positive rate (SWFPR) are discussed in detail in Attachment 6. Both the parametric and non-parametric prediction limits currently have good power ratings. The current cumulative annual SWFPR for the plan is 9.6%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive rate.

Statistical power calculations for confidence limits compared to the GWPS under assessment monitoring are included in the confidence interval output of Attachment 5. Confidence limits are calculated to meet statistical power levels of 50% for increases in the true concentration mean of 1.5 times a fixed standard, and 80% for increases in the true concentration mean of 2.0 times a fixed standard, as discussed in the Unified Guidance Chapter 22 (USEPA, 2009).

6. Conclusions

Semiannual assessment and background monitoring for the Appendix I and detected Appendix II constituents was conducted in May 2024 at assessment monitoring wells MW-27 and MW-50R and background wells MW-51 and PZ-12. In addition, 1,4-phenylenediamine (or p-phenylene-diamine) was resampled at MW-27 and MW-50R in May 2024 since the September 2023 results were rejected during data validation.

6.1 Background

The methodology described in Attachment 2 was utilized to conduct the statistical evaluations for assessment monitoring wells MW-27 and MW-50R. The combined MW-51 and PZ-12 data (December 2008 through May 2024) was utilized as the background data set.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a “never-detected” constituent and has been repeatedly detected in PZ-12, retesting is not recommended, and the May 2024 results were not included in the background data set. A new background well is being installed and will replace PZ-12.

6.2 Assessment Monitoring

No SSIs were identified in MW-50R. SSIs were identified for benzene and cis-1,2-dichloroethene in MW-27. No SSLs were identified. The Spring 2024 statistical evaluation did not identify all Appendix II constituents below the interwell prediction limit or laboratory reporting limit for three consecutive sampling events at MW-27 and MW-50R. Therefore, MW-27 and MW-50R will not exit assessment monitoring.

As further discussed in Section 3.4, the May 2024 1,4-phenylenediamine data in MW-27 and MW-50R was validator-qualified R (i.e., rejected) again due to low laboratory control sample and laboratory control sample duplicate recoveries. Further resampling is not recommended for the rejected 1,4-phenylenediamine data at MW-27 and MW-50R since 1,4-phenylenediamine was sampled and analyzed in September 2023 at these wells as part of the five-year resampling of the full Appendix II list, resampling was conducted in May 2024, 1,4-phenylenediamine has not been detected at these wells, and the laboratory indicated 1,4-phenylenediamine is a poor performing analyte.

6.3 Sampling Schedules

Semiannual assessment monitoring for the Appendix I and detected Appendix II constituents will be conducted at assessment monitoring wells MW-27 and MW-50R and background well MW-51 in Fall 2024. In accordance with Special Provision X.4.a.3, the next 5-year full Appendix II resampling is scheduled for Fall 2028.

7. References

United States Environmental Protection Agency (USEPA), 1997. *The Lognormal Distribution in Environmental Applications*. EPA/600/R97/006. Office of Solid Waste and Emergency Response, Washington, D.C.

USEPA, 2006. *On the Computation of a 95% Upper Confidence Limit of the Unknown Population Mean Based Upon Data Sets with Below Detection Limit Observations*. EPA/600/R-06/022. Office of Research and Development, Washington, D.C.

USEPA, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. EPA 530-R-09-007. Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

Thank you for your attention to this matter, and please contact us if you have any questions or need additional information.

Sincerely,

Foth Infrastructure & Environment, LLC

Gina Wilming

Gina Wilming
Senior Project Manager
Iowa CGP #2099
(319) 297-2065

Hannah Dubbs

Hannah Dubbs
Project Environmental Scientist
(319) 297-2055

cc: Dane Blozovich, RASWC
Bill Buss, Hall Engineering

Attachment 1

Summary of Analytical Results

Attachment 1
Dec. 2008 - May 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,1,1,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,1,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1		
1,1,1,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,1,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,1-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,1-Trichloroethane	ug/L	2013-09	< 1	< 1		
1,1,1-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,1-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,1-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,2,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,2,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1		
1,1,2,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,2,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1,2-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,1,2-Trichloroethane	ug/L	2013-09	< 1	< 1		
1,1,2-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,1,2-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1,2-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,1-Dichloroethane	ug/L	2008-12	1.2	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-05	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-07	1.1	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-09	1.2	< 1	< 1	
1,1-Dichloroethane	ug/L	2009-12	< 1	< 1	< 1	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,1-Dichloroethane	ug/L	2010-09	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2011-03	1.0	< 1.0	< 1.0	
1,1-Dichloroethane	ug/L	2011-09	< 1.0	< 1.0	< 1.0	
1,1-Dichloroethane	ug/L	2012-03	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2012-09	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2013-05	< 1	< 1		
1,1-Dichloroethane	ug/L	2013-09	< 1	< 1		
1,1-Dichloroethane	ug/L	2014-04	< 1.00	< 1.00		
1,1-Dichloroethane	ug/L	2014-09	0.384 J	< 1		
1,1-Dichloroethane	ug/L	2015-04	0.263 J			
1,1-Dichloroethane	ug/L	2015-09	0.475 J			
1,1-Dichloroethane	ug/L	2016-04	0.363 J			
1,1-Dichloroethane	ug/L	2016-09	0.359 J			
1,1-Dichloroethane	ug/L	2017-05	0.316 J			
1,1-Dichloroethane	ug/L	2017-09	0.503 J			
1,1-Dichloroethane	ug/L	2018-05	0.476 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2019-10	0.371 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2020-05	0.303 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2020-10	0.399 J	< 1	< 5	< 1
1,1-Dichloroethane	ug/L	2021-05	0.242 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2023-05	0.256 J	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,1-Dichloroethane	ug/L	2024-05	0.241 J	< 1	< 1	~~< 1~~
1,1-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1	
1,1-Dichloroethene	ug/L	2013-09	< 1	< 1		
1,1-Dichloroethene	ug/L	2018-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2018-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2019-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2019-10	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2020-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2020-10	< 2	< 2	< 10	< 2
1,1-Dichloroethene	ug/L	2021-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2021-10	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2022-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2022-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2023-05	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2023-09	< 2	< 2	< 2	< 2
1,1-Dichloroethene	ug/L	2024-05	< 2	< 2	< 2	~~< 2~~
1,1-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
1,1-Dichloropropene	ug/L	2013-09	< 1	< 1		
1,1-Dichloropropene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,1-Dichloropropene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2,3-Trichloropropane	ug/L	2013-09	< 1	< 1		
1,2,3-Trichloropropane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2,3-Trichloropropane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2,3-Trichloropropane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2,4,5-Tetrachlorobenzene	ug/L	2008-12	< 8	< 8	< 8	
1,2,4,5-Tetrachlorobenzene	ug/L	2013-09	< 8	< 8		
1,2,4,5-Tetrachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,2,4,5-Tetrachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,2,4-Trichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,2,4-Trichlorobenzene	ug/L	2013-09	< 1	< 1		
1,2,4-Trichlorobenzene	ug/L	2018-09	< 5	< 5	< 5	< 5
1,2,4-Trichlorobenzene	ug/L	2023-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dibromo-3-chloropropane	ug/L	2013-09	< 1	< 1		
1,2-Dibromo-3-chloropropane	ug/L	2018-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2018-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-10	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-10	< 5	< 5	< 25	< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-10	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-05	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-09	< 5	< 5	< 5	< 5
1,2-Dibromo-3-chloropropane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
1,2-Dibromoethane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dibromoethane	ug/L	2013-09	< 1	< 1		
1,2-Dibromoethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dibromoethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dibromoethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,2-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,2-Dichloroethane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichloroethane	ug/L	2013-09	< 1	< 1		
1,2-Dichloroethane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichloroethane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichloroethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
1,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,2-Dichloropropane	ug/L	2013-09	< 1	< 1		
1,2-Dichloropropane	ug/L	2018-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2019-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2019-10	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2020-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2020-10	< 1	< 1	< 5	< 1
1,2-Dichloropropane	ug/L	2021-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2021-10	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2022-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2022-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2023-05	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,2-Dichloropropane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,3,5-Trinitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
1,3,5-Trinitrobenzene	ug/L	2013-09	< 8	< 8		
1,3,5-Trinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,3,5-Trinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,3-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,3-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,3-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
1,3-Dichloropropane	ug/L	2013-09	< 1	< 1		
1,3-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1	< 1
1,3-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1	< 1
1,3-Dinitrobenzene	ug/L	2013-09	< 8	< 8		
1,3-Dinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,3-Dinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1,4-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
1,4-Dichlorobenzene	ug/L	2013-09	< 1	< 1		
1,4-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
1,4-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
1,4-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
1,4-Naphthoquinone	ug/L	2008-12	< 8	< 8	< 8	
1,4-Naphthoquinone	ug/L	2013-09	< 8	< 8		
1,4-Naphthoquinone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1,4-Naphthoquinone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
1-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8	
1-Naphthylamine	ug/L	2013-09	< 8	< 8		
1-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
1-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1	
2,2-Dichloropropane	ug/L	2013-09	< 1	< 1		
2,2-Dichloropropane	ug/L	2018-09	< 4	< 4	< 4	< 4
2,2-Dichloropropane	ug/L	2023-09	< 4	< 4	< 4	< 4
2,2'-oxybis(1-Chloropropane)	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,2'-oxybis(1-Chloropropane)	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,3,4,6-Tetrachlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,3,4,6-Tetrachlorophenol	ug/L	2013-09	< 8	< 8		
2,3,4,6-Tetrachlorophenol	ug/L	2018-09	< 10.5	< 10.1	0.623 J	< 11
2,3,4,6-Tetrachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4,5-T	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
2,4,5-T	ug/L	2013-12	< 0.5	< 0.5		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
2,4,5-T	ug/L	2018-09	< 1.09	< 1.05	< 1.07	< 1.18
2,4,5-T	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4,5-TP (Silvex)	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
2,4,5-TP (Silvex)	ug/L	2013-12	< 0.5	< 0.5		
2,4,5-TP (Silvex)	ug/L	2018-09	< 1.09	< 1.05	< 1.07	< 1.18
2,4,5-TP (Silvex)	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4,5-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4,5-Trichlorophenol	ug/L	2013-09	< 8	< 8		
2,4,5-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4,5-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4,6-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4,6-Trichlorophenol	ug/L	2013-09	< 8	< 8		
2,4,6-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4,6-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-D	ug/L	2008-12	< 2	< 2	< 2	
2,4-D	ug/L	2013-12	< 2	< 2		
2,4-D	ug/L	2018-09	0.834 J	< 1.05	< 1.07	< 1.18
2,4-D	ug/L	2023-09	< 1.08	< 1.15	< 1.07	
2,4-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dichlorophenol	ug/L	2013-09	< 8	< 8		
2,4-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-Dimethylphenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dimethylphenol	ug/L	2013-09	< 8	< 8		
2,4-Dimethylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dimethylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,4-Dinitrophenol	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dinitrophenol	ug/L	2013-09	< 8	< 8		
2,4-Dinitrophenol	ug/L	2018-09	< 21.1	< 20.2	< 20.8	< 22
2,4-Dinitrophenol	ug/L	2023-09	< 19.2	< 20	< 20	< 21.7
2,4-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8	
2,4-Dinitrotoluene	ug/L	2013-09	< 8	< 8		
2,4-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,4-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,6-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2,6-Dichlorophenol	ug/L	2013-09	< 8	< 8		
2,6-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,6-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2,6-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8	
2,6-Dinitrotoluene	ug/L	2013-09	< 8	< 8		
2,6-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2,6-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Acetylaminofluorene	ug/L	2008-12	< 8	< 8	< 8	
2-Acetylaminofluorene	ug/L	2013-09	< 8	< 8		
2-Acetylaminofluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Acetylaminofluorene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Butanone	ug/L	2008-12	< 5	< 5	< 5	
2-Butanone	ug/L	2013-09	< 5	< 5		
2-Butanone	ug/L	2018-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2018-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2019-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2019-10	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2020-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2020-10	< 10	< 10	< 50	< 10
2-Butanone	ug/L	2021-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2021-10	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2022-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2022-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2023-05	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2023-09	< 10	< 10	< 10	< 10
2-Butanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
2-Chloronaphthalene	ug/L	2008-12	< 8	< 8	< 8	
2-Chloronaphthalene	ug/L	2013-09	< 8	< 8		
2-Chloronaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Chloronaphthalene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
2-Chlorophenol	ug/L	2008-12	< 8	< 8	< 8	
2-Chlorophenol	ug/L	2013-09	< 8	< 8		
2-Chlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Chlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Hexanone	ug/L	2008-12	< 5	< 5	< 5	
2-Hexanone	ug/L	2013-09	< 5	< 5		
2-Hexanone	ug/L	2018-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2018-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2019-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2019-10	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2020-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2020-10	< 10	< 10	< 50	< 10
2-Hexanone	ug/L	2021-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2021-10	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2022-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2022-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2023-05	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2023-09	< 10	< 10	< 10	< 10
2-Hexanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
2-Methylnaphthalene	ug/L	2008-12	< 8	< 8	< 8	
2-Methylnaphthalene	ug/L	2013-09	< 8	< 8		
2-Methylnaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Methylnaphthalene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Methylphenol	ug/L	2008-12	< 8	< 8	< 8	
2-Methylphenol	ug/L	2013-09	< 8	< 8		
2-Methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8	
2-Naphthylamine	ug/L	2013-09	< 8	< 8		
2-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
2-Nitroaniline	ug/L	2013-09	< 8	< 8		
2-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
2-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8	
2-Nitrophenol	ug/L	2013-09	< 8	< 8		
2-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
2-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3,3-Dichlorobenzidine	ug/L	2008-12	< 8	< 8	< 8	
3,3-Dichlorobenzidine	ug/L	2013-09	< 8	< 8		
3,3-Dichlorobenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3,3-Dichlorobenzidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3,3-Dimethylbenzidine	ug/L	2008-12	< 8	< 8	< 8	
3,3-Dimethylbenzidine	ug/L	2013-09	< 8	< 8		
3,3-Dimethylbenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3,3-Dimethylbenzidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3-Methylcholanthrene	ug/L	2008-12	< 8	< 8	< 8	
3-Methylcholanthrene	ug/L	2013-09	< 8	< 8		
3-Methylcholanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3-Methylcholanthrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
3-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
3-Nitroaniline	ug/L	2013-09	< 8	< 8		
3-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
3-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4,4'-DDD	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDD	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDD	ug/L	2018-09	< 0.0337	0.00795 J	< 0.0337	< 0.036
4,4'-DDD	ug/L	2019-02	< 0.0352		< 0.0352	
4,4'-DDD	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
4,4'-DDE	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDE	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDE	ug/L	2018-09	< 0.0337	< 0.034	0.00313 J	< 0.036
4,4'-DDE	ug/L	2019-02	0.0041 J		< 0.0352	
4,4'-DDE	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
4,4'-DDT	ug/L	2008-12	< 0.05	< 0.05		
4,4'-DDT	ug/L	2013-09	< 0.05	< 0.05		
4,4'-DDT	ug/L	2018-09	0.0288 J	< 0.034	< 0.0337	< 0.036
4,4'-DDT	ug/L	2019-02	< 0.0352		< 0.0352	
4,4'-DDT	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
4,6-Dinitro-2-methylphenol	ug/L	2008-12	< 8	< 8	< 8	
4,6-Dinitro-2-methylphenol	ug/L	2013-09	< 8	< 8		
4,6-Dinitro-2-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4,6-Dinitro-2-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Aminobiphenyl	ug/L	2008-12	< 8	< 8	< 8	
4-Aminobiphenyl	ug/L	2013-09	< 8	< 8		
4-Aminobiphenyl	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Aminobiphenyl	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Bromophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8	
4-Bromophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8		
4-Bromophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Bromophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chloro-3-methylphenol	ug/L	2008-12	< 8	< 8	< 8	
4-Chloro-3-methylphenol	ug/L	2013-09	< 8	< 8		
4-Chloro-3-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chloro-3-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chloroaniline	ug/L	2008-12	< 8	< 8	< 8	
4-Chloroaniline	ug/L	2013-09	< 8	< 8		
4-Chloroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chloroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Chlorophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8	
4-Chlorophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8		
4-Chlorophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Chlorophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Methyl-2-pentanone	ug/L	2008-12	< 5	< 5	< 5	
4-Methyl-2-pentanone	ug/L	2013-09	< 5	< 5		
4-Methyl-2-pentanone	ug/L	2018-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2018-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2019-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2019-10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2020-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2020-10	< 10	< 10	< 50	< 10
4-Methyl-2-pentanone	ug/L	2021-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2021-10	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2022-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2022-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2023-05	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2023-09	< 10	< 10	< 10	< 10
4-Methyl-2-pentanone	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
4-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8	
4-Nitroaniline	ug/L	2013-09	< 8	< 8		
4-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
4-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8	
4-Nitrophenol	ug/L	2013-09	< 8	< 8		
4-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
4-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
5-Nitro-o-toluidine	ug/L	2008-12	< 8	< 8	< 8	
5-Nitro-o-toluidine	ug/L	2013-09	< 8	< 8		
5-Nitro-o-toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
5-Nitro-o-toluidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
7,12-Dimethylbenz(a)anthracene	ug/L	2008-12	< 8	< 8	< 8	
7,12-Dimethylbenz(a)anthracene	ug/L	2013-09	< 8	< 8		
7,12-Dimethylbenz(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
7,12-Dimethylbenz(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acenaphthene	ug/L	2008-12	< 8	< 8	< 8	
Acenaphthene	ug/L	2013-09	< 8	< 8		
Acenaphthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acenaphthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acenaphthylene	ug/L	2008-12	< 8	< 8	< 8	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Acenaphthylene	ug/L	2013-09	< 8	< 8		
Acenaphthylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acenaphthylene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acetone	ug/L	2008-12	< 10	< 10	< 10	
Acetone	ug/L	2013-09	< 10	< 10		
Acetone	ug/L	2018-05	10.4	9.94 J	11.1	36
Acetone	ug/L	2018-08	< 10		< 10	< 10
Acetone	ug/L	2018-09	< 10	< 10	4.59 J	< 10
Acetone	ug/L	2019-05	< 10	20.2	4.32 J	9.9 J
Acetone	ug/L	2019-10	< 10	8.87 J	12.2	14.4
Acetone	ug/L	2020-01			< 10	< 10
Acetone	ug/L	2020-05	< 10	< 10	3.27 J	25.7
Acetone	ug/L	2020-07				6.19 J
Acetone	ug/L	2020-10	< 10	111	< 50	13.7
Acetone	ug/L	2020-12				< 10
Acetone	ug/L	2021-05	6.27 J	18.2	< 10	5.89 J
Acetone	ug/L	2021-10	< 10	12.7	< 10	4.49 J
Acetone	ug/L	2022-05	< 10	17.8	< 10	5.04 J
Acetone	ug/L	2022-09	< 10	33.6	< 10	< 10
Acetone	ug/L	2023-05	42.3	3.63 J	< 10	13.8
Acetone	ug/L	2023-08				< 10
Acetone	ug/L	2023-09	20.3	24.7	< 10	20.8
Acetone	ug/L	2024-05	< 10	7.07 J	< 10	~~26.3~~
Acetonitrile	ug/L	2008-12	< 10	< 10	< 10	
Acetonitrile	ug/L	2013-09	< 10	< 10		
Acetonitrile	mg/L	2018-09	< 10	< 10	< 10	< 10
Acetonitrile	ug/L	2023-09	< 10000	< 10000	< 10000	
Acetophenone	ug/L	2008-12	< 8	< 8	< 8	
Acetophenone	ug/L	2013-09	< 8	< 8		
Acetophenone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Acetophenone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Acrolein	ug/L	2008-12	< 10	< 10	< 10	
Acrolein	ug/L	2013-09	< 10	< 10		
Acrolein	ug/L	2018-09	< 10	< 10	< 10	< 10
Acrolein	ug/L	2023-09	< 10	< 10	< 10	< 10
Acrylonitrile	ug/L	2008-12	< 5	< 5	< 5	
Acrylonitrile	ug/L	2013-09	< 5	< 5		
Acrylonitrile	ug/L	2018-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2018-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2019-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2019-10	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2020-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2020-10	< 5	< 5	< 25	< 5
Acrylonitrile	ug/L	2021-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2021-10	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2022-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2022-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2023-05	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2023-09	< 5	< 5	< 5	< 5
Acrylonitrile	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Aldrin	ug/L	2008-12	< 0.05	< 0.05		
Aldrin	ug/L	2013-09	< 0.05	< 0.05		
Aldrin	ug/L	2018-09	0.0161 J	< 0.034	< 0.0337	< 0.036
Aldrin	ug/L	2019-02	< 0.0352		< 0.0352	
Aldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Allyl Chloride	ug/L	2008-12	< 0	< 0	< 0	
Allyl Chloride	ug/L	2013-09	< 1	< 1		
Allyl Chloride	ug/L	2018-09	< 2	< 2	< 2	< 2
Allyl Chloride	ug/L	2023-09	< 2	< 2	< 2	< 2
alpha-BHC	ug/L	2008-12	< 0.05	< 0.05		
alpha-BHC	ug/L	2013-09	< 0.05	< 0.05		
alpha-BHC	ug/L	2018-09	0.00757 J	< 0.034	< 0.0337	< 0.036
alpha-BHC	ug/L	2019-02	0.00595 J		< 0.0352	
alpha-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Anthracene	ug/L	2008-12	< 8	< 8	< 8	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Anthracene	ug/L	2013-09	< 8	< 8		
Anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Antimony	mg/L	2008-12	< 0.001	< 0.001	< 0.001	
Antimony	mg/L	2013-09	< 0.01	< 0.01		
Antimony	mg/L	2018-05	< 0.001	0.0031	0.00216	0.00128
Antimony	mg/L	2018-09	< 0.001	< 0.001	0.000795 J	0.00295
Antimony	mg/L	2019-05	< 0.001	0.00112	< 0.001	< 0.001
Antimony	mg/L	2019-10	< 0.001	< 0.001	< 0.001	0.000626 J
Antimony	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Antimony	mg/L	2020-10	< 0.001	< 0.001	< 0.001	0.00131
Antimony	mg/L	2021-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2021-10	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2022-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2022-09	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2023-05	< 0.002	< 0.002	< 0.002	< 0.002
Antimony	mg/L	2023-09	< 0.002	< 0.002	0.00331	
Antimony	mg/L	2024-05	< 0.002	0.00112 J	< 0.002	~~< 0.002~~
Arsenic	mg/L	2008-12	< 0.004	< 0.002	< 0.004	
Arsenic	mg/L	2013-09	< 0.01	< 0.01		
Arsenic	mg/L	2018-05	0.00249	0.00234	< 0.002	0.00874
Arsenic	mg/L	2018-09	0.00116 J	0.0018 J	< 0.002	0.00564
Arsenic	mg/L	2019-05	0.00526	0.00366	< 0.002	0.00593
Arsenic	mg/L	2019-10	0.0101	0.00584	< 0.002	0.00516
Arsenic	mg/L	2020-05	0.0147	0.00257	< 0.002	0.00666
Arsenic	mg/L	2020-10	0.0044	0.00249	< 0.002	~~0.0101~~
Arsenic	mg/L	2021-05	0.0122	0.00163 J	< 0.002	0.00616
Arsenic	mg/L	2021-10	0.012	0.00251	< 0.002	0.0051
Arsenic	mg/L	2022-05	0.00589	0.000828 J	< 0.002	0.00272
Arsenic	mg/L	2022-09	0.00294	0.00173 J	< 0.002	0.00271
Arsenic	mg/L	2023-05	0.00681	0.00177 J	0.00061 J	~~0.00262~~
Arsenic	mg/L	2023-09	0.00726	0.00227	< 0.002	
Arsenic	mg/L	2024-05	0.00184 J	0.00195 J	< 0.002	~~0.00202~~
Barium	mg/L	2008-12	0.0267	0.224	0.0748	
Barium	mg/L	2009-05	0.141	0.149	0.0757	
Barium	mg/L	2009-07	0.136	0.161	0.0738	
Barium	mg/L	2009-09	0.0591	0.0897	< 0.01	
Barium	mg/L	2009-12	0.0517	0.241	0.116	
Barium	mg/L	2010-09	0.0728	0.205	0.14	
Barium	mg/L	2011-03	0.0558	0.141	0.0233	
Barium	mg/L	2011-09	0.0509	0.114	0.0236	
Barium	mg/L	2012-03	0.0368	0.13		
Barium	mg/L	2012-09	0.0879	0.154		
Barium	mg/L	2012-10			0.0149	
Barium	mg/L	2013-05	0.0496	0.14		0.321
Barium	mg/L	2013-07				2.18
Barium	mg/L	2013-09			0.162	0.0504
Barium	mg/L	2013-09	0.0577	0.126		
Barium	mg/L	2013-12				0.188
Barium	mg/L	2014-04	0.0272	0.117		0.142
Barium	mg/L	2014-09	0.0548	0.129		0.0341
Barium	mg/L	2015-04	0.0596	0.138	0.0131	0.0260
Barium	mg/L	2015-09	0.0367	0.135	0.00867	0.0195
Barium	mg/L	2016-04	0.0685	0.0793	0.00862	0.0186
Barium	mg/L	2016-09	0.07	0.0859	0.00697	0.0416
Barium	mg/L	2017-05	0.0628	0.115	0.00855	0.0246
Barium	mg/L	2017-09	0.0535	0.0602	0.0087	
Barium	mg/L	2018-05	0.0954	0.0484	0.0144	0.116
Barium	mg/L	2018-09	0.0608	0.0469	0.0107	0.0665
Barium	mg/L	2019-05	0.0807	0.0685	0.00821	0.0236
Barium	mg/L	2019-10	0.0714	0.0475	0.00863	0.0447
Barium	mg/L	2020-05	0.0938	0.0738	0.00927	0.0328
Barium	mg/L	2020-10	0.0671	0.077	0.00684	0.101
Barium	mg/L	2021-05	0.0844	0.0568	0.00794	0.0353
Barium	mg/L	2021-10	0.0919	0.0884	0.00788	0.0316

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Barium	mg/L	2022-05	0.0843	0.0386	0.043	0.0233
Barium	mg/L	2022-09	0.0795	0.0332	0.0127	0.0245
Barium	mg/L	2023-05	0.0819	0.0509	0.00663	~~0.0153~~
Barium	mg/L	2023-09	0.085	0.0735	0.00743	
Barium	mg/L	2024-05	0.0903	0.0635	0.00555	~~0.0176~~
Benzene	ug/L	2008-12	< 1	< 1	< 1	
Benzene	ug/L	2013-09	< 1	< 1		
Benzene	ug/L	2018-05	0.889	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2018-09	0.22 J	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2019-05	0.608	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2019-10	0.708	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2020-05	0.744	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2020-10	0.427 J	< 0.5	< 2.5	< 0.5
Benzene	ug/L	2021-05	0.815	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2021-10	0.558	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2022-05	0.858	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2022-09	0.221 J	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2023-05	0.971	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2023-09	0.977	< 0.5	< 0.5	< 0.5
Benzene	ug/L	2024-05	0.856	< 0.5	< 0.5	~~< 0.5~~
Benzo(a)anthracene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(a)anthracene	ug/L	2013-09	< 8	< 8		
Benzo(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(a)pyrene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(a)pyrene	ug/L	2013-09	< 8	< 8		
Benzo(a)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(a)pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(b)fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(b)fluoranthene	ug/L	2013-09	< 8	< 8		
Benzo(b)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(b)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(ghi)perylene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(ghi)perylene	ug/L	2013-09	< 8	< 8		
Benzo(ghi)perylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(ghi)perylene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzo(k)fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Benzo(k)fluoranthene	ug/L	2013-09	< 8	< 8		
Benzo(k)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzo(k)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Benzyl Alcohol	ug/L	2008-12	< 8	< 8	< 8	
Benzyl Alcohol	ug/L	2013-09	< 8	< 8		
Benzyl Alcohol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Benzyl Alcohol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Beryllium	mg/L	2008-12	< 0.004	< 0.004	< 0.004	
Beryllium	mg/L	2013-09	< 0.001	< 0.001		
Beryllium	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2021-10	< 0.001	0.000666 J	< 0.001	< 0.001
Beryllium	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Beryllium	mg/L	2023-05	< 0.001	< 0.001	0.000422 J	~~0.000429 J~~
Beryllium	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Beryllium	mg/L	2024-05	< 0.001	< 0.001	< 0.001	~~< 0.001~~
beta-BHC	ug/L	2008-12	< 0.05	< 0.05		
beta-BHC	ug/L	2013-09	< 0.05	< 0.05		
beta-BHC	ug/L	2018-09	0.0339	< 0.034	< 0.0337	< 0.036
beta-BHC	ug/L	2019-02	0.0279 J		< 0.0352	
beta-BHC	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
beta-BHC	ug/L	2019-10	< 0.0327			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
beta-BHC	ug/L	2020-05	0.0214 J			
beta-BHC	ug/L	2020-10	0.0219 J			
beta-BHC	ug/L	2021-05	< 0.064			
beta-BHC	ug/L	2021-10	< 0.0344			
beta-BHC	ug/L	2022-05	< 0.0762			
beta-BHC	ug/L	2022-09	< 0.0744			
beta-BHC	ug/L	2023-05	< 0.0711			
beta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
beta-BHC	ug/L	2024-05	< 0.0604			
bis(2-Chloroethoxy)methane	ug/L	2008-12	< 8	< 8	< 8	
bis(2-Chloroethoxy)methane	ug/L	2013-09	< 8	< 8		
bis(2-Chloroethoxy)methane	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Chloroethoxy)methane	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
bis(2-Chloroethyl)ether	ug/L	2008-12	< 8	< 8	< 8	
bis(2-Chloroethyl)ether	ug/L	2013-09	< 8	< 8		
bis(2-Chloroethyl)ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Chloroethyl)ether	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
bis(2-Ethylhexyl)phthalate	ug/L	2013-09	11	< 8		
bis(2-Ethylhexyl)phthalate	ug/L	2013-12	< 10			
bis(2-Ethylhexyl)phthalate	ug/L	2014-04	< 10.3 J			
bis(2-Ethylhexyl)phthalate	ug/L	2014-09	< 10			
bis(2-Ethylhexyl)phthalate	ug/L	2015-04	< 10.2 J			
bis(2-Ethylhexyl)phthalate	ug/L	2015-09	< 10.3 J			
bis(2-Ethylhexyl)phthalate	ug/L	2016-04	< 10.4 J			
bis(2-Ethylhexyl)phthalate	ug/L	2016-09	< 10.9			
bis(2-Ethylhexyl)phthalate	ug/L	2017-05	< 10.2			
bis(2-Ethylhexyl)phthalate	ug/L	2017-09	< 10.3			
bis(2-Ethylhexyl)phthalate	ug/L	2018-05	< 10.3			
bis(2-Ethylhexyl)phthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
bis(2-Ethylhexyl)phthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Bromochloromethane	ug/L	2008-12	< 1	< 1	< 1	
Bromochloromethane	ug/L	2013-09	< 1	< 1		
Bromochloromethane	ug/L	2018-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2018-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2019-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2019-10	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2020-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2020-10	< 5	< 5	< 25	< 5
Bromochloromethane	ug/L	2021-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2021-10	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2022-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2022-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2023-05	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2023-09	< 5	< 5	< 5	< 5
Bromochloromethane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Bromodichloromethane	ug/L	2008-12	< 1	< 1	< 1	
Bromodichloromethane	ug/L	2013-09	< 1	< 1		
Bromodichloromethane	ug/L	2018-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2018-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2019-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2019-10	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2020-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2020-10	< 1	< 1	< 5	< 1
Bromodichloromethane	ug/L	2021-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2021-10	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2022-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2022-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2023-05	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2023-09	< 1	< 1	< 1	< 1
Bromodichloromethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Bromoform	ug/L	2008-12	< 1	< 1	< 1	
Bromoform	ug/L	2013-09	< 1	< 1		
Bromoform	ug/L	2018-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2018-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2019-05	< 5	< 5	< 5	< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Bromoform	ug/L	2019-10	< 5	< 5	< 5	< 5
Bromoform	ug/L	2020-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2020-10	< 5	< 5	< 25	< 5
Bromoform	ug/L	2021-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2021-10	< 5	< 5	< 5	< 5
Bromoform	ug/L	2022-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2022-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2023-05	< 5	< 5	< 5	< 5
Bromoform	ug/L	2023-09	< 5	< 5	< 5	< 5
Bromoform	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Bromomethane	ug/L	2008-12	< 1	< 1	< 1	
Bromomethane	ug/L	2013-09	< 1	< 1		
Bromomethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2019-10	3.1 J	< 4	< 4	< 4
Bromomethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2020-10	< 4	< 4	< 20	< 4
Bromomethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Bromomethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Butylbenzylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Butylbenzylphthalate	ug/L	2013-09	< 8	< 8		
Butylbenzylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Butylbenzylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Cadmium	mg/L	2008-12	< 0.001	0.0014	< 0.001	
Cadmium	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2009-12	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2010-09	< 0.005	< 0.005	< 0.005	
Cadmium	mg/L	2011-03	< 0.0050	< 0.0050	< 0.0050	
Cadmium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Cadmium	mg/L	2012-03	< 0.005	< 0.005		
Cadmium	mg/L	2012-09	< 0.005	< 0.005		
Cadmium	mg/L	2012-10			< 0.005	
Cadmium	mg/L	2013-05	< 0.005	< 0.005		< 0.005
Cadmium	mg/L	2013-07				0.0142
Cadmium	mg/L	2013-09			< 0.005	< 0.005
Cadmium	mg/L	2013-09	< 0.005	< 0.005		
Cadmium	mg/L	2013-12				< 0.0050
Cadmium	mg/L	2014-04	0.000247 J	0.000117 J		0.00105
Cadmium	mg/L	2014-09	< 0.0005	< 0.0005		0.000565
Cadmium	mg/L	2015-04	< 0.000500	< 0.000500	< 0.000500	0.000274 J
Cadmium	mg/L	2015-09	< 0.0005	< 0.0005	< 0.0005	< 0.0005
Cadmium	mg/L	2016-04	0.000056 J	< 0.0005	< 0.0005	0.000206 J
Cadmium	mg/L	2016-09	0.000149 J	< 0.0005	0.000046 J	0.000379 J
Cadmium	mg/L	2017-05	< 0.0005	< 0.0005	0.000109 J	0.000277 J
Cadmium	mg/L	2017-09	0.000167 J	0.000074 J	0.000116 J	
Cadmium	mg/L	2018-05	< 0.0005	0.000113 J	0.000137 J	0.000653
Cadmium	mg/L	2018-09	0.000238 J	0.000228 J	0.000098 J	0.000585
Cadmium	mg/L	2019-05	0.000304 J	< 0.0005	< 0.0005	0.000389 J
Cadmium	mg/L	2019-10	0.000144	< 0.0001	0.000084 J	0.000982
Cadmium	mg/L	2020-05	0.000113	< 0.0001	0.000137	0.000328
Cadmium	mg/L	2020-10	0.00005 J	0.000059 J	< 0.0001	0.00113
Cadmium	mg/L	2021-05	0.000613	0.000177	0.000263	0.000564
Cadmium	mg/L	2021-10	0.000189	0.000807	0.000115	0.000844
Cadmium	mg/L	2022-05	0.000256	0.000101	0.000152	0.000296
Cadmium	mg/L	2022-09	0.000173	0.000103	0.000084 J	0.000461
Cadmium	mg/L	2023-05	0.000154 J	< 0.0002	0.000239	~~0.000395~~
Cadmium	mg/L	2023-09	0.000319	< 0.0002	< 0.0002	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Cadmium	mg/L	2024-05	0.000326	0.000328	< 0.0008	~~0.000176 J~~
Carbon Disulfide	ug/L	2008-12	< 1	< 1	< 1	
Carbon Disulfide	ug/L	2013-09	< 1	< 1		
Carbon Disulfide	ug/L	2018-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2018-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2019-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2019-10	< 1	< 1	< 1	1.08
Carbon Disulfide	ug/L	2020-01				< 1
Carbon Disulfide	ug/L	2020-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2020-10	< 1	< 1	< 5	< 1
Carbon Disulfide	ug/L	2021-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2021-10	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2022-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2022-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2023-05	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2023-09	< 1	< 1	< 1	< 1
Carbon Disulfide	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Carbon Tetrachloride	ug/L	2008-12	< 1	< 1	< 1	
Carbon Tetrachloride	ug/L	2013-09	< 1	< 1		
Carbon Tetrachloride	ug/L	2018-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2018-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2019-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2019-10	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2020-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2020-10	< 2	< 2	< 10	< 2
Carbon Tetrachloride	ug/L	2021-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2021-10	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2022-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2022-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2023-05	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2023-09	< 2	< 2	< 2	< 2
Carbon Tetrachloride	ug/L	2024-05	< 2	< 2	< 2	~~< 2~~
Chlorobenzene	ug/L	2008-12	< 1	< 1	< 1	
Chlorobenzene	ug/L	2013-09	< 1	< 1		
Chlorobenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
Chlorobenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
Chlorobenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Chlorobenzilate	ug/L	2008-12	< 8	< 8	< 8	
Chlorobenzilate	ug/L	2013-09	< 8	< 8		
Chlorobenzilate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Chlorobenzilate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Chlorodibromomethane	ug/L	2008-12	< 1	< 1	< 1	
Chlorodibromomethane	ug/L	2013-09	< 1	< 1		
Chlorodibromomethane	ug/L	2018-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2018-09	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2019-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2019-10	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2020-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2020-10	< 5	< 5	< 25	< 5
Chlorodibromomethane	ug/L	2021-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2021-10	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2022-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2022-09	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2023-05	< 5	< 5	< 5	< 5
Chlorodibromomethane	ug/L	2023-09	< 5	< 5	< 5	< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Chlorodibromomethane	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Chloroethane	ug/L	2008-12	1.4	< 1	< 1	
Chloroethane	ug/L	2009-05	1.8	1.4	< 1	
Chloroethane	ug/L	2009-07	< 1	< 1	< 1	
Chloroethane	ug/L	2009-09	< 1	2	< 1	
Chloroethane	ug/L	2009-12	1.8	3.9	< 1	
Chloroethane	ug/L	2010-09	< 1	< 1	< 1	
Chloroethane	ug/L	2011-03	< 1.0	6.5	< 1.0	
Chloroethane	ug/L	2011-09	< 1.0	4.8	< 1.0	
Chloroethane	ug/L	2012-03	< 1	6.1	< 1	
Chloroethane	ug/L	2012-09	1.4	2.8	< 1	
Chloroethane	ug/L	2013-05	< 1	3.4		
Chloroethane	ug/L	2013-09	< 1	1.9		
Chloroethane	ug/L	2014-04	< 4.00	2.23 J		
Chloroethane	ug/L	2014-09	0.499 J	2.76 J		
Chloroethane	ug/L	2015-04	0.485 J	2.56 J		
Chloroethane	ug/L	2015-09	0.647 J	2.08 J		
Chloroethane	ug/L	2016-04	0.214 J	1.72 J		
Chloroethane	ug/L	2016-09	< 4	< 4		
Chloroethane	ug/L	2017-05	0.513 J	0.627 J		
Chloroethane	ug/L	2017-09	0.436 J	0.258 J		
Chloroethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2019-10	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2020-10	< 4	0.898 J	< 20	< 4
Chloroethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Chloroethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Chloroform	ug/L	2008-12	< 1	< 1	< 1	
Chloroform	ug/L	2013-09	< 1	< 1		
Chloroform	ug/L	2018-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2018-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2019-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2019-10	< 3	< 3	< 3	< 3
Chloroform	ug/L	2020-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2020-10	< 3	< 3	< 15	< 3
Chloroform	ug/L	2021-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2021-10	< 3	< 3	< 3	< 3
Chloroform	ug/L	2022-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2022-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2023-05	< 3	< 3	< 3	< 3
Chloroform	ug/L	2023-09	< 3	< 3	< 3	< 3
Chloroform	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Chloromethane	ug/L	2008-12	< 1	< 1	< 1	
Chloromethane	ug/L	2013-09	< 1	< 1		
Chloromethane	ug/L	2018-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2018-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2019-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2019-10	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2020-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2020-10	< 3	< 3	< 15	< 3
Chloromethane	ug/L	2021-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2021-10	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2022-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2022-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2023-05	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2023-09	< 3	< 3	< 3	< 3
Chloromethane	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Chloroprene	ug/L	2008-12	< 0	< 0	< 0	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Chloroprene	ug/L	2013-09	< 1	< 1		
Chloroprene	ug/L	2018-09	< 1	< 1	< 1	< 1
Chloroprene	ug/L	2023-09	< 1	< 1	< 1	< 1
Chromium	mg/L	2008-12	< 0.01	0.0197	< 0.01	
Chromium	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Chromium	mg/L	2009-12	< 0.005	0.054	0.0108	
Chromium	mg/L	2010-09	0.0092	0.0326	0.0095	
Chromium	mg/L	2011-03	0.0055	0.0120	< 0.0050	
Chromium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Chromium	mg/L	2012-03	< 0.005	< 0.005		
Chromium	mg/L	2012-09	0.0089	< 0.005		
Chromium	mg/L	2012-10			< 0.005	
Chromium	mg/L	2013-05	< 0.005	< 0.005		0.0156
Chromium	mg/L	2013-07				0.0305
Chromium	mg/L	2013-09			0.0078	< 0.005
Chromium	mg/L	2013-09	0.006	< 0.005		
Chromium	mg/L	2013-12				< 0.0050
Chromium	mg/L	2014-04	< 0.0200	< 0.0200		< 0.0200
Chromium	mg/L	2014-09	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500	< 0.00500
Chromium	mg/L	2015-09	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2016-04	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2016-09	0.000717 J	< 0.005	< 0.005	0.000836 J
Chromium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00205 J
Chromium	mg/L	2017-09	< 0.005	0.000806 J	0.00191 J	
Chromium	mg/L	2018-05	0.00127 J	0.00387 J	< 0.005	0.00132 J
Chromium	mg/L	2018-09	0.00089 J	< 0.005	< 0.005	0.00117 J
Chromium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2020-10	0.00115 J	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2021-10	< 0.005	< 0.005	< 0.005	0.0011 J
Chromium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2023-05	< 0.005	< 0.005	< 0.005	< 0.005
Chromium	mg/L	2023-09	< 0.005	0.00159 J	< 0.005	
Chromium	mg/L	2024-05	< 0.005	0.00132 J	< 0.005	~~< 0.005~~
Chrysene	ug/L	2008-12	< 8	< 8	< 8	
Chrysene	ug/L	2013-09	< 8	< 8		
Chrysene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Chrysene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
cis-1,2-Dichloroethene	ug/L	2008-12	2.7	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-05	2.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-07	3.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-09	1.9	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2009-12	2.2	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2010-09	2.8	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2011-03	3.5	< 1.0	< 1.0	
cis-1,2-Dichloroethene	ug/L	2011-09	< 1.0	< 1.0	2.9 (1)	
cis-1,2-Dichloroethene	ug/L	2012-03	< 1	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2012-09	2.9	< 1	< 1	
cis-1,2-Dichloroethene	ug/L	2013-05	1	< 1		
cis-1,2-Dichloroethene	ug/L	2013-09	2.4	< 1		
cis-1,2-Dichloroethene	ug/L	2014-04	0.499 J	< 1.00		
cis-1,2-Dichloroethene	ug/L	2014-09	1.47	0.175 J		
cis-1,2-Dichloroethene	ug/L	2015-04	1.71			
cis-1,2-Dichloroethene	ug/L	2015-09	3.34			
cis-1,2-Dichloroethene	ug/L	2016-04	2.77			
cis-1,2-Dichloroethene	ug/L	2016-09	3.2			
cis-1,2-Dichloroethene	ug/L	2017-05	2.08			

(1) Per IDNR March 14, 2013 correspondence, the single detection of cis-1,2-dichloroethene in MW-51 during September 2011 will not result in further action. This parameter will continue to be assessed with the double quantification rule.

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
cis-1,2-Dichloroethene	ug/L	2017-05	2.08			
cis-1,2-Dichloroethene	ug/L	2017-09	2.99			
cis-1,2-Dichloroethene	ug/L	2018-05	3.65	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2018-09	2.96	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2019-05	1.89	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2019-10	2.43	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2020-05	2.15	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2020-10	3.08	0.241 J	< 5	< 1
cis-1,2-Dichloroethene	ug/L	2021-05	2.23	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2021-10	< 1.72	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2022-05	2.18	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2022-09	2.46	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2023-05	2.44	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2023-09	2	< 1	< 1	< 1
cis-1,2-Dichloroethene	ug/L	2024-05	2.24	< 1	< 1	~~< 1~~
cis-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
cis-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1		
cis-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25	< 5
cis-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5	< 5
cis-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Cobalt	mg/L	2008-12	< 0.004	0.0203	< 0.004	
Cobalt	mg/L	2009-05	0.0081	0.005	< 0.005	
Cobalt	mg/L	2009-07	0.0101	0.005	< 0.005	
Cobalt	mg/L	2009-09	0.0122	0.0078	< 0.005	
Cobalt	mg/L	2009-12	0.01	0.037	< 0.005	
Cobalt	mg/L	2010-09	0.0183	0.0269	< 0.005	
Cobalt	mg/L	2011-03	0.0172	0.0147	< 0.0050	
Cobalt	mg/L	2011-09	0.0225	0.0111	< 0.0050	
Cobalt	mg/L	2012-03	0.0095	0.0117		
Cobalt	mg/L	2012-09	0.0233	0.0109		
Cobalt	mg/L	2012-10			< 0.005	
Cobalt	mg/L	2013-05	0.0117	0.0089		0.0346
Cobalt	mg/L	2013-07				0.0524
Cobalt	mg/L	2013-09			< 0.005	0.0215
Cobalt	mg/L	2013-09	0.0173	0.0077		
Cobalt	mg/L	2013-12				0.0336
Cobalt	mg/L	2014-04	0.00720	0.00527 J		0.0255
Cobalt	mg/L	2014-09	0.0164	0.00649		0.0213
Cobalt	mg/L	2015-04	0.0112	0.00560	0.000523	0.00661
Cobalt	mg/L	2015-09	0.00948	0.00403	0.000091 J	0.0058
Cobalt	mg/L	2016-04	0.0192	0.00361	< 0.0005	0.00506
Cobalt	mg/L	2016-09	0.0221	0.00272	0.000036 J	0.00459
Cobalt	mg/L	2017-05	0.0159	0.00189	0.00011 J	0.00189
Cobalt	mg/L	2017-09	0.00228	0.00251	0.000318 J	
Cobalt	mg/L	2018-05	0.0346	0.000656	0.00013 J	0.00726
Cobalt	mg/L	2018-09	0.00582	0.00114	0.00015 J	0.00655
Cobalt	mg/L	2019-05	0.018	0.0017	0.000258 J	0.0112
Cobalt	mg/L	2019-10	0.0201	0.00107	0.000274 J	0.0121
Cobalt	mg/L	2020-05	0.0154	0.00102	< 0.0005	0.00992
Cobalt	mg/L	2020-10	0.0193	0.00161	< 0.0005	0.018
Cobalt	mg/L	2021-05	0.0133	0.000596	0.000097 J	0.0125
Cobalt	mg/L	2021-10	0.0137	0.00194	0.000221 J	0.0121
Cobalt	mg/L	2022-05	0.00974	0.000348 J	< 0.0005	0.0107
Cobalt	mg/L	2022-09	0.0129	0.00128	0.00023 J	0.00954
Cobalt	mg/L	2023-05	0.01	0.000503	0.000366 J	~~0.0102~~

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Cobalt	mg/L	2023-09	0.0124	0.00173	< 0.0005	
Cobalt	mg/L	2024-05	0.00821	0.00221	< 0.0005	~~0.0131~~
Copper	mg/L	2008-12	< 0.004	0.02	0.0041	
Copper	mg/L	2009-05	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-07	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-09	< 0.01	< 0.01	< 0.01	
Copper	mg/L	2009-12	< 0.01	0.0315	< 0.01	
Copper	mg/L	2010-09	< 0.01	0.0191	< 0.01	
Copper	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100	
Copper	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100	
Copper	mg/L	2012-03	0.0119	< 0.01		
Copper	mg/L	2012-09	0.0137	< 0.01		
Copper	mg/L	2012-10			< 0.01	
Copper	mg/L	2013-05	< 0.01	< 0.01		0.0768
Copper	mg/L	2013-07				0.136
Copper	mg/L	2013-09			0.0118	< 0.01
Copper	mg/L	2013-09	< 0.01	< 0.01		
Copper	mg/L	2013-12				0.0146
Copper	mg/L	2014-04	< 0.0200	< 0.0200		0.00638 J
Copper	mg/L	2014-09	0.000828 J	< 0.002		0.00964
Copper	mg/L	2015-04	0.00131 J	< 0.00200	0.000734 J	0.00204
Copper	mg/L	2015-09	0.00175 J	0.000497 J	0.00114 J	0.00118 J
Copper	mg/L	2016-04	< 0.005	< 0.005	< 0.005	0.00286 J
Copper	mg/L	2016-09	0.00151 J	< 0.005	< 0.005	0.00673
Copper	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00243 J
Copper	mg/L	2017-09	0.00499 J	< 0.005	< 0.005	
Copper	mg/L	2018-05	0.00351 J	< 0.005	0.00379 J	0.00847
Copper	mg/L	2018-09	0.00195 J	< 0.005	0.0021 J	0.00491 J
Copper	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00924
Copper	mg/L	2020-05	< 0.005	< 0.005	< 0.005	0.00715
Copper	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.0137
Copper	mg/L	2021-05	< 0.005	< 0.005	0.00196 J	0.0125
Copper	mg/L	2021-10	< 0.005	< 0.005	< 0.005	< 0.005
Copper	mg/L	2022-05	< 0.005	< 0.005	< 0.005	0.00263 J
Copper	mg/L	2022-09	< 0.005	< 0.005	< 0.005	0.00518
Copper	mg/L	2023-05	< 0.005	< 0.005	< 0.005	~~0.00199 J~~
Copper	mg/L	2023-09	< 0.005	< 0.005	0.00192 J	
Copper	mg/L	2024-05	0.00195 J	0.00359 J	< 0.005	~~0.00227 J~~
Cyanide	mg/L	2008-12	< 0.007	< 0.007	< 0.007	
Cyanide	mg/L	2013-09	< 0.005	< 0.005		
Cyanide	mg/L	2018-09	< 0.01	< 0.01	< 0.01	< 0.01
Cyanide	mg/L	2023-09	< 0.01	< 0.01	< 0.01	
delta-BHC	ug/L	2008-12	< 0.05	< 0.05		
delta-BHC	ug/L	2013-09	< 0.05	< 0.05		
delta-BHC	ug/L	2018-09	0.0515	0.00579 J	< 0.0337	< 0.036
delta-BHC	ug/L	2019-02	0.00998 J		< 0.0352	
delta-BHC	ug/L	2019-05	0.00315 J		0.00255 J	0.00304 J
delta-BHC	ug/L	2019-10	0.00363 J			
delta-BHC	ug/L	2020-05	< 0.0323			
delta-BHC	ug/L	2020-10	0.00874 J			
delta-BHC	ug/L	2021-05	< 0.064			
delta-BHC	ug/L	2021-10	< 0.0344			
delta-BHC	ug/L	2022-05	< 0.0762			
delta-BHC	ug/L	2022-09	< 0.0744			
delta-BHC	ug/L	2023-05	< 0.0711			
delta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
delta-BHC	ug/L	2024-05	< 0.0604			
Diallate	ug/L	2008-12	< 8	< 8	< 8	
Diallate	ug/L	2013-09	< 8	< 8		
Diallate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diallate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibenzo(a,h)anthracene	ug/L	2008-12	< 8	< 8	< 8	
Dibenzo(a,h)anthracene	ug/L	2013-09	< 8	< 8		
Dibenzo(a,h)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Dibenzo(a,h)anthracene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibenzofuran	ug/L	2008-12	< 8	< 8	< 8	
Dibenzofuran	ug/L	2013-09	< 8	< 8		
Dibenzofuran	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dibenzofuran	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dibromomethane	ug/L	2008-12	< 1	< 1	< 1	
Dibromomethane	ug/L	2013-09	< 1	< 1		
Dibromomethane	ug/L	2018-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2018-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2019-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2019-10	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2020-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2020-10	< 1	< 1	< 5	< 1
Dibromomethane	ug/L	2021-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2021-10	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2022-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2022-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2023-05	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2023-09	< 1	< 1	< 1	< 1
Dibromomethane	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Dichlorodifluoromethane	ug/L	2008-12	< 1	< 1	< 1	
Dichlorodifluoromethane	ug/L	2013-09	< 1	< 1		
Dichlorodifluoromethane	ug/L	2018-09	< 3	< 3	< 3	< 3
Dichlorodifluoromethane	ug/L	2023-09	< 3	< 3	< 3	< 3
Dieldrin	ug/L	2008-12	< 0.05	< 0.05		
Dieldrin	ug/L	2013-09	< 0.05	< 0.05		
Dieldrin	ug/L	2018-09	0.042	< 0.034	< 0.0337	< 0.036
Dieldrin	ug/L	2019-02	0.0125 J		< 0.0352	
Dieldrin	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
Dieldrin	ug/L	2019-10	< 0.0327			
Dieldrin	ug/L	2020-05	0.00417 J			
Dieldrin	ug/L	2020-10	0.0118 J			
Dieldrin	ug/L	2021-05	< 0.064			
Dieldrin	ug/L	2021-10	< 0.0344			
Dieldrin	ug/L	2022-05	< 0.0762			
Dieldrin	ug/L	2022-09	< 0.0744			
Dieldrin	ug/L	2023-05	< 0.0711			
Dieldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Dieldrin	ug/L	2024-05	< 0.0604			
Diethylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Diethylphthalate	ug/L	2013-09	< 8	< 8		
Diethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dimethoate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Dimethoate	ug/L	2013-09	0.7	< 0.4		
Dimethoate	ug/L	2013-12	< 0.32			
Dimethoate	ug/L	2014-04	< 10.3			
Dimethoate	ug/L	2014-09	< 10			
Dimethoate	ug/L	2015-04	< 10.2			
Dimethoate	ug/L	2015-09	< 10.3			
Dimethoate	ug/L	2016-04	< 10.4			
Dimethoate	ug/L	2016-09	< 10.9			
Dimethoate	ug/L	2017-05	< 10.2			
Dimethoate	ug/L	2017-09	1.45 J			
Dimethoate	ug/L	2018-05	< 10.3			
Dimethoate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dimethoate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Dimethylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Dimethylphthalate	ug/L	2013-09	< 8	< 8		
Dimethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dimethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Di-n-butylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Di-n-butylphthalate	ug/L	2013-09	< 8	< 8		
Di-n-butylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Di-n-butylphthalate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Di-n-octylphthalate	ug/L	2008-12	< 8	< 8	< 8	
Di-n-octylphthalate	ug/L	2013-09	< 8	< 8		
Di-n-octylphthalate	ug/L	2018-09	< 21.1	< 20.2	< 20.8	< 22
Di-n-octylphthalate	ug/L	2023-09	< 19.2	< 20	< 20	< 21.7
Dinoseb	ug/L	2008-12	< 0.5	< 0.5	< 0.5	
Dinoseb	ug/L	2013-12	< 0.5	< 0.5		
Dinoseb	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Dinoseb	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Diphenylamine	ug/L	2008-12	< 8	< 8	< 8	
Diphenylamine	ug/L	2013-09	< 8	< 8		
Diphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Diphenylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Disulfoton	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Disulfoton	ug/L	2013-09	< 0.4	< 0.4		
Disulfoton	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Disulfoton	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Endosulfan I	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan I	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan I	ug/L	2018-09	0.0237 J	< 0.034	< 0.0337	< 0.036
Endosulfan I	ug/L	2019-02	< 0.0352		< 0.0352	
Endosulfan I	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan II	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan II	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan II	ug/L	2018-09	< 0.0337	< 0.034	< 0.0337	0.00244 J
Endosulfan II	ug/L	2019-02	< 0.0352		< 0.0352	
Endosulfan II	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan Sulfate	ug/L	2008-12	< 0.05	< 0.05		
Endosulfan Sulfate	ug/L	2013-09	< 0.05	< 0.05		
Endosulfan Sulfate	ug/L	2018-09	0.0766	< 0.034	< 0.0337	< 0.036
Endosulfan Sulfate	ug/L	2019-02	0.00328 J		< 0.0352	
Endosulfan Sulfate	ug/L	2019-05	< 0.0333		< 0.0333	< 0.033
Endosulfan Sulfate	ug/L	2019-10	< 0.0327			
Endosulfan Sulfate	ug/L	2020-05	0.00434 J			
Endosulfan Sulfate	ug/L	2020-10	0.00474 J			
Endosulfan Sulfate	ug/L	2021-05	< 0.064			
Endosulfan Sulfate	ug/L	2021-10	< 0.0344			
Endosulfan Sulfate	ug/L	2022-05	< 0.0762			
Endosulfan Sulfate	ug/L	2022-09	< 0.0744			
Endosulfan Sulfate	ug/L	2023-05	< 0.0711			
Endosulfan Sulfate	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endosulfan Sulfate	ug/L	2024-05	< 0.0604			
Endrin	ug/L	2008-12	< 0.05	< 0.05		
Endrin	ug/L	2013-09	< 0.05	< 0.05		
Endrin	ug/L	2018-09	0.121	0.00214 J	< 0.0337	< 0.036
Endrin	ug/L	2019-02	0.006 J		< 0.0352	
Endrin	ug/L	2019-05	0.00926 J		< 0.0333	< 0.033
Endrin	ug/L	2019-10	0.0135 J			
Endrin	ug/L	2020-05	< 0.0323			
Endrin	ug/L	2020-10	< 0.0356			
Endrin	ug/L	2021-05	< 0.064			
Endrin	ug/L	2021-10	< 0.0344			
Endrin	ug/L	2022-05	< 0.0762			
Endrin	ug/L	2022-09	< 0.0744			
Endrin	ug/L	2023-05	< 0.0711			
Endrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endrin	ug/L	2024-05	< 0.0604			
Endrin Aldehyde	ug/L	2008-12	< 0.05	< 0.05		
Endrin Aldehyde	ug/L	2013-09	< 0.05	< 0.05		
Endrin Aldehyde	ug/L	2018-09	0.0344	< 0.034	0.0104 J	< 0.036
Endrin Aldehyde	ug/L	2019-02	< 0.0352		< 0.0352	
Endrin Aldehyde	ug/L	2019-05	0.00819 J		< 0.0333	< 0.033
Endrin Aldehyde	ug/L	2019-10	< 0.0327			
Endrin Aldehyde	ug/L	2020-05	< 0.0323			
Endrin Aldehyde	ug/L	2020-10	< 0.0356			
Endrin Aldehyde	ug/L	2021-05	< 0.064			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Endrin Aldehyde	ug/L	2021-10	< 0.0344			
Endrin Aldehyde	ug/L	2022-05	< 0.0762			
Endrin Aldehyde	ug/L	2022-09	< 0.0744			
Endrin Aldehyde	ug/L	2023-05	< 0.0711			
Endrin Aldehyde	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Endrin Aldehyde	ug/L	2024-05	< 0.0604			
Ethyl Methacrylate	ug/L	2008-12	< 10	< 10	< 10	
Ethyl Methacrylate	ug/L	2013-09	< 10	< 10		
Ethyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2	< 2
Ethyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2	< 2
Ethyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8	
Ethyl Methanesulfonate	ug/L	2013-09	< 8	< 8		
Ethyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Ethyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Ethylbenzene	ug/L	2008-12	< 1	< 1	< 1	
Ethylbenzene	ug/L	2013-09	< 1	< 1		
Ethylbenzene	ug/L	2018-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2018-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2019-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2019-10	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2020-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2020-10	< 1	< 1	< 5	< 1
Ethylbenzene	ug/L	2021-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2021-10	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2022-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2022-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2023-05	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2023-09	< 1	< 1	< 1	< 1
Ethylbenzene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Famphur	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Famphur	ug/L	2013-09	< 0.4	< 0.4		
Famphur	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Famphur	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluoranthene	ug/L	2008-12	< 8	< 8	< 8	
Fluoranthene	ug/L	2013-09	< 8	< 8		
Fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluorene	ug/L	2008-12	< 8	< 8	< 8	
Fluorene	ug/L	2013-09	< 8	< 8		
Fluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Fluorene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Fluorotrichloromethane	ug/L	2008-12	< 1	< 1	< 1	
Fluorotrichloromethane	ug/L	2013-09	< 1	< 1		
Fluorotrichloromethane	ug/L	2018-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2018-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2019-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2019-10	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2020-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2020-10	< 4	< 4	< 20	< 4
Fluorotrichloromethane	ug/L	2021-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2021-10	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2022-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2022-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2023-05	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2023-09	< 4	< 4	< 4	< 4
Fluorotrichloromethane	ug/L	2024-05	< 4	< 4	< 4	~~< 4~~
Heptachlor	ug/L	2008-12	< 0.05	< 0.05		
Heptachlor	ug/L	2013-09	< 0.05	< 0.05		
Heptachlor	ug/L	2018-09	0.0295 J	0.003 J	< 0.0337	< 0.036
Heptachlor	ug/L	2019-02	< 0.0352		< 0.0352	
Heptachlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Heptachlor Epoxide	ug/L	2008-12	< 0.05	< 0.05		
Heptachlor Epoxide	ug/L	2013-09	< 0.05	< 0.05		
Heptachlor Epoxide	ug/L	2018-09	0.00969 J	< 0.034	< 0.0337	< 0.036
Heptachlor Epoxide	ug/L	2019-02	0.0175 J		< 0.0352	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Heptachlor Epoxide	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Hexachlorobenzene	ug/L	2008-12	< 0.05	< 0.05	< 8	
Hexachlorobenzene	ug/L	2013-09	< 0.05	< 0.05		
Hexachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachlorobutadiene	ug/L	2008-12	< 8	< 8	< 8	
Hexachlorobutadiene	ug/L	2013-09	< 8	< 8		
Hexachlorobutadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorobutadiene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachlorocyclopentadiene	ug/L	2008-12	< 8	< 8	< 8	
Hexachlorocyclopentadiene	ug/L	2013-09	< 8	< 8		
Hexachlorocyclopentadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachlorocyclopentadiene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachloroethane	ug/L	2008-12	< 8	< 8	< 8	
Hexachloroethane	ug/L	2013-09	< 8	< 8		
Hexachloroethane	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachloroethane	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Hexachloropropene	ug/L	2008-12	< 8	< 8	< 8	
Hexachloropropene	ug/L	2013-09	< 8	< 8		
Hexachloropropene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Hexachloropropene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Indeno(1,2,3-cd)pyrene	ug/L	2008-12	< 8	< 8	< 8	
Indeno(1,2,3-cd)pyrene	ug/L	2013-09	< 8	< 8		
Indeno(1,2,3-cd)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Indeno(1,2,3-cd)pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Iodomethane	ug/L	2008-12	< 1	< 1	< 1	
Iodomethane	ug/L	2013-09	< 1	< 1		
Iodomethane	ug/L	2018-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2018-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2019-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2019-10	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2020-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2020-10	< 10	< 10	< 50	< 10
Iodomethane	ug/L	2021-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2021-10	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2022-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2022-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2023-05	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2023-09	< 10	< 10	< 10	< 10
Iodomethane	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Isobutanol	mg/L	2008-12	< 1	< 1		
Isobutanol	mg/L	2013-12	< 1	< 1		
Isobutanol	mg/L	2018-09	< 10	< 10	< 10	< 10
Isobutanol	mg/L	2023-09	< 10	< 10	< 10	
Isodrin	ug/L	2008-12	< 8	< 8	< 8	
Isodrin	ug/L	2013-09	< 8	< 8		
Isodrin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isodrin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Isophorone	ug/L	2008-12	< 8	< 8	< 8	
Isophorone	ug/L	2013-09	< 8	< 8		
Isophorone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isophorone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Isosafrole	ug/L	2008-12	< 8	< 8	< 8	
Isosafrole	ug/L	2013-09	< 8	< 8		
Isosafrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Isosafrole	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Kepone	ug/L	2008-12	< 8	< 8	< 8	
Kepone	ug/L	2013-09	< 8	< 8		
Kepone	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Kepone	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Lead	mg/L	2008-12	< 0.004	0.0775	< 0.004	
Lead	mg/L	2009-05	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-07	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-09	< 0.005	< 0.005	< 0.005	
Lead	mg/L	2009-12	< 0.005	0.0506	< 0.005	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Lead	mg/L	2010-09	< 0.005	0.0421	< 0.005	
Lead	mg/L	2011-03	< 0.0050	0.0136	< 0.0050	
Lead	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050	
Lead	mg/L	2012-03	< 0.005	< 0.005		
Lead	mg/L	2012-09	< 0.005	< 0.005		
Lead	mg/L	2012-10			< 0.005	
Lead	mg/L	2013-05	< 0.005	< 0.005		0.0384
Lead	mg/L	2013-07				0.0878
Lead	mg/L	2013-09			0.0057	< 0.005
Lead	mg/L	2013-09	< 0.005	< 0.005		
Lead	mg/L	2013-12				< 0.0050
Lead	mg/L	2014-04	< 0.00400	< 0.00400		0.00273 J
Lead	mg/L	2014-09	0.000192 J	0.000276 J		0.00247
Lead	mg/L	2015-04	0.000256 J	0.000327 J	0.000391 J	0.00130
Lead	mg/L	2015-09	0.00029 J	< 0.0005	0.000118 J	0.000558
Lead	mg/L	2016-04	< 0.0005	< 0.0005	< 0.0005	0.00139
Lead	mg/L	2016-09	0.000964	0.00114	< 0.0005	0.00193
Lead	mg/L	2017-05	< 0.0005	0.000324 J	< 0.0005	0.00188
Lead	mg/L	2017-09	< 0.0005	0.00273	< 0.0005	
Lead	mg/L	2018-05	0.000631	0.000351 J	0.000757	0.00387
Lead	mg/L	2018-09	0.000348 J	< 0.0005	0.000462 J	0.00266
Lead	mg/L	2019-05	0.000617	0.000732	< 0.0005	0.0014
Lead	mg/L	2019-10	< 0.0005	< 0.0005	< 0.0005	0.0032
Lead	mg/L	2020-05	< 0.0005	< 0.0005	< 0.0005	0.00161
Lead	mg/L	2020-10	< 0.0005	< 0.0005	< 0.0005	0.0052
Lead	mg/L	2021-05	0.000224 J	0.000725	0.000389 J	0.0025
Lead	mg/L	2021-10	0.000454 J	0.000837	< 0.0005	0.00327
Lead	mg/L	2022-05	< 0.0005	< 0.0005	< 0.0005	0.00114
Lead	mg/L	2022-09	0.00034 J	0.00245	< 0.0005	0.00203
Lead	mg/L	2023-05	0.000329 J	< 0.0005	0.000579	~~0.000957~~
Lead	mg/L	2023-09	0.000435 J	0.00228	0.000376 J	
Lead	mg/L	2024-05	0.000604	0.00585	< 0.0005	~~0.000734~~
Lindane (BHC, Gamma-)	ug/L	2008-12	< 0.05	< 0.05		
Lindane (BHC, Gamma-)	ug/L	2013-09	< 0.05	< 0.05		
Lindane (BHC, Gamma-)	ug/L	2018-09	0.0117 J	< 0.034	< 0.0337	< 0.036
Lindane (BHC, Gamma-)	ug/L	2019-02	< 0.0352		< 0.0352	
Lindane (BHC, Gamma-)	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
m/p-Cresol	ug/L	2008-12	< 8	< 8	< 8	
m/p-Cresol	ug/L	2013-09	< 8	< 8		
m/p-Cresol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
m/p-Cresol	ug/L	2023-09	< 9.62	< 10	< 10	1.24 J
Mercury	mg/L	2008-12	< 0.0005	< 0.0005	< 0.0005	
Mercury	mg/L	2013-09	< 0.0002	< 0.0002		
Mercury	mg/L	2018-09	< 0.0002	< 0.0002	< 0.0002	< 0.0002
Mercury	mg/L	2023-09	< 0.0002	< 0.0002	< 0.0002	
Methacrylonitrile	ug/L	2008-12	< 0	< 0	< 0	
Methacrylonitrile	ug/L	2013-09	< 1	< 1		
Methacrylonitrile	ug/L	2018-09	< 10	< 10	< 10	< 10
Methacrylonitrile	ug/L	2023-09	< 10	< 10	< 10	< 10
Methapyrilene	ug/L	2008-12	< 8	< 8	< 8	
Methapyrilene	ug/L	2013-09	< 8	< 8		
Methapyrilene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Methapyrilene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methoxychlor	ug/L	2008-12	< 0.05	< 0.05		
Methoxychlor	ug/L	2013-09	< 0.05	< 0.05		
Methoxychlor	ug/L	2018-09	< 0.0337	< 0.034	0.0179 J	< 0.036
Methoxychlor	ug/L	2019-02	0.00465 J		< 0.0352	
Methoxychlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064	< 0.0711
Methyl Methacrylate	ug/L	2008-12	< 0	< 0	< 0	
Methyl Methacrylate	ug/L	2013-09	< 1	< 1		
Methyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2	< 2
Methyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2	< 2
Methyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8	
Methyl Methanesulfonate	ug/L	2013-09	< 8	< 8		
Methyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Methyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methyl Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Methyl Parathion	ug/L	2013-09	< 0.4	< 0.4		
Methyl Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Methyl Parathion	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Methylene Chloride	ug/L	2008-12	< 5	< 5	< 5	
Methylene Chloride	ug/L	2013-09	< 5	< 5		
Methylene Chloride	ug/L	2018-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2018-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2019-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2019-10	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2020-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2020-10	< 5	< 5	< 25	< 5
Methylene Chloride	ug/L	2021-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2021-10	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2022-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2022-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2023-05	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2023-09	< 5	< 5	< 5	< 5
Methylene Chloride	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
Naphthalene	ug/L	2008-12	< 8	< 8	< 8	
Naphthalene	ug/L	2013-09	< 8	< 8		
Naphthalene	ug/L	2018-09	< 5	< 5	< 5	< 5
Naphthalene	ug/L	2023-09	< 5	< 5	< 5	< 5
Nickel	mg/L	2008-12	0.021	0.0357	0.007	
Nickel	mg/L	2009-05	0.0564	0.0081	< 0.005	
Nickel	mg/L	2009-07	0.0574	0.0067	< 0.005	
Nickel	mg/L	2009-09	0.0468	0.0079	< 0.005	
Nickel	mg/L	2009-12	0.0383	0.0723	0.0099	
Nickel	mg/L	2010-09	0.0494	0.0449	0.0129	
Nickel	mg/L	2011-03	0.0616	0.0201	< 0.0050	
Nickel	mg/L	2011-09	0.0501	0.0095	< 0.0050	
Nickel	mg/L	2012-03	0.028	0.0126		
Nickel	mg/L	2012-09	0.0535	0.0112		
Nickel	mg/L	2012-10			< 0.005	
Nickel	mg/L	2013-05	0.0255	0.0089		0.0793
Nickel	mg/L	2013-07				0.112
Nickel	mg/L	2013-09			0.0176	0.0521
Nickel	mg/L	2013-09	0.0354	0.0066		
Nickel	mg/L	2013-12				0.0460
Nickel	mg/L	2014-04	0.0177 J	0.00775 J		0.0355 J
Nickel	mg/L	2014-09	0.0301	0.00594		0.0391
Nickel	mg/L	2015-04	0.0258	0.00543	0.00160 J	0.00974
Nickel	mg/L	2015-09	0.0198	0.00401 J	0.00137 J	0.0072
Nickel	mg/L	2016-04	0.0339	0.0031 J	< 0.005	0.00669
Nickel	mg/L	2016-09	0.0356	0.0033 J	< 0.005	0.0161
Nickel	mg/L	2017-05	0.0313	0.00319 J	0.00302 J	0.00975
Nickel	mg/L	2017-09	0.0382	0.00348 J	0.00574	
Nickel	mg/L	2018-05	0.04	0.00236 J	0.00768	0.0133
Nickel	mg/L	2018-09	0.0291 J	< 0.05	< 0.05	0.00857 J
Nickel	mg/L	2019-05	0.0271	0.00283 J	0.00952	0.0172
Nickel	mg/L	2019-10	0.0268	0.0019 J	0.00795	0.0162
Nickel	mg/L	2020-05	0.0266	< 0.005	0.00518	0.0138
Nickel	mg/L	2020-10	0.0259	< 0.005	0.0067	0.0219
Nickel	mg/L	2021-05	0.023	< 0.005	0.00654	0.0154
Nickel	mg/L	2021-10	0.0248	0.00311 J	0.00709	0.0173
Nickel	mg/L	2022-05	0.019	< 0.005	0.00464 J	0.0139
Nickel	mg/L	2022-09	0.0182	0.00259 J	0.00576	0.0119
Nickel	mg/L	2023-05	0.0226	0.00208 J	0.00736	~~0.0179~~
Nickel	mg/L	2023-09	0.0196	0.00448 J	0.00664	
Nickel	mg/L	2024-05	0.0184	< 0.005	0.00246 J	~~0.016~~
Nitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
Nitrobenzene	ug/L	2013-09	< 8	< 8		
Nitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Nitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
N-Nitrosodiethylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodiethylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodiethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodiethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodimethylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodimethylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodimethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodimethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodi-n-butylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodi-n-butylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodi-n-butylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodi-n-butylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodi-n-propylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodi-n-propylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodi-n-propylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodi-n-propylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosodiphenylamine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosodiphenylamine	ug/L	2013-09	< 8	< 8		
N-Nitrosodiphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosodiphenylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosomethylethylamine	ug/L	2013-12	< 8	< 8		
N-Nitrosomethylethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosomethylethylamine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosopiperidine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosopiperidine	ug/L	2013-09	< 8	< 8		
N-Nitrosopiperidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosopiperidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
N-Nitrosopyrrolidine	ug/L	2008-12	< 8	< 8	< 8	
N-Nitrosopyrrolidine	ug/L	2013-09	< 8	< 8		
N-Nitrosopyrrolidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
N-Nitrosopyrrolidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
o,o,o-Triethylphosphorothioate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
o,o,o-Triethylphosphorothioate	ug/L	2013-09	< 0.4	< 0.4		
o,o,o-Triethylphosphorothioate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
o,o,o-Triethylphosphorothioate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
o-Toluidine	ug/L	2008-12	< 8	< 8	< 8	
o-Toluidine	ug/L	2013-09	< 8	< 8		
o-Toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
o-Toluidine	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
p-(Dimethylamino)azobenzene	ug/L	2008-12	< 8	< 8	< 8	
p-(Dimethylamino)azobenzene	ug/L	2013-09	< 8	< 8		
p-(Dimethylamino)azobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
p-(Dimethylamino)azobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Parathion	ug/L	2013-09	< 0.4	< 0.4		
Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Parathion	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
PCBs - Aroclor 1016	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1016	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1016	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1016	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1221	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1221	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1221	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1221	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1232	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1232	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1232	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1232	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1242	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1242	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1242	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1242	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1248	ug/L	2008-12	< 0.2	< 0.2		
PCBs - Aroclor 1248	ug/L	2013-09	< 1	< 1		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
PCBs - Aroclor 1248	ug/L	2018-09	< 40.8	< 0.816	< 41.7	< 0.833
PCBs - Aroclor 1248	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1254	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1254	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1254	ug/L	2018-09	< 0.816	< 0.816	< 0.833	< 0.833
PCBs - Aroclor 1254	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
PCBs - Aroclor 1260	ug/L	2008-12	< 0.1	< 0.1		
PCBs - Aroclor 1260	ug/L	2013-09	< 1	< 1		
PCBs - Aroclor 1260	ug/L	2018-09	< 0.816	< 0.816	< 0.833	< 0.833
PCBs - Aroclor 1260	ug/L	2023-09	< 0.8	< 0.784	< 0.8	< 0.889
Pentachlorobenzene	ug/L	2008-12	< 8	< 8	< 8	
Pentachlorobenzene	ug/L	2013-09	< 8	< 8		
Pentachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pentachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Pentachloronitrobenzene	ug/L	2008-12	< 8	< 8	< 8	
Pentachloronitrobenzene	ug/L	2013-09	< 8	< 8		
Pentachloronitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pentachloronitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Pentachlorophenol	ug/L	2008-12	< 8	< 8	< 8	
Pentachlorophenol	ug/L	2013-09	< 8	< 8		
Pentachlorophenol	ug/L	2018-09	< 10.5	< 10.1	2.55 J	< 11
Pentachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenacetin	ug/L	2008-12	< 8	< 8	< 8	
Phenacetin	ug/L	2013-09	< 8	< 8		
Phenacetin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenacetin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenanthrene	ug/L	2008-12	< 8	< 8	< 8	
Phenanthrene	ug/L	2013-09	< 8	< 8		
Phenanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenanthrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phenol	mg/L	2008-12	< 0.008	< 0.008	< 0.008	
Phenol	mg/L	2013-09	< 0.008	< 0.008		
Phenol	mg/L	2014-09	< 0.0184	< 0.0192	< 0.0188	
Phenol	mg/L	2015-09	< 0.0204	< 0.018	< 0.018	
Phenol	mg/L	2016-09	< 0.018	< 0.0192	< 0.0192	
Phenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phenol	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Phorate	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Phorate	ug/L	2013-09	< 0.4	< 0.4		
Phorate	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Phorate	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
p-Phenylenediamine	ug/L	2008-12	< 8	< 8	< 8	
p-Phenylenediamine	ug/L	2013-09	< 8	< 8		
p-Phenylenediamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
p-Phenylenediamine	ug/L	2023-09	< 9.62 R	< 10 R	< 10 R	< 10.9 R
p-Phenylenediamine	ug/L	2024-05	< 9.8 R	< 10 R		
Pronamide	ug/L	2008-12	< 8	< 8	< 8	
Pronamide	ug/L	2013-09	< 8	< 8		
Pronamide	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pronamide	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Propionitrile	ug/L	2008-12	< 0	< 0	< 0	
Propionitrile	ug/L	2013-09	< 10	< 10		
Propionitrile	ug/L	2018-09	< 10	< 10	< 10	< 10
Propionitrile	ug/L	2023-09	< 10	< 10	< 10	< 10
Pyrene	ug/L	2008-12	< 8	< 8	< 8	
Pyrene	ug/L	2013-09	< 8	< 8		
Pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Pyrene	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Safrole	ug/L	2008-12	< 8	< 8	< 8	
Safrole	ug/L	2013-09	< 8	< 8		
Safrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Safrole	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Selenium	mg/L	2008-12	< 0.004	< 0.004	0.0051	
Selenium	mg/L	2009-05	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2009-07	< 0.015	< 0.015	< 0.015	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Selenium	mg/L	2009-09	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2009-12	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2010-09	< 0.015	< 0.015	< 0.015	
Selenium	mg/L	2011-03	< 0.0150	< 0.0150	< 0.0150	
Selenium	mg/L	2011-09	< 0.0150	< 0.0150	< 0.0150	
Selenium	mg/L	2012-03	< 0.015	< 0.015		
Selenium	mg/L	2012-09	< 0.015	< 0.015		
Selenium	mg/L	2012-10			< 0.015	
Selenium	mg/L	2013-05	< 0.015	< 0.015		< 0.015
Selenium	mg/L	2013-07				0.0188
Selenium	mg/L	2013-09			< 0.015	< 0.015
Selenium	mg/L	2013-09	< 0.015	< 0.015		
Selenium	mg/L	2013-12				< 0.0150
Selenium	mg/L	2014-04	< 0.00500 J	< 0.00500 J		< 0.00500
Selenium	mg/L	2014-09	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500	< 0.00500
Selenium	mg/L	2015-09	< 0.005	< 0.005	0.00411 J	< 0.005
Selenium	mg/L	2016-04	< 0.005	< 0.005	0.0018 J	< 0.005
Selenium	mg/L	2016-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2017-09	< 0.005	< 0.005	< 0.005	
Selenium	mg/L	2018-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2018-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00105 J
Selenium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.00146 J
Selenium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2021-10	0.00111 J	0.0015 J	< 0.005	0.000965 J
Selenium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Selenium	mg/L	2023-05	< 0.005	< 0.005	0.00148 J	< 0.005
Selenium	mg/L	2023-09	< 0.005	< 0.005	< 0.005	
Selenium	mg/L	2024-05	< 0.005	< 0.005	< 0.005	~~< 0.005~~
Silver	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~	
Silver	mg/L	2013-09	< 0.007	< 0.007		
Silver	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2021-10	< 0.001	0.000722 J	< 0.001	< 0.001
Silver	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Silver	mg/L	2023-05	< 0.001	< 0.001	0.00175	< 0.001
Silver	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Silver	mg/L	2024-05	< 0.001	< 0.001	~~< 0.004~~	~~< 0.001~~
Styrene	ug/L	2008-12	< 1	< 1	< 1	
Styrene	ug/L	2013-09	< 1	< 1		
Styrene	ug/L	2018-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2018-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2019-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2019-10	< 1	< 1	< 1	< 1
Styrene	ug/L	2020-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2020-10	< 1	< 1	< 5	< 1
Styrene	ug/L	2021-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2021-10	< 1	< 1	< 1	< 1
Styrene	ug/L	2022-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2022-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2023-05	< 1	< 1	< 1	< 1
Styrene	ug/L	2023-09	< 1	< 1	< 1	< 1
Styrene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Sulfide	mg/L	2008-12	< 0.1	< 0.1	< 0.1	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Sulfide	mg/L	2013-09	< 0.05	< 0.05		
Sulfide	mg/L	2018-09	1.2	< 1	13.4	0.768 J
Sulfide	mg/L	2019-10			< 1	5.54
Sulfide	mg/L	2020-05	0.243 J		< 1	1.95
Sulfide	mg/L	2020-10	< 10		< 10	< 10
Sulfide	mg/L	2021-05			< 1	0.67 J
Sulfide	mg/L	2021-10	< 1		< 1	1.03
Sulfide	mg/L	2022-05	< 1		< 1	1.61
Sulfide	mg/L	2022-09	< 1		< 1	0.398 J
Sulfide	mg/L	2023-05	< 1		< 1	< 1
Sulfide	mg/L	2023-09	< 1	< 1	< 1	
Sulfide	mg/L	2024-05	< 3		< 3	~~< 3~~
Technical Chlordane	ug/L	2008-12	< 0.1	< 0.1		
Technical Chlordane	ug/L	2013-09	< 0.1	< 0.1		
Technical Chlordane	ug/L	2018-09	< 2.11	< 2.13	< 2.11	< 2.25
Technical Chlordane	ug/L	2019-02	< 2.2		< 2.2	
Technical Chlordane	ug/L	2023-09	< 2	< 1.96	< 2	< 2.22
Tetrachloroethene	ug/L	2008-12	< 1	< 1	< 1	
Tetrachloroethene	ug/L	2013-09	< 1	< 1		
Tetrachloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
Tetrachloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
Tetrachloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Thallium	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~	
Thallium	mg/L	2013-09	< 0.02	< 0.02		
Thallium	mg/L	2018-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2018-09	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2019-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2019-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2020-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2020-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2021-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2021-10	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2022-05	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2022-09	< 0.001	< 0.001	< 0.001	< 0.001
Thallium	mg/L	2023-05	0.000323 J	< 0.001	0.00242 J-	~~0.00327~~
Thallium	mg/L	2023-09	< 0.001	< 0.001	< 0.001	
Thallium	mg/L	2024-05	< 0.001	< 0.001	< 0.001	~~< 0.001~~
Thionazin	ug/L	2008-12	< 0.4	< 0.4	< 0.4	
Thionazin	ug/L	2013-09	< 0.4	< 0.4		
Thionazin	ug/L	2018-09	< 10.5	< 10.1	< 10.4	< 11
Thionazin	ug/L	2023-09	< 9.62	< 10	< 10	< 10.9
Tin	mg/L	2008-12	< 0.25	< 0.25	< 0.25	
Tin	mg/L	2013-09	< 0.05	< 0.05		
Tin	mg/L	2018-09	< 0.005	< 0.005	< 0.005	< 0.005
Tin	mg/L	2023-09	< 0.005	< 0.005	< 0.005	
Toluene	ug/L	2008-12	< 1	< 1	< 1	
Toluene	ug/L	2013-09	< 1	< 1		
Toluene	ug/L	2018-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2018-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2019-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2019-10	< 1	< 1	< 1	< 1
Toluene	ug/L	2020-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2020-10	< 1	< 1	< 5	< 1
Toluene	ug/L	2021-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2021-10	< 1	< 1	< 1	< 1

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Toluene	ug/L	2022-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2022-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2023-05	< 1	< 1	< 1	< 1
Toluene	ug/L	2023-09	< 1	< 1	< 1	< 1
Toluene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Total Suspended Solids	mg/L	2014-09	25	61	17.5	
Total Suspended Solids	mg/L	2015-04	10.0	37.5	14.9	
Total Suspended Solids	mg/L	2015-09	34.3	19	3.25	
Total Suspended Solids	mg/L	2016-04	29.4	17.5	0.625 J	11.1
Total Suspended Solids	mg/L	2016-09	41.6	13.6	2.13	27.5
Total Suspended Solids	mg/L	2017-05	45.3	28	3.5	62
Total Suspended Solids	mg/L	2017-09	37.1	147	5.85	
Total Suspended Solids	mg/L	2018-05	21.8	19.6	8	72
Total Suspended Solids	mg/L	2018-09	60.8	7.88	16.3	10.9
Total Suspended Solids	mg/L	2019-05	58	286	2.25	7
Total Suspended Solids	mg/L	2019-10	37	44	2.13	7.5
Total Suspended Solids	mg/L	2020-05	45	14 J	1.38 J	18
Total Suspended Solids	mg/L	2020-10	12.3	56	3.25	15.6
Total Suspended Solids	mg/L	2021-05	59		2.5	19
Total Suspended Solids	mg/L	2021-10	63.3	13.1	1 J	15.5
Total Suspended Solids	mg/L	2022-05	19.5	7	3.75	40
Total Suspended Solids	mg/L	2022-09	29	27	1.13 J	13.8
Total Suspended Solids	mg/L	2023-05	31	17.3	0.875 J	7.5
Total Suspended Solids	mg/L	2023-09	54.5	57.3	1.38 J	39
Total Suspended Solids	mg/L	2024-05	65.5	241	1.63 J	~~75~~
Toxaphene	ug/L	2008-12	< 0.1	< 0.1		
Toxaphene	ug/L	2013-09	< 0.2	< 0.2		
Toxaphene	ug/L	2018-09	< 2.11	< 2.13	< 2.11	< 2.25
Toxaphene	ug/L	2019-02	< 2.2		< 2.2	
Toxaphene	ug/L	2023-09	< 2	< 1.96	< 2	< 2.22
trans-1,2-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1	
trans-1,2-Dichloroethene	ug/L	2013-09	< 1	< 1		
trans-1,2-Dichloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
trans-1,2-Dichloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
trans-1,2-Dichloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
trans-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1	
trans-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1		
trans-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25	< 5
trans-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5	< 5
trans-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5	~~< 5~~
trans-1,4-Dichloro-2-butene	ug/L	2008-12	< 5	< 5	< 5	
trans-1,4-Dichloro-2-butene	ug/L	2013-09	< 5	< 5		
trans-1,4-Dichloro-2-butene	ug/L	2018-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2018-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2019-05	< 10	< 10	< 10	< 10

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
trans-1,4-Dichloro-2-butene	ug/L	2019-10	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2020-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2020-10	< 10	< 10	< 50	< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-10	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-05	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-09	< 10	< 10	< 10	< 10
trans-1,4-Dichloro-2-butene	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Trichloroethene	ug/L	2008-12	1	< 1	< 1	
Trichloroethene	ug/L	2009-05	1.1	< 1	< 1	
Trichloroethene	ug/L	2009-07	1.5	< 1	< 1	
Trichloroethene	ug/L	2009-09	1.3	< 1	< 1	
Trichloroethene	ug/L	2009-12	< 1	< 1	< 1	
Trichloroethene	ug/L	2010-09	1.2	< 1	< 1	
Trichloroethene	ug/L	2011-03	< 1.0	< 1.0	< 1.0	
Trichloroethene	ug/L	2011-09	< 1.0	< 1.0	< 1.0	
Trichloroethene	ug/L	2012-03	< 1	< 1	< 1	
Trichloroethene	ug/L	2012-09	< 1	< 1	< 1	
Trichloroethene	ug/L	2013-05	< 1	< 1		
Trichloroethene	ug/L	2013-09	< 1	< 1		
Trichloroethene	ug/L	2014-04	< 1.00	< 1.00		
Trichloroethene	ug/L	2014-09	0.245 J	< 1		
Trichloroethene	ug/L	2015-04	< 1.00			
Trichloroethene	ug/L	2015-09	0.275 J			
Trichloroethene	ug/L	2016-04	0.304 J			
Trichloroethene	ug/L	2016-09	< 1			
Trichloroethene	ug/L	2017-05	< 1			
Trichloroethene	ug/L	2017-09	< 1			
Trichloroethene	ug/L	2018-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2018-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2019-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2019-10	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2020-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2020-10	< 1	< 1	< 5	< 1
Trichloroethene	ug/L	2021-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2021-10	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2022-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2022-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2023-05	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2023-09	< 1	< 1	< 1	< 1
Trichloroethene	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Vanadium	mg/L	2008-12	< 0.01	0.0384	< 0.01	
Vanadium	mg/L	2009-05	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-07	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-09	< 0.01	< 0.01	< 0.01	
Vanadium	mg/L	2009-12	< 0.01	0.0554	< 0.01	
Vanadium	mg/L	2010-09	0.0298	0.052	0.0134	
Vanadium	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100	
Vanadium	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100	
Vanadium	mg/L	2012-03	< 0.01	< 0.03		
Vanadium	mg/L	2012-09	< 0.01	< 0.01		
Vanadium	mg/L	2012-10			< 0.01	
Vanadium	mg/L	2013-05	< 0.01	< 0.03		0.0284
Vanadium	mg/L	2013-07				0.0686
Vanadium	mg/L	2013-09			0.0108	< 0.01
Vanadium	mg/L	2013-09	< 0.01	< 0.01		
Vanadium	mg/L	2013-12				< 0.0100
Vanadium	mg/L	2014-04	< 0.0500	< 0.0500		0.00335 J
Vanadium	mg/L	2014-09	0.000564 J	< 0.005		0.00268 J
Vanadium	mg/L	2015-04	0.00238 J	< 0.00500	0.000980 J	0.000896 J
Vanadium	mg/L	2015-09	0.000653 J	< 0.005	< 0.005	0.000758 J
Vanadium	mg/L	2016-04	0.000569 J	< 0.005	< 0.005	0.000856 J
Vanadium	mg/L	2016-09	0.00109 J	0.000306 J	< 0.005	0.00172 J

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Vanadium	mg/L	2017-05	< 0.005	< 0.005	< 0.005	0.00136 J
Vanadium	mg/L	2017-09	0.00128 J	0.001 J	< 0.005	
Vanadium	mg/L	2018-05	0.00113 J	0.000574 J	< 0.005	0.00175 J
Vanadium	mg/L	2018-09	0.000747 J	< 0.005	< 0.005	0.0019 J
Vanadium	mg/L	2019-05	< 0.005	< 0.005	< 0.005	0.00176 J
Vanadium	mg/L	2019-10	< 0.005	< 0.005	< 0.005	0.00288 J
Vanadium	mg/L	2020-05	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2020-10	< 0.005	< 0.005	< 0.005	0.00282 J
Vanadium	mg/L	2021-05	< 0.005	< 0.005	< 0.005	0.00129 J
Vanadium	mg/L	2021-10	< 0.005	< 0.005	< 0.005	0.00434 J
Vanadium	mg/L	2022-05	< 0.005	< 0.005	< 0.005	0.00149 J
Vanadium	mg/L	2022-09	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2023-05	< 0.005	< 0.005	< 0.005	< 0.005
Vanadium	mg/L	2023-09	< 0.005	0.00132 J	< 0.005	
Vanadium	mg/L	2024-05	< 0.005	0.00208 J	< 0.005	~~< 0.005~~
Vinyl Acetate	ug/L	2008-12	< 5	< 5	< 5	
Vinyl Acetate	ug/L	2013-09	< 5	< 5		
Vinyl Acetate	ug/L	2018-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2018-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2019-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2019-10	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2020-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2020-10	< 10	< 10	< 50	< 10
Vinyl Acetate	ug/L	2021-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2021-10	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2022-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2022-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2023-05	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2023-09	< 10	< 10	< 10	< 10
Vinyl Acetate	ug/L	2024-05	< 10	< 10	< 10	~~< 10~~
Vinyl Chloride	ug/L	2008-12	< 1	< 1	< 1	
Vinyl Chloride	ug/L	2013-09	< 1	< 1		
Vinyl Chloride	ug/L	2018-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2018-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2019-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2019-10	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2020-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2020-10	< 1	< 1	< 5	< 1
Vinyl Chloride	ug/L	2021-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2021-10	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2022-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2022-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2023-05	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2023-09	< 1	< 1	< 1	< 1
Vinyl Chloride	ug/L	2024-05	< 1	< 1	< 1	~~< 1~~
Xylenes, Total	ug/L	2008-12	< 2	< 2	< 2	
Xylenes, Total	ug/L	2013-09	< 2	< 2		
Xylenes, Total	ug/L	2018-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2018-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2019-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2019-10	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2020-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2020-10	< 3	< 3	< 15	< 3
Xylenes, Total	ug/L	2021-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2021-10	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2022-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2022-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2023-05	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2023-09	< 3	< 3	< 3	< 3
Xylenes, Total	ug/L	2024-05	< 3	< 3	< 3	~~< 3~~
Zinc	mg/L	2008-12	0.0101	0.0157	0.0189	
Zinc	mg/L	2009-05	< 0.05	< 0.05	< 0.05	
Zinc	mg/L	2009-07	< 0.05	0.0514	< 0.05	
Zinc	mg/L	2009-09	< 0.05	< 0.05	0.0568	
Zinc	mg/L	2009-12	< 0.05	0.132	< 0.05	

Attachment 1
Dec. 2008 - May 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	PZ-12 Background
Zinc	mg/L	2010-03	< 0.05			
Zinc	mg/L	2010-09	< 0.05	0.0808	< 0.05	
Zinc	mg/L	2011-03	< 0.0500	< 0.0500	< 0.0500	
Zinc	mg/L	2011-09	< 0.0500	< 0.0500	< 0.0500	
Zinc	mg/L	2012-03	< 0.05	0.117		
Zinc	mg/L	2012-09	< 0.05	< 0.05		
Zinc	mg/L	2012-10			< 0.05	
Zinc	mg/L	2013-05	< 0.05	< 0.05		0.207
Zinc	mg/L	2013-07				0.826
Zinc	mg/L	2013-09			0.326	0.31
Zinc	mg/L	2013-09	< 0.05	< 0.05		
Zinc	mg/L	2013-12				0.251
Zinc	mg/L	2014-04	0.0143 J	< 0.0200		0.248
Zinc	mg/L	2014-09	0.0514	< 0.01		0.402
Zinc	mg/L	2015-04	0.0433	0.00769 J	0.395	0.977
Zinc	mg/L	2015-09	0.0305	0.00816 J	0.091	0.0256
Zinc	mg/L	2016-04	< 0.01	< 0.01	0.011	0.00621 J
Zinc	mg/L	2016-09	0.00648 J	0.00829 J	0.008 J	0.0211
Zinc	mg/L	2017-05	< 0.02	< 0.02	0.0258	0.0202
Zinc	mg/L	2017-09	< 0.02	0.0138 J	0.0215	
Zinc	mg/L	2018-05	0.011 J	< 0.02	0.038	0.0366
Zinc	mg/L	2018-09	< 0.02	< 0.02	0.0232	0.0206
Zinc	mg/L	2019-05	0.0289	0.0143 J	0.0204	0.028
Zinc	mg/L	2019-10	0.0134 J	0.0172 J	0.0308	0.0347
Zinc	mg/L	2020-05	0.0143 J	< 0.02	0.0437	0.0131 J
Zinc	mg/L	2020-10	< 0.02	0.0187 J	0.0256	0.0257
Zinc	mg/L	2021-05	0.0173 J	0.0437	0.0944	0.018 J
Zinc	mg/L	2021-10	0.0253	0.0202	0.0878	0.0395
Zinc	mg/L	2022-05	0.542	0.103	0.822	0.0109 J
Zinc	mg/L	2022-09	0.0143 J	0.0244	0.0391	0.017 J
Zinc	mg/L	2023-05	0.0158 J	0.00847 J	0.07	~~0.0331~~
Zinc	mg/L	2023-09	0.0249	0.0397	0.136	
Zinc	mg/L	2024-05	0.088	0.0542	0.101	~~0.0592~~

Attachment 2

Detailed Discussion of Statistical Methods

Statistical Methodology

1. Comparison to Background

For determining which parameters will need a formal statistical treatment, the Unified Guidance (USEPA, 2009) suggests splitting monitoring parameters into three distinct groups: a) reliable indicators selected for formal testing; b) other analytes which are monitored for general groundwater quality information but not statistically tested; and c) those meeting the "never-detected" criteria. Only those parameters with some historically detected presence in background need to be included in the first group and treated with a formal statistical test. Any parameter that has never been detected in background is eligible for the third group of "never-detected" constituents. Constituents with detections below the reporting limit (J-flagged data) will be considered "never-detected." As a means of evaluating the third group, the Unified Guidance suggests the Double Quantification Rule (DQR). The DQR is stated in the Unified Guidance as:

"A confirmed exceedance is registered if any well-constituent pair in the '100% non-detect' group exhibits quantified measurements [i.e., at or above the reporting limit (RL)] in two consecutive sample and resample events."

The Unified Guidance also recommends establishing background sample sizes as large as feasible. The guidance recognizes that small sample sizes in background can be "particularly" troublesome, especially in controlling statistical test false positive and negative rates. With parametric tests (such as parametric prediction limits), the false positive rate may be controlled, but at the expense of statistical power. With non-parametric tests (such as non-parametric prediction limits or the "quasi-statistical" DQR), the false positive rate may be unacceptably high. The Unified Guidance suggests that generally at least 8 to 10 separate background measurements be available, recognizing that statistical power continues to increase with larger sample sizes.

The statistical analysis methods utilized for comparison to background are the DQR and "1-of-2" interwell prediction limits as recommended in the Unified Guidance (USEPA, 2009).

Double Quantification Rule
The DQR will be used to evaluate SSIs over background for the Appendix I and II constituents that have not been detected above the reporting limit in the background data set. An SSI will be indicated for any well-constituent pair with quantified measurements at or above the reporting limit noted for two consecutive sample and resample events. If applicable, the resample will be collected prior to next semiannual sampling event.

Interwell Prediction Limits
Interwell prediction limits will be used to statistically evaluate SSIs over background for the Appendix I and II constituents which have been detected above the reporting limit in the background data set. A "1-of-2" retesting plan will be utilized on individual sample results. The 1-of-2 retesting plan as defined in the Unified Guidance concludes that an SSI has occurred when two out of two sample results exceed the prediction limit, while no SSI is concluded if 1-

of-2 is below the limit. If applicable, resamples will be collected prior to next semiannual sampling event. The prediction limit for each constituent will be recalculated semiannually.

For interwell constituents with less than or equal to 50% detects in the background data set, a non-parametric prediction limit will be utilized. The non-parametric prediction limit will be taken as the maximum order statistic (maximum value) of the background data.

For interwell constituents with greater than 50% detects in the background data set, normality assumptions will be verified using the Shapiro-Wilk normality test. If the background data is not normally distributed, a non-parametric prediction limit will be utilized (as described in the paragraph above). If the background data is normally distributed, or can be fit to a normal distribution utilizing a normalizing transformation, then a normal-based parametric prediction limit will be applied.

When considering a lognormal prediction limit, a comparison will be made to the maximum order statistic for the background data set. Lognormal prediction limits can be sensitive to smaller departures from lognormality. That is, if data are not truly lognormal, but also not rejected as lognormal, the prediction limit may be inflated as a result of the transformation. In choosing a lognormal limit, in addition to the percent detections and lognormal goodness of fit criteria, an additional convention will be applied. If the lognormal limit exceeds the level of twice the maximum background concentration, it is assumed that the lognormal model does not adequately fit the background distribution and a non-parametric prediction limit will be selected.

For interwell constituents with 50% to 85% detects in the background data set, Kaplan-Meier estimation will be applied to manage statistical bias introduced by non-detects. For interwell constituents with over 85% detects in the background data set, half the reporting limit will be used for non-detect data. These estimation methods follow Unified Guidance recommendations and are given in detail in Unified Guidance Chapter 15 (USEPA, 2009).

The parametric prediction limit will be calculated as:

$$PL = \overline{x} + k \cdot s$$

where $\overline{x}$ is the sample mean of the December 2008 through current event background data, s is the sample standard deviation, and k is the multiplier obtained from the Unified Guidance Table 19-1 (USEPA, 2009) for 1-of-2 interwell prediction limits on observations. In determining k, the number of constituents of concern (COCs) for formal statistical evaluation along with the number of downgradient wells need to be identified. Per the basic subdivision discussion presented in Section 19.2.1 of the Unified Guidance, along with the discussion regarding the use of the appendix tables for parametric retesting plans given on pages 19-13 through 19-15 of the Unified Guidance (USEPA, 2009), the *k*-multiplier is chosen based on the number of constituents, wells, and evaluations performed annually. When an exact well and COC configuration is not given in the appendix tables, the *k*-multiplier is linearly interpolated as described on page 19-14 of the Unified Guidance (USEPA, 2009).

Sanitas® v10.0 software (Sanitas Technologies) will be used to check distributional assumptions, perform Kaplan-Meier in the case of 50% to 85% detects in the background data set, and calculate the *k*-multipliers and subsequent prediction limits.

Intrawell Prediction Limits

Intrawell prediction limits are calculated in a similar manner to that described above for the interwell case. A main difference between the two methods is the intrawell limit is calculated from a collection of background measurements within the compliance well. A minimum of eight compliance well background samples will be used when calculating the limit.

A second difference is for the parametric prediction limit, in which the *k*-multiplier is modified from the interwell case, as given in Appendix D Tables 19-10 through 19-18 of the Unified Guidance (USEPA, 2009).

Updating intrawell background is performed periodically. The Unified Guidance (Section 5.3.2) recommends that 4 to 8 new compliance observations be collected prior to updating the background data set. The guidance also states that “a potential update is predicated on there being no statistically significant increase [SSI] recorded for that well constituent, including since the last update.” A two-sample t-test or Wilcoxon rank-sum test between existing intrawell background data and the potential set of newer background data is performed, and a non-significant result implies that the newer compliance data can be re-classified as background measurements.

2. Comparison to Groundwater Protection Standard – Assessment Monitoring

According to 567 IAC 113.10(6)f and g, under the assessment monitoring program Appendix II results which have been determined to be statistically above background are also statistically compared to the GWPS. If “Appendix II constituents are detected at statistically significant levels above the GWPS” a notice is placed in the operating record and characterization is begun.

Under 567 IAC 113.10(6)h, the GWPS is the maximum contaminant level (MCL) promulgated under Section 1412 of the Safe Drinking Water Act in 40 Code of Federal Regulations (CFR) Part 141. If no MCL exists, or if background concentrations are higher than the MCL, the GWPS is defined as background. Also, per 567 IAC 113.10(6)i, an alternative GWPS may be established by the department for constituents for which there is no MCL such as the “health-based concentrations that comply with the statewide standards for groundwater established pursuant to 567-Chapter 137.”

When the GWPS is background concentrations, the statistical methods discussed in the above “1. Comparison to Background” are used. When the GWPS is the MCL or an alternative health-based concentration, per the Unified Guidance (USEPA, 2009), “confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring.” In the case of normally distributed data, a normal-based parametric confidence interval is used. If the data are not normally distributed a non-parametric confidence interval on the median is used. A lower 99% confidence limit falling above the GWPS implies that concentrations are detected at statistically significant levels above the GWPS with an α-level of 0.01, which is the minimum RCRA regulatory limit from §264.97(i)(2) for an individual test false positive error rate.

The Unified Guidance recognizes that statistical power is also of prime concern to USEPA and that there “should be a high probability that the statistical test will positively identify concentrations that have exceeded a fixed regulatory standard.” In compliance/assessment monitoring, instead of pre-specifying the false positive rate prior to computing confidence interval limits, the Unified Guidance suggests the desired level of power (1-β) should be set as an initial target.

For compliance/assessment monitoring purposes, the Unified Guidance (Chapter 22) suggests evaluating increases in the true concentration mean of 1.5 and 2.0 times a fixed standard. (This is similar in concept to the critical power targets in detection monitoring, i.e., 55-60% power at 3σ above background and 80-85% power at 4σ over background). As a general guide, the Unified Guidance suggests there should be at least 70-80% statistical power for detecting increases of 2 times a fixed standard. Specifically, the Unified Guidance recommends there be 50% power of detecting increases in the true concentration mean of 1.5 times a fixed standard (risk ratio of 1.5) and 80% power of detecting increases in the true concentration mean of 2.0 times a fixed standard (risk ratio of 2.0).

To meet these levels of statistical power, α is chosen based on either Unified Guidance Equation 22.1:

$$1-\beta = G_{T,n-1}\left(t_{1-\alpha,n-1}\middle|\Delta-\sqrt{n}(R-1)\right);$$

where R is the desired risk ratio, $t_{(1-\alpha\ ,n-1)}$ is the (1−α) Student's t-quantile with (n−1) degrees of freedom and G represents the cumulative non-central t-distribution with (n−1) degrees of freedom and noncentrality parameter Δ;

or Unified Guidance Equation 22.2:

$$\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R\cdot\widehat{CV}} - t_{1-\beta,n-1}\right);$$

where R is the desired risk ratio, n is the sample size, CV is the estimated sample coefficient of variation, $t_{(1-\beta\ ,n-1)}$ is the (1−β) Student's t-quantile with (n−1) degrees of freedom, and F is the cumulative (central) Student's t-distribution function.

The first equation (Unified Guidance Equation 22.1) assumes a coefficient of variation (CV) =1. This version is used if only poorer estimates of the true CV are available. In practice, a convention has been adopted with the statistical updates to utilize Unified Guidance Equation 22.2 in all cases where a parametric confidence interval is calculated, and use Unified Guidance Equation 22.1 when non-parametric confidence intervals are calculated. Since a non-parametric confidence interval is based on the median, it is not as sensitive to departures from normality, and the assumption of a CV=1 in Unified Guidance Equation 22.1 should provide a conservative estimate.

Since 0.01 is the minimum RCRA regulatory limit for α, it is never set lower than this. Conversely, the Unified Guidance recognizes the "difficulty of simultaneously attaining the recommended level of power while controlling the false positive rate, especially for small sample sizes and highly variable data." The Unified Guidance suggests a maximum false positive rate of α=0.2 is a reasonable upper bound.

Finally, similar to the need for defining a SWFPR under detection monitoring, the Unified Guidance (Chapter 7) recognizes there may be concern about the "use of relatively high individual test-wise false positive rates (α) in order to meet a pre-specified power, especially when considering the cumulative false positive error rate across multiple wells and/or constituents." However, "the Unified Guidance considers computation of cumulative SWFPRs in compliance/assessment testing to be problematic, and reliance on individual test false positive rates preferable." Notwithstanding, if several confidence limit calculations are compared to the GWPS with high α-levels, caution should be taken in the interpretation.

For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits.

3. Comparison to Groundwater Protection Standard – Corrective Action Monitoring

As stated above, if "Appendix II constituents are detected at statistically significant levels above the GWPS" a notice is placed in the operating record and characterization is begun. Owners or operators are required to initiate an assessment of corrective measures, select a remedy, and implement a remedy in accordance with 567 IAC 113.10(7), (8), and (9). For remedy completion in accordance with 567 IAC 113.10(9)e(2), compliance with the GWPS is considered achieved by demonstrating that concentrations of Appendix II constituents have not exceeded the GWPS for a period of three consecutive years or an alternate length of time established by the Department.

Individual analyte/well pairs may return to assessment constituents (at the corrective action monitoring location) once compliance with the GWPS has been achieved for a period of 3 years. Note that monitoring wells will not move out of the corrective action monitoring program until all Appendix II constituents have achieved compliance with the GWPS for a period of three consecutive years.

Confidence Intervals in Corrective Action Mode

In the case of the GWPS being a fixed standard as either the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source, "confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring" (USEPA, 2009). However, a primary difference between confidence intervals as used under assessment monitoring and confidence intervals used under corrective action is reversal of the null hypothesis. As detailed in Section 7.2 of the Unified Guidance (USEPA, 2009), the hypothesis testing structure under assessment monitoring is to presume compliance point concentrations do not to exceed the fixed standard unless sampling data indicates otherwise. As a formal statistical hypothesis, this is written as:

$$H_0\text{: } \Theta \leq G \quad \text{vs.} \quad H_A\text{: } \Theta > G$$

In corrective action mode, the hypothesis is reversed. Namely, compliance point concentrations are presumed to exceed the fixed standard and evidence must be presented to demonstrate regulatory compliance. In the case of corrective action, the statistical hypothesis is written as:

$$H_0\text{: } \Theta > G \quad \text{vs.} \quad H_A\text{: } \Theta \leq G$$

For testing under assessment monitoring, a lower confidence limit (LCL) is compared to the compliance standard *G*. If the LCL is larger than the standard *G*, it is concluded that the compliance standard has been violated.

However, under corrective action monitoring, the upper confidence limit (UCL) is compared to the compliance standard *G*. In this case, the UCL should lie below the standard to accept the alternative hypothesis that concentration levels are in compliance.

The UCL α-level under corrective action monitoring is set so that a high degree of confidence is achieved in declaring successful remediation. Per the Unified Guidance (Section 7.4.2) "EPA's overriding concern in corrective action is that remediation efforts not be declared successful without sufficient statistical proof." The Unified Guidance "recommends the use of a reasonably low, fixed test-wide false positive rate (e.g., α = 0.05 or 0.10)." In this case, α = 0.10 corresponds to a 90% UCL.

GWPS as Background
Pursuant to 567 IAC 113.10(6)h, when background concentrations of an analyte exceed the applicable MCL or IAC Statewide Standard for a Protected Groundwater Source, the GWPS is the background concentration. In this case, the GWPS is not a fixed standard but based on a distribution of background sample results.

Section 7.5 of the Unified Guidance (USEPA, 2009) details statistical hypothesis testing under corrective action when the GWPS is background. The Unified Guidance offers two alternative statistical approaches to hypothesis testing in this case. These alternatives are as follows:

A. The first represents a *two-sample* test of two distinct populations, namely the compliance well to background populations. Similar to the statistical tests used under detection and assessment monitoring, with this alternative under corrective action, the Unified Guidance states that "one highly recommended statistical test approach is a prediction limit." The Unified Guidance also states, "whatever the critical value for a selected background test, it becomes the GWPS under compliance/assessment or corrective action monitoring." Further, "the only allowable hypothesis test structure for the two-sample approach follows that of detection and compliance monitoring. Once exceeded and in corrective action, a return to compliance is through evidence that future samples lie below the GWPS using the same hypothesis structure." Therefore, with this approach in corrective action, prediction limits are calculated similarly as in assessment monitoring. Compliance well concentrations below a prediction limit indicate a return to concentrations below the background GWPS.

B. The second involves computation of a fixed statistic from the background data as the GWPS. The Unified Guidance recommendation in this case is to define a fixed GWPS based on a background upper tolerance limit with 95% confidence and 95% coverage. This is designed to be a "reasonable maximum on the likely range of background concentrations." This upper tolerance limit based on background data is then used as a fixed standard in statistical comparisons with 90% or 95% UCLs from compliance wells as discussed previously. Also, with the UCL method, the null hypothesis is reversed from that of assessment monitoring, assuming contamination is above the GWPS. A UCL falling below the background GWPS offers evidence of a return to concentrations below the GWPS. The Unified Guidance refers to this approach as a *single-sample* testing method, since the compliance well population is tested against a defined fixed standard.

The Unified Guidance discusses tradeoffs between the two approaches and does not necessarily prescribe either approach over the other. The Unified Guidance suggests that both approaches may be used, where “the background GWPS would be a range based on the two testing methods rather than a single value.”

Normality

For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits. “Corrective Action Mode” is selected for this analysis.

Non-Corrective Action Constituents

As recommended in the Unified Guidance (USEPA, 2009), confidence intervals in corrective action mode will be utilized to evaluate only constituents and monitoring locations with previously identified SSLs over the GWPS. Other compliance constituents (i.e., those without SSLs over the GWPS during prior statistical evaluations) will continue to be evaluated using the “1. Comparison to Background” and “2. Comparison to Groundwater Protection Standard – Assessment Monitoring” methods described above.

Note: the Unified Guidance (USEPA, 2009) states: “it should be recognized that once corrective action or remediation activities are initiated, there will be a considerable time during which the GWPS may still be exceeded. As provided in the RCRA regulations, it is at the conclusion of remediation activities that formal corrective action monitoring evaluation is appropriate. However, in the intervening period of remedial activity, well constituents can still be monitored and the relative efficacy of remediation measures tracked. The same corrective action hypothesis can be assumed for the targeted constituents; techniques such as trend testing may be appropriate interim applications.” Given the statement above and the intentions of 567 IAC 113.10(6)g, as soon as an SSL is identified for an assessment monitoring constituent/location, then the next statistical evaluation will utilize corrective action monitoring (confidence intervals in corrective action mode).

Data Concentration Shifts During Corrective Action

Confidence intervals are based on the assumption that the population is stable over time. As a result, confidence intervals may not accurately represent the current well concentrations if increasing or decreasing trends are observed (i.e., during a release or under active remediation). Per the Unified Guidance (USEPA, 2009), lower or upper confidence limits constructed on accumulated data may be overly wide (due to high sample variability caused by combining pre- and post-shift data) and may not be reflective of more recent upward/downward shifts in the contaminant distribution.

Alternative procedures may be applied to data sets with shifting distributions. For example, where trends tests are significant, pre-shift data may be removed from the well/parameter data set for the purposes of constructing the confidence interval. “The reduction in sample size will often be more than offset by the gain in statistical power. More recent measurements may exhibit less variation around the shifted mean value, resulting in a shorter confidence interval” (USEPA, 2009).

Another alternative is to construct confidence bands around the trend line to track progress towards exceeding or meeting a fixed standard. As suggested in the Unified Guidance (Chapter 22), if a trend is present, a 90% confidence band (upper 95% confidence limit) is placed on the linear trend line. If the upper 95% confidence limit on the trend line falls below the GWPS, the well is found to have reduced to levels statistically below the GWPS.

As the discussed in the Unified Guidance, “inferences concerning a linear regression are generally appropriate when two conditions hold: 1) the residuals from the regression are approximately normal or at least reasonably symmetric in distribution; and 2) a plot of residuals versus concentrations indicates a scatter cloud of essentially uniform vertical thickness or width.” These conditions are assessed through normal probability plots of the regression residuals and plots of residuals against the predicted concentrations.

Data Adjustments Due to Exiting Corrective Action

When analyte/well pairs exit corrective action and return to assessment constituents, the hypothesis testing structure is reversed again. In corrective action mode, compliance point concentrations were presumed to exceed the GWPS, and evidence must be presented to demonstrated regulatory compliance (i.e., UCLs below the GWPS for three consecutive years). With the return to assessment constituents, analyte/well pairs have demonstrated regulatory compliance. The hypothesis testing structure reverts to the assessment monitoring structure where compliance point concentrations are presumed to not exceed the GWPS unless sampling data indicates otherwise (i.e., LCL is above the GWPS). With this reversion in hypothesis, the focus shifts to evaluating concentration changes in the analyte/well pair that would indicate an increase over the GWPS and re-trigger corrective action. For constituents with historical SSLs, earlier concentrations that had previously triggered corrective action are no longer providing useful information regarding the current assessment monitoring hypothesis. Retaining the historical data during the timeframe in which the GWPS was exceeded will result in the regression or confidence interval methods being slower to respond to new increases. As a result, the historical data prior to when statistical compliance with the GWPS was first achieved will be removed when analyte/well pairs exit corrective action and return to assessment constituents.

Attachment 3

Sanitas Report Output for Prediction Limit Calculations

Attachment 3
Assessment Monitoring
Interwell Prediction Limit

Constituent Name	Well	Upper Limit	Date	Observation	Exceeds	Background N	Background Wells	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Assessment Monitoring Locations														
Antimony (mg/L)	MW-27	0.00331	5/28/2024	0.001ND	No	25	MW-51,PZ-12	n/a	n/a	72	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Antimony (mg/L)	MW-50R	0.00331	5/28/2024	0.00112J	No	25	MW-51,PZ-12	n/a	n/a	72	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-27	0.00874	5/28/2024	0.00184J	No	23	MW-51,PZ-12	n/a	n/a	57	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-50R	0.00874	5/28/2024	0.00195J	No	23	MW-51,PZ-12	n/a	n/a	57	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-27	2.18	5/28/2024	0.0903	No	50	MW-51,PZ-12	n/a	n/a	2	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-50R	2.18	5/28/2024	0.0635	No	50	MW-51,PZ-12	n/a	n/a	2	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Cadmium (mg/L)	MW-27	0.001724	5/28/2024	0.000326	No	50	MW-51,PZ-12	-8.331	1.078	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cadmium (mg/L)	MW-50R	0.001724	5/28/2024	0.000328	No	50	MW-51,PZ-12	-8.331	1.078	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Chromium (mg/L)	MW-27	0.0305	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	78	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Chromium (mg/L)	MW-50R	0.0305	5/28/2024	0.00132J	No	51	MW-51,PZ-12	n/a	n/a	78	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	MW-27	0.0528	5/28/2024	0.00821	No	50	MW-51,PZ-12	-6.92	2.18	32	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cobalt (mg/L)	MW-50R	0.0528	5/28/2024	0.00221	No	50	MW-51,PZ-12	-6.92	2.18	32	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Copper (mg/L)	MW-27	0.136	5/28/2024	0.00195J	No	50	MW-51,PZ-12	n/a	n/a	48	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-50R	0.136	5/28/2024	0.00359J	No	50	MW-51,PZ-12	n/a	n/a	48	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-27	0.0878	5/28/2024	0.000604	No	50	MW-51,PZ-12	n/a	n/a	46	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-50R	0.0878	5/28/2024	0.00585	No	50	MW-51,PZ-12	n/a	n/a	46	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Nickel (mg/L)	MW-27	0.05383	5/28/2024	0.0184	No	50	MW-51,PZ-12	-4.786	1.021	18	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Nickel (mg/L)	MW-50R	0.05383	5/28/2024	0.0025ND	No	50	MW-51,PZ-12	-4.786	1.021	18	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Selenium (mg/L)	MW-27	0.0188	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	84	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-50R	0.0188	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	84	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-27	0.00175	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-50R	0.00175	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Sulfide (mg/L)	MW-27	13.4	5/28/2024	1.5ND	No	21	MW-51,PZ-12	n/a	n/a	62	n/a	n/a	0.003935	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-27	0.00242	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-50R	0.00242	5/28/2024	0.0005ND	No	23	MW-51,PZ-12	n/a	n/a	96	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-27	0.0686	5/28/2024	0.0025ND	No	51	MW-51,PZ-12	n/a	n/a	61	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-50R	0.0686	5/28/2024	0.00208J	No	51	MW-51,PZ-12	n/a	n/a	61	n/a	n/a	0.000728	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-27	0.977	5/28/2024	0.088	No	50	MW-51,PZ-12	n/a	n/a	14	n/a	n/a	0.00075	NP Inter (normality) 1 of 2
Zinc (mg/L)	MW-50R	0.977	5/28/2024	0.0542	No	50	MW-51,PZ-12	n/a	n/a	14	n/a	n/a	0.00075	NP Inter (normality) 1 of 2

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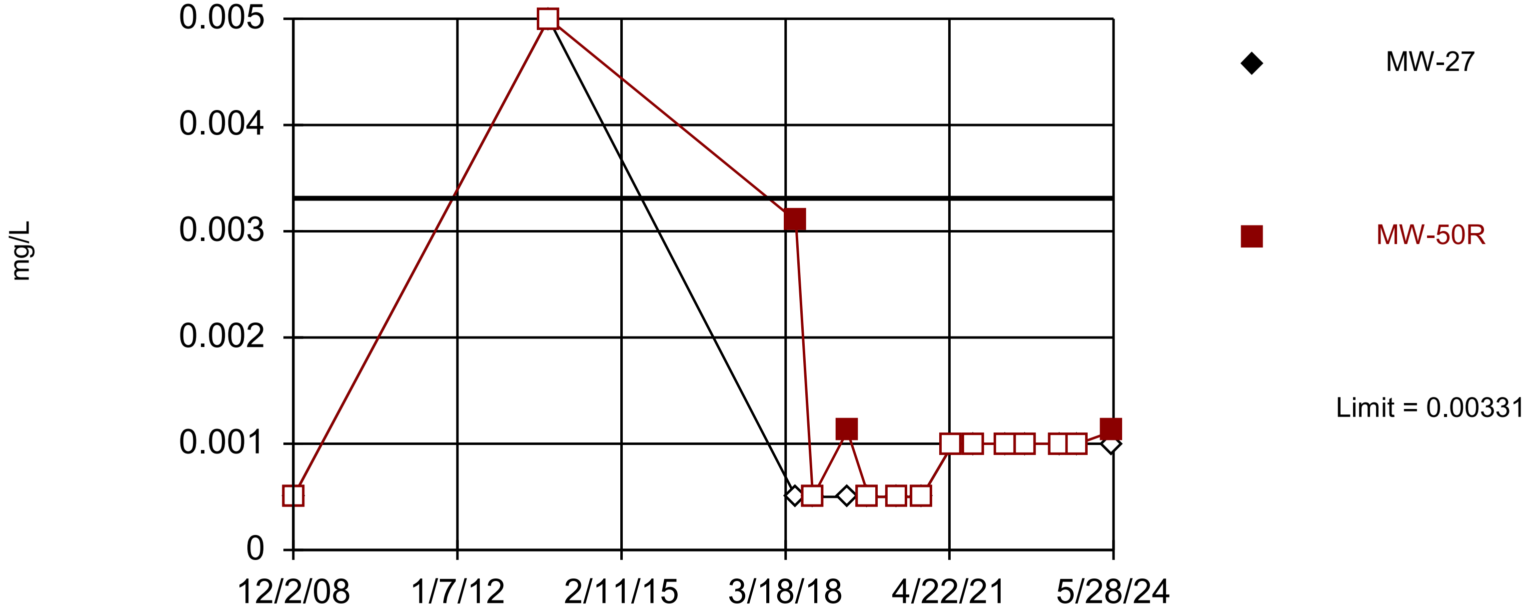
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 25 background values. 72% NDs. Annual per-constituent alpha = 0.01115. Individual comparison alpha = 0.002799 (1 of 2).

Constituent: Antimony Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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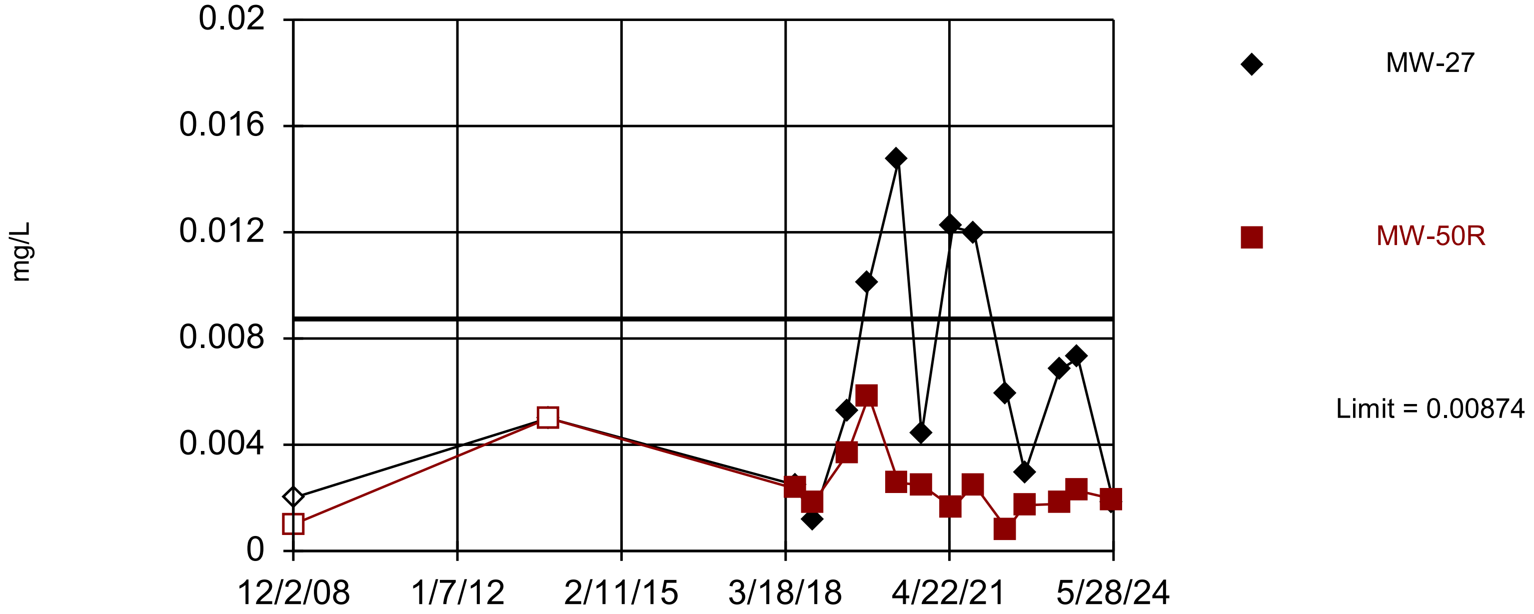
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 56.52% NDs. Annual per-constituent alpha = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

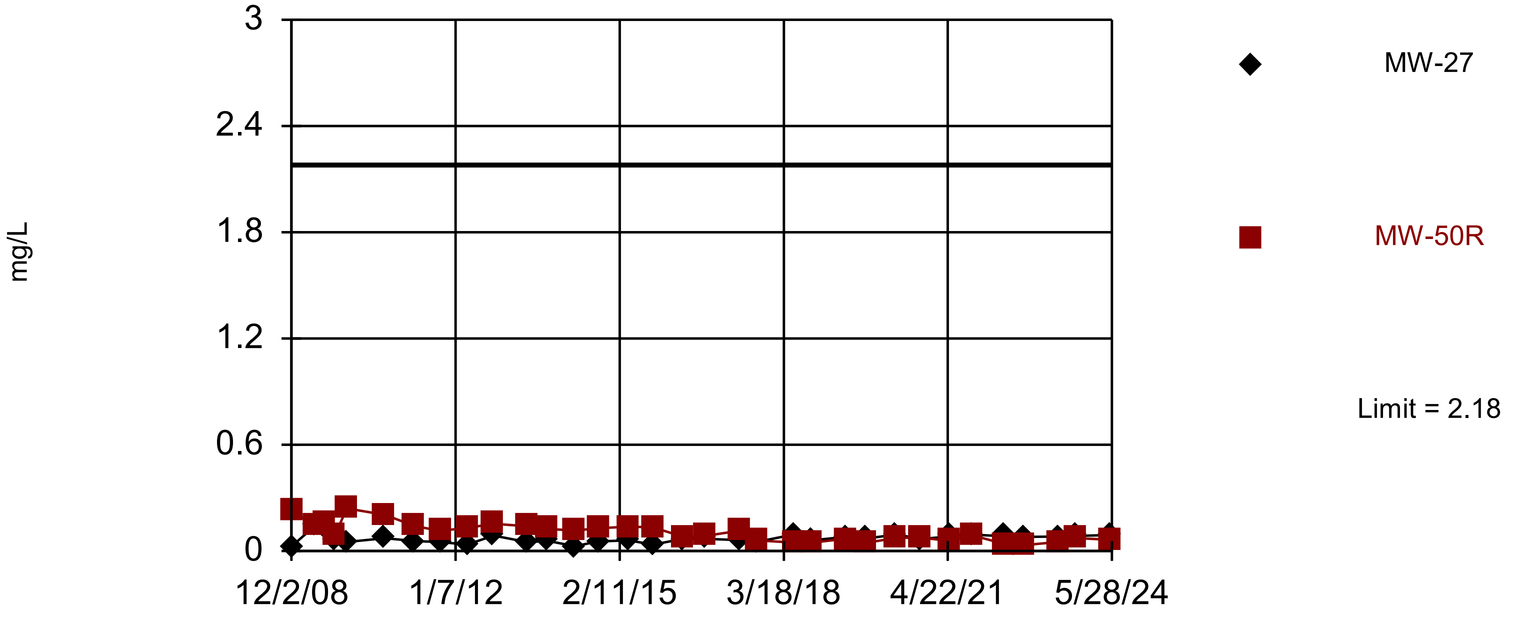
Constituent: Arsenic Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 2% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Barium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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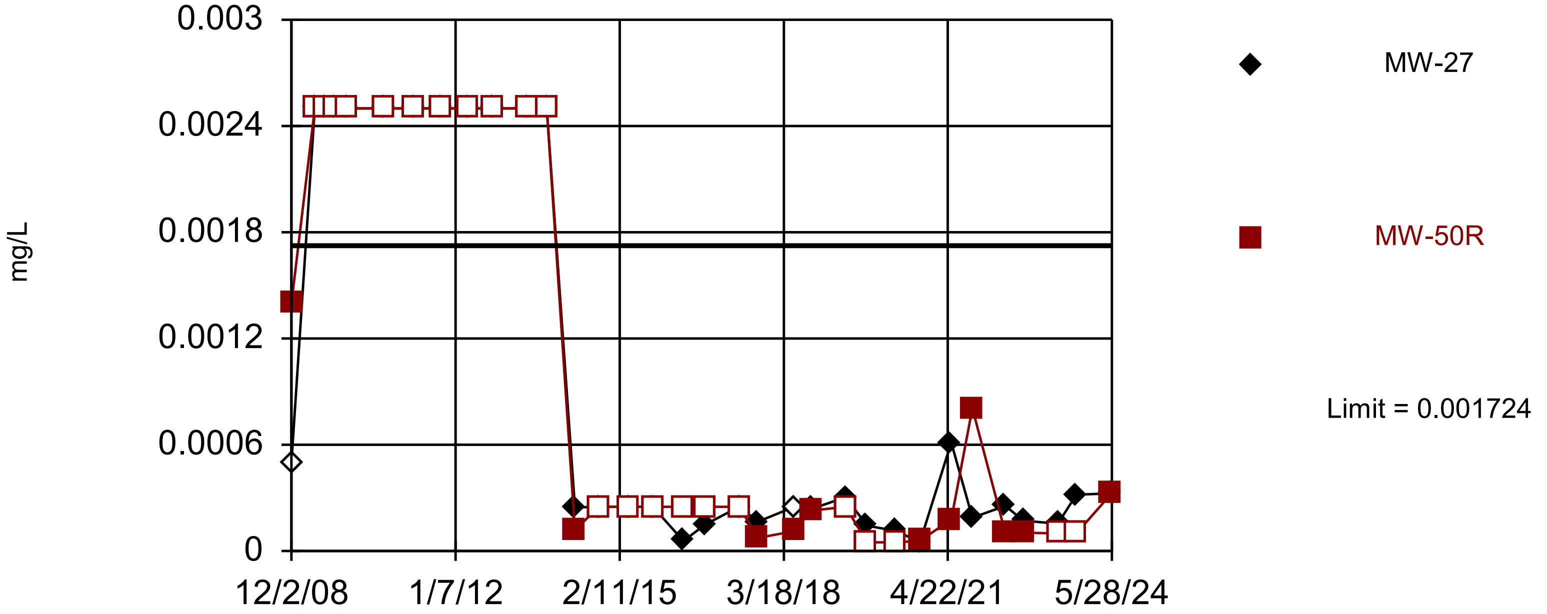
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-8.331, Std. Dev.=1.078, n=50, 42% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9461, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cadmium Analysis Run 7/17/2024 9:33 AM

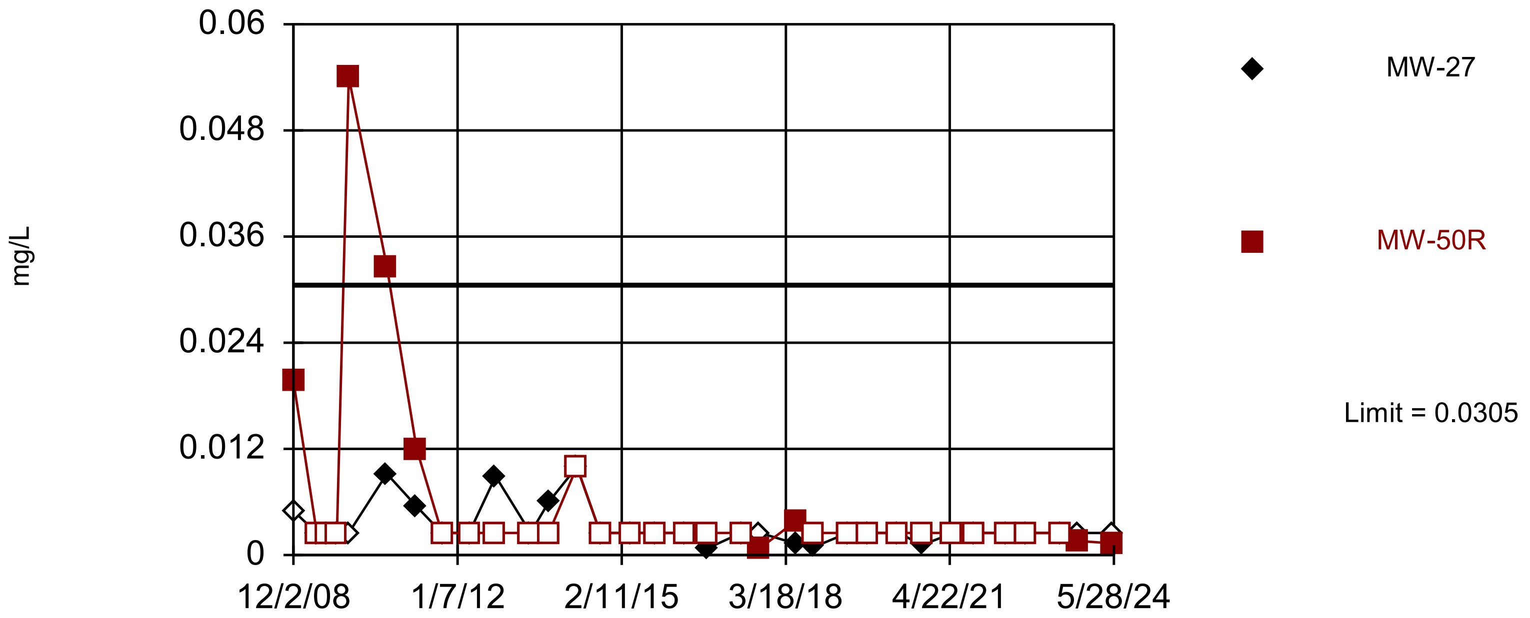
RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 78.43% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Chromium Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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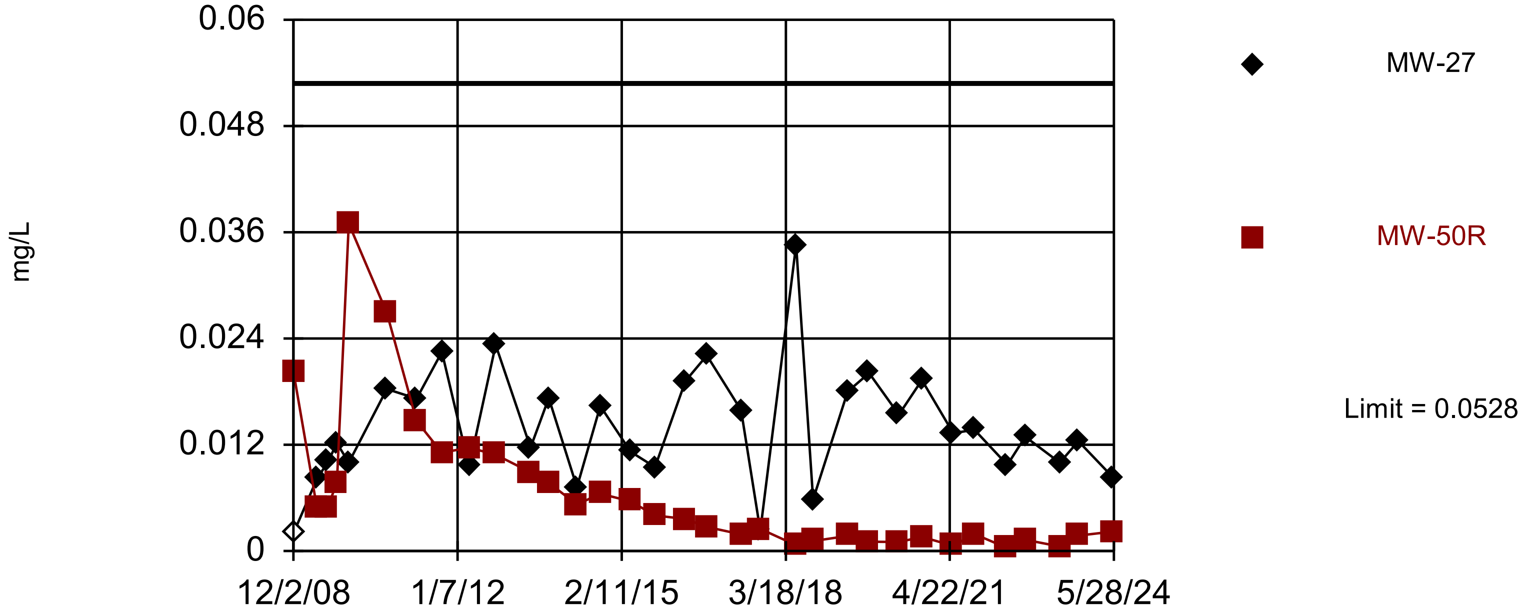
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-6.92, Std. Dev.=2.18, n=50, 32% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9477, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cobalt Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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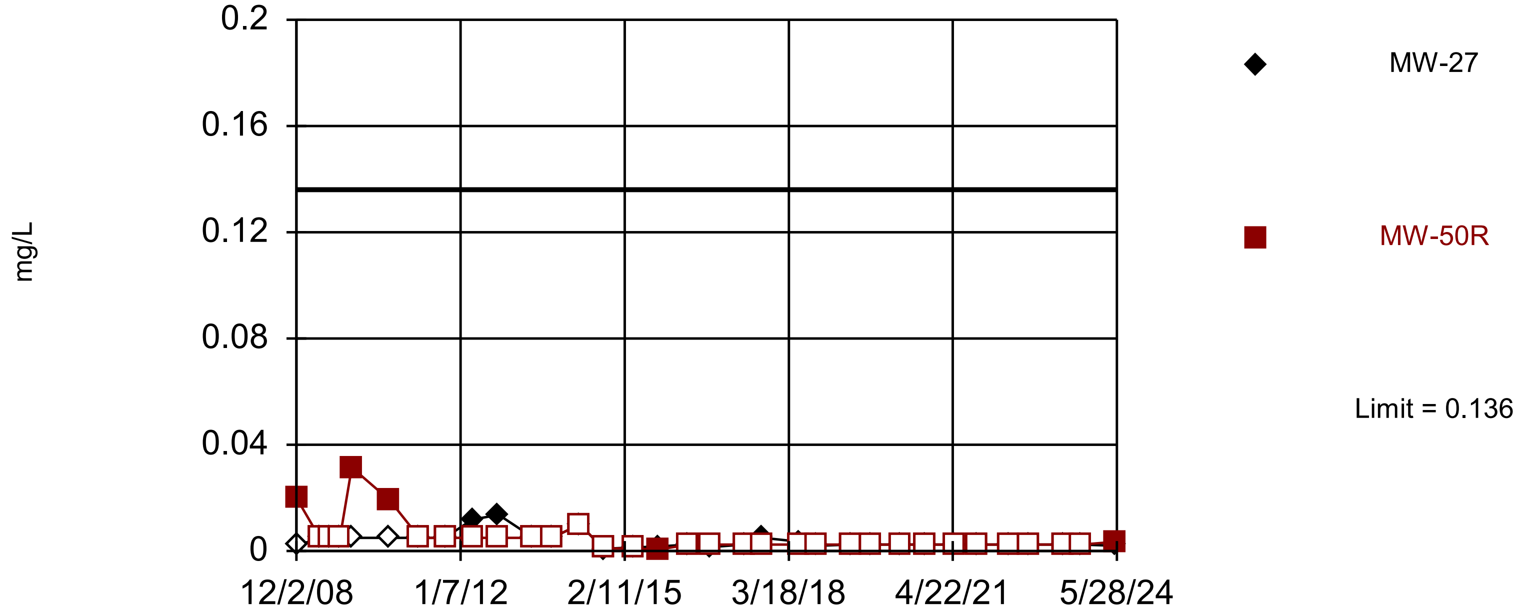
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 48% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Copper Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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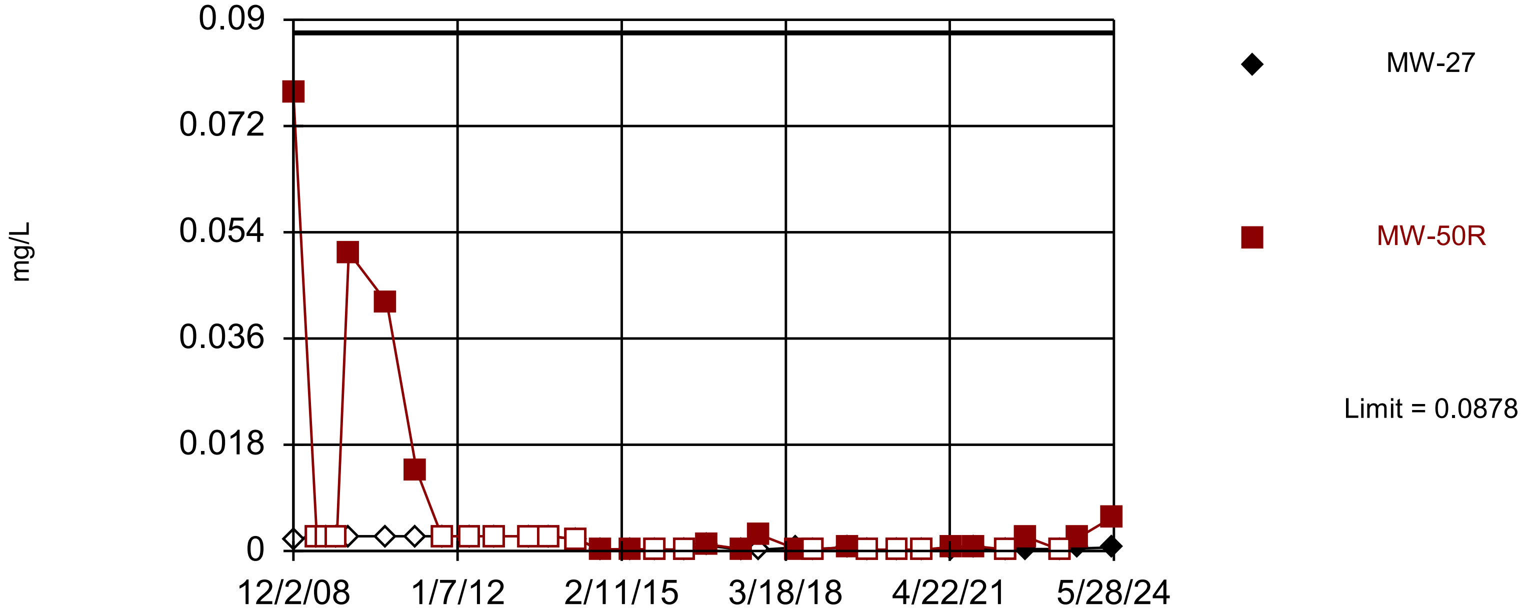
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 46% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Lead   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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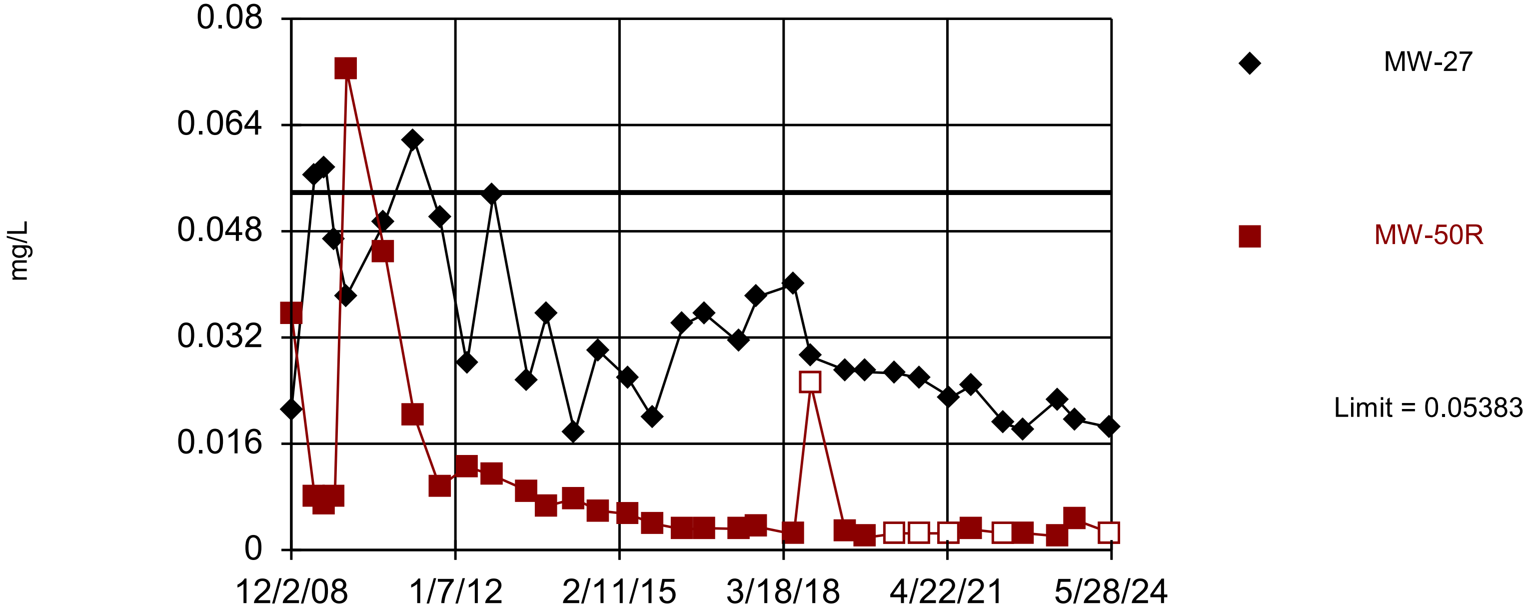
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-4.786, Std. Dev.=1.021, n=50, 18% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9675, critical = 0.935. Kappa = 1.825 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Nickel Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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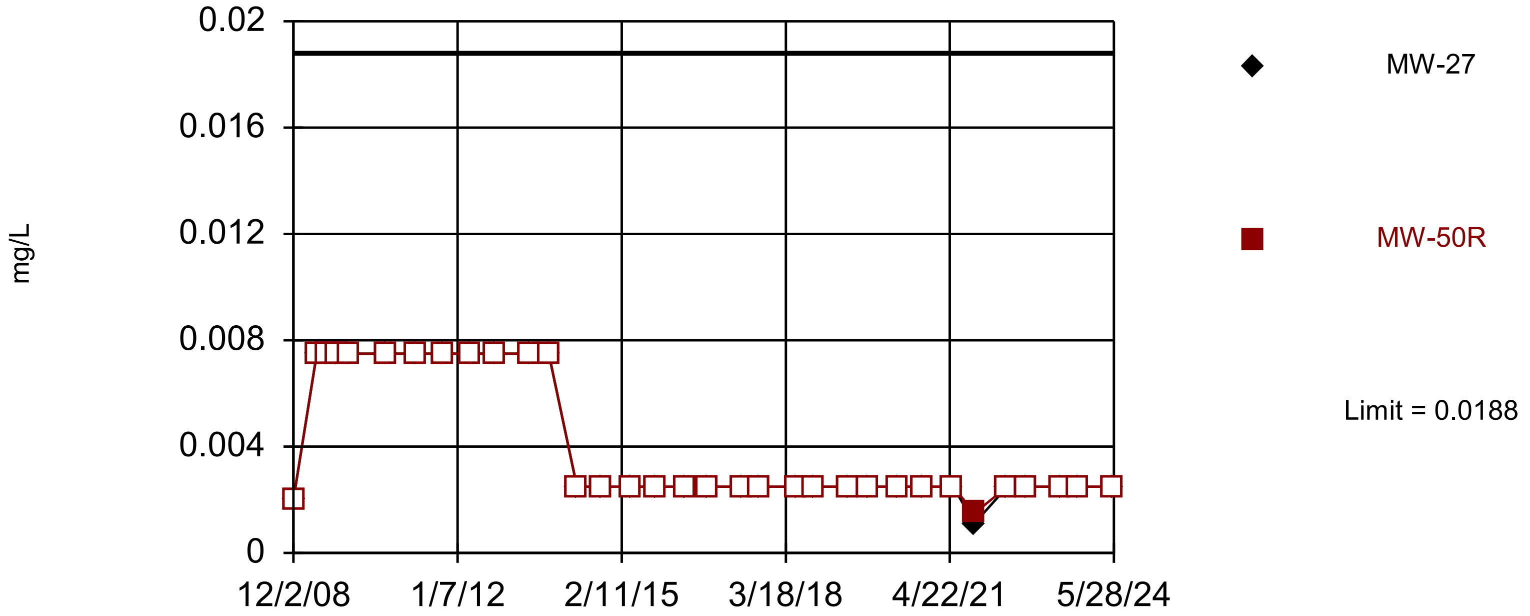
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 84.31% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Selenium   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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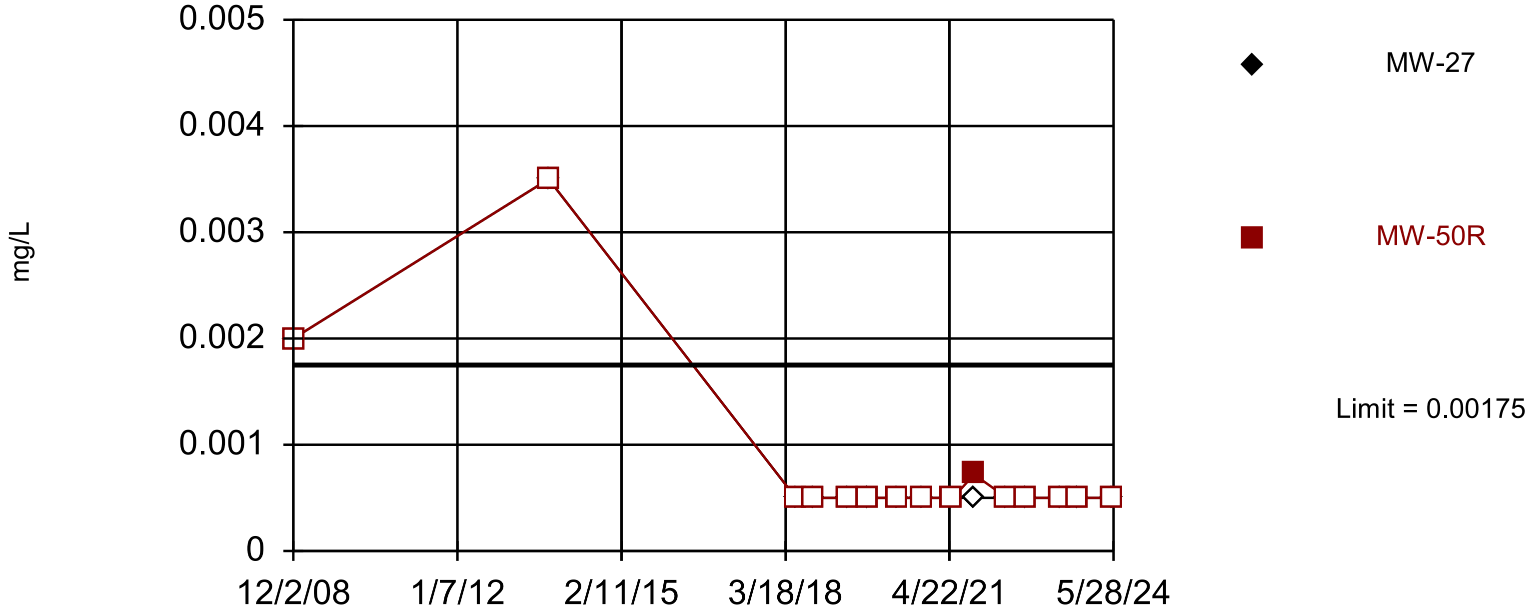
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 95.65% NDs. Annual per-constituent alpha = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Silver   Analysis Run 7/17/2024 9:41 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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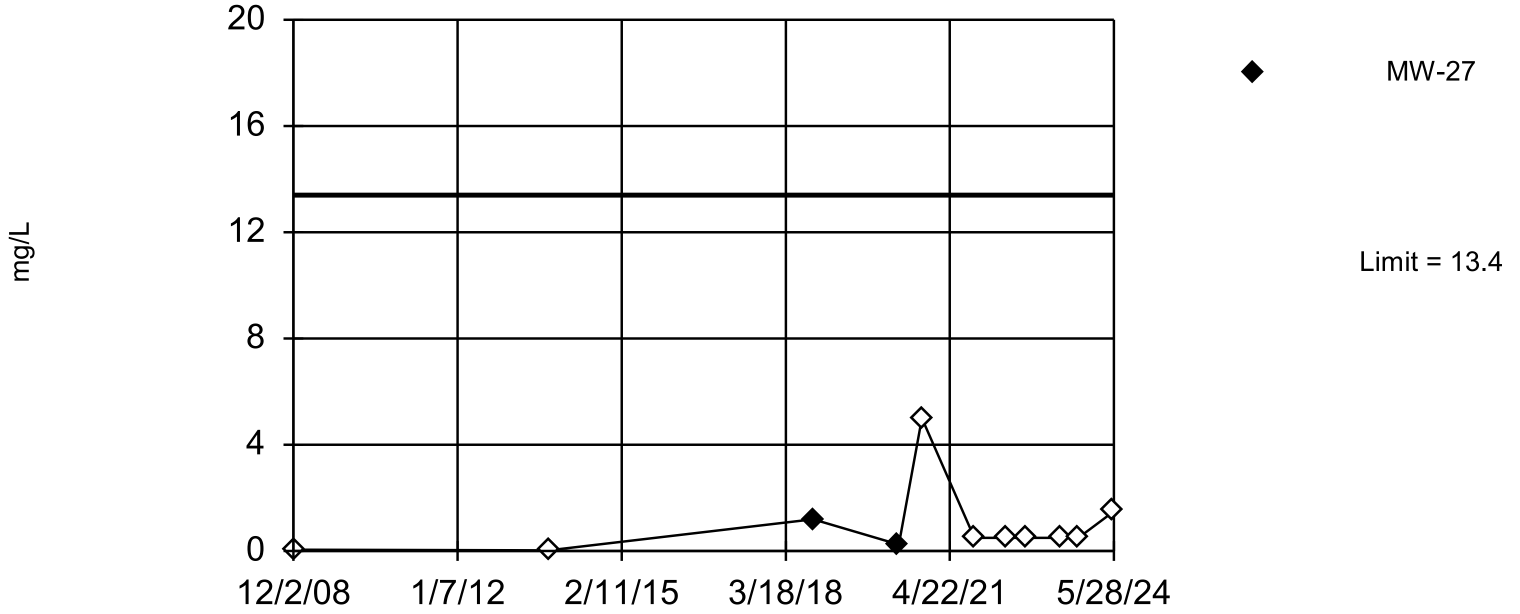
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 21 background values. 61.9% NDs. Annual per-constituent alpha = 0.01565. Individual comparison alpha = 0.003935 (1 of 2).

Constituent: Sulfide Analysis Run 7/17/2024 9:36 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

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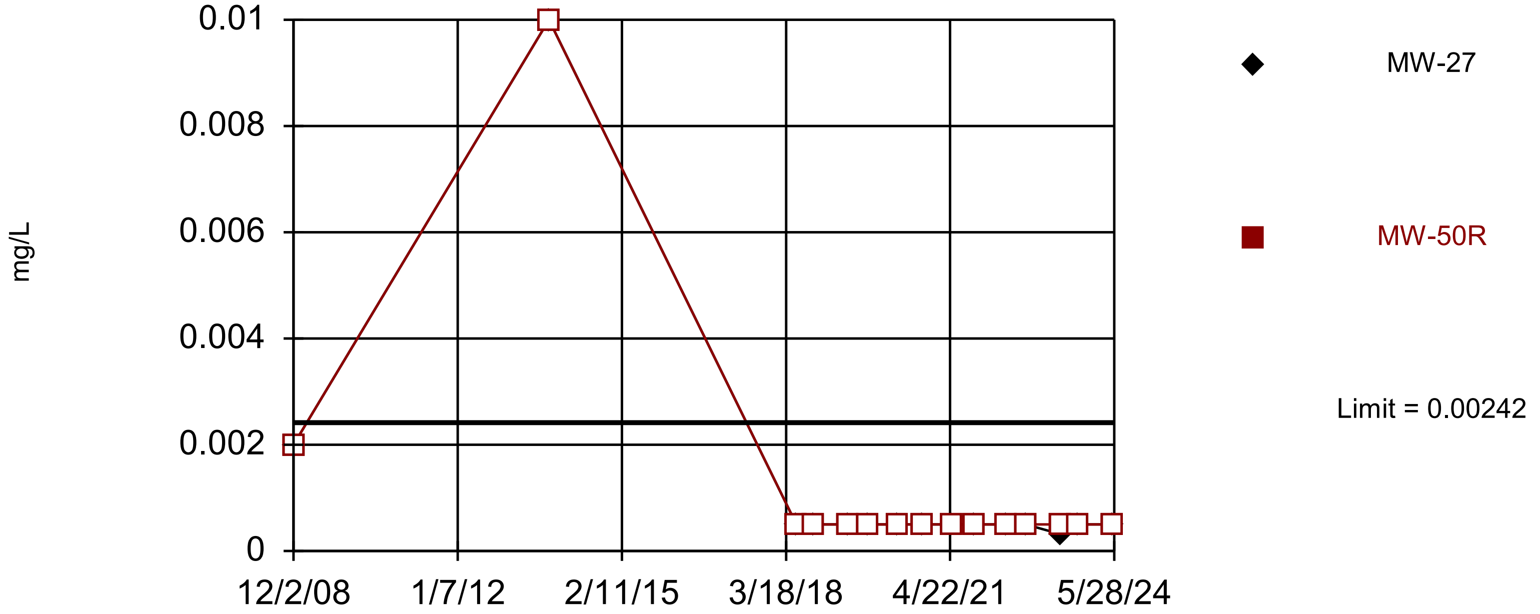
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 95.65% NDs. Annual per-constituent alpha = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Thallium   Analysis Run 7/17/2024 9:33 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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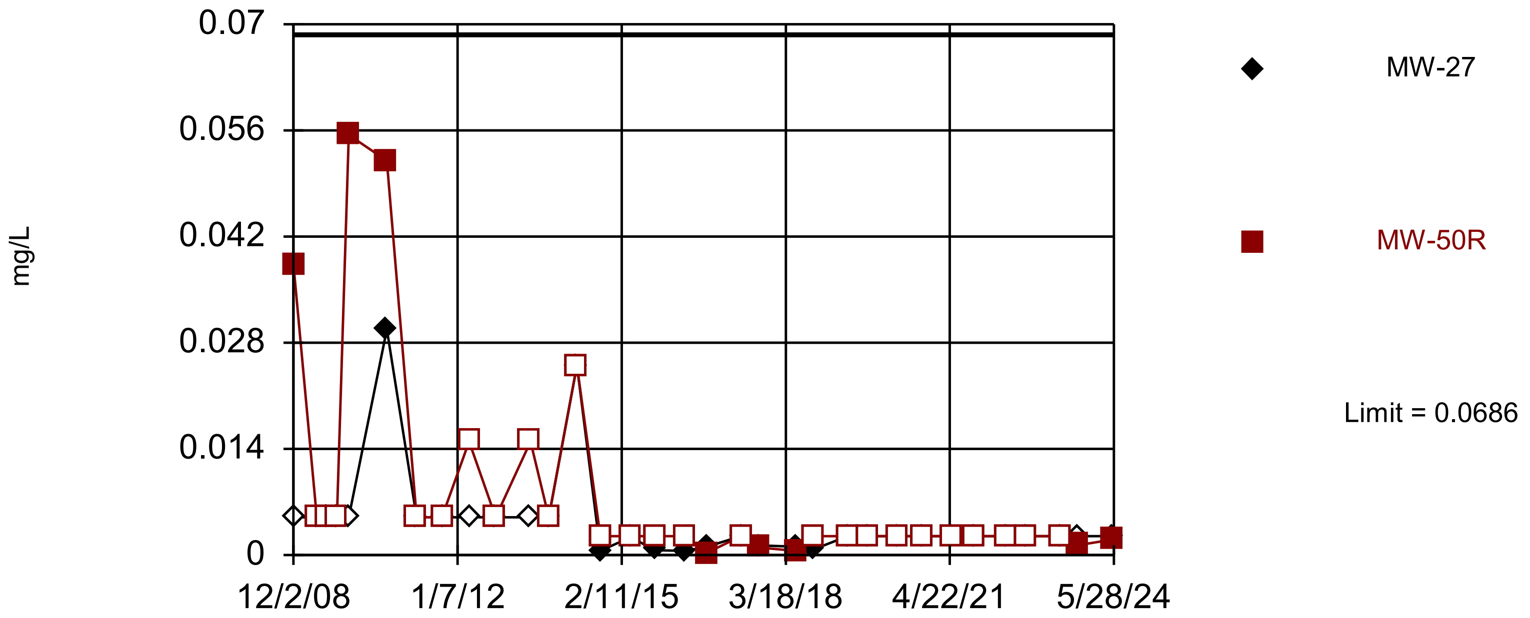
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 51 background values. 60.78% NDs. Annual per-constituent alpha = 0.002909. Individual comparison alpha = 0.000728 (1 of 2).

Constituent: Vanadium Analysis Run 7/17/2024 9:33 AM

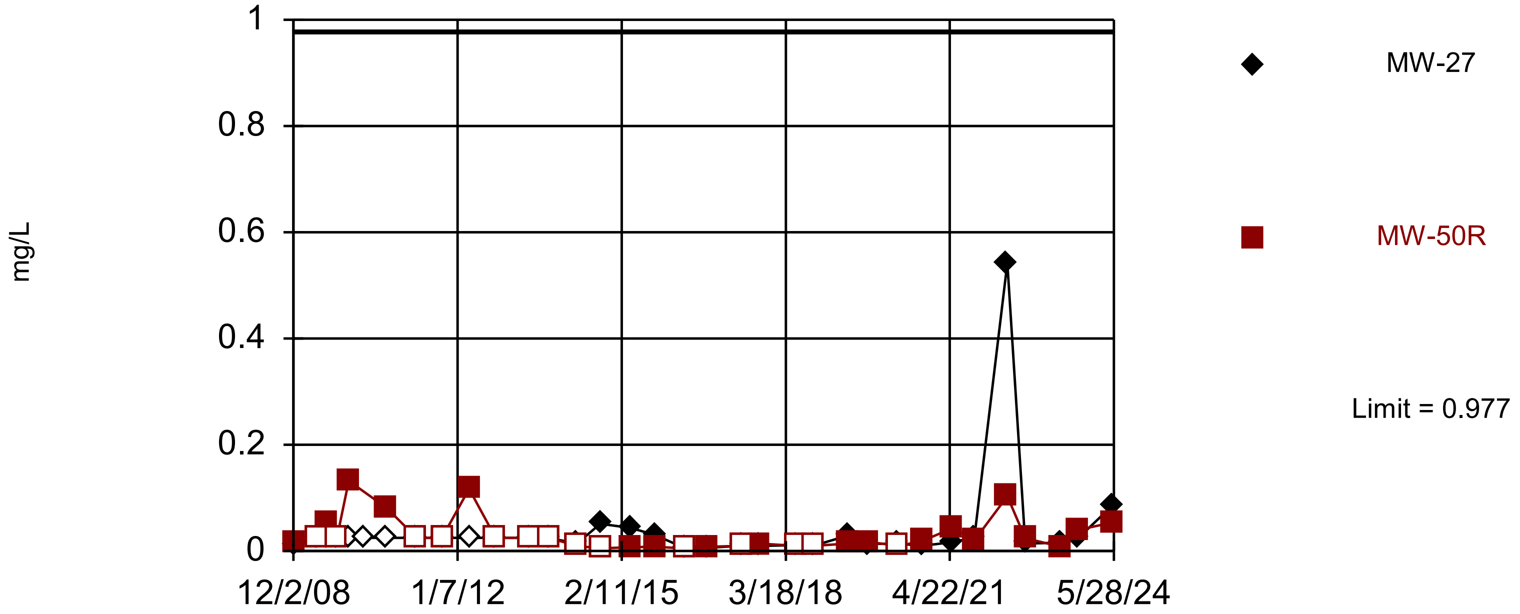
RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Sanitas™ v.10.0.20 Software licensed to Foth Infrastructure & Environment, LLC. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 50 background values. 14% NDs. Annual per-constituent alpha = 0.002998. Individual comparison alpha = 0.0007503 (1 of 2).

Constituent: Zinc Analysis Run 7/17/2024 9:33 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Attachment 4

Sanitas Report Output for Double Quantification Rule Evaluation

Data Screening - Assessment Monitoring

Analysis Run 7/17/2024 10:19 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

A listing of detects for 203 constituents in MW-27 and MW-50R in May 2024:

Benzene, MW-27, 5/28/2024: 0.856 ug/L
cis-1,2-Dichloroethene, MW-27, 5/28/2024: 2.24 ug/L

Attachment 5

Sanitas Report Output for Confidence Interval Calculations

Assessment Mode

Attachment 5
Assessment Monitoring
Confidence Interval - Assessment Mode (1)

Constituent Name	Well	Upper Limit	Lower Limit	Compliance Limit (2)	Exceeds	N	Mean	Standard Deviation	CV	a to Achieve 50% Power at R=1.5 (3,4)	a to Achieve 80% Power at R=2.0 (3,4)	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Benzene (ug/L)	MW-27	0.83	0.49	5	No	15	0.66	0.25	0.38	<0.01	<0.01	13	None	No	0.01	Param.
cis-1,2-Dichloroethene (ug/L)	MW-27	2.6	1.9	70	No	33	2.3	0.9	0.38	<0.01	<0.01	9	None	No	0.01	Param.

(1) Under assessment mode, an SSL is indicated when the lower confidence limit exceeds the groundwater protection standard (compliance limit).

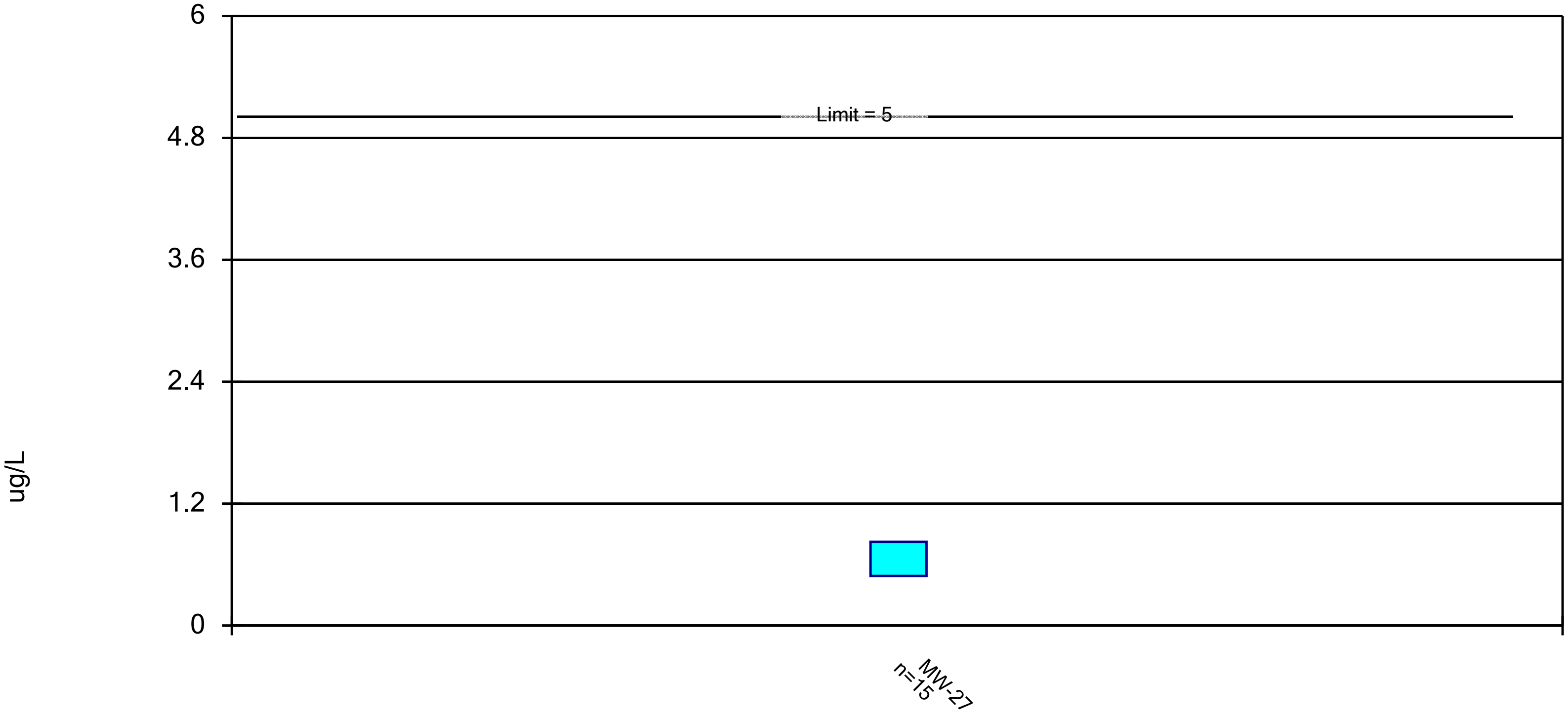
(2) Value is the 40 CFR Part 141 Safe Drinking Water Act MCL or the IAC 567 Chapter 137 Statewide Standard for a Protected Groundwater Source.

(3) For parametric confidence intervals: Except where otherwise indicated, based on Unified Guidance Equation 22.2, i.e., $\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R \cdot \widehat{CV}} - t_{1-\beta,n-1}\right)$
where R is the desired risk ratio, *n* is the sample size, CV is the estimated sample coefficient of variation, $t_{1-b,n-1}$ is the (1–b) Student's t-quantile with (n–1) degrees of freedom, and F is the cumulative (central) Student's t-distribution function.

(4) For non-parametric confidence intervals: Based on Unified Guidance Equation 22.1, i.e., $1 - \beta = G_{T,n-1}\left(t_{1-\alpha,n-1} \middle| \Delta = \sqrt{n}(R-1)\right)$
where R is the desired risk ratio, $t_{1-a,n-1}$ is the (1–a) Student's t-quantile with (n–1) degrees of freedom and G represents the cumulative non-central t-distribution with (n–1) degrees of freedom and noncentrality parameter D.

Parametric Confidence Interval - Assessment Monitoring

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: Benzene   Analysis Run 7/17/2024 10:27 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

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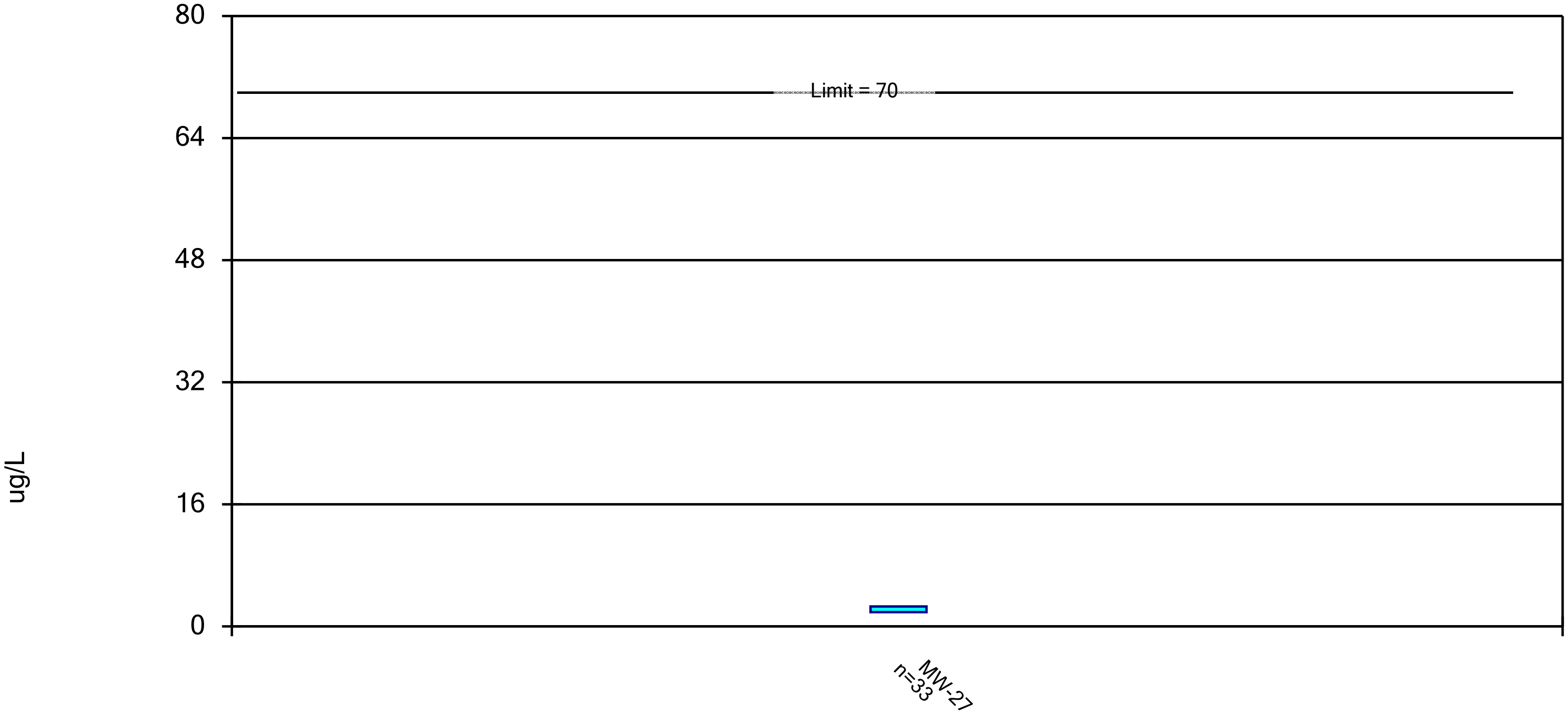
Parametric Confidence Interval - Assessment Monitoring

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: cis-1,2-Dichloroethene   Analysis Run 7/17/2024 10:27 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

Attachment 6

Effective Power and Site-Wide False Positive Rate Discussion

Sanitas Report Output for Power Curve Evaluation

Effective Power and Site-Wide False Positive Rate Discussion

Statistical power refers to the ability of a test to identify real increases in concentration levels given they exist. The Unified Guidance defines the effective power as the “probability of detecting contamination in the monitoring network when one and only one well-constituent pair is contaminated.” It further states that any statistical test procedure with effective power at least as high as the appropriate USEPA Reference Power Curve (ERPC) should be considered to have reasonable power.

The Unified Guidance gives the following criteria for comparing the effective power to the ERPC:

If the effective power first exceeds the ERPC at a mean concentration increase no greater than 3 background standard deviations, the power is labeled ‘good;’ if the effective power first exceeds the ERPC at a mean increase between 3 and 4 standard deviations, the power is considered ‘acceptable;’ and if the first exceedance of the ERPC does not occur until an increase greater than 4 standard deviations, the power is considered ‘low.’

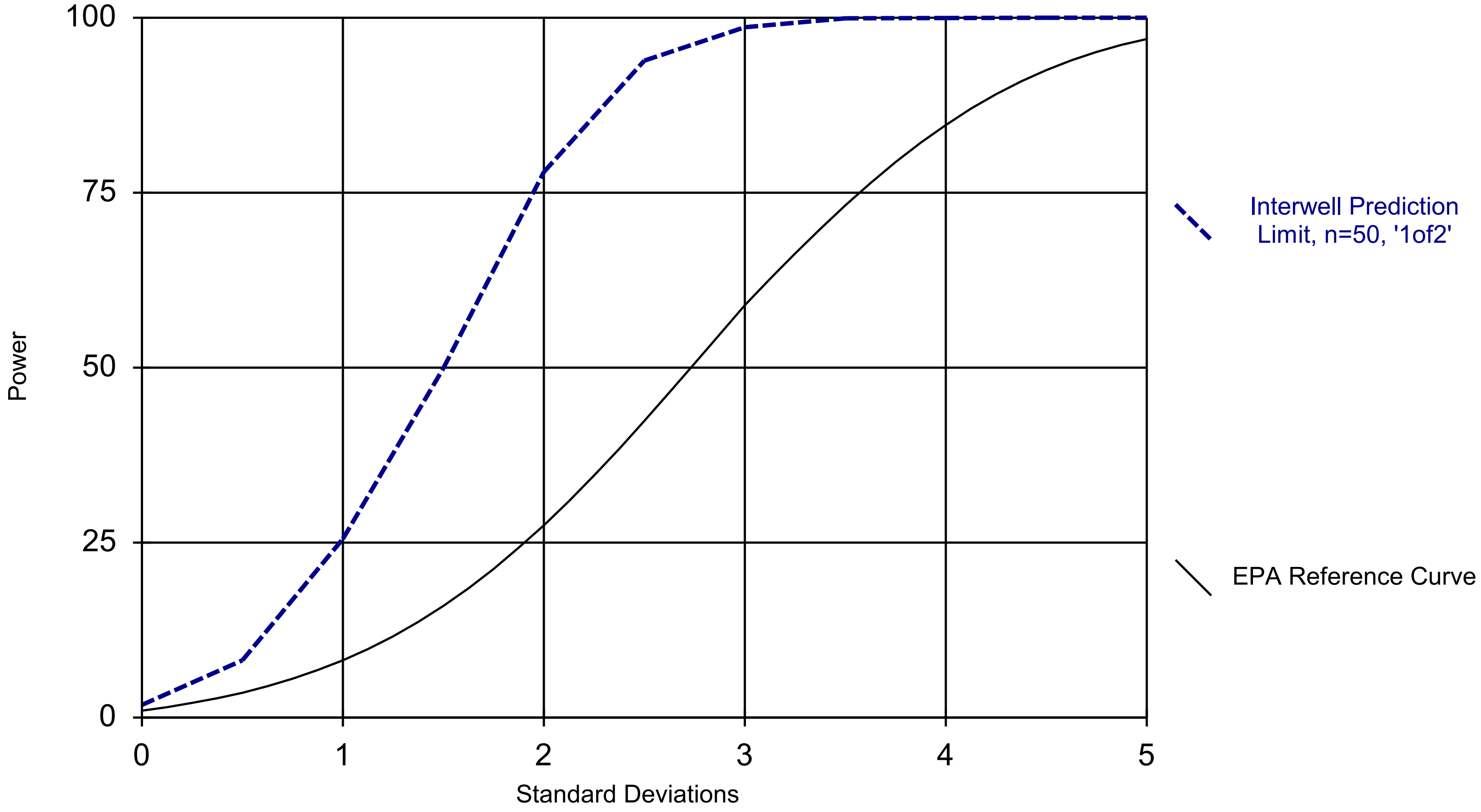
Effective power curves were developed with Sanitas for the 1-of-2 prediction limit plan, with power curves illustrated below. Based on the power curves, both the parametric and non-parametric prediction limits have good power.

The Unified Guidance “strongly encourages use of a comprehensive design strategy to account for both the cumulative site-wide false positive rate (SWFPR) and effective power to identify real exceedances.” The Unified Guidance recommends and uses an annual SWFPR target of 10%. The current annual SWFPR based on the 1-of-2 prediction limit plan may be calculated using the basic subdivision principle discussed in Unified Guidance Sections 6.2.2, 19.2.1 and 19.4.

Currently, comparisons were made at 2 wells semiannually with a total of 58 single tests annually. The Sanitas prediction limit report output of Attachment 3 includes annual individual test α-levels for each well/constituent pair. The α-levels reported by Sanitas account for the 1-of-2 plan, as well as two semiannual events conducted at the site.

The cumulative annual SWFPR can be approximated directly from the α-levels reported in the Sanitas output as SWFPR $= 1 - \prod_{i=1}^{58}(1-\alpha_i)^2 = 0.096 \approx$ 9.6%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive.

Parametric Power Curves

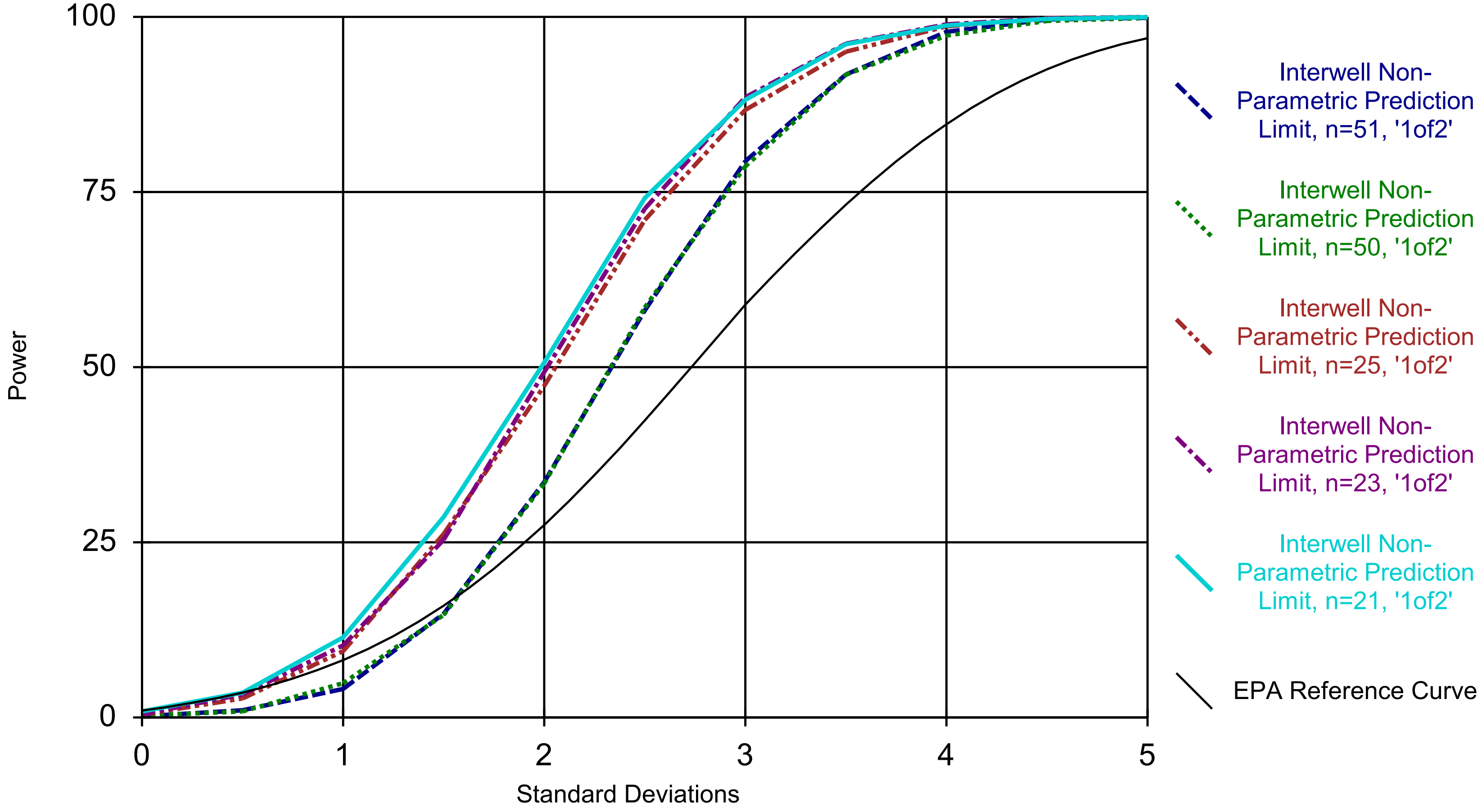


Kappa = 1.372, based on 6 constituent/well pairs, evaluated semi-annually (this report reflects annual total).

Analysis Run 7/17/2024 11:06 AM

RASWC Client: Foth Data: RASWC Spring 2024 Evaluation

Non-Parametric Power Curves



Analysis Run 7/17/2024 11:05 AM

RASWC   Client: Foth   Data: RASWC Spring 2024 Evaluation

Fall 2024 Statistical Analysis

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November 25, 2024

Dane Blozovich
Rathbun Area Solid Waste Commission
2642 Highway J-46
Corydon, IA 50060

RE: Appanoose County Sanitary Landfill - Fall 2024 Statistical Analysis

Dear Dane Blozovich:

1. Organization

This memo addresses the statistical analysis of the groundwater monitoring data collected during the October 2024 sampling event. The statistical methods and results are summarized, with the memo organization given as follows:

Tables

Attachments

Attachment 1	Summary of Analytical Results
Attachment 2	MW-60 Soil Boring Log and Well Construction Form
Attachment 3	Detailed Discussion of Statistical Methods
Attachment 4	Sanitas Report Output for Prediction Limit Calculations
Attachment 5	Sanitas Report Output for Double Quantification Rule Evaluations
Attachment 6	Sanitas Report Output for Confidence Interval Calculations
Attachment 7	Effective Power and Site-Wide False Positive Rate Discussion

2. Background

The groundwater monitoring locations and status of the Appendix II sampling schedules are summarized in Table 1. The Appendix II analytical results are presented in Attachment 1.

Table 1
Monitoring Locations and Schedule
Dec. 2008 – Oct. 2024 Appendix II Data

Monitoring Location	Monitoring Program	Current Schedule (1) (Oct. 2024)	Appendix I Initiated	Appendix II Initiated	Baseline Appendix II Completed (4 Events) (2)	Last Full Appendix II Event Completed
North Unit						
MW-27	Assessment	Appendix II	N/A	Dec-08	Sep-09	Sep-23
MW-50R	Assessment	Appendix II	N/A	Dec-08	Sep-09	Sep-23
MW-51	Background	Appendix II	N/A	Dec-08	Sep-09	Sep-23
MW-60	Background	Appendix I (3)	Oct-24	N/A	N/A	N/A
PZ-12	Background	Discontinued (4)	N/A	Oct-18	-	Sep-23

(1) Assessment monitoring wells and background monitoring well MW-51 were sampled for the Appendix I and detected Appendix II constituents in Oct. 2024.
(2) The baseline Appendix II monitoring events (May, Jul. & Sep. 2009) and semiannual monitoring events through Sep. 2017 consisted only of the Appendix II analytes with detections during Dec. 2008 and Sep. 2013.
(3) Background monitoring for the Appendix I list and sulfide was initiated at MW-60 in Oct. 2024.
(4) Background monitoring was discontinued at PZ-12 in Oct. 2024. Newly installed background well MW-60 replaced PZ-12.

New background monitoring well MW-60 was installed on July 1-3, 2024. The soil boring log and monitoring well construction form are included in Attachment 2. As reported in the Spring 2024 statistical evaluation, background well MW-60 will replace PZ-12 for background monitoring. Therefore, in October 2024, background monitoring was discontinued at PZ-12 and background monitoring for the Appendix I list and sulfide was initiated at MW-60. The background monitoring analytes selected for MW-60 were based on the background monitoring parameters monitored at MW-51.

In addition, semiannual assessment monitoring for the Appendix I and detected Appendix II constituents was conducted at MW-27 and MW-50R and semiannual background monitoring for the Appendix I list and sulfide was conducted at MW-51 in October 2024, as indicated in Table 1. At MW-50R, none of the Appendix II constituents not included in the Appendix I list have been detected. At MW-27, the historically detected Appendix II constituents were beta-BHC, delta-BHC, dieldrin, endosulfan sulfate, endrin, endrin aldehyde, and sulfide.

Under the assessment monitoring program of 567 Iowa Administrative Code (IAC) 113.10(6), Appendix II monitoring results are statistically compared to background levels as given in 567 IAC 113.10(6)e and to the groundwater protection standard (GWPS) as given in 567 IAC 113.10(6)g and h. A well may return to detection monitoring when all Appendix II constituents are "shown to be at or below background values, using the statistical procedures in 567 IAC 113.10(4)g for two consecutive sampling events." Three consecutive sampling events may be utilized to make the determination to return to detection monitoring to limit the frequent fluctuation of wells moving between the detection and assessment monitoring programs. Assessment monitoring continues when Appendix II concentrations are above background values but below the GWPS also using the statistical procedures in 567 IAC 113.10(4)g. Characterization for corrective measures begins when "Appendix II constituents are detected at statistically significant levels above the GWPS."

Based on the December 2008 through October 2024 results, this memo presents an evaluation of statistically significant increases (SSIs) above background and statistically significant levels (SSLs) above the GWPS under the requirements of 567 IAC 113.10(4)g and h. A summary of the results is discussed below.

3. Statistical Methodology

The statistical methods utilized for wells in assessment monitoring were consistent with the methods used in previous updates. Detailed descriptions of the statistical methods are provided in Attachment 3.

The combined background data set (MW-51, MW-60, and PZ-12) was utilized to evaluate SSIs over background. As discussed in Section 2, MW-60 was installed as a new background monitoring well in July 2024 to replace PZ-12. Starting in October 2024, background monitoring was discontinued at PZ-12 and initiated at MW-60. The historical PZ-12 background data will be retained at this time. As more data is obtained from MW-60, consideration will be given as to whether to continue retaining the historical PZ-12 results in the combined background data set.

3.1 Review of Single Background Detections

Single volatile organic compound (VOC) detections were identified for acetone in MW-51 and acetone and carbon disulfide in PZ-12 in October 2019 and for acetone in PZ-12 in May 2020, October 2020, and May 2023. Retesting was conducted in January 2020, July 2020, December 2020, and August 2023. The retest results did not confirm the single detections; therefore, SSIs were not declared. The retest results indicated that MW-51 and PZ-12 remained suitable for monitoring background groundwater quality.

A single VOC detection was identified for acetone in PZ-12 in September 2023. None of the remaining Appendix II VOCs, SVOCs, pesticides, and PCBs were detected above the laboratory practical quantitation limit (PQL). Since Appendix II metals were not sampled in September 2023 at PZ-12, no data set adjustments were recommended based on the acetone detection.

A single VOC detection was identified for acetone in PZ-12 in May 2024. Since acetone is considered a "never-detected" constituent and was repeatedly detected in PZ-12, retesting was not recommended, and the May 2024 results were not included in the background data set.

Since VOCs are considered “never detected” constituents, acetone and carbon disulfide were not added as prediction limit constituents. Downgradient acetone and carbon disulfide results continue to be evaluated using the double quantification rule (DQR).

The background data set adjustments previously recommended and incorporated based on the review of single background detections include:

- Removal of the October 2020 arsenic concentration in PZ-12 (initiated with the Fall 2020 statistical evaluation).
- Removal of the May 2023 arsenic, barium, beryllium, cadmium, cobalt, copper, lead, nickel, thallium, and zinc concentrations in PZ-12 (initiated with the Spring 2023 statistical evaluation).
- The May 2024 results at PZ-12 will not be added to the background data set (initiated with the Spring 2024 statistical evaluation).

These data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.2 Total Suspended Solids and the Background Data Set

To reduce total suspended solids (TSS) in the groundwater samples, no-purge sampling using HydraSleeve™ samplers was continued at the downgradient and background monitoring wells in October 2024. A summary of the TSS results for the high-volume and no-purge sampling events is provided in Table 2.

Table 2
Total Suspended Solids Data (mg/L)

Date	Sampling Technique	MW-27 (Downgradient)	MW-50R (Downgradient)	MW-51 (Background)	MW-60 (1) (Background)
2014-09	High Volume	25	61	17.5	-
2015-04	High Volume	10.0	37.5	14.9	-
2015-09	High Volume	34.3	19	3.25	-
2016-04	High Volume	29.4	17.5	0.625 J	-
2016-09	No-Purge	41.6	13.6	2.13	-
2017-05	No-Purge	45.3	28	3.5	-
2017-09	No-Purge	37.1	147 (2)	5.85	-
2018-05	No-Purge	21.8	19.6	8.00	-
2018-09/10	No-Purge	60.8	7.88	16.3	-
2019-05	No-Purge	58	286	2.25	-
2019-10	No-Purge	37	44	2.13	-
2020-05	No-Purge	45	14 J	1.38 J	-
2020-10	No-Purge	12.3	56	3.2	-
2021-05	No-Purge	59.0	- (3)	2.50	-
2021-10	No-Purge	63.3	13.1	1 J	-
2022-05	No-Purge	19.5	7	3.75	-
2022-09	No-Purge	29	27	1.13	-

Table 2 Continued
Total Suspended Solids Data (mg/L)

Date	Sampling Technique	MW-27 (Downgradient)	MW-50R (Downgradient)	MW-51 (Background)	MW-60 (1) (Background)
2023-05	No-Purge	31	17.3	0.875 J	-
2023-09	No-Purge (4)	54.5 (4)	57.3 (4)	1.38 J	-
2024-05	No-Purge	65.5	241	1.63 J	-
2024-10	No-Purge	5.33	21.3	< 5	6

(1) Background monitoring well MW-60 was installed in Jul. 2024 and background monitoring was initiated in Oct. 2024.

(2) Lower groundwater elevations due to drought conditions (and therefore, limited water in the well casing) likely contributed to the higher TSS result at MW-50R in Sep. 2017.

(3) The laboratory missed sample login and analysis for TSS at MW-50R in May 2021.

(4) Lower groundwater elevations and slower well recharge due to drought conditions (and therefore, limited water in the well casing) likely contributed to TSS concentrations at MW-27 and MW-50R in Sep. 2023.

No background data set adjustments are recommended for MW-51 and MW-60 based on a review of the TSS data from the October 2024 sampling event. The TSS concentration at MW-51 was below the 5 mg/L limit for acceptable sample quality and at MW-60 only slightly exceeded the limit with a concentration of 6 mg/L.

3.3 Background Data Set Review for Prediction Limits

The background data set and PQLs were reviewed starting with the Spring 2023 statistical evaluation. This consisted of reviewing the PQLs for metals constituents used in the prediction limit evaluation to determine whether PQLs have been lowered over time, and whether some of the earlier non-detect data with elevated PQLs should be removed from the background data due to the increased uncertainty it added. Non-detect background data with a PQL of at least two times the maximum detected background concentration are recommended for removal.

The background data set adjustments previously recommended and incorporated based on the review of PQLs include:

- Removal of non-detect silver and thallium background samples with a PQL of 0.004 mg/L.

These background data set adjustments were maintained in the current statistical evaluation. The removed data are listed as crossed-out concentrations in Attachment 1.

3.4 Quality Assurance/Quality Control Summary

Data validation reports detailing any resampling, data qualifiers added because of data validation, and an overall assessment of the data will be submitted in Appendix A of the 2024 Annual Water Quality Report (AWQR).

None of the October 2024 results were rejected and resampling was not recommended. In October 2024, the overall data assessment indicated that method criteria, precision, accuracy, representativeness, comparability, completeness, and suitability for intended use were acceptable.

4. Results of Analysis

4.1 Comparison to Background Levels

4.1.1 Interwell Prediction Limits

Interwell prediction limits were used to formally assess SSIs over background for analytes detected above the reporting limit in the combined background data set. These analytes were antimony, arsenic, barium, cadmium, chromium, cobalt, copper, lead, nickel, selenium, silver, sulfide, thallium, vanadium, and zinc. Prediction limits calculated utilizing sample data collected from December 2008 through October 2024 for the combined background data set are summarized in Table 3.

Table 3
Prediction Limit Summary
Dec. 2008 – Oct. 2024 Interwell Data (1)

Chemical Name	Prediction Limit	Units	Prediction Limit Type	Retesting Plan	Prediction Limit Method
Antimony	0.0062	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Arsenic	0.00874	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Barium	2.18	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cadmium	0.001614	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Chromium	0.0305	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Cobalt	0.04714	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Copper	0.136	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Lead	0.0878	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Nickel	0.0517	mg/L	Parametric (Lognormal with Kaplan-Meier Adjustment)	1-of-2	$\exp(\hat{\mu}_{KM} + k \cdot \hat{\sigma}_{KM})$
Selenium	0.0188	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Silver	0.00175	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Sulfide (2)	13.4	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Thallium	0.00242	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Vanadium	0.0686	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic
Zinc	0.977	mg/L	Non-Parametric	1-of-2	Maximum Order Statistic

(1) Interwell data consists of the Appendix II parameters detected in the combined background data set (MW-51, MW-60, and PZ-12). Note that background data set adjustments were incorporated in accordance with Section 3.
(2) Sulfide was included only for assessment monitoring wells.

Non-parametric prediction limits were used for antimony, arsenic, barium, chromium, copper, lead, selenium, silver, sulfide, thallium, vanadium, and zinc since either normality assumptions could not be met or there were less than 50% detects in the combined background data set. Parametric prediction limits were used for cadmium, cobalt, and nickel since the assumptions of normality were met with a lognormal transformation and the lognormal limit was accepted as representative of the background distribution.

Prediction limit output is included in Attachment 4. No prediction limit exceedances were identified at MW-27 and MW-50R in October 2024.

4.1.2 Double Quantification Rule Evaluation

The DQR was used to evaluate SSIs over background for the Appendix II constituents which have not been detected above the reporting limit in the combined background data set. The DQR output is included in Attachment 5, with a summary of the October 2024 DQR detections listed in Table 4. In lieu of retesting, the SSI was declared for the single DQR detection listed in Table 4 and evaluated for an SSL in Section 4.2.

Table 4
Oct. 2024 Double Quantification Rule Detections

Well	Constituent(s)
Assessment Monitoring Wells	
MW-27	cis-1,2-Dichloroethene

4.1.3 Exiting Assessment Monitoring

Table 5 presents a summary of the assessment monitoring wells and statistical comparisons required for exiting assessment monitoring. As discussed in Section 2, assessment monitoring wells may return to detection monitoring when Appendix II constituents fall below the interwell prediction limit (for constituents which are detected in the background data set) and below the laboratory reporting limit (for constituents which are not detected in the background data set) for three consecutive sampling events.

Table 5
Evaluation to Exit Assessment Monitoring

Monitoring Location	Sep. 2023	May 2023	Sep. 2024
MW-27			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	No	No	No
MW-50R			
Constituents Detected in Background are Below Prediction Limits	Yes	Yes	Yes
DQR Constituents are Below Reporting Limit	No	Yes	Yes

As shown in Table 5, all Appendix II constituents were not below the interwell prediction limits and laboratory reporting limits for three consecutive sampling events at MW-27 and MW-50R. As a result, MW-27 and MW-50R will not exit assessment monitoring at this time.

4.2 Comparison to the Groundwater Protection Standard

The SSI identified in Table 4 was evaluated for an SSL over the GWPS per 567 IAC 113.10(6)f and g. The comparison to the GWPS was evaluated through a statistical confidence interval in assessment mode, with confidence interval output included in Attachment 6 and summarized in Table 6. As shown in Table 6, an SSL was not identified for cis-1,2-dichloroethene in MW-27.

Table 6
Assessment Monitoring SSL Summary
Dec. 2008 – Oct. 2024 Appendix II Data

Chemical Name	Wells with SSL	Wells without SSL	Groundwater Protection Standard (1)
Assessment Monitoring Wells			
cis-1,2-Dichloroethene (ug/L)		MW-27	70

(1) Values are the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source.

5. Effective Power and Site-Wide False Positive Rate

Statistical power calculations, effective power curves for the 1-of-2 prediction limit plan, and the current site-wide false positive rate (SWFPR) are discussed in detail in Attachment 7. Both the parametric and non-parametric prediction limits currently have good power ratings. The current cumulative annual SWFPR for the plan is 8.7%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive rate.

Statistical power calculations for confidence limits compared to the GWPS under assessment monitoring are included in the confidence interval output of Attachment 6. Confidence limits are calculated to meet statistical power levels of 50% for increases in the true concentration mean of 1.5 times a fixed standard, and 80% for increases in the true concentration mean of 2.0 times a fixed standard, as discussed in the Unified Guidance Chapter 22 (USEPA, 2009).

6. Conclusions

New background monitoring well MW-60 was installed in July 2024. As reported in the Spring 2024 statistical evaluation, background well MW-60 will replace PZ-12 for background monitoring. Therefore, in October 2024, background monitoring was discontinued at PZ-12 and background monitoring for the Appendix I list and sulfide was initiated at MW-60.

In addition, semiannual assessment monitoring for the Appendix I and detected Appendix II constituents was conducted at MW-27 and MW-50R and semiannual background monitoring for the Appendix I list and sulfide was conducted at MW-51 in October 2024.

6.1 Background

The methodology described in Attachment 3 was utilized to conduct the statistical evaluations for assessment monitoring wells MW-27 and MW-50R. The combined background data set (MW-51, MW-60, and PZ-12) was utilized to evaluate SSIs over background. As discussed in Section 6, MW-60 was installed as a new background monitoring well in July 2024 to replace PZ-12. Starting in October 2024, background monitoring was discontinued at PZ-12 and initiated at MW-60. The historical PZ-12 background data will be retained at this time. As more data is obtained from MW-60, consideration will be given as to whether to continue retaining the historical PZ-12 results in the combined background data set.

6.2 Assessment Monitoring

No SSIs were identified in MW-50R. An SSI was identified for cis-1,2-dichloroethene in MW-27. An SSL was not identified. The Fall 2024 statistical evaluation did not identify all Appendix II constituents below the interwell prediction limit or laboratory reporting limit for three consecutive sampling events at MW-27 and MW-50R. Therefore, MW-27 and MW-50R will not exit assessment monitoring.

6.3 Sampling Schedules

In Spring 2025, semiannual background monitoring for the Appendix I list and sulfide will be conducted at background wells MW-51 and MW-60, and semiannual assessment monitoring for the Appendix I and detected Appendix II constituents will be conducted at assessment monitoring wells MW-27 and MW-50R. In accordance with Special Provision X.4.a.3, the next 5-year full Appendix II resampling is scheduled for Fall 2028.

7. References

United States Environmental Protection Agency (USEPA), 1997. *The Lognormal Distribution in Environmental Applications*. EPA/600/R97/006. Office of Solid Waste and Emergency Response, Washington, D.C.

USEPA, 2006. *On the Computation of a 95% Upper Confidence Limit of the Unknown Population Mean Based Upon Data Sets with Below Detection Limit Observations*. EPA/600/R-06/022. Office of Research and Development, Washington, D.C.

USEPA, 2009. *Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities, Unified Guidance*. EPA 530-R-09-007. Office of Resource Conservation and Recovery, Program Implementation and Information Division, Washington, D.C.

Thank you for your attention to this matter, and please contact us if you have any questions or need additional information.

Sincerely,

Foth Infrastructure & Environment, LLC

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cc: Dane Blozovich, RASWC
Bill Buss, Hall Engineering

Attachment 1

Summary of Analytical Results

Attachment 1
Dec. 2008 - Oct. 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
1,1,1,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1		
1,1,1,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1			
1,1,1,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,1,1,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,1,1,2-Tetrachloroethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,1,1-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1		
1,1,1-Trichloroethane	ug/L	2013-09	< 1	< 1			
1,1,1-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,1,1-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,1,1-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,1,1-Trichloroethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,1,2,2-Tetrachloroethane	ug/L	2008-12	< 1	< 1	< 1		
1,1,2,2-Tetrachloroethane	ug/L	2013-09	< 1	< 1			
1,1,2,2-Tetrachloroethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,1,2,2-Tetrachloroethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,1,2,2-Tetrachloroethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,1,2-Trichloroethane	ug/L	2008-12	< 1	< 1	< 1		
1,1,2-Trichloroethane	ug/L	2013-09	< 1	< 1			
1,1,2-Trichloroethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,1,2-Trichloroethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,1,2-Trichloroethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,1,2-Trichloroethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,1-Dichloroethane	ug/L	2008-12	1.2	< 1	< 1		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
1,1-Dichloroethane	ug/L	2009-05	< 1	< 1	< 1		
1,1-Dichloroethane	ug/L	2009-07	1.1	< 1	< 1		
1,1-Dichloroethane	ug/L	2009-09	1.2	< 1	< 1		
1,1-Dichloroethane	ug/L	2009-12	< 1	< 1	< 1		
1,1-Dichloroethane	ug/L	2010-09	< 1	< 1	< 1		
1,1-Dichloroethane	ug/L	2011-03	1.0	< 1.0	< 1.0		
1,1-Dichloroethane	ug/L	2011-09	< 1.0	< 1.0	< 1.0		
1,1-Dichloroethane	ug/L	2012-03	< 1	< 1	< 1		
1,1-Dichloroethane	ug/L	2012-09	< 1	< 1	< 1		
1,1-Dichloroethane	ug/L	2013-05	< 1	< 1			
1,1-Dichloroethane	ug/L	2013-09	< 1	< 1			
1,1-Dichloroethane	ug/L	2014-04	< 1.00	< 1.00			
1,1-Dichloroethane	ug/L	2014-09	0.384 J	< 1			
1,1-Dichloroethane	ug/L	2015-04	0.263 J				
1,1-Dichloroethane	ug/L	2015-09	0.475 J				
1,1-Dichloroethane	ug/L	2016-04	0.363 J				
1,1-Dichloroethane	ug/L	2016-09	0.359 J				
1,1-Dichloroethane	ug/L	2017-05	0.316 J				
1,1-Dichloroethane	ug/L	2017-09	0.503 J				
1,1-Dichloroethane	ug/L	2018-05	0.476 J	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2019-10	0.371 J	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2020-05	0.303 J	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2020-10	0.399 J	< 1	< 5		< 1
1,1-Dichloroethane	ug/L	2021-05	0.242 J	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2023-05	0.256 J	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,1-Dichloroethane	ug/L	2024-05	0.241 J	< 1	< 1		~~< 1~~
1,1-Dichloroethane	ug/L	2024-10	0.223 J	< 1	< 1	< 1	
1,1-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1		
1,1-Dichloroethene	ug/L	2013-09	< 1	< 1			
1,1-Dichloroethene	ug/L	2018-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2018-09	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2019-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2019-10	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2020-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2020-10	< 2	< 2	< 10		< 2
1,1-Dichloroethene	ug/L	2021-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2021-10	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2022-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2022-09	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2023-05	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2023-09	< 2	< 2	< 2		< 2
1,1-Dichloroethene	ug/L	2024-05	< 2	< 2	< 2		~~< 2~~
1,1-Dichloroethene	ug/L	2024-10	< 2	< 2	< 2	< 2	
1,1-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1		
1,1-Dichloropropene	ug/L	2013-09	< 1	< 1			
1,1-Dichloropropene	ug/L	2018-09	< 1	< 1	< 1		< 1
1,1-Dichloropropene	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2008-12	< 1	< 1	< 1		
1,2,3-Trichloropropane	ug/L	2013-09	< 1	< 1			
1,2,3-Trichloropropane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,2,3-Trichloropropane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2022-09	< 1	< 1	< 1		< 1

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
1,2,3-Trichloropropane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2,3-Trichloropropane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,2,3-Trichloropropane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,2,4,5-Tetrachlorobenzene	ug/L	2008-12	< 8	< 8	< 8		
1,2,4,5-Tetrachlorobenzene	ug/L	2013-09	< 8	< 8			
1,2,4,5-Tetrachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
1,2,4,5-Tetrachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
1,2,4-Trichlorobenzene	ug/L	2008-12	< 1	< 1	< 1		
1,2,4-Trichlorobenzene	ug/L	2013-09	< 1	< 1			
1,2,4-Trichlorobenzene	ug/L	2018-09	< 5	< 5	< 5		< 5
1,2,4-Trichlorobenzene	ug/L	2023-09	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2008-12	< 1	< 1	< 1		
1,2-Dibromo-3-chloropropane	ug/L	2013-09	< 1	< 1			
1,2-Dibromo-3-chloropropane	ug/L	2018-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2018-09	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2019-10	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2020-10	< 5	< 5	< 25		< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2021-10	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2022-09	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-05	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2023-09	< 5	< 5	< 5		< 5
1,2-Dibromo-3-chloropropane	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
1,2-Dibromo-3-chloropropane	ug/L	2024-10	< 5	< 5	< 5	< 5	
1,2-Dibromoethane	ug/L	2008-12	< 1	< 1	< 1		
1,2-Dibromoethane	ug/L	2013-09	< 1	< 1			
1,2-Dibromoethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,2-Dibromoethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2-Dibromoethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,2-Dibromoethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,2-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1		
1,2-Dichlorobenzene	ug/L	2013-09	< 1	< 1			
1,2-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5		< 1
1,2-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,2-Dichlorobenzene	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,2-Dichloroethane	ug/L	2008-12	< 1	< 1	< 1		
1,2-Dichloroethane	ug/L	2013-09	< 1	< 1			
1,2-Dichloroethane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2019-05	< 1	< 1	< 1		< 1

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
1,2-Dichloroethane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,2-Dichloroethane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2-Dichloroethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,2-Dichloroethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1		
1,2-Dichloropropane	ug/L	2013-09	< 1	< 1			
1,2-Dichloropropane	ug/L	2018-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2019-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2019-10	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2020-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2020-10	< 1	< 1	< 5		< 1
1,2-Dichloropropane	ug/L	2021-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2021-10	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2022-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2022-09	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2023-05	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,2-Dichloropropane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,2-Dichloropropane	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,3,5-Trinitrobenzene	ug/L	2008-12	< 8	< 8	< 8		
1,3,5-Trinitrobenzene	ug/L	2013-09	< 8	< 8			
1,3,5-Trinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
1,3,5-Trinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
1,3-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1		
1,3-Dichlorobenzene	ug/L	2013-09	< 1	< 1			
1,3-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1		< 1
1,3-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1		< 1
1,3-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1		
1,3-Dichloropropane	ug/L	2013-09	< 1	< 1			
1,3-Dichloropropane	ug/L	2018-09	< 1	< 1	< 1		< 1
1,3-Dichloropropane	ug/L	2023-09	< 1	< 1	< 1		< 1
1,3-Dinitrobenzene	ug/L	2013-09	< 8	< 8			
1,3-Dinitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
1,3-Dinitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
1,4-Dichlorobenzene	ug/L	2008-12	< 1	< 1	< 1		
1,4-Dichlorobenzene	ug/L	2013-09	< 1	< 1			
1,4-Dichlorobenzene	ug/L	2018-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2018-09	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2019-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2019-10	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2020-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2020-10	< 1	< 1	< 5		< 1
1,4-Dichlorobenzene	ug/L	2021-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2021-10	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2022-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2022-09	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2023-05	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2023-09	< 1	< 1	< 1		< 1
1,4-Dichlorobenzene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
1,4-Dichlorobenzene	ug/L	2024-10	< 1	< 1	< 1	< 1	
1,4-Naphthoquinone	ug/L	2008-12	< 8	< 8	< 8		
1,4-Naphthoquinone	ug/L	2013-09	< 8	< 8			
1,4-Naphthoquinone	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
1,4-Naphthoquinone	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
1-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8		
1-Naphthylamine	ug/L	2013-09	< 8	< 8			
1-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
1-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,2-Dichloropropane	ug/L	2008-12	< 1	< 1	< 1		
2,2-Dichloropropane	ug/L	2013-09	< 1	< 1			
2,2-Dichloropropane	ug/L	2018-09	< 4	< 4	< 4		< 4
2,2-Dichloropropane	ug/L	2023-09	< 4	< 4	< 4		< 4
2,2'-oxybis(1-Chloropropane)	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,2'-oxybis(1-Chloropropane)	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,3,4,6-Tetrachlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2,3,4,6-Tetrachlorophenol	ug/L	2013-09	< 8	< 8			
2,3,4,6-Tetrachlorophenol	ug/L	2018-09	< 10.5	< 10.1	0.623 J		< 11
2,3,4,6-Tetrachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,4,5-T	ug/L	2008-12	< 0.5	< 0.5	< 0.5		
2,4,5-T	ug/L	2013-12	< 0.5	< 0.5			
2,4,5-T	ug/L	2018-09	< 1.09	< 1.05	< 1.07		< 1.18
2,4,5-T	ug/L	2023-09	< 1.08	< 1.15	< 1.07		
2,4,5-TP (Silvex)	ug/L	2008-12	< 0.5	< 0.5	< 0.5		
2,4,5-TP (Silvex)	ug/L	2013-12	< 0.5	< 0.5			
2,4,5-TP (Silvex)	ug/L	2018-09	< 1.09	< 1.05	< 1.07		< 1.18
2,4,5-TP (Silvex)	ug/L	2023-09	< 1.08	< 1.15	< 1.07		
2,4,5-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2,4,5-Trichlorophenol	ug/L	2013-09	< 8	< 8			
2,4,5-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,4,5-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,4,6-Trichlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2,4,6-Trichlorophenol	ug/L	2013-09	< 8	< 8			
2,4,6-Trichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,4,6-Trichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,4-D	ug/L	2008-12	< 2	< 2	< 2		
2,4-D	ug/L	2013-12	< 2	< 2			
2,4-D	ug/L	2018-09	0.834 J	< 1.05	< 1.07		< 1.18
2,4-D	ug/L	2023-09	< 1.08	< 1.15	< 1.07		
2,4-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2,4-Dichlorophenol	ug/L	2013-09	< 8	< 8			
2,4-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,4-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,4-Dimethylphenol	ug/L	2008-12	< 8	< 8	< 8		
2,4-Dimethylphenol	ug/L	2013-09	< 8	< 8			
2,4-Dimethylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,4-Dimethylphenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,4-Dinitrophenol	ug/L	2008-12	< 8	< 8	< 8		
2,4-Dinitrophenol	ug/L	2013-09	< 8	< 8			
2,4-Dinitrophenol	ug/L	2018-09	< 21.1	< 20.2	< 20.8		< 22
2,4-Dinitrophenol	ug/L	2023-09	< 19.2	< 20	< 20		< 21.7
2,4-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8		
2,4-Dinitrotoluene	ug/L	2013-09	< 8	< 8			
2,4-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,4-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,6-Dichlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2,6-Dichlorophenol	ug/L	2013-09	< 8	< 8			
2,6-Dichlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,6-Dichlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2,6-Dinitrotoluene	ug/L	2008-12	< 8	< 8	< 8		
2,6-Dinitrotoluene	ug/L	2013-09	< 8	< 8			
2,6-Dinitrotoluene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2,6-Dinitrotoluene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Acetylaminofluorene	ug/L	2008-12	< 8	< 8	< 8		
2-Acetylaminofluorene	ug/L	2013-09	< 8	< 8			
2-Acetylaminofluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Acetylaminofluorene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Butanone	ug/L	2008-12	< 5	< 5	< 5		
2-Butanone	ug/L	2013-09	< 5	< 5			
2-Butanone	ug/L	2018-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2018-09	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2019-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2019-10	< 10	< 10	< 10		< 10

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
2-Butanone	ug/L	2020-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2020-10	< 10	< 10	< 50		< 10
2-Butanone	ug/L	2021-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2021-10	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2022-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2022-09	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2023-05	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2023-09	< 10	< 10	< 10		< 10
2-Butanone	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
2-Butanone	ug/L	2024-10	< 10	< 10	< 10	3.53 J	
2-Chloronaphthalene	ug/L	2008-12	< 8	< 8	< 8		
2-Chloronaphthalene	ug/L	2013-09	< 8	< 8			
2-Chloronaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Chloronaphthalene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Chlorophenol	ug/L	2008-12	< 8	< 8	< 8		
2-Chlorophenol	ug/L	2013-09	< 8	< 8			
2-Chlorophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Chlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Hexanone	ug/L	2008-12	< 5	< 5	< 5		
2-Hexanone	ug/L	2013-09	< 5	< 5			
2-Hexanone	ug/L	2018-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2018-09	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2019-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2019-10	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2020-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2020-10	< 10	< 10	< 50		< 10
2-Hexanone	ug/L	2021-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2021-10	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2022-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2022-09	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2023-05	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2023-09	< 10	< 10	< 10		< 10
2-Hexanone	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
2-Hexanone	ug/L	2024-10	< 10	< 10	< 10	< 10	
2-Methylnaphthalene	ug/L	2008-12	< 8	< 8	< 8		
2-Methylnaphthalene	ug/L	2013-09	< 8	< 8			
2-Methylnaphthalene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Methylnaphthalene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Methylphenol	ug/L	2008-12	< 8	< 8	< 8		
2-Methylphenol	ug/L	2013-09	< 8	< 8			
2-Methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Methylphenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Naphthylamine	ug/L	2008-12	< 8	< 8	< 8		
2-Naphthylamine	ug/L	2013-09	< 8	< 8			
2-Naphthylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Naphthylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8		
2-Nitroaniline	ug/L	2013-09	< 8	< 8			
2-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
2-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8		
2-Nitrophenol	ug/L	2013-09	< 8	< 8			
2-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
2-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
3,3-Dichlorobenzidine	ug/L	2008-12	< 8	< 8	< 8		
3,3-Dichlorobenzidine	ug/L	2013-09	< 8	< 8			
3,3-Dichlorobenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
3,3-Dichlorobenzidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
3,3-Dimethylbenzidine	ug/L	2008-12	< 8	< 8	< 8		
3,3-Dimethylbenzidine	ug/L	2013-09	< 8	< 8			
3,3-Dimethylbenzidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
3,3-Dimethylbenzidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
3-Methylcholanthrene	ug/L	2008-12	< 8	< 8	< 8		
3-Methylcholanthrene	ug/L	2013-09	< 8	< 8			
3-Methylcholanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
3-Methylcholanthrene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
3-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8		
3-Nitroaniline	ug/L	2013-09	< 8	< 8			
3-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
3-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4,4'-DDD	ug/L	2008-12	< 0.05	< 0.05			
4,4'-DDD	ug/L	2013-09	< 0.05	< 0.05			
4,4'-DDD	ug/L	2018-09	< 0.0337	0.00795 J	< 0.0337		< 0.036
4,4'-DDD	ug/L	2019-02	< 0.0352		< 0.0352		
4,4'-DDD	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
4,4'-DDE	ug/L	2008-12	< 0.05	< 0.05			
4,4'-DDE	ug/L	2013-09	< 0.05	< 0.05			
4,4'-DDE	ug/L	2018-09	< 0.0337	< 0.034	0.00313 J		< 0.036
4,4'-DDE	ug/L	2019-02	0.0041 J		< 0.0352		
4,4'-DDE	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
4,4'-DDT	ug/L	2008-12	< 0.05	< 0.05			
4,4'-DDT	ug/L	2013-09	< 0.05	< 0.05			
4,4'-DDT	ug/L	2018-09	0.0288 J	< 0.034	< 0.0337		< 0.036
4,4'-DDT	ug/L	2019-02	< 0.0352		< 0.0352		
4,4'-DDT	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
4,6-Dinitro-2-methylphenol	ug/L	2008-12	< 8	< 8	< 8		
4,6-Dinitro-2-methylphenol	ug/L	2013-09	< 8	< 8			
4,6-Dinitro-2-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4,6-Dinitro-2-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Aminobiphenyl	ug/L	2008-12	< 8	< 8	< 8		
4-Aminobiphenyl	ug/L	2013-09	< 8	< 8			
4-Aminobiphenyl	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Aminobiphenyl	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Bromophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8		
4-Bromophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8			
4-Bromophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Bromophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Chloro-3-methylphenol	ug/L	2008-12	< 8	< 8	< 8		
4-Chloro-3-methylphenol	ug/L	2013-09	< 8	< 8			
4-Chloro-3-methylphenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Chloro-3-methylphenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Chloroaniline	ug/L	2008-12	< 8	< 8	< 8		
4-Chloroaniline	ug/L	2013-09	< 8	< 8			
4-Chloroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Chloroaniline	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Chlorophenyl Phenyl Ether	ug/L	2008-12	< 8	< 8	< 8		
4-Chlorophenyl Phenyl Ether	ug/L	2013-09	< 8	< 8			
4-Chlorophenyl Phenyl Ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Chlorophenyl Phenyl Ether	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Methyl-2-pentanone	ug/L	2008-12	< 5	< 5	< 5		
4-Methyl-2-pentanone	ug/L	2013-09	< 5	< 5			
4-Methyl-2-pentanone	ug/L	2018-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2018-09	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2019-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2019-10	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2020-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2020-10	< 10	< 10	< 50		< 10
4-Methyl-2-pentanone	ug/L	2021-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2021-10	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2022-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2022-09	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2023-05	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2023-09	< 10	< 10	< 10		< 10
4-Methyl-2-pentanone	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
4-Methyl-2-pentanone	ug/L	2024-10	< 10	< 10	< 10	< 10	
4-Nitroaniline	ug/L	2008-12	< 8	< 8	< 8		
4-Nitroaniline	ug/L	2013-09	< 8	< 8			
4-Nitroaniline	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Nitroaniline	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
4-Nitrophenol	ug/L	2008-12	< 8	< 8	< 8		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
4-Nitrophenol	ug/L	2013-09	< 8	< 8			
4-Nitrophenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
4-Nitrophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
5-Nitro-o-toluidine	ug/L	2008-12	< 8	< 8	< 8		
5-Nitro-o-toluidine	ug/L	2013-09	< 8	< 8			
5-Nitro-o-toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
5-Nitro-o-toluidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
7,12-Dimethylbenz(a)anthracene	ug/L	2008-12	< 8	< 8	< 8		
7,12-Dimethylbenz(a)anthracene	ug/L	2013-09	< 8	< 8			
7,12-Dimethylbenz(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
7,12-Dimethylbenz(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Acenaphthene	ug/L	2008-12	< 8	< 8	< 8		
Acenaphthene	ug/L	2013-09	< 8	< 8			
Acenaphthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Acenaphthene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Acenaphthylene	ug/L	2008-12	< 8	< 8	< 8		
Acenaphthylene	ug/L	2013-09	< 8	< 8			
Acenaphthylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Acenaphthylene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Acetone	ug/L	2008-12	< 10	< 10	< 10		
Acetone	ug/L	2013-09	< 10	< 10			
Acetone	ug/L	2018-05	10.4	9.94 J	11.1		36
Acetone	ug/L	2018-08	< 10		< 10		< 10
Acetone	ug/L	2018-09	< 10	< 10	4.59 J		< 10
Acetone	ug/L	2019-05	< 10	20.2	4.32 J		9.9 J
Acetone	ug/L	2019-10	< 10	8.87 J	12.2		14.4
Acetone	ug/L	2020-01			< 10		< 10
Acetone	ug/L	2020-05	< 10	< 10	3.27 J		25.7
Acetone	ug/L	2020-07					6.19 J
Acetone	ug/L	2020-10	< 10	111	< 50		13.7
Acetone	ug/L	2020-12					< 10
Acetone	ug/L	2021-05	6.27 J	18.2	< 10		5.89 J
Acetone	ug/L	2021-10	< 10	12.7	< 10		4.49 J
Acetone	ug/L	2022-05	< 10	17.8	< 10		5.04 J
Acetone	ug/L	2022-09	< 10	33.6	< 10		< 10
Acetone	ug/L	2023-05	42.3	3.63 J	< 10		13.8
Acetone	ug/L	2023-08					< 10
Acetone	ug/L	2023-09	20.3	24.7	< 10		20.8
Acetone	ug/L	2024-05	< 10	7.07 J	< 10		~~26.3~~
Acetone	ug/L	2024-10	< 10	< 10	< 10	< 10	
Acetonitrile	ug/L	2008-12	< 10	< 10	< 10		
Acetonitrile	ug/L	2013-09	< 10	< 10			
Acetonitrile	mg/L	2018-09	< 10	< 10	< 10		< 10
Acetonitrile	ug/L	2023-09	< 10000	< 10000	< 10000		
Acetophenone	ug/L	2008-12	< 8	< 8	< 8		
Acetophenone	ug/L	2013-09	< 8	< 8			
Acetophenone	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Acetophenone	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Acrolein	ug/L	2008-12	< 10	< 10	< 10		
Acrolein	ug/L	2013-09	< 10	< 10			
Acrolein	ug/L	2018-09	< 10	< 10	< 10		< 10
Acrolein	ug/L	2023-09	< 10	< 10	< 10		< 10
Acrylonitrile	ug/L	2008-12	< 5	< 5	< 5		
Acrylonitrile	ug/L	2013-09	< 5	< 5			
Acrylonitrile	ug/L	2018-05	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2018-09	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2019-05	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2019-10	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2020-05	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2020-10	< 5	< 5	< 25		< 5
Acrylonitrile	ug/L	2021-05	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2021-10	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2022-05	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2022-09	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2023-05	< 5	< 5	< 5		< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Acrylonitrile	ug/L	2023-09	< 5	< 5	< 5		< 5
Acrylonitrile	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
Acrylonitrile	ug/L	2024-10	< 5	< 5	< 5	< 5	
Aldrin	ug/L	2008-12	< 0.05	< 0.05			
Aldrin	ug/L	2013-09	< 0.05	< 0.05			
Aldrin	ug/L	2018-09	0.0161 J	< 0.034	< 0.0337		< 0.036
Aldrin	ug/L	2019-02	< 0.0352		< 0.0352		
Aldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Allyl Chloride	ug/L	2008-12	< 0	< 0	< 0		
Allyl Chloride	ug/L	2013-09	< 1	< 1			
Allyl Chloride	ug/L	2018-09	< 2	< 2	< 2		< 2
Allyl Chloride	ug/L	2023-09	< 2	< 2	< 2		< 2
alpha-BHC	ug/L	2008-12	< 0.05	< 0.05			
alpha-BHC	ug/L	2013-09	< 0.05	< 0.05			
alpha-BHC	ug/L	2018-09	0.00757 J	< 0.034	< 0.0337		< 0.036
alpha-BHC	ug/L	2019-02	0.00595 J		< 0.0352		
alpha-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Anthracene	ug/L	2008-12	< 8	< 8	< 8		
Anthracene	ug/L	2013-09	< 8	< 8			
Anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Anthracene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Antimony	mg/L	2008-12	< 0.001	< 0.001	< 0.001		
Antimony	mg/L	2013-09	< 0.01	< 0.01			
Antimony	mg/L	2018-05	< 0.001	0.0031	0.00216		0.00128
Antimony	mg/L	2018-09	< 0.001	< 0.001	0.000795 J		0.00295
Antimony	mg/L	2019-05	< 0.001	0.00112	< 0.001		< 0.001
Antimony	mg/L	2019-10	< 0.001	< 0.001	< 0.001		0.000626 J
Antimony	mg/L	2020-05	< 0.001	< 0.001	< 0.001		< 0.001
Antimony	mg/L	2020-10	< 0.001	< 0.001	< 0.001		0.00131
Antimony	mg/L	2021-05	< 0.002	< 0.002	< 0.002		< 0.002
Antimony	mg/L	2021-10	< 0.002	< 0.002	< 0.002		< 0.002
Antimony	mg/L	2022-05	< 0.002	< 0.002	< 0.002		< 0.002
Antimony	mg/L	2022-09	< 0.002	< 0.002	< 0.002		< 0.002
Antimony	mg/L	2023-05	< 0.002	< 0.002	< 0.002		< 0.002
Antimony	mg/L	2023-09	< 0.002	< 0.002	0.00331		
Antimony	mg/L	2024-05	< 0.002	0.00112 J	< 0.002		~~< 0.002~~
Antimony	mg/L	2024-10	< 0.002	< 0.002	0.00112 J	0.0062	
Arsenic	mg/L	2008-12	< 0.004	< 0.002	< 0.004		
Arsenic	mg/L	2013-09	< 0.01	< 0.01			
Arsenic	mg/L	2018-05	0.00249	0.00234	< 0.002		0.00874
Arsenic	mg/L	2018-09	0.00116 J	0.0018 J	< 0.002		0.00564
Arsenic	mg/L	2019-05	0.00526	0.00366	< 0.002		0.00593
Arsenic	mg/L	2019-10	0.0101	0.00584	< 0.002		0.00516
Arsenic	mg/L	2020-05	0.0147	0.00257	< 0.002		0.00666
Arsenic	mg/L	2020-10	0.0044	0.00249	< 0.002		~~0.0101~~
Arsenic	mg/L	2021-05	0.0122	0.00163 J	< 0.002		0.00616
Arsenic	mg/L	2021-10	0.012	0.00251	< 0.002		0.0051
Arsenic	mg/L	2022-05	0.00589	0.000828 J	< 0.002		0.00272
Arsenic	mg/L	2022-09	0.00294	0.00173 J	< 0.002		0.00271
Arsenic	mg/L	2023-05	0.00681	0.00177 J	0.00061 J		~~0.00262~~
Arsenic	mg/L	2023-09	0.00726	0.00227	< 0.002		
Arsenic	mg/L	2024-05	0.00184 J	0.00195 J	< 0.002		~~0.00202~~
Arsenic	mg/L	2024-10	0.000907 J	0.0013 J	< 0.002	0.00492	
Barium	mg/L	2008-12	0.0267	0.224	0.0748		
Barium	mg/L	2009-05	0.141	0.149	0.0757		
Barium	mg/L	2009-07	0.136	0.161	0.0738		
Barium	mg/L	2009-09	0.0591	0.0897	< 0.01		
Barium	mg/L	2009-12	0.0517	0.241	0.116		
Barium	mg/L	2010-09	0.0728	0.205	0.14		
Barium	mg/L	2011-03	0.0558	0.141	0.0233		
Barium	mg/L	2011-09	0.0509	0.114	0.0236		
Barium	mg/L	2012-03	0.0368	0.13			
Barium	mg/L	2012-09	0.0879	0.154			
Barium	mg/L	2012-10			0.0149		
Barium	mg/L	2013-05	0.0496	0.14			0.321

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Barium	mg/L	2013-07					2.18
Barium	mg/L	2013-09			0.162		0.0504
Barium	mg/L	2013-09	0.0577	0.126			
Barium	mg/L	2013-12					0.188
Barium	mg/L	2014-04	0.0272	0.117			0.142
Barium	mg/L	2014-09	0.0548	0.129			0.0341
Barium	mg/L	2015-04	0.0596	0.138	0.0131		0.0260
Barium	mg/L	2015-09	0.0367	0.135	0.00867		0.0195
Barium	mg/L	2016-04	0.0685	0.0793	0.00862		0.0186
Barium	mg/L	2016-09	0.07	0.0859	0.00697		0.0416
Barium	mg/L	2017-05	0.0628	0.115	0.00855		0.0246
Barium	mg/L	2017-09	0.0535	0.0602	0.0087		
Barium	mg/L	2018-05	0.0954	0.0484	0.0144		0.116
Barium	mg/L	2018-09	0.0608	0.0469	0.0107		0.0665
Barium	mg/L	2019-05	0.0807	0.0685	0.00821		0.0236
Barium	mg/L	2019-10	0.0714	0.0475	0.00863		0.0447
Barium	mg/L	2020-05	0.0938	0.0738	0.00927		0.0328
Barium	mg/L	2020-10	0.0671	0.077	0.00684		0.101
Barium	mg/L	2021-05	0.0844	0.0568	0.00794		0.0353
Barium	mg/L	2021-10	0.0919	0.0884	0.00788		0.0316
Barium	mg/L	2022-05	0.0843	0.0386	0.043		0.0233
Barium	mg/L	2022-09	0.0795	0.0332	0.0127		0.0245
Barium	mg/L	2023-05	0.0819	0.0509	0.00663		~~0.0153~~
Barium	mg/L	2023-09	0.085	0.0735	0.00743		
Barium	mg/L	2024-05	0.0903	0.0635	0.00555		~~0.0176~~
Barium	mg/L	2024-10	0.0669	0.0532	0.00631	0.0203	
Benzene	ug/L	2008-12	< 1	< 1	< 1		
Benzene	ug/L	2013-09	< 1	< 1			
Benzene	ug/L	2018-05	0.889	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2018-09	0.22 J	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2019-05	0.608	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2019-10	0.708	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2020-05	0.744	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2020-10	0.427 J	< 0.5	< 2.5		< 0.5
Benzene	ug/L	2021-05	0.815	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2021-10	0.558	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2022-05	0.858	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2022-09	0.221 J	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2023-05	0.971	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2023-09	0.977	< 0.5	< 0.5		< 0.5
Benzene	ug/L	2024-05	0.856	< 0.5	< 0.5		~~< 0.5~~
Benzene	ug/L	2024-10	< 0.5	< 0.5	< 0.5	< 0.5	
Benzo(a)anthracene	ug/L	2008-12	< 8	< 8	< 8		
Benzo(a)anthracene	ug/L	2013-09	< 8	< 8			
Benzo(a)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Benzo(a)anthracene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Benzo(a)pyrene	ug/L	2008-12	< 8	< 8	< 8		
Benzo(a)pyrene	ug/L	2013-09	< 8	< 8			
Benzo(a)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Benzo(a)pyrene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Benzo(b)fluoranthene	ug/L	2008-12	< 8	< 8	< 8		
Benzo(b)fluoranthene	ug/L	2013-09	< 8	< 8			
Benzo(b)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Benzo(b)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Benzo(ghi)perylene	ug/L	2008-12	< 8	< 8	< 8		
Benzo(ghi)perylene	ug/L	2013-09	< 8	< 8			
Benzo(ghi)perylene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Benzo(ghi)perylene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Benzo(k)fluoranthene	ug/L	2008-12	< 8	< 8	< 8		
Benzo(k)fluoranthene	ug/L	2013-09	< 8	< 8			
Benzo(k)fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Benzo(k)fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Benzyl Alcohol	ug/L	2008-12	< 8	< 8	< 8		
Benzyl Alcohol	ug/L	2013-09	< 8	< 8			
Benzyl Alcohol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Benzyl Alcohol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Beryllium	mg/L	2008-12	< 0.004	< 0.004	< 0.004		
Beryllium	mg/L	2013-09	< 0.001	< 0.001			
Beryllium	mg/L	2018-05	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2018-09	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2019-05	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2019-10	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2020-05	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2020-10	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2021-05	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2021-10	< 0.001	0.000666 J	< 0.001		< 0.001
Beryllium	mg/L	2022-05	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2022-09	< 0.001	< 0.001	< 0.001		< 0.001
Beryllium	mg/L	2023-05	< 0.001	< 0.001	0.000422 J		~~0.000429 J~~
Beryllium	mg/L	2023-09	< 0.001	< 0.001	< 0.001		
Beryllium	mg/L	2024-05	< 0.001	< 0.001	< 0.001		~~< 0.001~~
Beryllium	mg/L	2024-10	< 0.001	< 0.001	< 0.001	< 0.001	
beta-BHC	ug/L	2008-12	< 0.05	< 0.05			
beta-BHC	ug/L	2013-09	< 0.05	< 0.05			
beta-BHC	ug/L	2018-09	0.0339	< 0.034	< 0.0337		< 0.036
beta-BHC	ug/L	2019-02	0.0279 J		< 0.0352		
beta-BHC	ug/L	2019-05	< 0.0333		< 0.0333		< 0.033
beta-BHC	ug/L	2019-10	< 0.0327				
beta-BHC	ug/L	2020-05	0.0214 J				
beta-BHC	ug/L	2020-10	0.0219 J				
beta-BHC	ug/L	2021-05	< 0.064				
beta-BHC	ug/L	2021-10	< 0.0344				
beta-BHC	ug/L	2022-05	< 0.0762				
beta-BHC	ug/L	2022-09	< 0.0744				
beta-BHC	ug/L	2023-05	< 0.0711				
beta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
beta-BHC	ug/L	2024-05	< 0.0604				
beta-BHC	ug/L	2024-10	< 0.0911				
bis(2-Chloroethoxy)methane	ug/L	2008-12	< 8	< 8	< 8		
bis(2-Chloroethoxy)methane	ug/L	2013-09	< 8	< 8			
bis(2-Chloroethoxy)methane	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
bis(2-Chloroethoxy)methane	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
bis(2-Chloroethyl)ether	ug/L	2008-12	< 8	< 8	< 8		
bis(2-Chloroethyl)ether	ug/L	2013-09	< 8	< 8			
bis(2-Chloroethyl)ether	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
bis(2-Chloroethyl)ether	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
bis(2-Ethylhexyl)phthalate	ug/L	2013-09	11	< 8			
bis(2-Ethylhexyl)phthalate	ug/L	2013-12	< 10				
bis(2-Ethylhexyl)phthalate	ug/L	2014-04	< 10.3 J				
bis(2-Ethylhexyl)phthalate	ug/L	2014-09	< 10				
bis(2-Ethylhexyl)phthalate	ug/L	2015-04	< 10.2 J				
bis(2-Ethylhexyl)phthalate	ug/L	2015-09	< 10.3 J				
bis(2-Ethylhexyl)phthalate	ug/L	2016-04	< 10.4 J				
bis(2-Ethylhexyl)phthalate	ug/L	2016-09	< 10.9				
bis(2-Ethylhexyl)phthalate	ug/L	2017-05	< 10.2				
bis(2-Ethylhexyl)phthalate	ug/L	2017-09	< 10.3				
bis(2-Ethylhexyl)phthalate	ug/L	2018-05	< 10.3				
bis(2-Ethylhexyl)phthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
bis(2-Ethylhexyl)phthalate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Bromochloromethane	ug/L	2008-12	< 1	< 1	< 1		
Bromochloromethane	ug/L	2013-09	< 1	< 1			
Bromochloromethane	ug/L	2018-05	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2018-09	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2019-05	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2019-10	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2020-05	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2020-10	< 5	< 5	< 25		< 5
Bromochloromethane	ug/L	2021-05	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2021-10	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2022-05	< 5	< 5	< 5		< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Bromochloromethane	ug/L	2022-09	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2023-05	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2023-09	< 5	< 5	< 5		< 5
Bromochloromethane	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
Bromochloromethane	ug/L	2024-10	< 5	< 5	< 5	< 5	
Bromodichloromethane	ug/L	2008-12	< 1	< 1	< 1		
Bromodichloromethane	ug/L	2013-09	< 1	< 1			
Bromodichloromethane	ug/L	2018-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2018-09	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2019-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2019-10	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2020-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2020-10	< 1	< 1	< 5		< 1
Bromodichloromethane	ug/L	2021-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2021-10	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2022-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2022-09	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2023-05	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2023-09	< 1	< 1	< 1		< 1
Bromodichloromethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Bromodichloromethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
Bromoform	ug/L	2008-12	< 1	< 1	< 1		
Bromoform	ug/L	2013-09	< 1	< 1			
Bromoform	ug/L	2018-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2018-09	< 5	< 5	< 5		< 5
Bromoform	ug/L	2019-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2019-10	< 5	< 5	< 5		< 5
Bromoform	ug/L	2020-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2020-10	< 5	< 5	< 25		< 5
Bromoform	ug/L	2021-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2021-10	< 5	< 5	< 5		< 5
Bromoform	ug/L	2022-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2022-09	< 5	< 5	< 5		< 5
Bromoform	ug/L	2023-05	< 5	< 5	< 5		< 5
Bromoform	ug/L	2023-09	< 5	< 5	< 5		< 5
Bromoform	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
Bromoform	ug/L	2024-10	< 5	< 5	< 5	< 5	
Bromomethane	ug/L	2008-12	< 1	< 1	< 1		
Bromomethane	ug/L	2013-09	< 1	< 1			
Bromomethane	ug/L	2018-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2018-09	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2019-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2019-10	3.1 J	< 4	< 4		< 4
Bromomethane	ug/L	2020-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2020-10	< 4	< 4	< 20		< 4
Bromomethane	ug/L	2021-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2021-10	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2022-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2022-09	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2023-05	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2023-09	< 4	< 4	< 4		< 4
Bromomethane	ug/L	2024-05	< 4	< 4	< 4		~~< 4~~
Bromomethane	ug/L	2024-10	< 4	< 4	< 4	< 4	
Butylbenzylphthalate	ug/L	2008-12	< 8	< 8	< 8		
Butylbenzylphthalate	ug/L	2013-09	< 8	< 8			
Butylbenzylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Butylbenzylphthalate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Cadmium	mg/L	2008-12	< 0.001	0.0014	< 0.001		
Cadmium	mg/L	2009-05	< 0.005	< 0.005	< 0.005		
Cadmium	mg/L	2009-07	< 0.005	< 0.005	< 0.005		
Cadmium	mg/L	2009-09	< 0.005	< 0.005	< 0.005		
Cadmium	mg/L	2009-12	< 0.005	< 0.005	< 0.005		
Cadmium	mg/L	2010-09	< 0.005	< 0.005	< 0.005		
Cadmium	mg/L	2011-03	< 0.0050	< 0.0050	< 0.0050		
Cadmium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050		

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Cadmium	mg/L	2012-03	< 0.005	< 0.005			
Cadmium	mg/L	2012-09	< 0.005	< 0.005			
Cadmium	mg/L	2012-10			< 0.005		
Cadmium	mg/L	2013-05	< 0.005	< 0.005			< 0.005
Cadmium	mg/L	2013-07					0.0142
Cadmium	mg/L	2013-09			< 0.005		< 0.005
Cadmium	mg/L	2013-09	< 0.005	< 0.005			
Cadmium	mg/L	2013-12					< 0.0050
Cadmium	mg/L	2014-04	0.000247 J	0.000117 J			0.00105
Cadmium	mg/L	2014-09	< 0.0005	< 0.0005			0.000565
Cadmium	mg/L	2015-04	< 0.000500	< 0.000500	< 0.000500		0.000274 J
Cadmium	mg/L	2015-09	< 0.0005	< 0.0005	< 0.0005		< 0.0005
Cadmium	mg/L	2016-04	0.000056 J	< 0.0005	< 0.0005		0.000206 J
Cadmium	mg/L	2016-09	0.000149 J	< 0.0005	0.000046 J		0.000379 J
Cadmium	mg/L	2017-05	< 0.0005	< 0.0005	0.000109 J		0.000277 J
Cadmium	mg/L	2017-09	0.000167 J	0.000074 J	0.000116 J		
Cadmium	mg/L	2018-05	< 0.0005	0.000113 J	0.000137 J		0.000653
Cadmium	mg/L	2018-09	0.000238 J	0.000228 J	0.000098 J		0.000585
Cadmium	mg/L	2019-05	0.000304 J	< 0.0005	< 0.0005		0.000389 J
Cadmium	mg/L	2019-10	0.000144	< 0.0001	0.000084 J		0.000982
Cadmium	mg/L	2020-05	0.000113	< 0.0001	0.000137		0.000328
Cadmium	mg/L	2020-10	0.00005 J	0.000059 J	< 0.0001		0.00113
Cadmium	mg/L	2021-05	0.000613	0.000177	0.000263		0.000564
Cadmium	mg/L	2021-10	0.000189	0.000807	0.000115		0.000844
Cadmium	mg/L	2022-05	0.000256	0.000101	0.000152		0.000296
Cadmium	mg/L	2022-09	0.000173	0.000103	0.000084 J		0.000461
Cadmium	mg/L	2023-05	0.000154 J	< 0.0002	0.000239		~~0.000395~~
Cadmium	mg/L	2023-09	0.000319	< 0.0002	< 0.0002		
Cadmium	mg/L	2024-05	0.000326	0.000328	< 0.0008		~~0.000176 J~~
Cadmium	mg/L	2024-10	< 0.0002	< 0.0002	< 0.0002	0.000146 J	
Carbon Disulfide	ug/L	2008-12	< 1	< 1	< 1		
Carbon Disulfide	ug/L	2013-09	< 1	< 1			
Carbon Disulfide	ug/L	2018-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2018-09	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2019-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2019-10	< 1	< 1	< 1		1.08
Carbon Disulfide	ug/L	2020-01					< 1
Carbon Disulfide	ug/L	2020-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2020-10	< 1	< 1	< 5		< 1
Carbon Disulfide	ug/L	2021-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2021-10	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2022-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2022-09	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2023-05	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2023-09	< 1	< 1	< 1		< 1
Carbon Disulfide	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Carbon Disulfide	ug/L	2024-10	< 1	< 1	< 1	< 1	
Carbon Tetrachloride	ug/L	2008-12	< 1	< 1	< 1		
Carbon Tetrachloride	ug/L	2013-09	< 1	< 1			
Carbon Tetrachloride	ug/L	2018-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2018-09	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2019-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2019-10	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2020-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2020-10	< 2	< 2	< 10		< 2
Carbon Tetrachloride	ug/L	2021-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2021-10	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2022-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2022-09	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2023-05	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2023-09	< 2	< 2	< 2		< 2
Carbon Tetrachloride	ug/L	2024-05	< 2	< 2	< 2		~~< 2~~
Carbon Tetrachloride	ug/L	2024-10	< 2	< 2	< 2	< 2	
Chlorobenzene	ug/L	2008-12	< 1	< 1	< 1		
Chlorobenzene	ug/L	2013-09	< 1	< 1			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Chlorobenzene	ug/L	2018-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2018-09	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2019-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2019-10	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2020-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2020-10	< 1	< 1	< 5		< 1
Chlorobenzene	ug/L	2021-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2021-10	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2022-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2022-09	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2023-05	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2023-09	< 1	< 1	< 1		< 1
Chlorobenzene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Chlorobenzene	ug/L	2024-10	< 1	< 1	< 1	< 1	
Chlorobenzilate	ug/L	2008-12	< 8	< 8	< 8		
Chlorobenzilate	ug/L	2013-09	< 8	< 8			
Chlorobenzilate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Chlorobenzilate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Chlorodibromomethane	ug/L	2008-12	< 1	< 1	< 1		
Chlorodibromomethane	ug/L	2013-09	< 1	< 1			
Chlorodibromomethane	ug/L	2018-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2018-09	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2019-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2019-10	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2020-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2020-10	< 5	< 5	< 25		< 5
Chlorodibromomethane	ug/L	2021-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2021-10	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2022-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2022-09	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2023-05	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2023-09	< 5	< 5	< 5		< 5
Chlorodibromomethane	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
Chlorodibromomethane	ug/L	2024-10	< 5	< 5	< 5	< 5	
Chloroethane	ug/L	2008-12	1.4	< 1	< 1		
Chloroethane	ug/L	2009-05	1.8	1.4	< 1		
Chloroethane	ug/L	2009-07	< 1	< 1	< 1		
Chloroethane	ug/L	2009-09	< 1	2	< 1		
Chloroethane	ug/L	2009-12	1.8	3.9	< 1		
Chloroethane	ug/L	2010-09	< 1	< 1	< 1		
Chloroethane	ug/L	2011-03	< 1.0	6.5	< 1.0		
Chloroethane	ug/L	2011-09	< 1.0	4.8	< 1.0		
Chloroethane	ug/L	2012-03	< 1	6.1	< 1		
Chloroethane	ug/L	2012-09	1.4	2.8	< 1		
Chloroethane	ug/L	2013-05	< 1	3.4			
Chloroethane	ug/L	2013-09	< 1	1.9			
Chloroethane	ug/L	2014-04	< 4.00	2.23 J			
Chloroethane	ug/L	2014-09	0.499 J	2.76 J			
Chloroethane	ug/L	2015-04	0.485 J	2.56 J			
Chloroethane	ug/L	2015-09	0.647 J	2.08 J			
Chloroethane	ug/L	2016-04	0.214 J	1.72 J			
Chloroethane	ug/L	2016-09	< 4	< 4			
Chloroethane	ug/L	2017-05	0.513 J	0.627 J			
Chloroethane	ug/L	2017-09	0.436 J	0.258 J			
Chloroethane	ug/L	2018-05	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2018-09	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2019-05	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2019-10	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2020-05	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2020-10	< 4	0.898 J	< 20		< 4
Chloroethane	ug/L	2021-05	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2021-10	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2022-05	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2022-09	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2023-05	< 4	< 4	< 4		< 4

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Chloroethane	ug/L	2023-09	< 4	< 4	< 4		< 4
Chloroethane	ug/L	2024-05	< 4	< 4	< 4		~~< 4~~
Chloroethane	ug/L	2024-10	< 4	< 4	< 4	< 4	
Chloroform	ug/L	2008-12	< 1	< 1	< 1		
Chloroform	ug/L	2013-09	< 1	< 1			
Chloroform	ug/L	2018-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2018-09	< 3	< 3	< 3		< 3
Chloroform	ug/L	2019-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2019-10	< 3	< 3	< 3		< 3
Chloroform	ug/L	2020-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2020-10	< 3	< 3	< 15		< 3
Chloroform	ug/L	2021-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2021-10	< 3	< 3	< 3		< 3
Chloroform	ug/L	2022-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2022-09	< 3	< 3	< 3		< 3
Chloroform	ug/L	2023-05	< 3	< 3	< 3		< 3
Chloroform	ug/L	2023-09	< 3	< 3	< 3		< 3
Chloroform	ug/L	2024-05	< 3	< 3	< 3		~~< 3~~
Chloroform	ug/L	2024-10	< 3	< 3	< 3	< 3	
Chloromethane	ug/L	2008-12	< 1	< 1	< 1		
Chloromethane	ug/L	2013-09	< 1	< 1			
Chloromethane	ug/L	2018-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2018-09	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2019-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2019-10	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2020-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2020-10	< 3	< 3	< 15		< 3
Chloromethane	ug/L	2021-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2021-10	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2022-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2022-09	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2023-05	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2023-09	< 3	< 3	< 3		< 3
Chloromethane	ug/L	2024-05	< 3	< 3	< 3		~~< 3~~
Chloromethane	ug/L	2024-10	< 3	< 3	< 3	< 3	
Chloroprene	ug/L	2008-12	< 0	< 0	< 0		
Chloroprene	ug/L	2013-09	< 1	< 1			
Chloroprene	ug/L	2018-09	< 1	< 1	< 1		< 1
Chloroprene	ug/L	2023-09	< 1	< 1	< 1		< 1
Chromium	mg/L	2008-12	< 0.01	0.0197	< 0.01		
Chromium	mg/L	2009-05	< 0.005	< 0.005	< 0.005		
Chromium	mg/L	2009-07	< 0.005	< 0.005	< 0.005		
Chromium	mg/L	2009-09	< 0.005	< 0.005	< 0.005		
Chromium	mg/L	2009-12	< 0.005	0.054	0.0108		
Chromium	mg/L	2010-09	0.0092	0.0326	0.0095		
Chromium	mg/L	2011-03	0.0055	0.0120	< 0.0050		
Chromium	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050		
Chromium	mg/L	2012-03	< 0.005	< 0.005			
Chromium	mg/L	2012-09	0.0089	< 0.005			
Chromium	mg/L	2012-10			< 0.005		
Chromium	mg/L	2013-05	< 0.005	< 0.005			0.0156
Chromium	mg/L	2013-07					0.0305
Chromium	mg/L	2013-09			0.0078		< 0.005
Chromium	mg/L	2013-09	0.006	< 0.005			
Chromium	mg/L	2013-12					< 0.0050
Chromium	mg/L	2014-04	< 0.0200	< 0.0200			< 0.0200
Chromium	mg/L	2014-09	< 0.005	< 0.005			< 0.005
Chromium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500		< 0.00500
Chromium	mg/L	2015-09	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2016-04	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2016-09	0.000717 J	< 0.005	< 0.005		0.000836 J
Chromium	mg/L	2017-05	< 0.005	< 0.005	< 0.005		0.00205 J
Chromium	mg/L	2017-09	< 0.005	0.000806 J	0.00191 J		
Chromium	mg/L	2018-05	0.00127 J	0.00387 J	< 0.005		0.00132 J
Chromium	mg/L	2018-09	0.00089 J	< 0.005	< 0.005		0.00117 J

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Chromium	mg/L	2019-05	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2019-10	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2020-05	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2020-10	0.00115 J	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2021-05	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2021-10	< 0.005	< 0.005	< 0.005		0.0011 J
Chromium	mg/L	2022-05	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2022-09	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2023-05	< 0.005	< 0.005	< 0.005		< 0.005
Chromium	mg/L	2023-09	< 0.005	0.00159 J	< 0.005		
Chromium	mg/L	2024-05	< 0.005	0.00132 J	< 0.005		~~< 0.005~~
Chromium	mg/L	2024-10	< 0.005	0.0012 J	< 0.005	< 0.005	
Chrysene	ug/L	2008-12	< 8	< 8	< 8		
Chrysene	ug/L	2013-09	< 8	< 8			
Chrysene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Chrysene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
cis-1,2-Dichloroethene	ug/L	2008-12	2.7	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2009-05	2.2	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2009-07	3.2	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2009-09	1.9	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2009-12	2.2	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2010-09	2.8	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2011-03	3.5	< 1.0	< 1.0		
cis-1,2-Dichloroethene	ug/L	2011-09	< 1.0	< 1.0	2.9 (1)		
cis-1,2-Dichloroethene	ug/L	2012-03	< 1	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2012-09	2.9	< 1	< 1		
cis-1,2-Dichloroethene	ug/L	2013-05	1	< 1			
cis-1,2-Dichloroethene	ug/L	2013-09	2.4	< 1			
cis-1,2-Dichloroethene	ug/L	2014-04	0.499 J	< 1.00			
cis-1,2-Dichloroethene	ug/L	2014-09	1.47	0.175 J			
cis-1,2-Dichloroethene	ug/L	2015-04	1.71				
cis-1,2-Dichloroethene	ug/L	2015-09	3.34				
cis-1,2-Dichloroethene	ug/L	2016-04	2.77				
cis-1,2-Dichloroethene	ug/L	2016-09	3.2				
cis-1,2-Dichloroethene	ug/L	2017-05	2.08				
cis-1,2-Dichloroethene	ug/L	2017-05	2.08				
cis-1,2-Dichloroethene	ug/L	2017-09	2.99				
cis-1,2-Dichloroethene	ug/L	2018-05	3.65	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2018-09	2.96	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2019-05	1.89	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2019-10	2.43	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2020-05	2.15	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2020-10	3.08	0.241 J	< 5		< 1
cis-1,2-Dichloroethene	ug/L	2021-05	2.23	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2021-10	< 1.72	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2022-05	2.18	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2022-09	2.46	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2023-05	2.44	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2023-09	2	< 1	< 1		< 1
cis-1,2-Dichloroethene	ug/L	2024-05	2.24	< 1	< 1		~~< 1~~
cis-1,2-Dichloroethene	ug/L	2024-10	2	< 1	< 1	< 1	
cis-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1		
cis-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1			
cis-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25		< 5
cis-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5		< 5

(1) Per IDNR March 14, 2013 correspondence, the single detection of cis-1,2-dichloroethene in MW-51 during September 2011 will not result in further action. This parameter will continue to be assessed with the double quantification rule.

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
cis-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5		< 5
cis-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
cis-1,3-Dichloropropene	ug/L	2024-10	< 5	< 5	< 5	< 5	
Cobalt	mg/L	2008-12	< 0.004	0.0203	< 0.004		
Cobalt	mg/L	2009-05	0.0081	0.005	< 0.005		
Cobalt	mg/L	2009-07	0.0101	0.005	< 0.005		
Cobalt	mg/L	2009-09	0.0122	0.0078	< 0.005		
Cobalt	mg/L	2009-12	0.01	0.037	< 0.005		
Cobalt	mg/L	2010-09	0.0183	0.0269	< 0.005		
Cobalt	mg/L	2011-03	0.0172	0.0147	< 0.0050		
Cobalt	mg/L	2011-09	0.0225	0.0111	< 0.0050		
Cobalt	mg/L	2012-03	0.0095	0.0117			
Cobalt	mg/L	2012-09	0.0233	0.0109			
Cobalt	mg/L	2012-10			< 0.005		
Cobalt	mg/L	2013-05	0.0117	0.0089			0.0346
Cobalt	mg/L	2013-07					0.0524
Cobalt	mg/L	2013-09			< 0.005		0.0215
Cobalt	mg/L	2013-09	0.0173	0.0077			
Cobalt	mg/L	2013-12					0.0336
Cobalt	mg/L	2014-04	0.00720	0.00527 J			0.0255
Cobalt	mg/L	2014-09	0.0164	0.00649			0.0213
Cobalt	mg/L	2015-04	0.0112	0.00560	0.000523		0.00661
Cobalt	mg/L	2015-09	0.00948	0.00403	0.000091 J		0.0058
Cobalt	mg/L	2016-04	0.0192	0.00361	< 0.0005		0.00506
Cobalt	mg/L	2016-09	0.0221	0.00272	0.000036 J		0.00459
Cobalt	mg/L	2017-05	0.0159	0.00189	0.00011 J		0.00189
Cobalt	mg/L	2017-09	0.00228	0.00251	0.000318 J		
Cobalt	mg/L	2018-05	0.0346	0.000656	0.00013 J		0.00726
Cobalt	mg/L	2018-09	0.00582	0.00114	0.00015 J		0.00655
Cobalt	mg/L	2019-05	0.018	0.0017	0.000258 J		0.0112
Cobalt	mg/L	2019-10	0.0201	0.00107	0.000274 J		0.0121
Cobalt	mg/L	2020-05	0.0154	0.00102	< 0.0005		0.00992
Cobalt	mg/L	2020-10	0.0193	0.00161	< 0.0005		0.018
Cobalt	mg/L	2021-05	0.0133	0.000596	0.000097 J		0.0125
Cobalt	mg/L	2021-10	0.0137	0.00194	0.000221 J		0.0121
Cobalt	mg/L	2022-05	0.00974	0.000348 J	< 0.0005		0.0107
Cobalt	mg/L	2022-09	0.0129	0.00128	0.00023 J		0.00954
Cobalt	mg/L	2023-05	0.01	0.000503	0.000366 J		~~0.0102~~
Cobalt	mg/L	2023-09	0.0124	0.00173	< 0.0005		
Cobalt	mg/L	2024-05	0.00821	0.00221	< 0.0005		~~0.0131~~
Cobalt	mg/L	2024-10	0.00108	0.00136	< 0.0005	0.000453 J	
Copper	mg/L	2008-12	< 0.004	0.02	0.0041		
Copper	mg/L	2009-05	< 0.01	< 0.01	< 0.01		
Copper	mg/L	2009-07	< 0.01	< 0.01	< 0.01		
Copper	mg/L	2009-09	< 0.01	< 0.01	< 0.01		
Copper	mg/L	2009-12	< 0.01	0.0315	< 0.01		
Copper	mg/L	2010-09	< 0.01	0.0191	< 0.01		
Copper	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100		
Copper	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100		
Copper	mg/L	2012-03	0.0119	< 0.01			
Copper	mg/L	2012-09	0.0137	< 0.01			
Copper	mg/L	2012-10			< 0.01		
Copper	mg/L	2013-05	< 0.01	< 0.01			0.0768
Copper	mg/L	2013-07					0.136
Copper	mg/L	2013-09			0.0118		< 0.01
Copper	mg/L	2013-09	< 0.01	< 0.01			
Copper	mg/L	2013-12					0.0146
Copper	mg/L	2014-04	< 0.0200	< 0.0200			0.00638 J
Copper	mg/L	2014-09	0.000828 J	< 0.002			0.00964
Copper	mg/L	2015-04	0.00131 J	< 0.00200	0.000734 J		0.00204
Copper	mg/L	2015-09	0.00175 J	0.000497 J	0.00114 J		0.00118 J
Copper	mg/L	2016-04	< 0.005	< 0.005	< 0.005		0.00286 J
Copper	mg/L	2016-09	0.00151 J	< 0.005	< 0.005		0.00673
Copper	mg/L	2017-05	< 0.005	< 0.005	< 0.005		0.00243 J

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Copper	mg/L	2017-09	0.00499 J	< 0.005	< 0.005		
Copper	mg/L	2018-05	0.00351 J	< 0.005	0.00379 J		0.00847
Copper	mg/L	2018-09	0.00195 J	< 0.005	0.0021 J		0.00491 J
Copper	mg/L	2019-05	< 0.005	< 0.005	< 0.005		< 0.005
Copper	mg/L	2019-10	< 0.005	< 0.005	< 0.005		0.00924
Copper	mg/L	2020-05	< 0.005	< 0.005	< 0.005		0.00715
Copper	mg/L	2020-10	< 0.005	< 0.005	< 0.005		0.0137
Copper	mg/L	2021-05	< 0.005	< 0.005	0.00196 J		0.0125
Copper	mg/L	2021-10	< 0.005	< 0.005	< 0.005		< 0.005
Copper	mg/L	2022-05	< 0.005	< 0.005	< 0.005		0.00263 J
Copper	mg/L	2022-09	< 0.005	< 0.005	< 0.005		0.00518
Copper	mg/L	2023-05	< 0.005	< 0.005	< 0.005		~~0.00199 J~~
Copper	mg/L	2023-09	< 0.005	< 0.005	0.00192 J		
Copper	mg/L	2024-05	0.00195 J	0.00359 J	< 0.005		~~0.00227 J~~
Copper	mg/L	2024-10	0.0033 J	< 0.005	< 0.005	< 0.005	
Cyanide	mg/L	2008-12	< 0.007	< 0.007	< 0.007		
Cyanide	mg/L	2013-09	< 0.005	< 0.005			
Cyanide	mg/L	2018-09	< 0.01	< 0.01	< 0.01		< 0.01
Cyanide	mg/L	2023-09	< 0.01	< 0.01	< 0.01		
delta-BHC	ug/L	2008-12	< 0.05	< 0.05			
delta-BHC	ug/L	2013-09	< 0.05	< 0.05			
delta-BHC	ug/L	2018-09	0.0515	0.00579 J	< 0.0337		< 0.036
delta-BHC	ug/L	2019-02	0.00998 J		< 0.0352		
delta-BHC	ug/L	2019-05	0.00315 J		0.00255 J		0.00304 J
delta-BHC	ug/L	2019-10	0.00363 J				
delta-BHC	ug/L	2020-05	< 0.0323				
delta-BHC	ug/L	2020-10	0.00874 J				
delta-BHC	ug/L	2021-05	< 0.064				
delta-BHC	ug/L	2021-10	< 0.0344				
delta-BHC	ug/L	2022-05	< 0.0762				
delta-BHC	ug/L	2022-09	< 0.0744				
delta-BHC	ug/L	2023-05	< 0.0711				
delta-BHC	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
delta-BHC	ug/L	2024-05	< 0.0604				
delta-BHC	ug/L	2024-10	< 0.0911				
Diallate	ug/L	2008-12	< 8	< 8	< 8		
Diallate	ug/L	2013-09	< 8	< 8			
Diallate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Diallate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Dibenzo(a,h)anthracene	ug/L	2008-12	< 8	< 8	< 8		
Dibenzo(a,h)anthracene	ug/L	2013-09	< 8	< 8			
Dibenzo(a,h)anthracene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Dibenzo(a,h)anthracene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Dibenzofuran	ug/L	2008-12	< 8	< 8	< 8		
Dibenzofuran	ug/L	2013-09	< 8	< 8			
Dibenzofuran	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Dibenzofuran	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Dibromomethane	ug/L	2008-12	< 1	< 1	< 1		
Dibromomethane	ug/L	2013-09	< 1	< 1			
Dibromomethane	ug/L	2018-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2018-09	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2019-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2019-10	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2020-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2020-10	< 1	< 1	< 5		< 1
Dibromomethane	ug/L	2021-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2021-10	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2022-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2022-09	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2023-05	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2023-09	< 1	< 1	< 1		< 1
Dibromomethane	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Dibromomethane	ug/L	2024-10	< 1	< 1	< 1	< 1	
Dichlorodifluoromethane	ug/L	2008-12	< 1	< 1	< 1		
Dichlorodifluoromethane	ug/L	2013-09	< 1	< 1			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Dichlorodifluoromethane	ug/L	2018-09	< 3	< 3	< 3		< 3
Dichlorodifluoromethane	ug/L	2023-09	< 3	< 3	< 3		< 3
Dieldrin	ug/L	2008-12	< 0.05	< 0.05			
Dieldrin	ug/L	2013-09	< 0.05	< 0.05			
Dieldrin	ug/L	2018-09	0.042	< 0.034	< 0.0337		< 0.036
Dieldrin	ug/L	2019-02	0.0125 J		< 0.0352		
Dieldrin	ug/L	2019-05	< 0.0333		< 0.0333		< 0.033
Dieldrin	ug/L	2019-10	< 0.0327				
Dieldrin	ug/L	2020-05	0.00417 J				
Dieldrin	ug/L	2020-10	0.0118 J				
Dieldrin	ug/L	2021-05	< 0.064				
Dieldrin	ug/L	2021-10	< 0.0344				
Dieldrin	ug/L	2022-05	< 0.0762				
Dieldrin	ug/L	2022-09	< 0.0744				
Dieldrin	ug/L	2023-05	< 0.0711				
Dieldrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Dieldrin	ug/L	2024-05	< 0.0604				
Dieldrin	ug/L	2024-10	< 0.0911				
Diethylphthalate	ug/L	2008-12	< 8	< 8	< 8		
Diethylphthalate	ug/L	2013-09	< 8	< 8			
Diethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Diethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Dimethoate	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Dimethoate	ug/L	2013-09	0.7	< 0.4			
Dimethoate	ug/L	2013-12	< 0.32				
Dimethoate	ug/L	2014-04	< 10.3				
Dimethoate	ug/L	2014-09	< 10				
Dimethoate	ug/L	2015-04	< 10.2				
Dimethoate	ug/L	2015-09	< 10.3				
Dimethoate	ug/L	2016-04	< 10.4				
Dimethoate	ug/L	2016-09	< 10.9				
Dimethoate	ug/L	2017-05	< 10.2				
Dimethoate	ug/L	2017-09	1.45 J				
Dimethoate	ug/L	2018-05	< 10.3				
Dimethoate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Dimethoate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Dimethylphthalate	ug/L	2008-12	< 8	< 8	< 8		
Dimethylphthalate	ug/L	2013-09	< 8	< 8			
Dimethylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Dimethylphthalate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Di-n-butylphthalate	ug/L	2008-12	< 8	< 8	< 8		
Di-n-butylphthalate	ug/L	2013-09	< 8	< 8			
Di-n-butylphthalate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Di-n-butylphthalate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Di-n-octylphthalate	ug/L	2008-12	< 8	< 8	< 8		
Di-n-octylphthalate	ug/L	2013-09	< 8	< 8			
Di-n-octylphthalate	ug/L	2018-09	< 21.1	< 20.2	< 20.8		< 22
Di-n-octylphthalate	ug/L	2023-09	< 19.2	< 20	< 20		< 21.7
Dinoseb	ug/L	2008-12	< 0.5	< 0.5	< 0.5		
Dinoseb	ug/L	2013-12	< 0.5	< 0.5			
Dinoseb	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Dinoseb	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Diphenylamine	ug/L	2008-12	< 8	< 8	< 8		
Diphenylamine	ug/L	2013-09	< 8	< 8			
Diphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Diphenylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Disulfoton	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Disulfoton	ug/L	2013-09	< 0.4	< 0.4			
Disulfoton	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Disulfoton	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Endosulfan I	ug/L	2008-12	< 0.05	< 0.05			
Endosulfan I	ug/L	2013-09	< 0.05	< 0.05			
Endosulfan I	ug/L	2018-09	0.0237 J	< 0.034	< 0.0337		< 0.036
Endosulfan I	ug/L	2019-02	< 0.0352		< 0.0352		
Endosulfan I	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Endosulfan II	ug/L	2008-12	< 0.05	< 0.05			
Endosulfan II	ug/L	2013-09	< 0.05	< 0.05			
Endosulfan II	ug/L	2018-09	< 0.0337	< 0.034	< 0.0337		0.00244 J
Endosulfan II	ug/L	2019-02	< 0.0352		< 0.0352		
Endosulfan II	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Endosulfan Sulfate	ug/L	2008-12	< 0.05	< 0.05			
Endosulfan Sulfate	ug/L	2013-09	< 0.05	< 0.05			
Endosulfan Sulfate	ug/L	2018-09	0.0766	< 0.034	< 0.0337		< 0.036
Endosulfan Sulfate	ug/L	2019-02	0.00328 J		< 0.0352		
Endosulfan Sulfate	ug/L	2019-05	< 0.0333		< 0.0333		< 0.033
Endosulfan Sulfate	ug/L	2019-10	< 0.0327				
Endosulfan Sulfate	ug/L	2020-05	0.00434 J				
Endosulfan Sulfate	ug/L	2020-10	0.00474 J				
Endosulfan Sulfate	ug/L	2021-05	< 0.064				
Endosulfan Sulfate	ug/L	2021-10	< 0.0344				
Endosulfan Sulfate	ug/L	2022-05	< 0.0762				
Endosulfan Sulfate	ug/L	2022-09	< 0.0744				
Endosulfan Sulfate	ug/L	2023-05	< 0.0711				
Endosulfan Sulfate	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Endosulfan Sulfate	ug/L	2024-05	< 0.0604				
Endosulfan Sulfate	ug/L	2024-10	< 0.0911				
Endrin	ug/L	2008-12	< 0.05	< 0.05			
Endrin	ug/L	2013-09	< 0.05	< 0.05			
Endrin	ug/L	2018-09	0.121	0.00214 J	< 0.0337		< 0.036
Endrin	ug/L	2019-02	0.006 J		< 0.0352		
Endrin	ug/L	2019-05	0.00926 J		< 0.0333		< 0.033
Endrin	ug/L	2019-10	0.0135 J				
Endrin	ug/L	2020-05	< 0.0323				
Endrin	ug/L	2020-10	< 0.0356				
Endrin	ug/L	2021-05	< 0.064				
Endrin	ug/L	2021-10	< 0.0344				
Endrin	ug/L	2022-05	< 0.0762				
Endrin	ug/L	2022-09	< 0.0744				
Endrin	ug/L	2023-05	< 0.0711				
Endrin	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Endrin	ug/L	2024-05	< 0.0604				
Endrin	ug/L	2024-10	< 0.0911				
Endrin Aldehyde	ug/L	2008-12	< 0.05	< 0.05			
Endrin Aldehyde	ug/L	2013-09	< 0.05	< 0.05			
Endrin Aldehyde	ug/L	2018-09	0.0344	< 0.034	0.0104 J		< 0.036
Endrin Aldehyde	ug/L	2019-02	< 0.0352		< 0.0352		
Endrin Aldehyde	ug/L	2019-05	0.00819 J		< 0.0333		< 0.033
Endrin Aldehyde	ug/L	2019-10	< 0.0327				
Endrin Aldehyde	ug/L	2020-05	< 0.0323				
Endrin Aldehyde	ug/L	2020-10	< 0.0356				
Endrin Aldehyde	ug/L	2021-05	< 0.064				
Endrin Aldehyde	ug/L	2021-10	< 0.0344				
Endrin Aldehyde	ug/L	2022-05	< 0.0762				
Endrin Aldehyde	ug/L	2022-09	< 0.0744				
Endrin Aldehyde	ug/L	2023-05	< 0.0711				
Endrin Aldehyde	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Endrin Aldehyde	ug/L	2024-05	< 0.0604				
Endrin Aldehyde	ug/L	2024-10	< 0.0911				
Ethyl Methacrylate	ug/L	2008-12	< 10	< 10	< 10		
Ethyl Methacrylate	ug/L	2013-09	< 10	< 10			
Ethyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2		< 2
Ethyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2		< 2
Ethyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8		
Ethyl Methanesulfonate	ug/L	2013-09	< 8	< 8			
Ethyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Ethyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Ethylbenzene	ug/L	2008-12	< 1	< 1	< 1		
Ethylbenzene	ug/L	2013-09	< 1	< 1			
Ethylbenzene	ug/L	2018-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2018-09	< 1	< 1	< 1		< 1

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Ethylbenzene	ug/L	2019-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2019-10	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2020-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2020-10	< 1	< 1	< 5		< 1
Ethylbenzene	ug/L	2021-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2021-10	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2022-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2022-09	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2023-05	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2023-09	< 1	< 1	< 1		< 1
Ethylbenzene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Ethylbenzene	ug/L	2024-10	< 1	< 1	< 1	< 1	
Famphur	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Famphur	ug/L	2013-09	< 0.4	< 0.4			
Famphur	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Famphur	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Fluoranthene	ug/L	2008-12	< 8	< 8	< 8		
Fluoranthene	ug/L	2013-09	< 8	< 8			
Fluoranthene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Fluoranthene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Fluorene	ug/L	2008-12	< 8	< 8	< 8		
Fluorene	ug/L	2013-09	< 8	< 8			
Fluorene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Fluorene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Fluorotrichloromethane	ug/L	2008-12	< 1	< 1	< 1		
Fluorotrichloromethane	ug/L	2013-09	< 1	< 1			
Fluorotrichloromethane	ug/L	2018-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2018-09	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2019-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2019-10	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2020-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2020-10	< 4	< 4	< 20		< 4
Fluorotrichloromethane	ug/L	2021-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2021-10	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2022-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2022-09	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2023-05	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2023-09	< 4	< 4	< 4		< 4
Fluorotrichloromethane	ug/L	2024-05	< 4	< 4	< 4		~~< 4~~
Fluorotrichloromethane	ug/L	2024-10	< 4	< 4	< 4	< 4	
Heptachlor	ug/L	2008-12	< 0.05	< 0.05			
Heptachlor	ug/L	2013-09	< 0.05	< 0.05			
Heptachlor	ug/L	2018-09	0.0295 J	0.003 J	< 0.0337		< 0.036
Heptachlor	ug/L	2019-02	< 0.0352		< 0.0352		
Heptachlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Heptachlor Epoxide	ug/L	2008-12	< 0.05	< 0.05			
Heptachlor Epoxide	ug/L	2013-09	< 0.05	< 0.05			
Heptachlor Epoxide	ug/L	2018-09	0.00969 J	< 0.034	< 0.0337		< 0.036
Heptachlor Epoxide	ug/L	2019-02	0.0175 J		< 0.0352		
Heptachlor Epoxide	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Hexachlorobenzene	ug/L	2008-12	< 0.05	< 0.05	< 8		
Hexachlorobenzene	ug/L	2013-09	< 0.05	< 0.05			
Hexachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Hexachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Hexachlorobutadiene	ug/L	2008-12	< 8	< 8	< 8		
Hexachlorobutadiene	ug/L	2013-09	< 8	< 8			
Hexachlorobutadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Hexachlorobutadiene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Hexachlorocyclopentadiene	ug/L	2008-12	< 8	< 8	< 8		
Hexachlorocyclopentadiene	ug/L	2013-09	< 8	< 8			
Hexachlorocyclopentadiene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Hexachlorocyclopentadiene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Hexachloroethane	ug/L	2008-12	< 8	< 8	< 8		
Hexachloroethane	ug/L	2013-09	< 8	< 8			
Hexachloroethane	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Hexachloroethane	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Hexachloropropene	ug/L	2008-12	< 8	< 8	< 8		
Hexachloropropene	ug/L	2013-09	< 8	< 8			
Hexachloropropene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Hexachloropropene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Indeno(1,2,3-cd)pyrene	ug/L	2008-12	< 8	< 8	< 8		
Indeno(1,2,3-cd)pyrene	ug/L	2013-09	< 8	< 8			
Indeno(1,2,3-cd)pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Indeno(1,2,3-cd)pyrene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Iodomethane	ug/L	2008-12	< 1	< 1	< 1		
Iodomethane	ug/L	2013-09	< 1	< 1			
Iodomethane	ug/L	2018-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2018-09	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2019-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2019-10	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2020-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2020-10	< 10	< 10	< 50		< 10
Iodomethane	ug/L	2021-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2021-10	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2022-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2022-09	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2023-05	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2023-09	< 10	< 10	< 10		< 10
Iodomethane	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
Iodomethane	ug/L	2024-10	< 10	< 10	< 10	< 10	
Isobutanol	mg/L	2008-12	< 1	< 1			
Isobutanol	mg/L	2013-12	< 1	< 1			
Isobutanol	mg/L	2018-09	< 10	< 10	< 10		< 10
Isobutanol	mg/L	2023-09	< 10	< 10	< 10		
Isodrin	ug/L	2008-12	< 8	< 8	< 8		
Isodrin	ug/L	2013-09	< 8	< 8			
Isodrin	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Isodrin	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Isophorone	ug/L	2008-12	< 8	< 8	< 8		
Isophorone	ug/L	2013-09	< 8	< 8			
Isophorone	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Isophorone	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Isosafrole	ug/L	2008-12	< 8	< 8	< 8		
Isosafrole	ug/L	2013-09	< 8	< 8			
Isosafrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Isosafrole	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Kepone	ug/L	2008-12	< 8	< 8	< 8		
Kepone	ug/L	2013-09	< 8	< 8			
Kepone	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Kepone	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Lead	mg/L	2008-12	< 0.004	0.0775	< 0.004		
Lead	mg/L	2009-05	< 0.005	< 0.005	< 0.005		
Lead	mg/L	2009-07	< 0.005	< 0.005	< 0.005		
Lead	mg/L	2009-09	< 0.005	< 0.005	< 0.005		
Lead	mg/L	2009-12	< 0.005	0.0506	< 0.005		
Lead	mg/L	2010-09	< 0.005	0.0421	< 0.005		
Lead	mg/L	2011-03	< 0.0050	0.0136	< 0.0050		
Lead	mg/L	2011-09	< 0.0050	< 0.0050	< 0.0050		
Lead	mg/L	2012-03	< 0.005	< 0.005			
Lead	mg/L	2012-09	< 0.005	< 0.005			
Lead	mg/L	2012-10			< 0.005		
Lead	mg/L	2013-05	< 0.005	< 0.005			0.0384
Lead	mg/L	2013-07					0.0878
Lead	mg/L	2013-09			0.0057		< 0.005
Lead	mg/L	2013-09	< 0.005	< 0.005			
Lead	mg/L	2013-12					< 0.0050
Lead	mg/L	2014-04	< 0.00400	< 0.00400			0.00273 J
Lead	mg/L	2014-09	0.000192 J	0.000276 J			0.00247
Lead	mg/L	2015-04	0.000256 J	0.000327 J	0.000391 J		0.00130
Lead	mg/L	2015-09	0.00029 J	< 0.0005	0.000118 J		0.000558

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Lead	mg/L	2016-04	< 0.0005	< 0.0005	< 0.0005		0.00139
Lead	mg/L	2016-09	0.000964	0.00114	< 0.0005		0.00193
Lead	mg/L	2017-05	< 0.0005	0.000324 J	< 0.0005		0.00188
Lead	mg/L	2017-09	< 0.0005	0.00273	< 0.0005		
Lead	mg/L	2018-05	0.000631	0.000351 J	0.000757		0.00387
Lead	mg/L	2018-09	0.000348 J	< 0.0005	0.000462 J		0.00266
Lead	mg/L	2019-05	0.000617	0.000732	< 0.0005		0.0014
Lead	mg/L	2019-10	< 0.0005	< 0.0005	< 0.0005		0.0032
Lead	mg/L	2020-05	< 0.0005	< 0.0005	< 0.0005		0.00161
Lead	mg/L	2020-10	< 0.0005	< 0.0005	< 0.0005		0.0052
Lead	mg/L	2021-05	0.000224 J	0.000725	0.000389 J		0.0025
Lead	mg/L	2021-10	0.000454 J	0.000837	< 0.0005		0.00327
Lead	mg/L	2022-05	< 0.0005	< 0.0005	< 0.0005		0.00114
Lead	mg/L	2022-09	0.00034 J	0.00245	< 0.0005		0.00203
Lead	mg/L	2023-05	0.000329 J	< 0.0005	0.000579		~~0.000957~~
Lead	mg/L	2023-09	0.000435 J	0.00228	0.000376 J		
Lead	mg/L	2024-05	0.000604	0.00585	< 0.0005		~~0.000734~~
Lead	mg/L	2024-10	0.000309 J	0.0015	< 0.0005	0.00195	
Lindane (BHC, Gamma-)	ug/L	2008-12	< 0.05	< 0.05			
Lindane (BHC, Gamma-)	ug/L	2013-09	< 0.05	< 0.05			
Lindane (BHC, Gamma-)	ug/L	2018-09	0.0117 J	< 0.034	< 0.0337		< 0.036
Lindane (BHC, Gamma-)	ug/L	2019-02	< 0.0352		< 0.0352		
Lindane (BHC, Gamma-)	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
m/p-Cresol	ug/L	2008-12	< 8	< 8	< 8		
m/p-Cresol	ug/L	2013-09	< 8	< 8			
m/p-Cresol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
m/p-Cresol	ug/L	2023-09	< 9.62	< 10	< 10		1.24 J
Mercury	mg/L	2008-12	< 0.0005	< 0.0005	< 0.0005		
Mercury	mg/L	2013-09	< 0.0002	< 0.0002			
Mercury	mg/L	2018-09	< 0.0002	< 0.0002	< 0.0002		< 0.0002
Mercury	mg/L	2023-09	< 0.0002	< 0.0002	< 0.0002		
Methacrylonitrile	ug/L	2008-12	< 0	< 0	< 0		
Methacrylonitrile	ug/L	2013-09	< 1	< 1			
Methacrylonitrile	ug/L	2018-09	< 10	< 10	< 10		< 10
Methacrylonitrile	ug/L	2023-09	< 10	< 10	< 10		< 10
Methapyrilene	ug/L	2008-12	< 8	< 8	< 8		
Methapyrilene	ug/L	2013-09	< 8	< 8			
Methapyrilene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Methapyrilene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Methoxychlor	ug/L	2008-12	< 0.05	< 0.05			
Methoxychlor	ug/L	2013-09	< 0.05	< 0.05			
Methoxychlor	ug/L	2018-09	< 0.0337	< 0.034	0.0179 J		< 0.036
Methoxychlor	ug/L	2019-02	0.00465 J		< 0.0352		
Methoxychlor	ug/L	2023-09	< 0.064	< 0.0627	< 0.064		< 0.0711
Methyl Methacrylate	ug/L	2008-12	< 0	< 0	< 0		
Methyl Methacrylate	ug/L	2013-09	< 1	< 1			
Methyl Methacrylate	ug/L	2018-09	< 2	< 2	< 2		< 2
Methyl Methacrylate	ug/L	2023-09	< 2	< 2	< 2		< 2
Methyl Methanesulfonate	ug/L	2008-12	< 8	< 8	< 8		
Methyl Methanesulfonate	ug/L	2013-09	< 8	< 8			
Methyl Methanesulfonate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Methyl Methanesulfonate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Methyl Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Methyl Parathion	ug/L	2013-09	< 0.4	< 0.4			
Methyl Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Methyl Parathion	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Methylene Chloride	ug/L	2008-12	< 5	< 5	< 5		
Methylene Chloride	ug/L	2013-09	< 5	< 5			
Methylene Chloride	ug/L	2018-05	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2018-09	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2019-05	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2019-10	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2020-05	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2020-10	< 5	< 5	< 25		< 5
Methylene Chloride	ug/L	2021-05	< 5	< 5	< 5		< 5

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Methylene Chloride	ug/L	2021-10	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2022-05	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2022-09	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2023-05	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2023-09	< 5	< 5	< 5		< 5
Methylene Chloride	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
Methylene Chloride	ug/L	2024-10	< 5	< 5	< 5	< 5	
Naphthalene	ug/L	2008-12	< 8	< 8	< 8		
Naphthalene	ug/L	2013-09	< 8	< 8			
Naphthalene	ug/L	2018-09	< 5	< 5	< 5		< 5
Naphthalene	ug/L	2023-09	< 5	< 5	< 5		< 5
Nickel	mg/L	2008-12	0.021	0.0357	0.007		
Nickel	mg/L	2009-05	0.0564	0.0081	< 0.005		
Nickel	mg/L	2009-07	0.0574	0.0067	< 0.005		
Nickel	mg/L	2009-09	0.0468	0.0079	< 0.005		
Nickel	mg/L	2009-12	0.0383	0.0723	0.0099		
Nickel	mg/L	2010-09	0.0494	0.0449	0.0129		
Nickel	mg/L	2011-03	0.0616	0.0201	< 0.0050		
Nickel	mg/L	2011-09	0.0501	0.0095	< 0.0050		
Nickel	mg/L	2012-03	0.028	0.0126			
Nickel	mg/L	2012-09	0.0535	0.0112			
Nickel	mg/L	2012-10			< 0.005		
Nickel	mg/L	2013-05	0.0255	0.0089			0.0793
Nickel	mg/L	2013-07					0.112
Nickel	mg/L	2013-09			0.0176		0.0521
Nickel	mg/L	2013-09	0.0354	0.0066			
Nickel	mg/L	2013-12					0.0460
Nickel	mg/L	2014-04	0.0177 J	0.00775 J			0.0355 J
Nickel	mg/L	2014-09	0.0301	0.00594			0.0391
Nickel	mg/L	2015-04	0.0258	0.00543	0.00160 J		0.00974
Nickel	mg/L	2015-09	0.0198	0.00401 J	0.00137 J		0.0072
Nickel	mg/L	2016-04	0.0339	0.0031 J	< 0.005		0.00669
Nickel	mg/L	2016-09	0.0356	0.0033 J	< 0.005		0.0161
Nickel	mg/L	2017-05	0.0313	0.00319 J	0.00302 J		0.00975
Nickel	mg/L	2017-09	0.0382	0.00348 J	0.00574		
Nickel	mg/L	2018-05	0.04	0.00236 J	0.00768		0.0133
Nickel	mg/L	2018-09	0.0291 J	< 0.05	< 0.05		0.00857 J
Nickel	mg/L	2019-05	0.0271	0.00283 J	0.00952		0.0172
Nickel	mg/L	2019-10	0.0268	0.0019 J	0.00795		0.0162
Nickel	mg/L	2020-05	0.0266	< 0.005	0.00518		0.0138
Nickel	mg/L	2020-10	0.0259	< 0.005	0.0067		0.0219
Nickel	mg/L	2021-05	0.023	< 0.005	0.00654		0.0154
Nickel	mg/L	2021-10	0.0248	0.00311 J	0.00709		0.0173
Nickel	mg/L	2022-05	0.019	< 0.005	0.00464 J		0.0139
Nickel	mg/L	2022-09	0.0182	0.00259 J	0.00576		0.0119
Nickel	mg/L	2023-05	0.0226	0.00208 J	0.00736		~~0.0179~~
Nickel	mg/L	2023-09	0.0196	0.00448 J	0.00664		
Nickel	mg/L	2024-05	0.0184	< 0.005	0.00246 J		~~0.016~~
Nickel	mg/L	2024-10	0.018	< 0.005	0.00601	< 0.005	
Nitrobenzene	ug/L	2008-12	< 8	< 8	< 8		
Nitrobenzene	ug/L	2013-09	< 8	< 8			
Nitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Nitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosodiethylamine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosodiethylamine	ug/L	2013-09	< 8	< 8			
N-Nitrosodiethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosodiethylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosodimethylamine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosodimethylamine	ug/L	2013-09	< 8	< 8			
N-Nitrosodimethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosodimethylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosodi-n-butylamine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosodi-n-butylamine	ug/L	2013-09	< 8	< 8			
N-Nitrosodi-n-butylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosodi-n-butylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
N-Nitrosodi-n-propylamine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosodi-n-propylamine	ug/L	2013-09	< 8	< 8			
N-Nitrosodi-n-propylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosodi-n-propylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosodiphenylamine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosodiphenylamine	ug/L	2013-09	< 8	< 8			
N-Nitrosodiphenylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosodiphenylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosomethylethylamine	ug/L	2013-12	< 8	< 8			
N-Nitrosomethylethylamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosomethylethylamine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosopiperidine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosopiperidine	ug/L	2013-09	< 8	< 8			
N-Nitrosopiperidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosopiperidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
N-Nitrosopyrrolidine	ug/L	2008-12	< 8	< 8	< 8		
N-Nitrosopyrrolidine	ug/L	2013-09	< 8	< 8			
N-Nitrosopyrrolidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
N-Nitrosopyrrolidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
o,o,o-Triethylphosphorothioate	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
o,o,o-Triethylphosphorothioate	ug/L	2013-09	< 0.4	< 0.4			
o,o,o-Triethylphosphorothioate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
o,o,o-Triethylphosphorothioate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
o-Toluidine	ug/L	2008-12	< 8	< 8	< 8		
o-Toluidine	ug/L	2013-09	< 8	< 8			
o-Toluidine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
o-Toluidine	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
p-(Dimethylamino)azobenzene	ug/L	2008-12	< 8	< 8	< 8		
p-(Dimethylamino)azobenzene	ug/L	2013-09	< 8	< 8			
p-(Dimethylamino)azobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
p-(Dimethylamino)azobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Parathion	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Parathion	ug/L	2013-09	< 0.4	< 0.4			
Parathion	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Parathion	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
PCBs - Aroclor 1016	ug/L	2008-12	< 0.1	< 0.1			
PCBs - Aroclor 1016	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1016	ug/L	2018-09	< 40.8	< 0.816	< 41.7		< 0.833
PCBs - Aroclor 1016	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1221	ug/L	2008-12	< 0.2	< 0.2			
PCBs - Aroclor 1221	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1221	ug/L	2018-09	< 40.8	< 0.816	< 41.7		< 0.833
PCBs - Aroclor 1221	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1232	ug/L	2008-12	< 0.2	< 0.2			
PCBs - Aroclor 1232	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1232	ug/L	2018-09	< 40.8	< 0.816	< 41.7		< 0.833
PCBs - Aroclor 1232	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1242	ug/L	2008-12	< 0.2	< 0.2			
PCBs - Aroclor 1242	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1242	ug/L	2018-09	< 40.8	< 0.816	< 41.7		< 0.833
PCBs - Aroclor 1242	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1248	ug/L	2008-12	< 0.2	< 0.2			
PCBs - Aroclor 1248	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1248	ug/L	2018-09	< 40.8	< 0.816	< 41.7		< 0.833
PCBs - Aroclor 1248	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1254	ug/L	2008-12	< 0.1	< 0.1			
PCBs - Aroclor 1254	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1254	ug/L	2018-09	< 0.816	< 0.816	< 0.833		< 0.833
PCBs - Aroclor 1254	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
PCBs - Aroclor 1260	ug/L	2008-12	< 0.1	< 0.1			
PCBs - Aroclor 1260	ug/L	2013-09	< 1	< 1			
PCBs - Aroclor 1260	ug/L	2018-09	< 0.816	< 0.816	< 0.833		< 0.833
PCBs - Aroclor 1260	ug/L	2023-09	< 0.8	< 0.784	< 0.8		< 0.889
Pentachlorobenzene	ug/L	2008-12	< 8	< 8	< 8		
Pentachlorobenzene	ug/L	2013-09	< 8	< 8			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Pentachlorobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Pentachlorobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Pentachloronitrobenzene	ug/L	2008-12	< 8	< 8	< 8		
Pentachloronitrobenzene	ug/L	2013-09	< 8	< 8			
Pentachloronitrobenzene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Pentachloronitrobenzene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Pentachlorophenol	ug/L	2008-12	< 8	< 8	< 8		
Pentachlorophenol	ug/L	2013-09	< 8	< 8			
Pentachlorophenol	ug/L	2018-09	< 10.5	< 10.1	2.55 J		< 11
Pentachlorophenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Phenacetin	ug/L	2008-12	< 8	< 8	< 8		
Phenacetin	ug/L	2013-09	< 8	< 8			
Phenacetin	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Phenacetin	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Phenanthrene	ug/L	2008-12	< 8	< 8	< 8		
Phenanthrene	ug/L	2013-09	< 8	< 8			
Phenanthrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Phenanthrene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Phenol	mg/L	2008-12	< 0.008	< 0.008	< 0.008		
Phenol	mg/L	2013-09	< 0.008	< 0.008			
Phenol	mg/L	2014-09	< 0.0184	< 0.0192	< 0.0188		
Phenol	mg/L	2015-09	< 0.0204	< 0.018	< 0.018		
Phenol	mg/L	2016-09	< 0.018	< 0.0192	< 0.0192		
Phenol	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Phenol	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Phorate	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Phorate	ug/L	2013-09	< 0.4	< 0.4			
Phorate	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Phorate	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
p-Phenylenediamine	ug/L	2008-12	< 8	< 8	< 8		
p-Phenylenediamine	ug/L	2013-09	< 8	< 8			
p-Phenylenediamine	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
p-Phenylenediamine	ug/L	2023-09	< 9.62 R	< 10 R	< 10 R		< 10.9 R
p-Phenylenediamine	ug/L	2024-05	< 9.8 R	< 10 R			
Pronamide	ug/L	2008-12	< 8	< 8	< 8		
Pronamide	ug/L	2013-09	< 8	< 8			
Pronamide	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Pronamide	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Propionitrile	ug/L	2008-12	< 0	< 0	< 0		
Propionitrile	ug/L	2013-09	< 10	< 10			
Propionitrile	ug/L	2018-09	< 10	< 10	< 10		< 10
Propionitrile	ug/L	2023-09	< 10	< 10	< 10		< 10
Pyrene	ug/L	2008-12	< 8	< 8	< 8		
Pyrene	ug/L	2013-09	< 8	< 8			
Pyrene	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Pyrene	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Safrole	ug/L	2008-12	< 8	< 8	< 8		
Safrole	ug/L	2013-09	< 8	< 8			
Safrole	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Safrole	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Selenium	mg/L	2008-12	< 0.004	< 0.004	0.0051		
Selenium	mg/L	2009-05	< 0.015	< 0.015	< 0.015		
Selenium	mg/L	2009-07	< 0.015	< 0.015	< 0.015		
Selenium	mg/L	2009-09	< 0.015	< 0.015	< 0.015		
Selenium	mg/L	2009-12	< 0.015	< 0.015	< 0.015		
Selenium	mg/L	2010-09	< 0.015	< 0.015	< 0.015		
Selenium	mg/L	2011-03	< 0.0150	< 0.0150	< 0.0150		
Selenium	mg/L	2011-09	< 0.0150	< 0.0150	< 0.0150		
Selenium	mg/L	2012-03	< 0.015	< 0.015			
Selenium	mg/L	2012-09	< 0.015	< 0.015			
Selenium	mg/L	2012-10			< 0.015		
Selenium	mg/L	2013-05	< 0.015	< 0.015			< 0.015
Selenium	mg/L	2013-07					0.0188
Selenium	mg/L	2013-09			< 0.015		< 0.015
Selenium	mg/L	2013-09	< 0.015	< 0.015			

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Selenium	mg/L	2013-12					< 0.0150
Selenium	mg/L	2014-04	< 0.00500 J	< 0.00500 J			< 0.00500
Selenium	mg/L	2014-09	< 0.005	< 0.005			< 0.005
Selenium	mg/L	2015-04	< 0.00500	< 0.00500	< 0.00500		< 0.00500
Selenium	mg/L	2015-09	< 0.005	< 0.005	0.00411 J		< 0.005
Selenium	mg/L	2016-04	< 0.005	< 0.005	0.0018 J		< 0.005
Selenium	mg/L	2016-09	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2017-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2017-09	< 0.005	< 0.005	< 0.005		
Selenium	mg/L	2018-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2018-09	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2019-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2019-10	< 0.005	< 0.005	< 0.005		0.00105 J
Selenium	mg/L	2020-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2020-10	< 0.005	< 0.005	< 0.005		0.00146 J
Selenium	mg/L	2021-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2021-10	0.00111 J	0.0015 J	< 0.005		0.000965 J
Selenium	mg/L	2022-05	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2022-09	< 0.005	< 0.005	< 0.005		< 0.005
Selenium	mg/L	2023-05	< 0.005	< 0.005	0.00148 J		< 0.005
Selenium	mg/L	2023-09	< 0.005	< 0.005	< 0.005		
Selenium	mg/L	2024-05	< 0.005	< 0.005	< 0.005		~~< 0.005~~
Selenium	mg/L	2024-10	< 0.005	< 0.005	< 0.005	< 0.005	
Silver	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~		
Silver	mg/L	2013-09	< 0.007	< 0.007			
Silver	mg/L	2018-05	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2018-09	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2019-05	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2019-10	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2020-05	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2020-10	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2021-05	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2021-10	< 0.001	0.000722 J	< 0.001		< 0.001
Silver	mg/L	2022-05	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2022-09	< 0.001	< 0.001	< 0.001		< 0.001
Silver	mg/L	2023-05	< 0.001	< 0.001	0.00175		< 0.001
Silver	mg/L	2023-09	< 0.001	< 0.001	< 0.001		
Silver	mg/L	2024-05	< 0.001	< 0.001	~~< 0.004~~		~~< 0.001~~
Silver	mg/L	2024-10	< 0.001	< 0.001	< 0.001	< 0.001	
Styrene	ug/L	2008-12	< 1	< 1	< 1		
Styrene	ug/L	2013-09	< 1	< 1			
Styrene	ug/L	2018-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2018-09	< 1	< 1	< 1		< 1
Styrene	ug/L	2019-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2019-10	< 1	< 1	< 1		< 1
Styrene	ug/L	2020-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2020-10	< 1	< 1	< 5		< 1
Styrene	ug/L	2021-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2021-10	< 1	< 1	< 1		< 1
Styrene	ug/L	2022-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2022-09	< 1	< 1	< 1		< 1
Styrene	ug/L	2023-05	< 1	< 1	< 1		< 1
Styrene	ug/L	2023-09	< 1	< 1	< 1		< 1
Styrene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Styrene	ug/L	2024-10	< 1	< 1	< 1	< 1	
Sulfide	mg/L	2008-12	< 0.1	< 0.1	< 0.1		
Sulfide	mg/L	2013-09	< 0.05	< 0.05			
Sulfide	mg/L	2018-09	1.2	< 1	13.4		0.768 J
Sulfide	mg/L	2019-10			< 1		5.54
Sulfide	mg/L	2020-05	0.243 J		< 1		1.95
Sulfide	mg/L	2020-10	< 10		< 10		< 10
Sulfide	mg/L	2021-05			< 1		0.67 J
Sulfide	mg/L	2021-10	< 1		< 1		1.03
Sulfide	mg/L	2022-05	< 1		< 1		1.61
Sulfide	mg/L	2022-09	< 1		< 1		0.398 J

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Sulfide	mg/L	2023-05	< 1		< 1		< 1
Sulfide	mg/L	2023-09	< 1	< 1	< 1		
Sulfide	mg/L	2024-05	< 3		< 3		~~< 3~~
Sulfide	mg/L	2024-10	< 3		< 3	< 3	
Technical Chlordane	ug/L	2008-12	< 0.1	< 0.1			
Technical Chlordane	ug/L	2013-09	< 0.1	< 0.1			
Technical Chlordane	ug/L	2018-09	< 2.11	< 2.13	< 2.11		< 2.25
Technical Chlordane	ug/L	2019-02	< 2.2		< 2.2		
Technical Chlordane	ug/L	2023-09	< 2	< 1.96	< 2		< 2.22
Tetrachloroethene	ug/L	2008-12	< 1	< 1	< 1		
Tetrachloroethene	ug/L	2013-09	< 1	< 1			
Tetrachloroethene	ug/L	2018-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2018-09	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2019-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2019-10	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2020-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2020-10	< 1	< 1	< 5		< 1
Tetrachloroethene	ug/L	2021-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2021-10	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2022-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2022-09	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2023-05	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2023-09	< 1	< 1	< 1		< 1
Tetrachloroethene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Tetrachloroethene	ug/L	2024-10	< 1	< 1	< 1	< 1	
Thallium	mg/L	2008-12	< 0.004	< 0.004	~~< 0.004~~		
Thallium	mg/L	2013-09	< 0.02	< 0.02			
Thallium	mg/L	2018-05	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2018-09	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2019-05	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2019-10	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2020-05	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2020-10	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2021-05	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2021-10	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2022-05	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2022-09	< 0.001	< 0.001	< 0.001		< 0.001
Thallium	mg/L	2023-05	0.000323 J	< 0.001	0.00242 J-		~~0.00327~~
Thallium	mg/L	2023-09	< 0.001	< 0.001	< 0.001		
Thallium	mg/L	2024-05	< 0.001	< 0.001	< 0.001		~~< 0.001~~
Thallium	mg/L	2024-10	< 0.001	0.000615 J	0.000919 J	< 0.001	
Thionazin	ug/L	2008-12	< 0.4	< 0.4	< 0.4		
Thionazin	ug/L	2013-09	< 0.4	< 0.4			
Thionazin	ug/L	2018-09	< 10.5	< 10.1	< 10.4		< 11
Thionazin	ug/L	2023-09	< 9.62	< 10	< 10		< 10.9
Tin	mg/L	2008-12	< 0.25	< 0.25	< 0.25		
Tin	mg/L	2013-09	< 0.05	< 0.05			
Tin	mg/L	2018-09	< 0.005	< 0.005	< 0.005		< 0.005
Tin	mg/L	2023-09	< 0.005	< 0.005	< 0.005		
Toluene	ug/L	2008-12	< 1	< 1	< 1		
Toluene	ug/L	2013-09	< 1	< 1			
Toluene	ug/L	2018-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2018-09	< 1	< 1	< 1		< 1
Toluene	ug/L	2019-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2019-10	< 1	< 1	< 1		< 1
Toluene	ug/L	2020-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2020-10	< 1	< 1	< 5		< 1
Toluene	ug/L	2021-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2021-10	< 1	< 1	< 1		< 1
Toluene	ug/L	2022-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2022-09	< 1	< 1	< 1		< 1
Toluene	ug/L	2023-05	< 1	< 1	< 1		< 1
Toluene	ug/L	2023-09	< 1	< 1	< 1		< 1
Toluene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Toluene	ug/L	2024-10	< 1	< 1	< 1	< 1	

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Total Suspended Solids	mg/L	2014-09	25	61	17.5		
Total Suspended Solids	mg/L	2015-04	10.0	37.5	14.9		
Total Suspended Solids	mg/L	2015-09	34.3	19	3.25		
Total Suspended Solids	mg/L	2016-04	29.4	17.5	0.625 J		11.1
Total Suspended Solids	mg/L	2016-09	41.6	13.6	2.13		27.5
Total Suspended Solids	mg/L	2017-05	45.3	28	3.5		62
Total Suspended Solids	mg/L	2017-09	37.1	147	5.85		
Total Suspended Solids	mg/L	2018-05	21.8	19.6	8		72
Total Suspended Solids	mg/L	2018-09	60.8	7.88	16.3		10.9
Total Suspended Solids	mg/L	2019-05	58	286	2.25		7
Total Suspended Solids	mg/L	2019-10	37	44	2.13		7.5
Total Suspended Solids	mg/L	2020-05	45	14 J	1.38 J		18
Total Suspended Solids	mg/L	2020-10	12.3	56	3.25		15.6
Total Suspended Solids	mg/L	2021-05	59		2.5		19
Total Suspended Solids	mg/L	2021-10	63.3	13.1	1 J		15.5
Total Suspended Solids	mg/L	2022-05	19.5	7	3.75		40
Total Suspended Solids	mg/L	2022-09	29	27	1.13 J		13.8
Total Suspended Solids	mg/L	2023-05	31	17.3	0.875 J		7.5
Total Suspended Solids	mg/L	2023-09	54.5	57.3	1.38 J		39
Total Suspended Solids	mg/L	2024-05	65.5	241	1.63 J		~~75~~
Total Suspended Solids	mg/L	2024-10	5.33	21.3	< 5	6	
Toxaphene	ug/L	2008-12	< 0.1	< 0.1			
Toxaphene	ug/L	2013-09	< 0.2	< 0.2			
Toxaphene	ug/L	2018-09	< 2.11	< 2.13	< 2.11		< 2.25
Toxaphene	ug/L	2019-02	< 2.2		< 2.2		
Toxaphene	ug/L	2023-09	< 2	< 1.96	< 2		< 2.22
trans-1,2-Dichloroethene	ug/L	2008-12	< 1	< 1	< 1		
trans-1,2-Dichloroethene	ug/L	2013-09	< 1	< 1			
trans-1,2-Dichloroethene	ug/L	2018-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2018-09	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2019-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2019-10	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2020-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2020-10	< 1	< 1	< 5		< 1
trans-1,2-Dichloroethene	ug/L	2021-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2021-10	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2022-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2022-09	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2023-05	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2023-09	< 1	< 1	< 1		< 1
trans-1,2-Dichloroethene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
trans-1,2-Dichloroethene	ug/L	2024-10	< 1	< 1	< 1	< 1	
trans-1,3-Dichloropropene	ug/L	2008-12	< 1	< 1	< 1		
trans-1,3-Dichloropropene	ug/L	2013-09	< 1	< 1			
trans-1,3-Dichloropropene	ug/L	2018-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2018-09	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2019-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2019-10	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2020-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2020-10	< 5	< 5	< 25		< 5
trans-1,3-Dichloropropene	ug/L	2021-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2021-10	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2022-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2022-09	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2023-05	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2023-09	< 5	< 5	< 5		< 5
trans-1,3-Dichloropropene	ug/L	2024-05	< 5	< 5	< 5		~~< 5~~
trans-1,3-Dichloropropene	ug/L	2024-10	< 5	< 5	< 5	< 5	
trans-1,4-Dichloro-2-butene	ug/L	2008-12	< 5	< 5	< 5		
trans-1,4-Dichloro-2-butene	ug/L	2013-09	< 5	< 5			
trans-1,4-Dichloro-2-butene	ug/L	2018-05	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2018-09	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2019-05	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2019-10	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2020-05	< 10	< 10	< 10		< 10

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Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
trans-1,4-Dichloro-2-butene	ug/L	2020-10	< 10	< 10	< 50		< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-05	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2021-10	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-05	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2022-09	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-05	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2023-09	< 10	< 10	< 10		< 10
trans-1,4-Dichloro-2-butene	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
trans-1,4-Dichloro-2-butene	ug/L	2024-10	< 10	< 10	< 10	< 10	
Trichloroethene	ug/L	2008-12	1	< 1	< 1		
Trichloroethene	ug/L	2009-05	1.1	< 1	< 1		
Trichloroethene	ug/L	2009-07	1.5	< 1	< 1		
Trichloroethene	ug/L	2009-09	1.3	< 1	< 1		
Trichloroethene	ug/L	2009-12	< 1	< 1	< 1		
Trichloroethene	ug/L	2010-09	1.2	< 1	< 1		
Trichloroethene	ug/L	2011-03	< 1.0	< 1.0	< 1.0		
Trichloroethene	ug/L	2011-09	< 1.0	< 1.0	< 1.0		
Trichloroethene	ug/L	2012-03	< 1	< 1	< 1		
Trichloroethene	ug/L	2012-09	< 1	< 1	< 1		
Trichloroethene	ug/L	2013-05	< 1	< 1			
Trichloroethene	ug/L	2013-09	< 1	< 1			
Trichloroethene	ug/L	2014-04	< 1.00	< 1.00			
Trichloroethene	ug/L	2014-09	0.245 J	< 1			
Trichloroethene	ug/L	2015-04	< 1.00				
Trichloroethene	ug/L	2015-09	0.275 J				
Trichloroethene	ug/L	2016-04	0.304 J				
Trichloroethene	ug/L	2016-09	< 1				
Trichloroethene	ug/L	2017-05	< 1				
Trichloroethene	ug/L	2017-09	< 1				
Trichloroethene	ug/L	2018-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2018-09	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2019-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2019-10	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2020-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2020-10	< 1	< 1	< 5		< 1
Trichloroethene	ug/L	2021-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2021-10	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2022-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2022-09	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2023-05	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2023-09	< 1	< 1	< 1		< 1
Trichloroethene	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Trichloroethene	ug/L	2024-10	< 1	< 1	< 1	< 1	
Vanadium	mg/L	2008-12	< 0.01	0.0384	< 0.01		
Vanadium	mg/L	2009-05	< 0.01	< 0.01	< 0.01		
Vanadium	mg/L	2009-07	< 0.01	< 0.01	< 0.01		
Vanadium	mg/L	2009-09	< 0.01	< 0.01	< 0.01		
Vanadium	mg/L	2009-12	< 0.01	0.0554	< 0.01		
Vanadium	mg/L	2010-09	0.0298	0.052	0.0134		
Vanadium	mg/L	2011-03	< 0.0100	< 0.0100	< 0.0100		
Vanadium	mg/L	2011-09	< 0.0100	< 0.0100	< 0.0100		
Vanadium	mg/L	2012-03	< 0.01	< 0.03			
Vanadium	mg/L	2012-09	< 0.01	< 0.01			
Vanadium	mg/L	2012-10			< 0.01		
Vanadium	mg/L	2013-05	< 0.01	< 0.03			0.0284
Vanadium	mg/L	2013-07					0.0686
Vanadium	mg/L	2013-09			0.0108		< 0.01
Vanadium	mg/L	2013-09	< 0.01	< 0.01			
Vanadium	mg/L	2013-12					< 0.0100
Vanadium	mg/L	2014-04	< 0.0500	< 0.0500			0.00335 J
Vanadium	mg/L	2014-09	0.000564 J	< 0.005			0.00268 J
Vanadium	mg/L	2015-04	0.00238 J	< 0.00500	0.000980 J		0.000896 J
Vanadium	mg/L	2015-09	0.000653 J	< 0.005	< 0.005		0.000758 J
Vanadium	mg/L	2016-04	0.000569 J	< 0.005	< 0.005		0.000856 J
Vanadium	mg/L	2016-09	0.00109 J	0.000306 J	< 0.005		0.00172 J

Attachment 1
Dec. 2008 - Oct. 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Vanadium	mg/L	2017-05	< 0.005	< 0.005	< 0.005		0.00136 J
Vanadium	mg/L	2017-09	0.00128 J	0.001 J	< 0.005		
Vanadium	mg/L	2018-05	0.00113 J	0.000574 J	< 0.005		0.00175 J
Vanadium	mg/L	2018-09	0.000747 J	< 0.005	< 0.005		0.0019 J
Vanadium	mg/L	2019-05	< 0.005	< 0.005	< 0.005		0.00176 J
Vanadium	mg/L	2019-10	< 0.005	< 0.005	< 0.005		0.00288 J
Vanadium	mg/L	2020-05	< 0.005	< 0.005	< 0.005		< 0.005
Vanadium	mg/L	2020-10	< 0.005	< 0.005	< 0.005		0.00282 J
Vanadium	mg/L	2021-05	< 0.005	< 0.005	< 0.005		0.00129 J
Vanadium	mg/L	2021-10	< 0.005	< 0.005	< 0.005		0.00434 J
Vanadium	mg/L	2022-05	< 0.005	< 0.005	< 0.005		0.00149 J
Vanadium	mg/L	2022-09	< 0.005	< 0.005	< 0.005		< 0.005
Vanadium	mg/L	2023-05	< 0.005	< 0.005	< 0.005		< 0.005
Vanadium	mg/L	2023-09	< 0.005	0.00132 J	< 0.005		
Vanadium	mg/L	2024-05	< 0.005	0.00208 J	< 0.005		~~< 0.005~~
Vanadium	mg/L	2024-10	< 0.005	< 0.005	< 0.005	0.00111 J	
Vinyl Acetate	ug/L	2008-12	< 5	< 5	< 5		
Vinyl Acetate	ug/L	2013-09	< 5	< 5			
Vinyl Acetate	ug/L	2018-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2018-09	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2019-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2019-10	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2020-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2020-10	< 10	< 10	< 50		< 10
Vinyl Acetate	ug/L	2021-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2021-10	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2022-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2022-09	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2023-05	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2023-09	< 10	< 10	< 10		< 10
Vinyl Acetate	ug/L	2024-05	< 10	< 10	< 10		~~< 10~~
Vinyl Acetate	ug/L	2024-10	< 10	< 10	< 10	< 10	
Vinyl Chloride	ug/L	2008-12	< 1	< 1	< 1		
Vinyl Chloride	ug/L	2013-09	< 1	< 1			
Vinyl Chloride	ug/L	2018-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2018-09	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2019-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2019-10	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2020-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2020-10	< 1	< 1	< 5		< 1
Vinyl Chloride	ug/L	2021-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2021-10	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2022-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2022-09	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2023-05	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2023-09	< 1	< 1	< 1		< 1
Vinyl Chloride	ug/L	2024-05	< 1	< 1	< 1		~~< 1~~
Vinyl Chloride	ug/L	2024-10	< 1	< 1	< 1	< 1	
Xylenes, Total	ug/L	2008-12	< 2	< 2	< 2		
Xylenes, Total	ug/L	2013-09	< 2	< 2			
Xylenes, Total	ug/L	2018-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2018-09	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2019-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2019-10	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2020-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2020-10	< 3	< 3	< 15		< 3
Xylenes, Total	ug/L	2021-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2021-10	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2022-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2022-09	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2023-05	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2023-09	< 3	< 3	< 3		< 3
Xylenes, Total	ug/L	2024-05	< 3	< 3	< 3		~~< 3~~
Xylenes, Total	ug/L	2024-10	< 3	< 3	< 3	< 3	
Zinc	mg/L	2008-12	0.0101	0.0157	0.0189		

Attachment 1
Dec. 2008 - Oct. 2024 Appendix II Monitoring Data

Chemical Name	Units	Sample Date	MW-27 Downgradient	MW-50R Downgradient	MW-51 Background	MW-60 Background	PZ-12 Background
Zinc	mg/L	2009-05	< 0.05	< 0.05	< 0.05		
Zinc	mg/L	2009-07	< 0.05	0.0514	< 0.05		
Zinc	mg/L	2009-09	< 0.05	< 0.05	0.0568		
Zinc	mg/L	2009-12	< 0.05	0.132	< 0.05		
Zinc	mg/L	2010-03	< 0.05				
Zinc	mg/L	2010-09	< 0.05	0.0808	< 0.05		
Zinc	mg/L	2011-03	< 0.0500	< 0.0500	< 0.0500		
Zinc	mg/L	2011-09	< 0.0500	< 0.0500	< 0.0500		
Zinc	mg/L	2012-03	< 0.05	0.117			
Zinc	mg/L	2012-09	< 0.05	< 0.05			
Zinc	mg/L	2012-10			< 0.05		
Zinc	mg/L	2013-05	< 0.05	< 0.05			0.207
Zinc	mg/L	2013-07					0.826
Zinc	mg/L	2013-09			0.326		0.31
Zinc	mg/L	2013-09	< 0.05	< 0.05			
Zinc	mg/L	2013-12					0.251
Zinc	mg/L	2014-04	0.0143 J	< 0.0200			0.248
Zinc	mg/L	2014-09	0.0514	< 0.01			0.402
Zinc	mg/L	2015-04	0.0433	0.00769 J	0.395		0.977
Zinc	mg/L	2015-09	0.0305	0.00816 J	0.091		0.0256
Zinc	mg/L	2016-04	< 0.01	< 0.01	0.011		0.00621 J
Zinc	mg/L	2016-09	0.00648 J	0.00829 J	0.008 J		0.0211
Zinc	mg/L	2017-05	< 0.02	< 0.02	0.0258		0.0202
Zinc	mg/L	2017-09	< 0.02	0.0138 J	0.0215		
Zinc	mg/L	2018-05	0.011 J	< 0.02	0.038		0.0366
Zinc	mg/L	2018-09	< 0.02	< 0.02	0.0232		0.0206
Zinc	mg/L	2019-05	0.0289	0.0143 J	0.0204		0.028
Zinc	mg/L	2019-10	0.0134 J	0.0172 J	0.0308		0.0347
Zinc	mg/L	2020-05	0.0143 J	< 0.02	0.0437		0.0131 J
Zinc	mg/L	2020-10	< 0.02	0.0187 J	0.0256		0.0257
Zinc	mg/L	2021-05	0.0173 J	0.0437	0.0944		0.018 J
Zinc	mg/L	2021-10	0.0253	0.0202	0.0878		0.0395
Zinc	mg/L	2022-05	0.542	0.103	0.822		0.0109 J
Zinc	mg/L	2022-09	0.0143 J	0.0244	0.0391		0.017 J
Zinc	mg/L	2023-05	0.0158 J	0.00847 J	0.07		~~0.0331~~
Zinc	mg/L	2023-09	0.0249	0.0397	0.136		
Zinc	mg/L	2024-05	0.088	0.0542	0.101		~~0.0592~~
Zinc	mg/L	2024-10	0.175	0.0547	0.885	0.0119 J	

Attachment 2

MW-60 Soil Boring Log and Well Construction Form

SOIL BORING LOG AND MONITORING WELL DIAGRAM

EB Solutions, Inc.

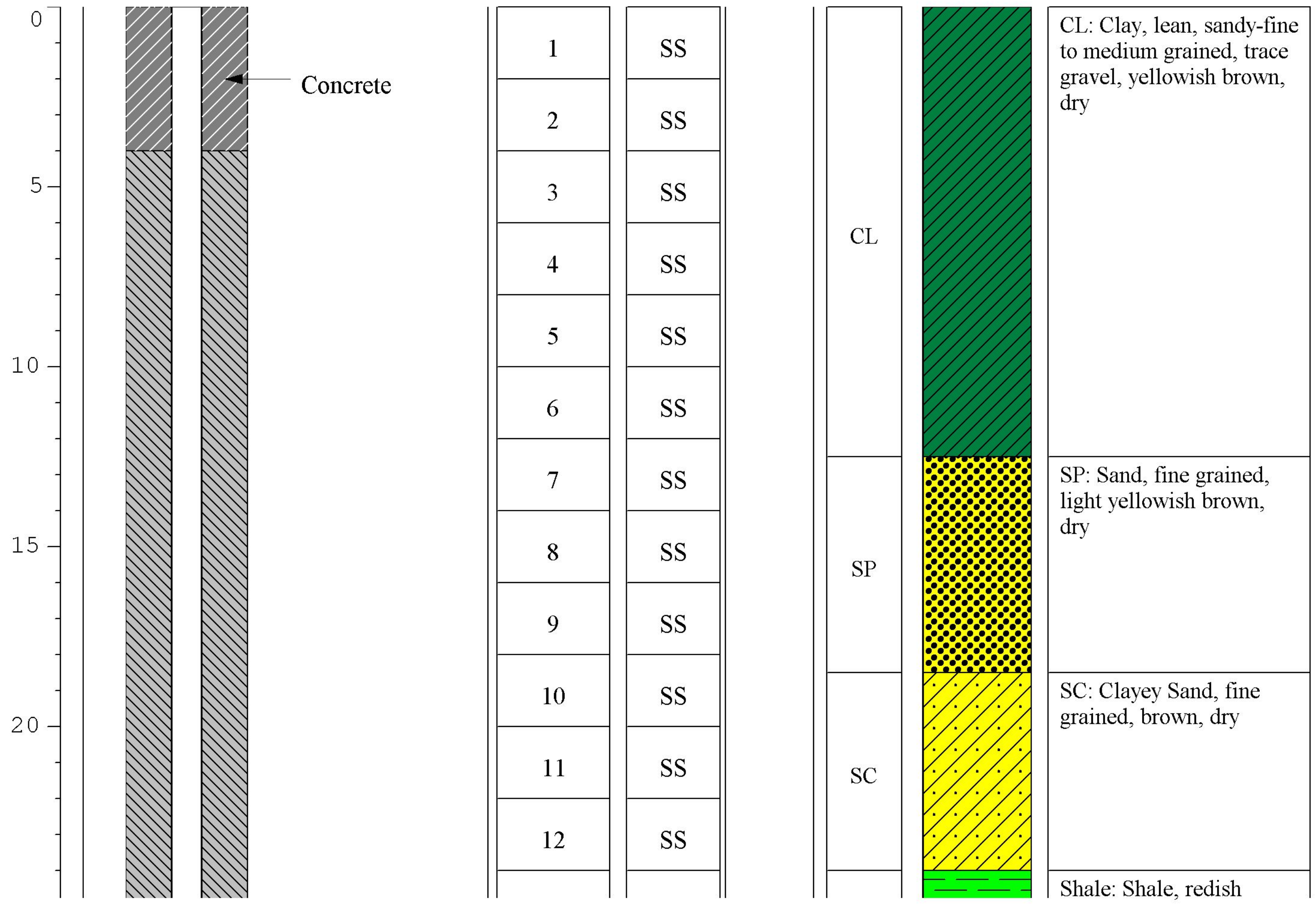
5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Appanoose County Landfill**	DRILLING CO.:	**EB Solutions, Inc.**
SITE LOCATION:	**195th Avenue**	REGISTRATION #:	**3161**
CITY/STATE:	**Centerville, Iowa**	METHOD OF DRILLING:	**CME-550**
JOB NO.:	**EB32024017**	BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
LOGGED BY:	**EDB**	DATES DRILLED:	**7-1-24 to 7-3-24**
UST REGISTRATION:	**NA**	GROUND ELEVATION:	**992.32**
LUST:	**NA**	CASING ELEVATION:	**995.02**
GROUNDWATER ELEVATION:	**871.46**	SCREEN ELEVATION:	**874.68**
		Elevation based on Landfill Datum	

Symbols: * - SAMPLED FOR LABORATORY ▼ WATER LEVEL AFTER DRILLING ▽ WATER LEVEL DURING DRILLING

DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMPLE		PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
			SAMP. #	TYPE*				



CL: Clay, lean, sandy-fine to medium grained, trace gravel, yellowish brown, dry

SP: Sand, fine grained, light yellowish brown, dry

SC: Clayey Sand, fine grained, brown, dry

Shale: Shale, redish

NOTES:

Sample Type: Spilt-Spoon (SS)/Rock Chips

Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

SOIL BORING LOG AND MONITORING WELL DIAGRAM

EB Solutions, Inc.

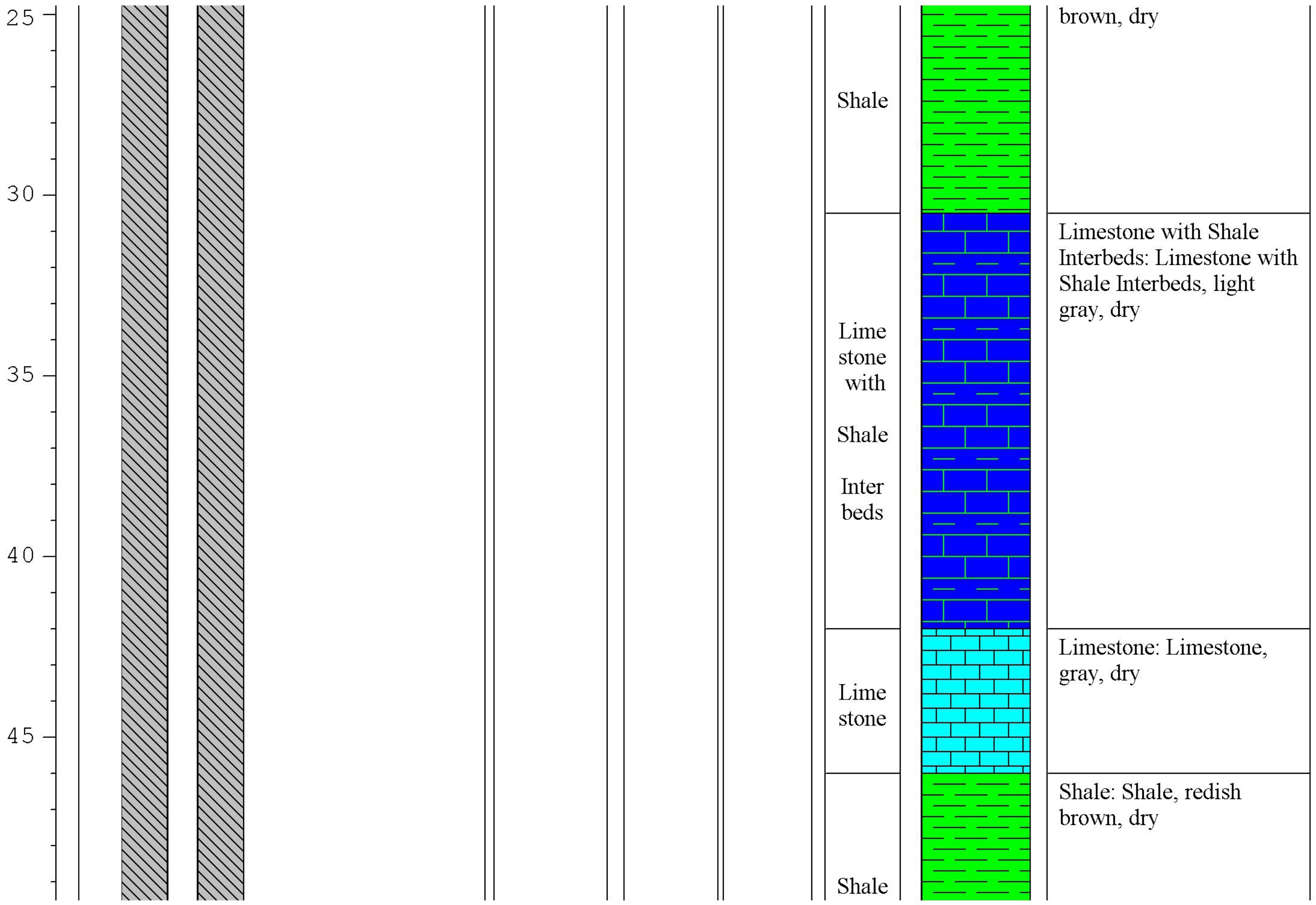
5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Appanoose County Landfill**	DRILLING CO.:	**EB Solutions, Inc.**
SITE LOCATION:	**195th Avenue**	REGISTRATION #:	**3161**
CITY/STATE:	**Centerville, Iowa**	METHOD OF DRILLING:	**CME-550**
JOB NO.:	**EB32024017**	BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
LOGGED BY:	**EDB**	DATES DRILLED:	**7-1-24 to 7-3-24**
UST REGISTRATION:	**NA**	GROUND ELEVATION:	**992.32**
LUST:	**NA**	CASING ELEVATION:	**995.02**
GROUNDWATER ELEVATION:	**871.46**	SCREEN ELEVATION:	**874.68**
		Elevation based on Landfill Datum	

Symbols: * - SAMPLED FOR LABORATORY ▼ WATER LEVEL AFTER DRILLING ▼ WATER LEVEL DURING DRILLING

DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMPLE		PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
			SAMP. #	TYPE*				



brown, dry

Limestone with Shale Interbeds: Limestone with Shale Interbeds, light gray, dry

Limestone: Limestone, gray, dry

Shale: Shale, redish brown, dry

NOTES:

Sample Type: Spilt-Spoon (SS)/Rock Chips

Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

SOIL BORING LOG AND MONITORING WELL DIAGRAM

EB Solutions, Inc.

5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

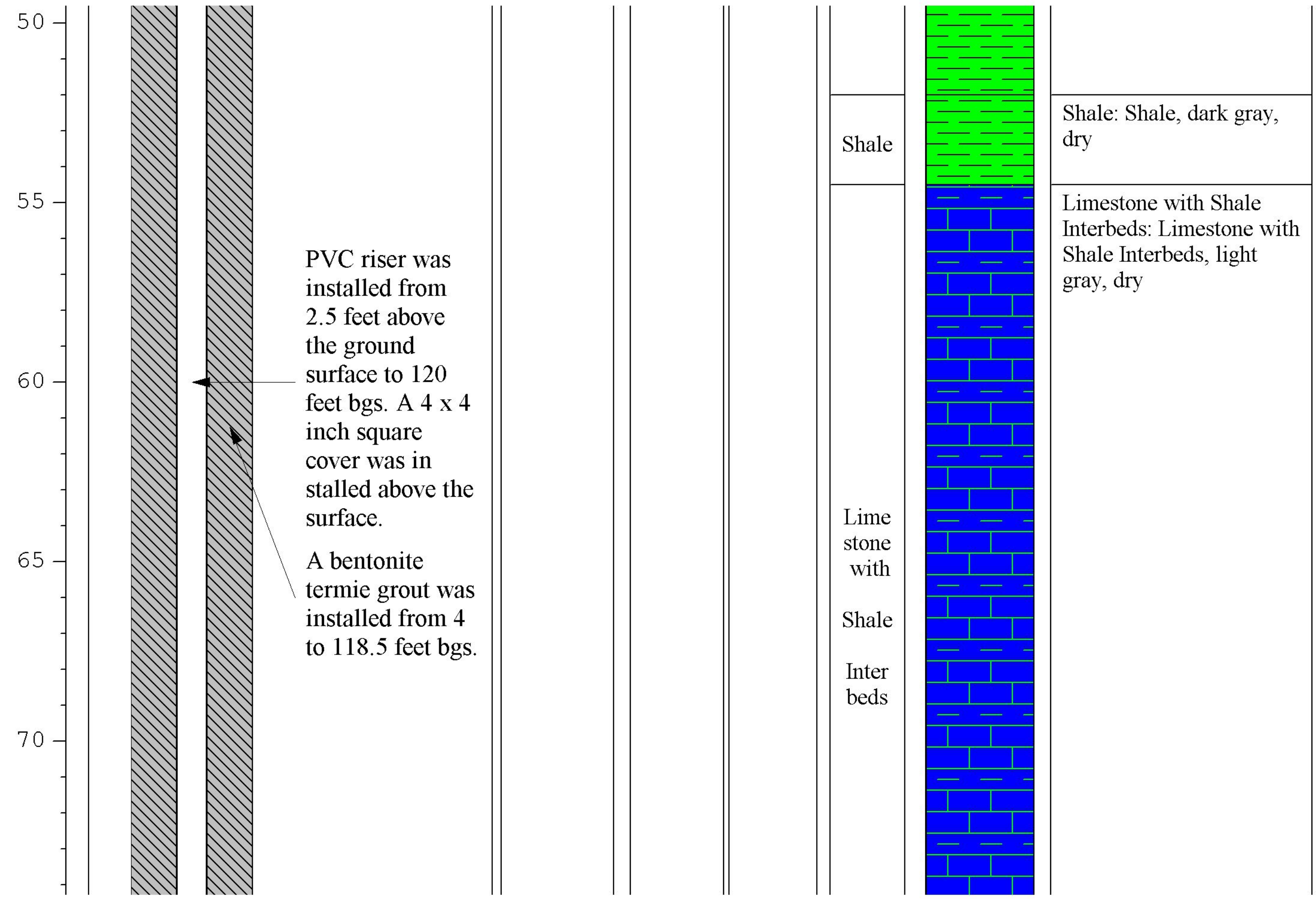
PROJECT INFORMATION	
PROJECT:	**Appanoose County Landfill**
SITE LOCATION:	**195th Avenue**
CITY/STATE:	**Centerville, Iowa**
JOB NO.:	**EB32024017**
LOGGED BY:	**EDB**
UST REGISTRATION:	**NA**
LUST:	**NA**
GROUNDWATER ELEVATION:	**871.46**

DRILLING INFORMATION	
DRILLING CO.:	**EB Solutions, Inc.**
REGISTRATION #:	**3161**
METHOD OF DRILLING:	**CME-550**
BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
DATES DRILLED:	**7-1-24 to 7-3-24**
GROUND ELEVATION:	**992.32**
CASING ELEVATION:	**995.02**
SCREEN ELEVATION:	**874.68**

Elevation based on Landfill Datum

Symbols: * - SAMPLED FOR LABORATORY ≖ WATER LEVEL AFTER DRILLING ≖ WATER LEVEL DURING DRILLING

DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMPLE		PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
			SAMP. #	TYPE*				



PVC riser was installed from 2.5 feet above the ground surface to 120 feet bgs. A 4 x 4 inch square cover was installed above the surface.

A bentonite termie grout was installed from 4 to 118.5 feet bgs.

Shale: Shale, dark gray, dry

Limestone with Shale Interbeds: Limestone with Shale Interbeds, light gray, dry

NOTES:

Sample Type: Spilt-Spoon (SS)/Rock Chips

Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

SOIL BORING LOG AND MONITORING WELL DIAGRAM

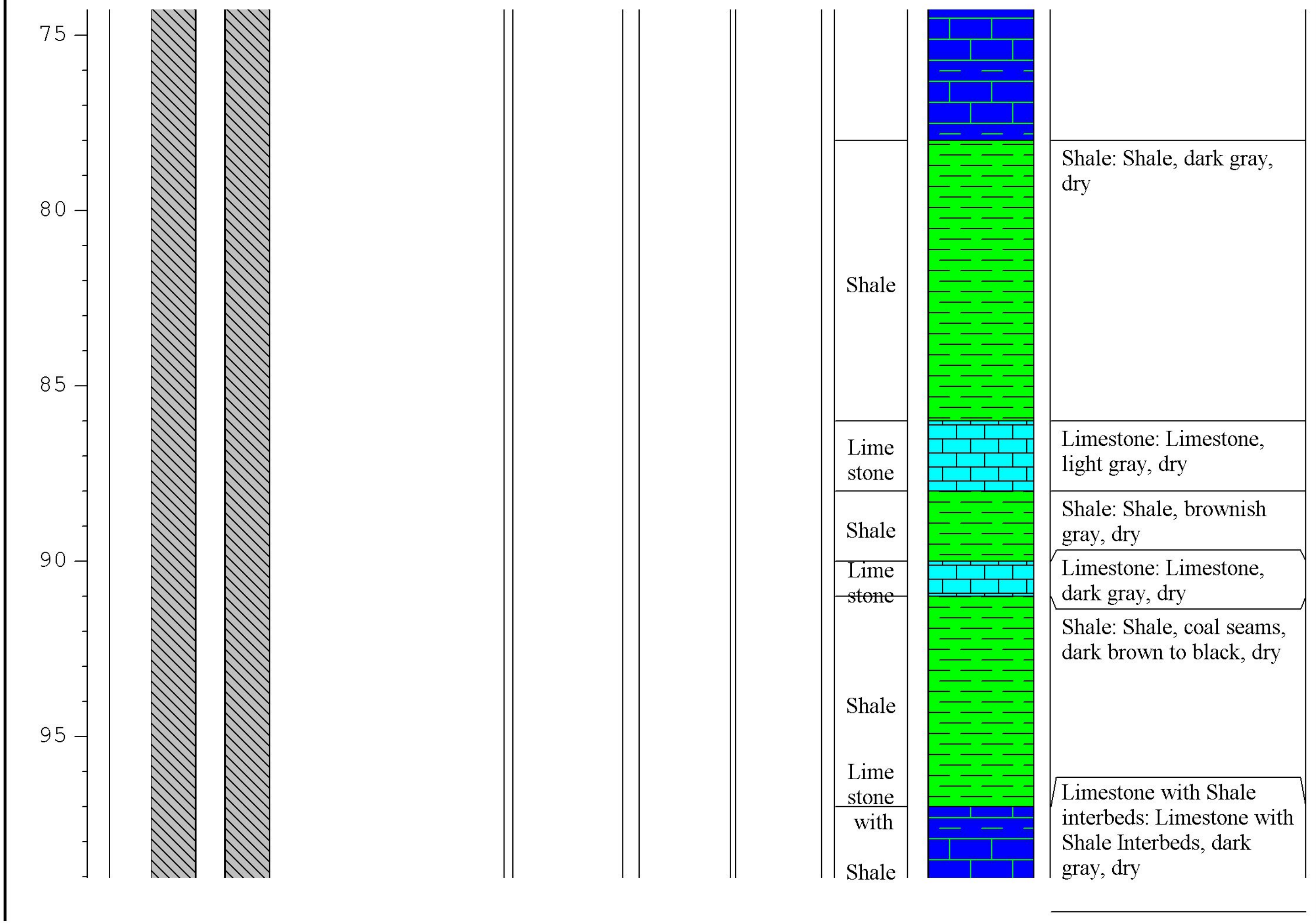
EB Solutions, Inc.
5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Appanoose County Landfill**	DRILLING CO.:	**EB Solutions, Inc.**
SITE LOCATION:	**195th Avenue**	REGISTRATION #:	**3161**
CITY/STATE:	**Centerville, Iowa**	METHOD OF DRILLING:	**CME-550**
JOB NO.:	**EB32024017**	BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
LOGGED BY:	**EDB**	DATES DRILLED:	**7-1-24 to 7-3-24**
UST REGISTRATION:	**NA**	GROUND ELEVATION:	**992.32**
LUST:	**NA**	CASING ELEVATION:	**995.02**
GROUNDWATER ELEVATION:	**871.46**	SCREEN ELEVATION:	**874.68**
		Elevation based on Landfill Datum	

Symbols: * - SAMPLED FOR LABORATORY ≖ WATER LEVEL AFTER DRILLING ≖ WATER LEVEL DURING DRILLING

DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMPLE		PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
			SAMP. #	TYPE*				



Shale	Shale: Shale, dark gray, dry
Lime stone	Limestone: Limestone, light gray, dry
Shale	Shale: Shale, brownish gray, dry
Lime stone	Limestone: Limestone, dark gray, dry
Shale	Shale: Shale, coal seams, dark brown to black, dry
Lime stone with Shale	Limestone with Shale interbeds: Limestone with Shale Interbeds, dark gray, dry

NOTES:
Sample Type: Spilt-Spoon (SS)/Rock Chips
Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

SOIL BORING LOG AND MONITORING WELL DIAGRAM

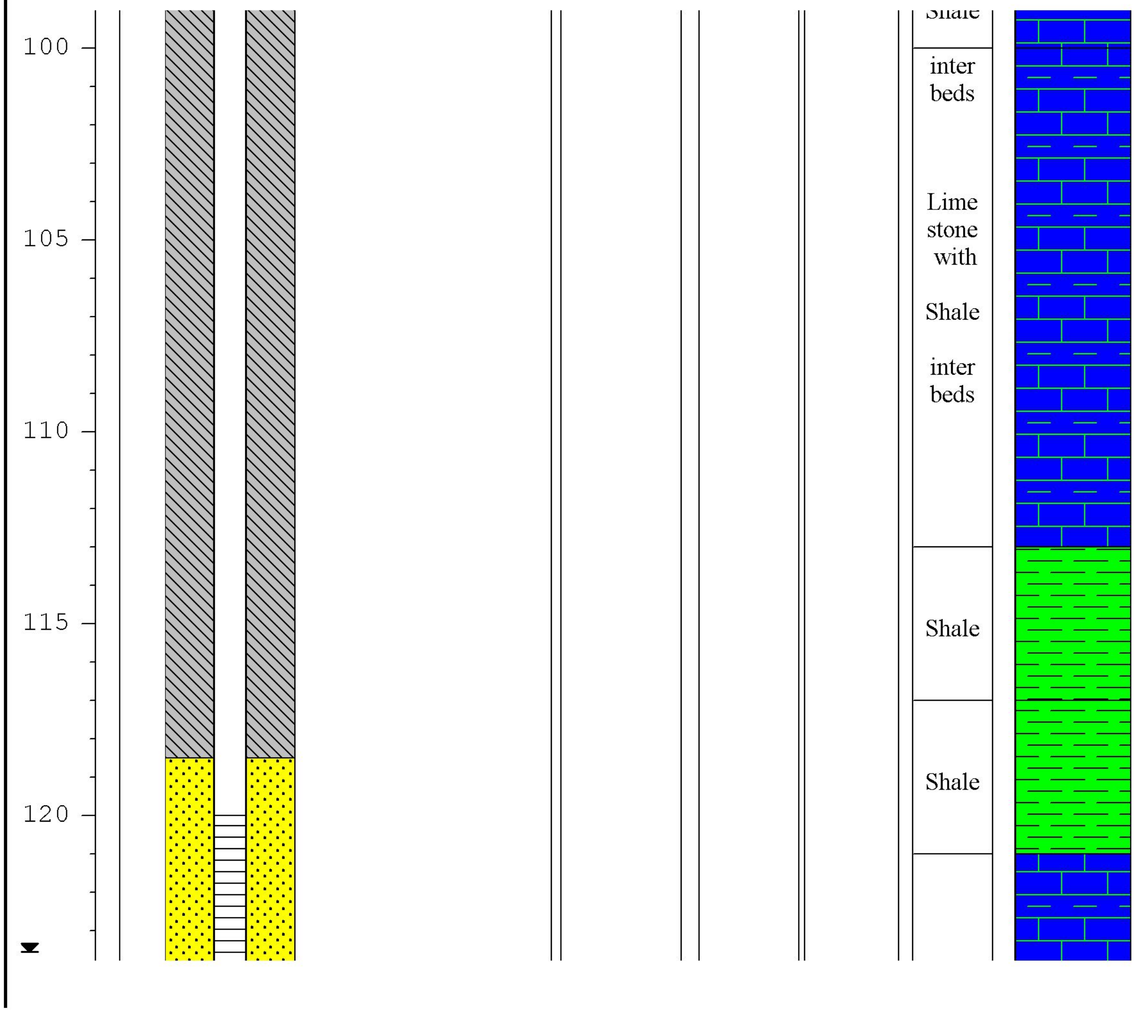
EB Solutions, Inc.

5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

PROJECT INFORMATION		DRILLING INFORMATION	
PROJECT:	**Appanoose County Landfill**	DRILLING CO.:	**EB Solutions, Inc.**
SITE LOCATION:	**195th Avenue**	REGISTRATION #:	**3161**
CITY/STATE:	**Centerville, Iowa**	METHOD OF DRILLING:	**CME-550**
JOB NO.:	**EB32024017**	BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
LOGGED BY:	**EDB**	DATES DRILLED:	**7-1-24 to 7-3-24**
UST REGISTRATION:	**NA**	GROUND ELEVATION:	**992.32**
LUST:	**NA**	CASING ELEVATION:	**995.02**
GROUNDWATER ELEVATION:	**871.46**	SCREEN ELEVATION:	**874.68**
		Elevation based on Landfill Datum	

Symbols: * - SAMPLED FOR LABORATORY ▼ WATER LEVEL AFTER DRILLING ▼ WATER LEVEL DURING DRILLING



DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMP. #	TYPE*	PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
						inter beds Lime stone with Shale inter beds		Limestone with Shale interbeds: Limestone with Shale Interbeds, light gray, dry
						Shale		Shale: Shale, gray, dry
						Shale		Shale: Shale, coal seams, dark brown to black, dry
								Limestone with Shale Interbeds: Limestone with Shale Interbeds, gray,

NOTES:
Sample Type: Spilt-Spoon (SS)/Rock Chips
Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

SOIL BORING LOG AND MONITORING WELL DIAGRAM

EB Solutions, Inc.

5060 4th Street SW Cedar
Rapids, Iowa 52404

BOREHOLE NO.: **MW60**
TOTAL DEPTH: **136'**

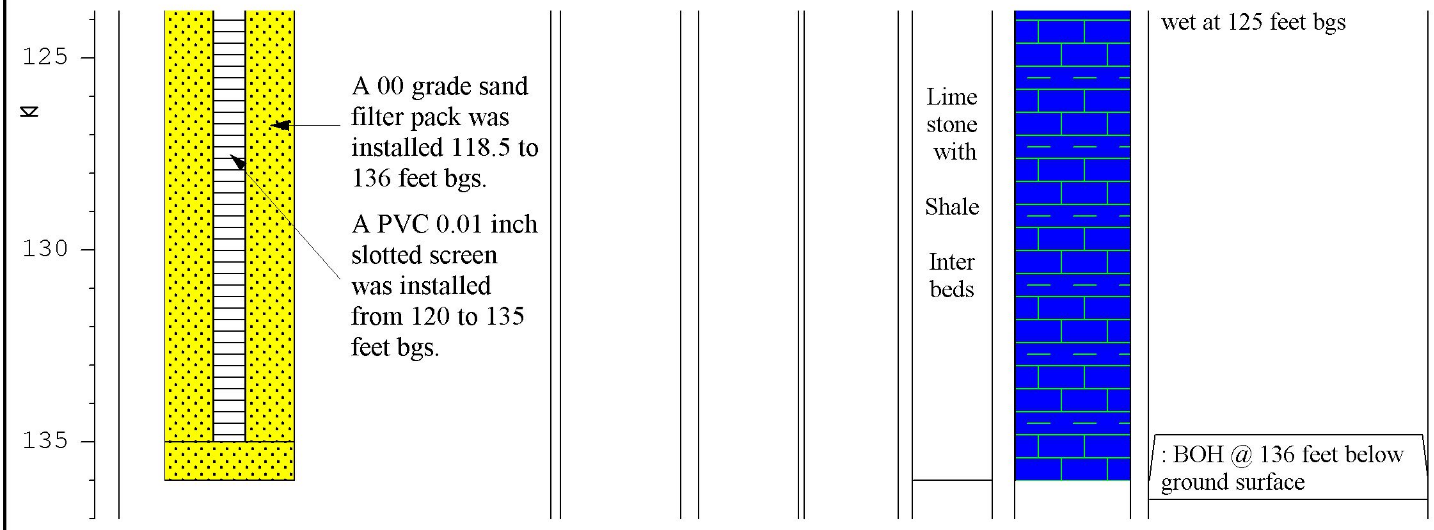
PROJECT INFORMATION	
PROJECT:	**Appanoose County Landfill**
SITE LOCATION:	**195th Avenue**
CITY/STATE:	**Centerville, Iowa**
JOB NO.:	**EB32024017**
LOGGED BY:	**EDB**
UST REGISTRATION:	**NA**
LUST:	**NA**
GROUNDWATER ELEVATION:	**871.46**

DRILLING INFORMATION	
DRILLING CO.:	**EB Solutions, Inc.**
REGISTRATION #:	**3161**
METHOD OF DRILLING:	**CME-550**
BORING DEPTH(ft)xDIAMETER(in):	**136' x 4/8"**
DATES DRILLED:	**7-1-24 to 7-3-24**
GROUND ELEVATION:	**992.32**
CASING ELEVATION:	**995.02**
SCREEN ELEVATION:	**874.68**

Elevation based on Landfill Datum

Symbols: * - SAMPLED FOR LABORATORY ▽ WATER LEVEL AFTER DRILLING ▽ WATER LEVEL DURING DRILLING

DEPTH	BORING COMPLETION	WELL DESCRIPTION	SAMPLE SAMP. #	SAMPLE TYPE*	PID ppm	USCS	SOIL SYMBOLS	SOIL DESCRIPTION
		A 00 grade sand filter pack was installed 118.5 to 136 feet bgs. A PVC 0.01 inch slotted screen was installed from 120 to 135 feet bgs.				Lime stone with Shale Inter beds		wet at 125 feet bgs : BOH @ 136 feet below ground surface



NOTES:

Sample Type: Spilt-Spoon (SS)/Rock Chips

Drilling Type: 4-1/4 Inch Hollow Stem Auger (HSA)/Air Rotary

MONITORING WELL / PIEZOMETER CONSTRUCTION DOCUMENTATION FORM

Disposal Site Name: Appanoose County Landfill Permit No.: 04-SDP-01-76C

Well/Piezometer No.: MW-60 Date Started: 7/1/2024 Date Completed: 7/3/2024

Applicable Requirements[1]: ☒ 567 IAC 113 ☐ 567 IAC 115 ☐ Site Permit

☐ 567 IAC 114 ☐ 567 IAC 139 ☐ Other:

A. SURVEYED LOCATION[2] AND ELEVATION OF POINT

Elevations (MSL): Ground Surface: 992.68 Top of Protective Casing: 995.18

Top of Well Casing: 995.02

Site Coordinates: Northing: 11220.90 Easting: 10917.90

World Coordinates: Latitude: Longitude:

Elevation and Coordinate Systems: Landfill Datum

B. SOIL BORING INFORMATION

Certified Well Contractor EB Solutions, Inc.

Address 5060 4th Street SW City, State, Zip Code Cedar Rapids, Iowa 52404

Name of driller Robert Hunt Cert No. 3161

Drilling method Air Rotary Drilling fluid None Bore hole diameter 4/8-inch

Soil sampling method Spilt Spoon Depth of boring 136 feet

C. MONITORING WELL INSTALLATION

Casing material: PVC

Length of casing: 122.5 feet

Casing diameter: 2-inch

Casing joint type: T & C Flush

Casing/screen joint type: T & C Flush

Screen material: PVC

Screen opening size: 0.01

Screen length: 15 feet

Depth of Well: 135 feet

Filter Pack: 118.5-136 feet

Material: Sand

Grain Size: 0.45-0.55mm

Quantity: 8.0 sacks

Seal (minimum 3 ft. length above filter pack): 4.0-118.5 feet

Material: Bentonite Grout

Placement method: Tremie

Quantity: 6 Bags

Backfill (if different from seal): NA

Material:

Placement method:

Quantity:

Surface seal design: Concrete

Material of protective casing: Aluminum

Material of grout between protective casing and well casing: Concrete

Protective cap: 4-inch Square Aluminum

Material: Aluminum

Vented?: ☒ Y ☐ N Locking?: ☒ Y ☐ N

Well cap: Expansion J-Plug

Material: Plastic/Rubber

Vented?: ☐ Y ☒ N

D. GROUNDWATER MEASUREMENT (±0.01 foot below top of inner well casing)

Water level 123.56 feet Stabilization time 4 days

Well development method Bladder Pump

Average depth of frost line 3 feet

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[1] Refer to the site's permit to determine applicable requirements. Note that some sites may only be regulated by their permit versus current landfill chapters. If the permit and rule are silent regarding applicable requirements, then 567 IAC Chapter 39 shall apply, which requires use of the Well Log (Well Record) Form, not this form. If the applicable requirements have been modified and approved by the DNR, then note under Other.

[2] The location does not need to be surveyed by a licensed surveyor. A handheld GPS reading accurate to +/- 30 feet is acceptable when an aerial photograph showing the location (pin) is included with this form. The site coordinates should be the same coordinate system currently used for survey control and mapping of the site.

DRILLER'S CERTIFICATION

I certify under penalty of law I believe the information reported above is true, accurate, and complete.

Signature ______ **Certification #** 3161 **Date** 7/22/2024

Note: Attach well log, boring log, and map showing new monitoring well/piezometer location in relation to existing wells or piezometers.

Complete one form for each well plugged and submit within 30 days to the local county agent, DNR project officer, and Erik Day with the DNR's Water Supply Section at erik.day@dnr.iowa.gov. DNR prefers that the forms be completed and submitted electronically.

Well and Boring Logs

Elevations: ±0.01 ft. MSL

Depths: ±0.1 ft from Ground Surface

Top of protective casing (TOP)
Elevation C 995.18

Top of Well Casing (TOC)
Elevation B 995.02

Ground surface (GS)
Elevation A 992.68
Depth Use 0

Top of backfill
Base of concrete plug and bentonite grout
Elevation A-W 988.68
Depth W 4.0 feet

Base of Protective Casing
Elevation C-A = 989.18
Depth PC-C-A = 3.5 feet

Base of Backfill, Top of Seal
Elevation A-X = 988.68
Depth X 4.0 feet

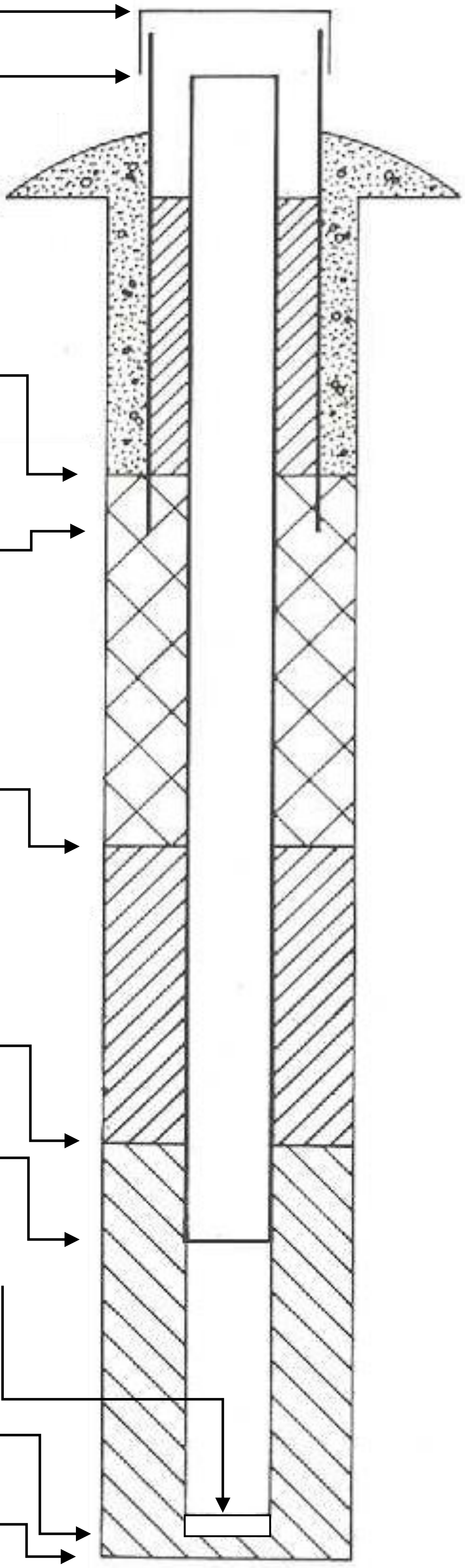
Top of Filter Pack, Base of Seal
Elevation A-Y = 876.18
Depth Y 118.5 feet

Top of Screen (TOS)
Elevation B-TD-S-WP = 874.68
Depth A-TOS^{elev} = 120.0 ft

Bottom of Screen (BOS)
Elevation B-TD-WP = 859.68
Depth A-BOS^{elev} = 135.0 ft

Bottom of Well
Elevation 859.68
Depth 135.0 feet

Bottom of Filter Pack
Elevation A-Z = 858.68
Depth Z 136.0 feet



Required Data:

- Elevations for A, B, and C shall be surveyed.
- Depths for W, X, Y, and Z shall be field measured following completion of each item.
- Lengths of the Protective Casing (PC), Screen (S), and Well Point (WP) shall be field measured prior to installation of each item.
- The total Depth (TD) from the Top of Well Casing to the Bottom of Well Point shall be field measured following installation.

PC: 122.5 feet
S: 15 feet
WP: 0.0 feet
TD: 138.34 feet

APPANOOSE COUNTY SANITARY LANDFILL
Permit No. 04-SDP-01-76C
26260 195th Avenue
Appanoose County, IA

Attachment 3

Detailed Discussion of Statistical Methods

Statistical Methodology

1. Comparison to Background

For determining which parameters will need a formal statistical treatment, the Unified Guidance (USEPA, 2009) suggests splitting monitoring parameters into three distinct groups: a) reliable indicators selected for formal testing; b) other analytes which are monitored for general groundwater quality information but not statistically tested; and c) those meeting the "never-detected" criteria. Only those parameters with some historically detected presence in background need to be included in the first group and treated with a formal statistical test. Any parameter that has never been detected in background is eligible for the third group of "never-detected" constituents. Constituents with detections below the reporting limit (J-flagged data) will be considered "never-detected." As a means of evaluating the third group, the Unified Guidance suggests the Double Quantification Rule (DQR). The DQR is stated in the Unified Guidance as:

"A confirmed exceedance is registered if any well-constituent pair in the '100% non-detect' group exhibits quantified measurements [i.e., at or above the reporting limit (RL)] in two consecutive sample and resample events."

The Unified Guidance also recommends establishing background sample sizes as large as feasible. The guidance recognizes that small sample sizes in background can be "particularly" troublesome, especially in controlling statistical test false positive and negative rates. With parametric tests (such as parametric prediction limits), the false positive rate may be controlled, but at the expense of statistical power. With non-parametric tests (such as non-parametric prediction limits or the "quasi-statistical" DQR), the false positive rate may be unacceptably high. The Unified Guidance suggests that generally at least 8 to 10 separate background measurements be available, recognizing that statistical power continues to increase with larger sample sizes.

The statistical analysis methods utilized for comparison to background are the DQR and "1-of-2" interwell prediction limits as recommended in the Unified Guidance (USEPA, 2009).

Double Quantification Rule

The DQR will be used to evaluate SSIs over background for the Appendix I and II constituents that have not been detected above the reporting limit in the background data set. An SSI will be indicated for any well-constituent pair with quantified measurements at or above the reporting limit noted for two consecutive sample and resample events. If applicable, the resample will be collected prior to next semiannual sampling event.

Interwell Prediction Limits

Interwell prediction limits will be used to statistically evaluate SSIs over background for the Appendix I and II constituents which have been detected above the reporting limit in the background data set. A "1-of-2" retesting plan will be utilized on individual sample results. The 1-of-2 retesting plan as defined in the Unified Guidance concludes that an SSI has occurred when two out of two sample results exceed the prediction limit, while no SSI is concluded if 1-

of-2 is below the limit. If applicable, resamples will be collected prior to next semiannual sampling event. The prediction limit for each constituent will be recalculated semiannually.

For interwell constituents with less than or equal to 50% detects in the background data set, a non-parametric prediction limit will be utilized. The non-parametric prediction limit will be taken as the maximum order statistic (maximum value) of the background data.

For interwell constituents with greater than 50% detects in the background data set, normality assumptions will be verified using the Shapiro-Wilk normality test. If the background data is not normally distributed, a non-parametric prediction limit will be utilized (as described in the paragraph above). If the background data is normally distributed, or can be fit to a normal distribution utilizing a normalizing transformation, then a normal-based parametric prediction limit will be applied.

When considering a lognormal prediction limit, a comparison will be made to the maximum order statistic for the background data set. Lognormal prediction limits can be sensitive to smaller departures from lognormality. That is, if data are not truly lognormal, but also not rejected as lognormal, the prediction limit may be inflated as a result of the transformation. In choosing a lognormal limit, in addition to the percent detections and lognormal goodness of fit criteria, an additional convention will be applied. If the lognormal limit exceeds the level of twice the maximum background concentration, it is assumed that the lognormal model does not adequately fit the background distribution and a non-parametric prediction limit will be selected.

For interwell constituents with 50% to 85% detects in the background data set, Kaplan-Meier estimation will be applied to manage statistical bias introduced by non-detects. For interwell constituents with over 85% detects in the background data set, half the reporting limit will be used for non-detect data. These estimation methods follow Unified Guidance recommendations and are given in detail in Unified Guidance Chapter 15 (USEPA, 2009).

The parametric prediction limit will be calculated as:

$$PL = \overline{x} + k \cdot s$$

where $\overline{x}$ is the sample mean of the December 2008 through current event background data, *s* is the sample standard deviation, and *k* is the multiplier obtained from the Unified Guidance Table 19-1 (USEPA, 2009) for 1-of-2 interwell prediction limits on observations. In determining *k*, the number of constituents of concern (COCs) for formal statistical evaluation along with the number of downgradient wells need to be identified. Per the basic subdivision discussion presented in Section 19.2.1 of the Unified Guidance, along with the discussion regarding the use of the appendix tables for parametric retesting plans given on pages 19-13 through 19-15 of the Unified Guidance (USEPA, 2009), the *k*-multiplier is chosen based on the number of constituents, wells, and evaluations performed annually. When an exact well and COC configuration is not given in the appendix tables, the *k*-multiplier is linearly interpolated as described on page 19-14 of the Unified Guidance (USEPA, 2009).

Sanitas® v10.0 software (Sanitas Technologies) will be used to check distributional assumptions, perform Kaplan-Meier in the case of 50% to 85% detects in the background data set, and calculate the *k*-multipliers and subsequent prediction limits.

Intrawell Prediction Limits

Intrawell prediction limits are calculated in a similar manner to that described above for the interwell case. A main difference between the two methods is the intrawell limit is calculated from a collection of background measurements within the compliance well. A minimum of eight compliance well background samples will be used when calculating the limit.

A second difference is for the parametric prediction limit, in which the *k*-multiplier is modified from the interwell case, as given in Appendix D Tables 19-10 through 19-18 of the Unified Guidance (USEPA, 2009).

Updating intrawell background is performed periodically. The Unified Guidance (Section 5.3.2) recommends that 4 to 8 new compliance observations be collected prior to updating the background data set. The guidance also states that "a potential update is predicated on there being no statistically significant increase [SSI] recorded for that well constituent, including since the last update." A two-sample t-test or Wilcoxon rank-sum test between existing intrawell background data and the potential set of newer background data is performed, and a non-significant result implies that the newer compliance data can be re-classified as background measurements.

2. Comparison to Groundwater Protection Standard – Assessment Monitoring

According to 567 IAC 113.10(6)f and g, under the assessment monitoring program Appendix II results which have been determined to be statistically above background are also statistically compared to the GWPS. If "Appendix II constituents are detected at statistically significant levels above the GWPS" a notice is placed in the operating record and characterization is begun.

Under 567 IAC 113.10(6)h, the GWPS is the maximum contaminant level (MCL) promulgated under Section 1412 of the Safe Drinking Water Act in 40 Code of Federal Regulations (CFR) Part 141. If no MCL exists, or if background concentrations are higher than the MCL, the GWPS is defined as background. Also, per 567 IAC 113.10(6)i, an alternative GWPS may be established by the department for constituents for which there is no MCL such as the "health-based concentrations that comply with the statewide standards for groundwater established pursuant to 567-Chapter 137."

When the GWPS is background concentrations, the statistical methods discussed in the above "1. Comparison to Background" are used. When the GWPS is the MCL or an alternative health-based concentration, per the Unified Guidance (USEPA, 2009), "confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring." In the case of normally distributed data, a normal-based parametric confidence interval is used. If the data are not normally distributed a non-parametric confidence interval on the median is used. A lower 99% confidence limit falling above the GWPS implies that concentrations are detected at statistically significant levels above the GWPS with an α-level of 0.01, which is the minimum RCRA regulatory limit from §264.97(i)(2) for an individual test false positive error rate.

The Unified Guidance recognizes that statistical power is also of prime concern to USEPA and that there "should be a high probability that the statistical test will positively identify concentrations that have exceeded a fixed regulatory standard." In compliance/assessment monitoring, instead of pre-specifying the false positive rate prior to computing confidence interval limits, the Unified Guidance suggests the desired level of power (1-β) should be set as an initial target.

For compliance/assessment monitoring purposes, the Unified Guidance (Chapter 22) suggests evaluating increases in the true concentration mean of 1.5 and 2.0 times a fixed standard. (This is similar in concept to the critical power targets in detection monitoring, i.e., 55-60% power at 3σ above background and 80-85% power at 4σ over background). As a general guide, the Unified Guidance suggests there should be at least 70-80% statistical power for detecting increases of 2 times a fixed standard. Specifically, the Unified Guidance recommends there be 50% power of detecting increases in the true concentration mean of 1.5 times a fixed standard (risk ratio of 1.5) and 80% power of detecting increases in the true concentration mean of 2.0 times a fixed standard (risk ratio of 2.0).

To meet these levels of statistical power, α is chosen based on either Unified Guidance Equation 22.1:

$$1-\beta = G_{T,n-1}\left(t_{1-\alpha,n-1}\middle|\Delta-\sqrt{n}(R-1)\right);$$

where R is the desired risk ratio, $t_{(1-\alpha,n-1)}$ is the (1−α) Student's t-quantile with (n−1) degrees of freedom and G represents the cumulative non-central t-distribution with (n−1) degrees of freedom and noncentrality parameter Δ;

or Unified Guidance Equation 22.2:

$$\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R\cdot\widehat{CV}} - t_{1-\beta,n-1}\right);$$

where R is the desired risk ratio, n is the sample size, CV is the estimated sample coefficient of variation, $t_{(1-\beta,n-1)}$ is the (1−β) Student's t-quantile with (n−1) degrees of freedom, and F is the cumulative (central) Student's t-distribution function.

The first equation (Unified Guidance Equation 22.1) assumes a coefficient of variation (CV) =1. This version is used if only poorer estimates of the true CV are available. In practice, a convention has been adopted with the statistical updates to utilize Unified Guidance Equation 22.2 in all cases where a parametric confidence interval is calculated, and use Unified Guidance Equation 22.1 when non-parametric confidence intervals are calculated. Since a non-parametric confidence interval is based on the median, it is not as sensitive to departures from normality, and the assumption of a CV=1 in Unified Guidance Equation 22.1 should provide a conservative estimate.

Since 0.01 is the minimum RCRA regulatory limit for α, it is never set lower than this. Conversely, the Unified Guidance recognizes the "difficulty of simultaneously attaining the recommended level of power while controlling the false positive rate, especially for small sample sizes and highly variable data." The Unified Guidance suggests a maximum false positive rate of α=0.2 is a reasonable upper bound.

Finally, similar to the need for defining a SWFPR under detection monitoring, the Unified Guidance (Chapter 7) recognizes there may be concern about the "use of relatively high individual test-wise false positive rates (α) in order to meet a pre-specified power, especially when considering the cumulative false positive error rate across multiple wells and/or constituents." However, "the Unified Guidance considers computation of cumulative SWFPRs in compliance/assessment testing to be problematic, and reliance on individual test false positive rates preferable." Notwithstanding, if several confidence limit calculations are compared to the GWPS with high α-levels, caution should be taken in the interpretation.

For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits.

3. Comparison to Groundwater Protection Standard – Corrective Action Monitoring

As stated above, if "Appendix II constituents are detected at statistically significant levels above the GWPS" a notice is placed in the operating record and characterization is begun. Owners or operators are required to initiate an assessment of corrective measures, select a remedy, and implement a remedy in accordance with 567 IAC 113.10(7), (8), and (9). For remedy completion in accordance with 567 IAC 113.10(9)e(2), compliance with the GWPS is considered achieved by demonstrating that concentrations of Appendix II constituents have not exceeded the GWPS for a period of three consecutive years or an alternate length of time established by the Department.

Individual analyte/well pairs may return to assessment constituents (at the corrective action monitoring location) once compliance with the GWPS has been achieved for a period of 3 years. Note that monitoring wells will not move out of the corrective action monitoring program until all Appendix II constituents have achieved compliance with the GWPS for a period of three consecutive years.

Confidence Intervals in Corrective Action Mode

In the case of the GWPS being a fixed standard as either the 40 CFR Part 141 Safe Drinking Water Act MCL or the 567 IAC Chapter 137 Statewide Standard for a Protected Groundwater Source, "confidence intervals are the recommended general statistical strategy in compliance/assessment or corrective action monitoring" (USEPA, 2009). However, a primary difference between confidence intervals as used under assessment monitoring and confidence intervals used under corrective action is reversal of the null hypothesis. As detailed in Section 7.2 of the Unified Guidance (USEPA, 2009), the hypothesis testing structure under assessment monitoring is to presume compliance point concentrations do not to exceed the fixed standard unless sampling data indicates otherwise. As a formal statistical hypothesis, this is written as:

$$H_0\text{: } \Theta \leq G \quad \text{vs.} \quad H_A\text{: } \Theta > G$$

In corrective action mode, the hypothesis is reversed. Namely, compliance point concentrations are presumed to exceed the fixed standard and evidence must be presented to demonstrate regulatory compliance. In the case of corrective action, the statistical hypothesis is written as:

$$H_0\text{: } \Theta > G \quad \text{vs.} \quad H_A\text{: } \Theta \leq G$$

For testing under assessment monitoring, a lower confidence limit (LCL) is compared to the compliance standard G. If the LCL is larger than the standard G, it is concluded that the compliance standard has been violated.

However, under corrective action monitoring, the upper confidence limit (UCL) is compared to the compliance standard *G*. In this case, the UCL should lie below the standard to accept the alternative hypothesis that concentration levels are in compliance.

The UCL α-level under corrective action monitoring is set so that a high degree of confidence is achieved in declaring successful remediation. Per the Unified Guidance (Section 7.4.2) "EPA's overriding concern in corrective action is that remediation efforts not be declared successful without sufficient statistical proof." The Unified Guidance "recommends the use of a reasonably low, fixed test-wide false positive rate (e.g., α = 0.05 or 0.10)." In this case, α = 0.10 corresponds to a 90% UCL.

GWPS as Background

Pursuant to 567 IAC 113.10(6)h, when background concentrations of an analyte exceed the applicable MCL or IAC Statewide Standard for a Protected Groundwater Source, the GWPS is the background concentration. In this case, the GWPS is not a fixed standard but based on a distribution of background sample results.

Section 7.5 of the Unified Guidance (USEPA, 2009) details statistical hypothesis testing under corrective action when the GWPS is background. The Unified Guidance offers two alternative statistical approaches to hypothesis testing in this case. These alternatives are as follows:

A. The first represents a *two-sample* test of two distinct populations, namely the compliance well to background populations. Similar to the statistical tests used under detection and assessment monitoring, with this alternative under corrective action, the Unified Guidance states that "one highly recommended statistical test approach is a prediction limit." The Unified Guidance also states, "whatever the critical value for a selected background test, it becomes the GWPS under compliance/assessment or corrective action monitoring." Further, "the only allowable hypothesis test structure for the two-sample approach follows that of detection and compliance monitoring. Once exceeded and in corrective action, a return to compliance is through evidence that future samples lie below the GWPS using the same hypothesis structure." Therefore, with this approach in corrective action, prediction limits are calculated similarly as in assessment monitoring. Compliance well concentrations below a prediction limit indicate a return to concentrations below the background GWPS.

B. The second involves computation of a fixed statistic from the background data as the GWPS. The Unified Guidance recommendation in this case is to define a fixed GWPS based on a background upper tolerance limit with 95% confidence and 95% coverage. This is designed to be a "reasonable maximum on the likely range of background concentrations." This upper tolerance limit based on background data is then used as a fixed standard in statistical comparisons with 90% or 95% UCLs from compliance wells as discussed previously. Also, with the UCL method, the null hypothesis is reversed from that of assessment monitoring, assuming contamination is above the GWPS. A UCL falling below the background GWPS offers evidence of a return to concentrations below the GWPS. The Unified Guidance refers to this approach as a *single-sample* testing method, since the compliance well population is tested against a defined fixed standard.

The Unified Guidance discusses tradeoffs between the two approaches and does not necessarily prescribe either approach over the other. The Unified Guidance suggests that both approaches may be used, where "the background GWPS would be a range based on the two testing methods rather than a single value."

Normality
For calculation of confidence intervals, Sanitas® v10.0 software is again used to check distributional assumptions, perform Kaplan-Meier estimation in the case of 50% to 85% detects, and calculate either parametric or nonparametric confidence limits. "Corrective Action Mode" is selected for this analysis.

Non-Corrective Action Constituents
As recommended in the Unified Guidance (USEPA, 2009), confidence intervals in corrective action mode will be utilized to evaluate only constituents and monitoring locations with previously identified SSLs over the GWPS. Other compliance constituents (i.e., those without SSLs over the GWPS during prior statistical evaluations) will continue to be evaluated using the "1. Comparison to Background" and "2. Comparison to Groundwater Protection Standard – Assessment Monitoring" methods described above.

Note: the Unified Guidance (USEPA, 2009) states: "it should be recognized that once corrective action or remediation activities are initiated, there will be a considerable time during which the GWPS may still be exceeded. As provided in the RCRA regulations, it is at the conclusion of remediation activities that formal corrective action monitoring evaluation is appropriate. However, in the intervening period of remedial activity, well constituents can still be monitored and the relative efficacy of remediation measures tracked. The same corrective action hypothesis can be assumed for the targeted constituents; techniques such as trend testing may be appropriate interim applications." Given the statement above and the intentions of 567 IAC 113.10(6)g, as soon as an SSL is identified for an assessment monitoring constituent/location, then the next statistical evaluation will utilize corrective action monitoring (confidence intervals in corrective action mode).

Data Concentration Shifts During Corrective Action
Confidence intervals are based on the assumption that the population is stable over time. As a result, confidence intervals may not accurately represent the current well concentrations if increasing or decreasing trends are observed (i.e., during a release or under active remediation). Per the Unified Guidance (USEPA, 2009), lower or upper confidence limits constructed on accumulated data may be overly wide (due to high sample variability caused by combining pre- and post-shift data) and may not be reflective of more recent upward/downward shifts in the contaminant distribution.

Alternative procedures may be applied to data sets with shifting distributions. For example, where trends tests are significant, pre-shift data may be removed from the well/parameter data set for the purposes of constructing the confidence interval. "The reduction in sample size will often be more than offset by the gain in statistical power. More recent measurements may exhibit less variation around the shifted mean value, resulting in a shorter confidence interval" (USEPA, 2009).

Another alternative is to construct confidence bands around the trend line to track progress towards exceeding or meeting a fixed standard. As suggested in the Unified Guidance (Chapter 22), if a trend is present, a 90% confidence band (upper 95% confidence limit) is placed on the linear trend line. If the upper 95% confidence limit on the trend line falls below the GWPS, the well is found to have reduced to levels statistically below the GWPS.

As the discussed in the Unified Guidance, “inferences concerning a linear regression are generally appropriate when two conditions hold: 1) the residuals from the regression are approximately normal or at least reasonably symmetric in distribution; and 2) a plot of residuals versus concentrations indicates a scatter cloud of essentially uniform vertical thickness or width.” These conditions are assessed through normal probability plots of the regression residuals and plots of residuals against the predicted concentrations.

Data Adjustments Due to Exiting Corrective Action

When analyte/well pairs exit corrective action and return to assessment constituents, the hypothesis testing structure is reversed again. In corrective action mode, compliance point concentrations were presumed to exceed the GWPS, and evidence must be presented to demonstrated regulatory compliance (i.e., UCLs below the GWPS for three consecutive years). With the return to assessment constituents, analyte/well pairs have demonstrated regulatory compliance. The hypothesis testing structure reverts to the assessment monitoring structure where compliance point concentrations are presumed to not exceed the GWPS unless sampling data indicates otherwise (i.e., LCL is above the GWPS). With this reversion in hypothesis, the focus shifts to evaluating concentration changes in the analyte/well pair that would indicate an increase over the GWPS and re-trigger corrective action. For constituents with historical SSLs, earlier concentrations that had previously triggered corrective action are no longer providing useful information regarding the current assessment monitoring hypothesis. Retaining the historical data during the timeframe in which the GWPS was exceeded will result in the regression or confidence interval methods being slower to respond to new increases. As a result, the historical data prior to when statistical compliance with the GWPS was first achieved will be removed when analyte/well pairs exit corrective action and return to assessment constituents.

Attachment 4

Sanitas Report Output for Prediction Limit Calculations

Attachment 4
Assessment Monitoring
Interwell Prediction Limit

Constituent Name	Well	Upper Limit	Date	Observation	Exceeds	Background N	Background Mean	Standard Deviation	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
Assessment Monitoring Locations													
Antimony (mg/L)	MW-27	0.0062	10/6/2024	0.001ND	No	27	n/a	n/a	67	n/a	n/a	0.002475	NP Inter (NDs) 1 of 2
Antimony (mg/L)	MW-50R	0.0062	10/6/2024	0.001ND	No	27	n/a	n/a	67	n/a	n/a	0.002475	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-27	0.00874	10/6/2024	0.000907J	No	25	n/a	n/a	56	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Arsenic (mg/L)	MW-50R	0.00874	10/6/2024	0.0013J	No	25	n/a	n/a	56	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Barium (mg/L)	MW-27	2.18	10/6/2024	0.0669	No	52	n/a	n/a	2	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Barium (mg/L)	MW-50R	2.18	10/6/2024	0.0532	No	52	n/a	n/a	2	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Cadmium (mg/L)	MW-27	0.001614	10/6/2024	0.0001ND	No	52	-8.37	1.066	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cadmium (mg/L)	MW-50R	0.001614	10/6/2024	0.0001ND	No	52	-8.37	1.066	42	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Chromium (mg/L)	MW-27	0.0305	10/6/2024	0.0025ND	No	53	n/a	n/a	79	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Chromium (mg/L)	MW-50R	0.0305	10/6/2024	0.0012J	No	53	n/a	n/a	79	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Cobalt (mg/L)	MW-27	0.04714	10/6/2024	0.00108	No	52	-6.951	2.141	33	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Cobalt (mg/L)	MW-50R	0.04714	10/6/2024	0.00136	No	52	-6.951	2.141	33	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Copper (mg/L)	MW-27	0.136	10/6/2024	0.0033J	No	52	n/a	n/a	50	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Copper (mg/L)	MW-50R	0.136	10/6/2024	0.0025ND	No	52	n/a	n/a	50	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-27	0.0878	10/6/2024	0.000309J	No	52	n/a	n/a	46	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Lead (mg/L)	MW-50R	0.0878	10/6/2024	0.0015	No	52	n/a	n/a	46	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Nickel (mg/L)	MW-27	0.0517	10/6/2024	0.018	No	52	-4.817	1.019	19	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Nickel (mg/L)	MW-50R	0.0517	10/6/2024	0.0025ND	No	52	-4.817	1.019	19	Kaplan-Meier	ln(x)	0.001754	Param Inter 1 of 2
Selenium (mg/L)	MW-27	0.0188	10/6/2024	0.0025ND	No	53	n/a	n/a	85	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Selenium (mg/L)	MW-50R	0.0188	10/6/2024	0.0025ND	No	53	n/a	n/a	85	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-27	0.00175	10/6/2024	0.0005ND	No	25	n/a	n/a	96	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Silver (mg/L)	MW-50R	0.00175	10/6/2024	0.0005ND	No	25	n/a	n/a	96	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Sulfide (mg/L)	MW-27	13.4	10/6/2024	1.5ND	No	23	n/a	n/a	65	n/a	n/a	0.003366	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-27	0.00242	10/6/2024	0.0005ND	No	25	n/a	n/a	92	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Thallium (mg/L)	MW-50R	0.00242	10/6/2024	0.000615J	No	25	n/a	n/a	92	n/a	n/a	0.002799	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-27	0.0686	10/6/2024	0.0025ND	No	53	n/a	n/a	60	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Vanadium (mg/L)	MW-50R	0.0686	10/6/2024	0.0025ND	No	53	n/a	n/a	60	n/a	n/a	0.000683	NP Inter (NDs) 1 of 2
Zinc (mg/L)	MW-27	0.977	10/6/2024	0.175	No	52	n/a	n/a	13	n/a	n/a	0.000706	NP Inter (normality) 1 of 2
Zinc (mg/L)	MW-50R	0.977	10/6/2024	0.0547	No	52	n/a	n/a	13	n/a	n/a	0.000706	NP Inter (normality) 1 of 2

(1) Interwell prediction limit data consists of the detected Appendix I and II parameters in the combined MW-51, MW-60, and PZ-12 data set. Note that background data set adjustments were incorporated in accordance with Section 3 of the Fall 2024 Statistical Evaluation memo.

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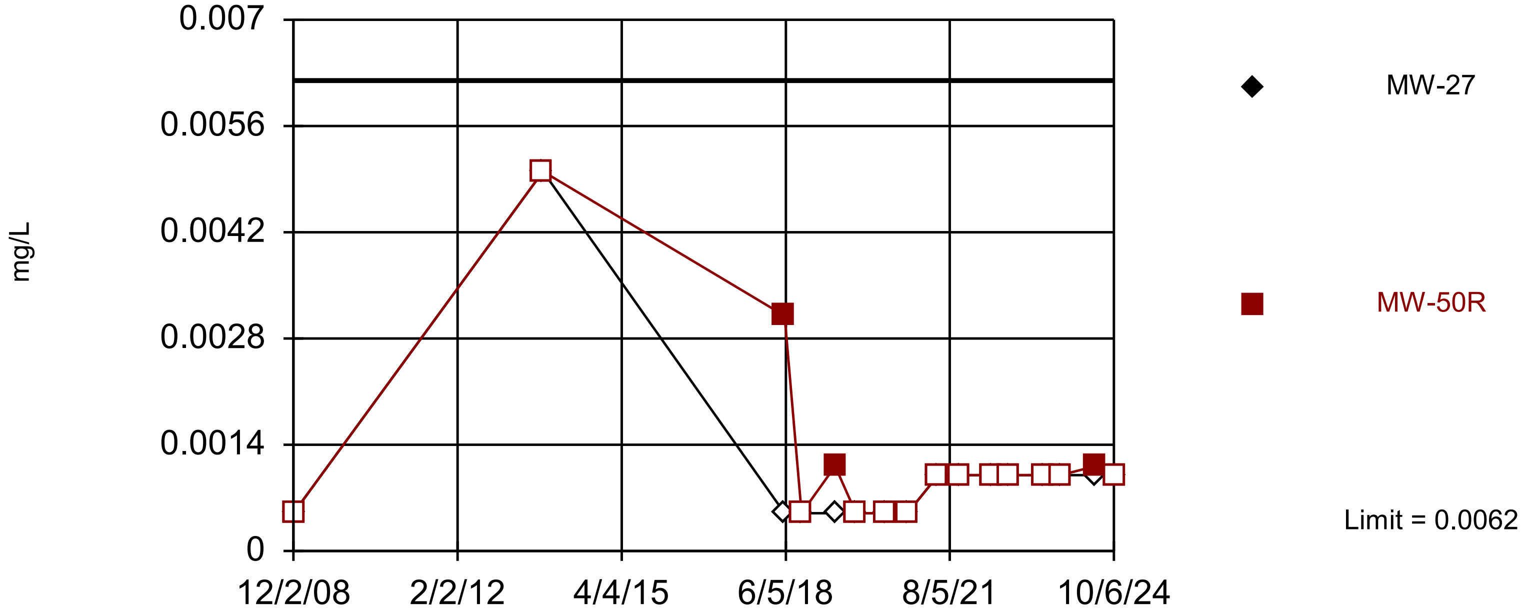
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 27 background values. 66.67% NDs. Annual per-constituent alpha = 0.009865. Individual comparison alpha = 0.002475 (1 of 2).

Constituent: Antimony   Analysis Run 11/17/2024 4:23 PM
RASWC   Client: Foth   Data: RASWC Fall 2024 Evaluation

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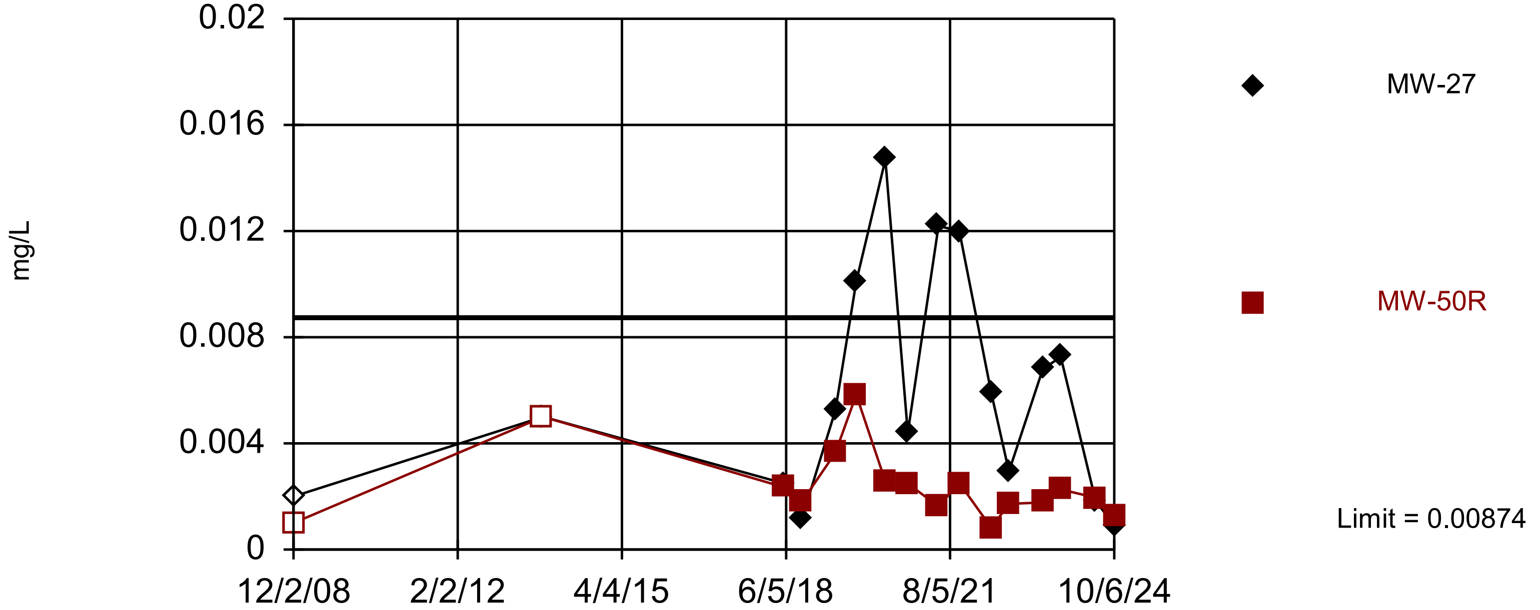
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 25 background values. 56% NDs. Annual per-constituent alpha = 0.01115. Individual comparison alpha = 0.002799 (1 of 2).

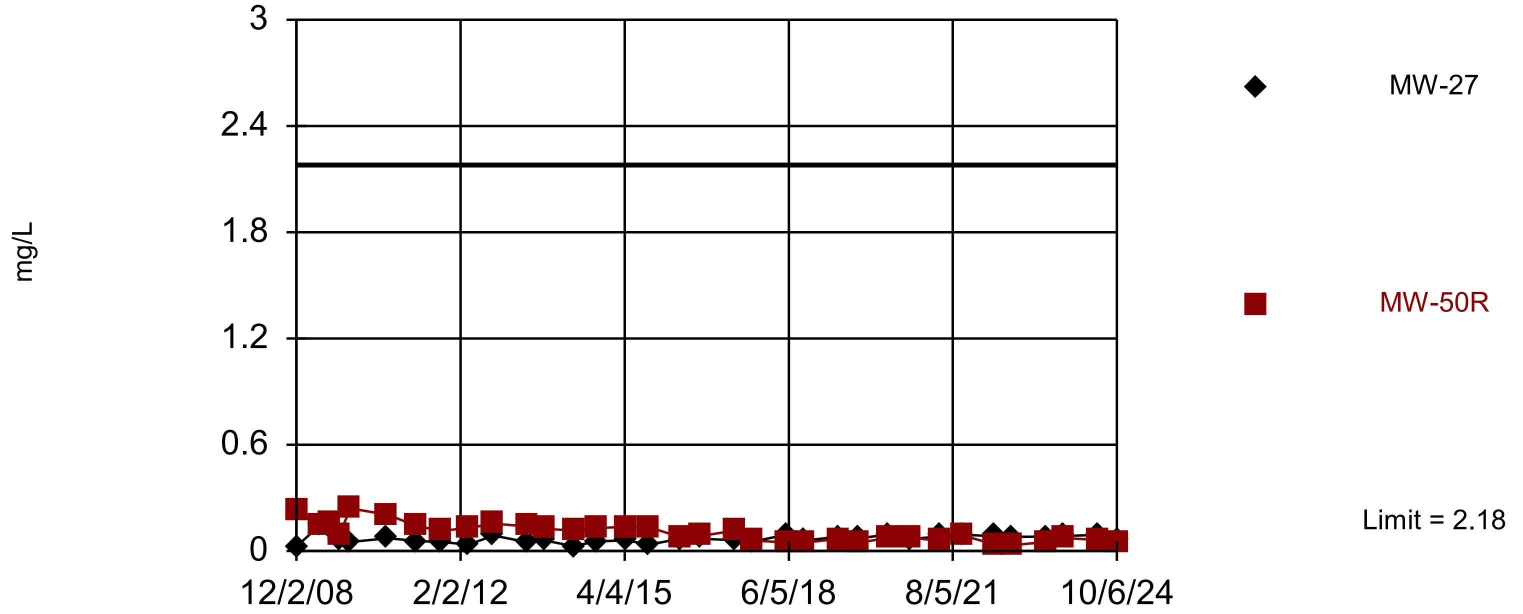
Constituent: Arsenic Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 52 background values. 1.923% NDs. Annual per-constituent alpha = 0.00282. Individual comparison alpha = 0.0007056 (1 of 2).

Constituent: Barium Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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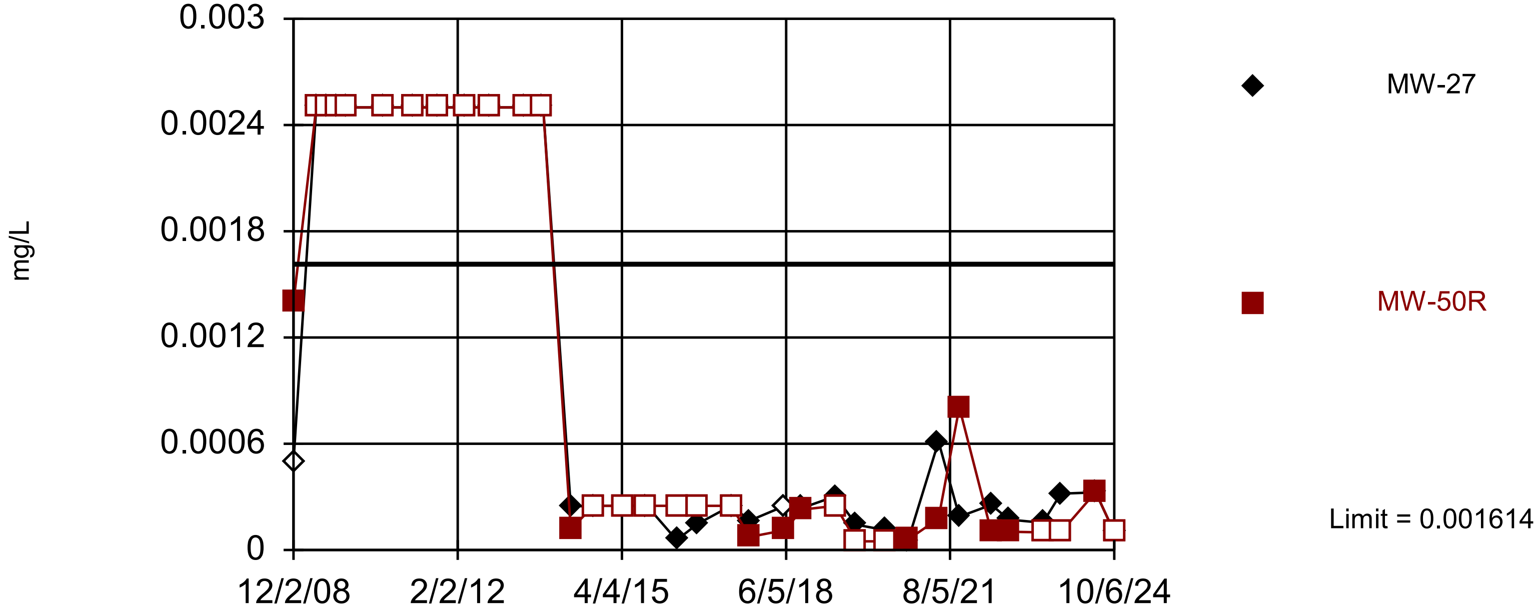
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-8.37, Std. Dev.=1.066, n=52, 42.31% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9429, critical = 0.937. Kappa = 1.82 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cadmium Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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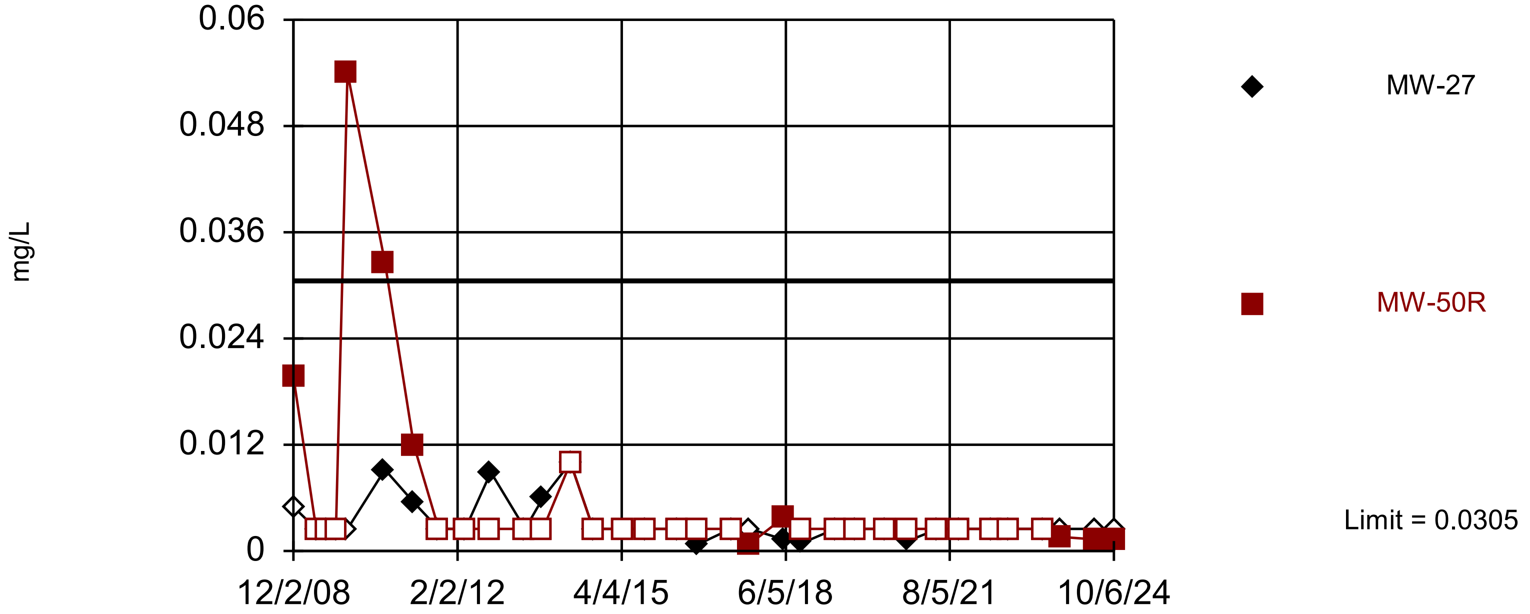
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 53 background values. 79.25% NDs. Annual per-constituent alpha = 0.00273. Individual comparison alpha = 0.0006833 (1 of 2).

Constituent: Chromium Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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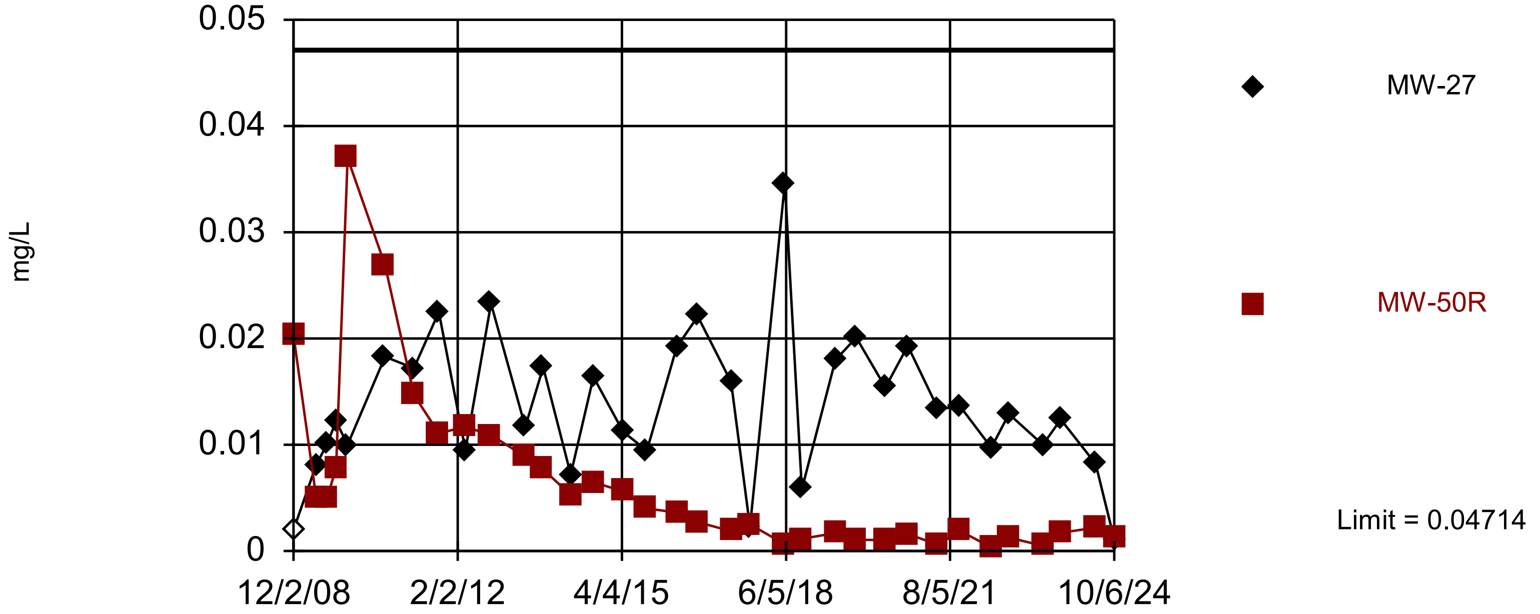
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-6.951, Std. Dev.=2.141, n=52, 32.69% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9479, critical = 0.937. Kappa = 1.82 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Cobalt   Analysis Run 11/17/2024 4:23 PM

RASWC   Client: Foth   Data: RASWC Fall 2024 Evaluation

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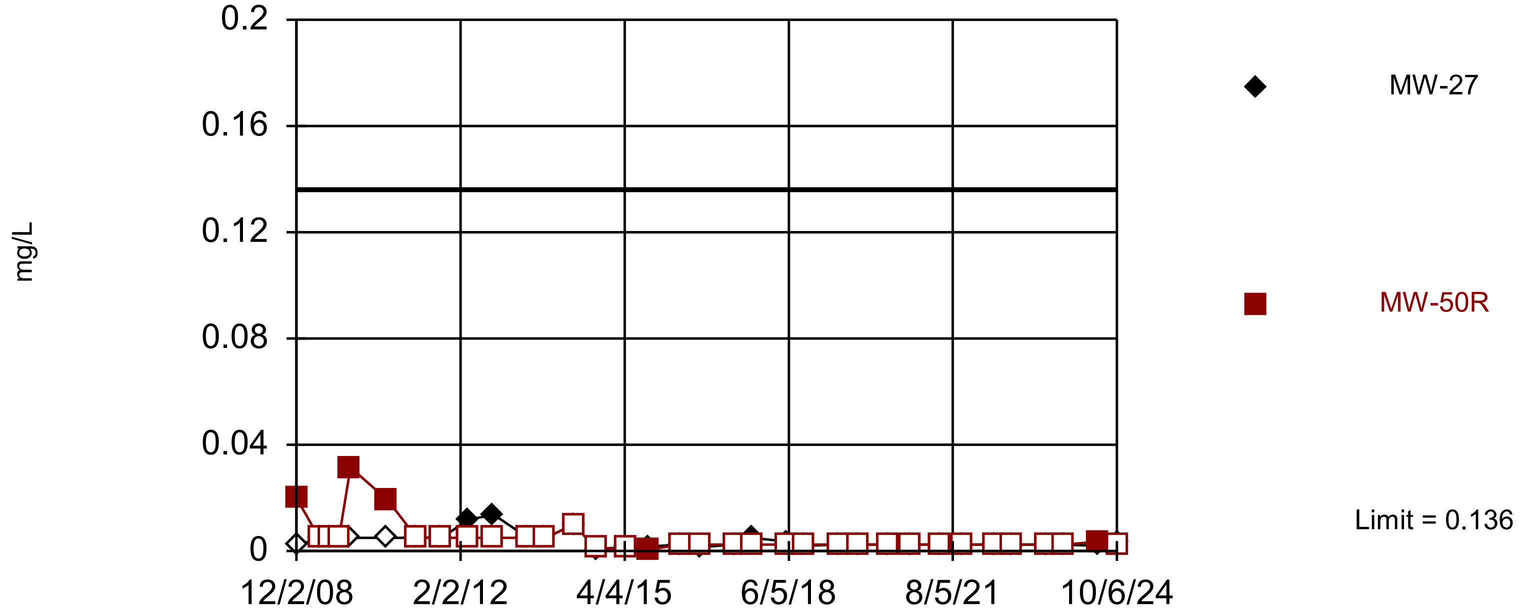
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 52 background values. 50% NDs. Annual per-constituent alpha = 0.00282. Individual comparison alpha = 0.0007056 (1 of 2).

Constituent: Copper Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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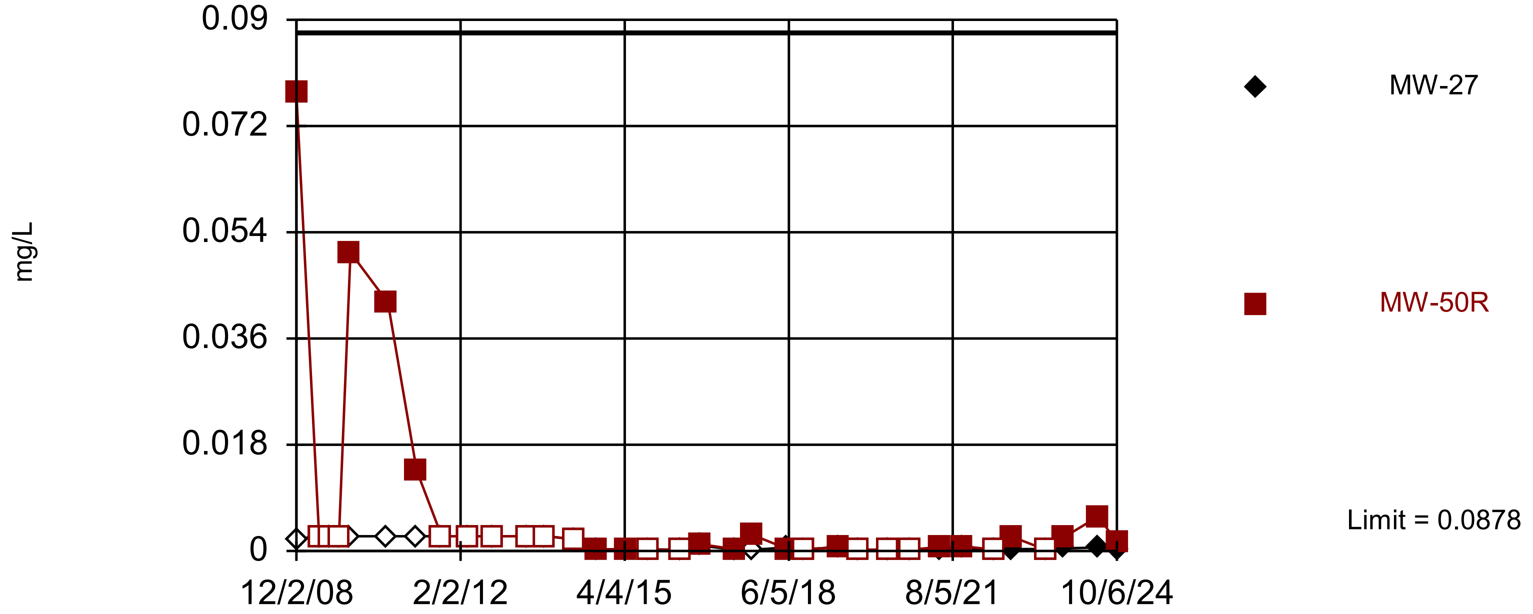
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 52 background values. 46.15% NDs. Annual per-constituent alpha = 0.00282. Individual comparison alpha = 0.0007056 (1 of 2).

Constituent: Lead Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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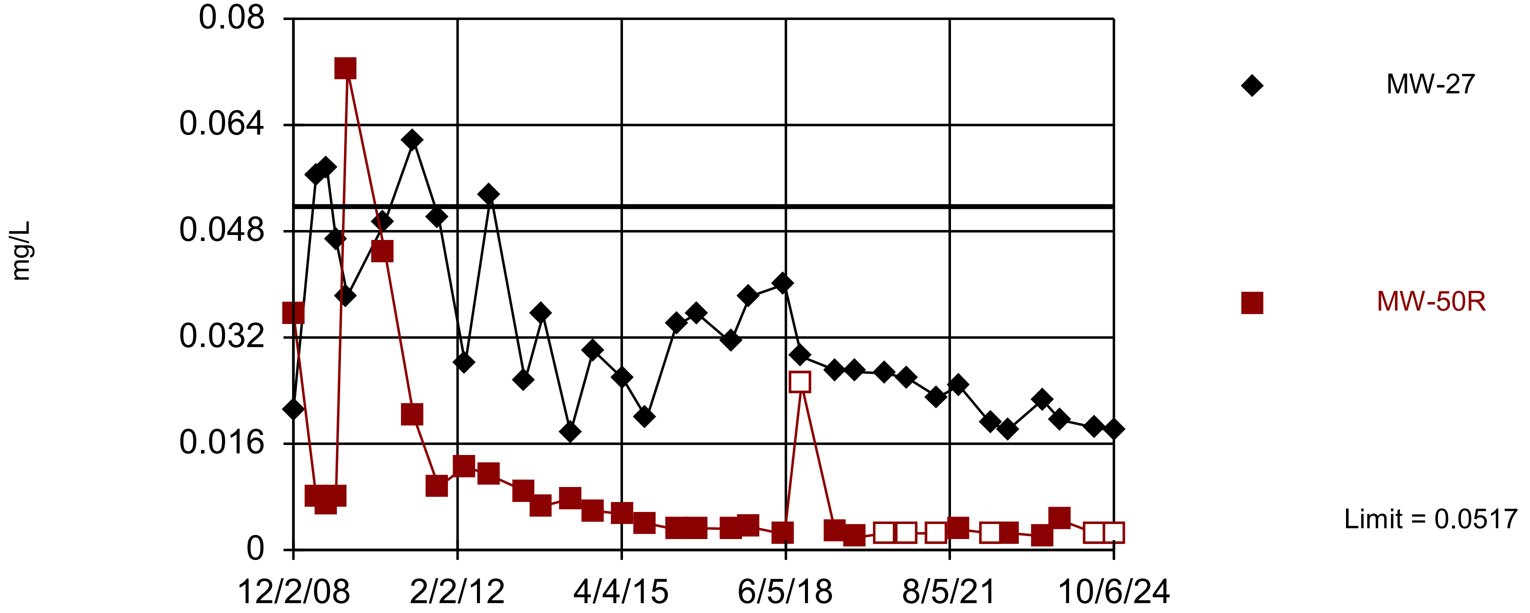
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Parametric



Background Data Summary (based on natural log transformation) (after Kaplan-Meier Adjustment): Mean=-4.817, Std. Dev.=1.019, n=52, 19.23% NDs. Normality test: Shapiro Francia @alpha = 0.01, calculated = 0.9641, critical = 0.937. Kappa = 1.82 (c=15, w=2, 1 of 2, event alpha = 0.05132). Report alpha = 0.003506. Individual comparison alpha = 0.001754.

Constituent: Nickel Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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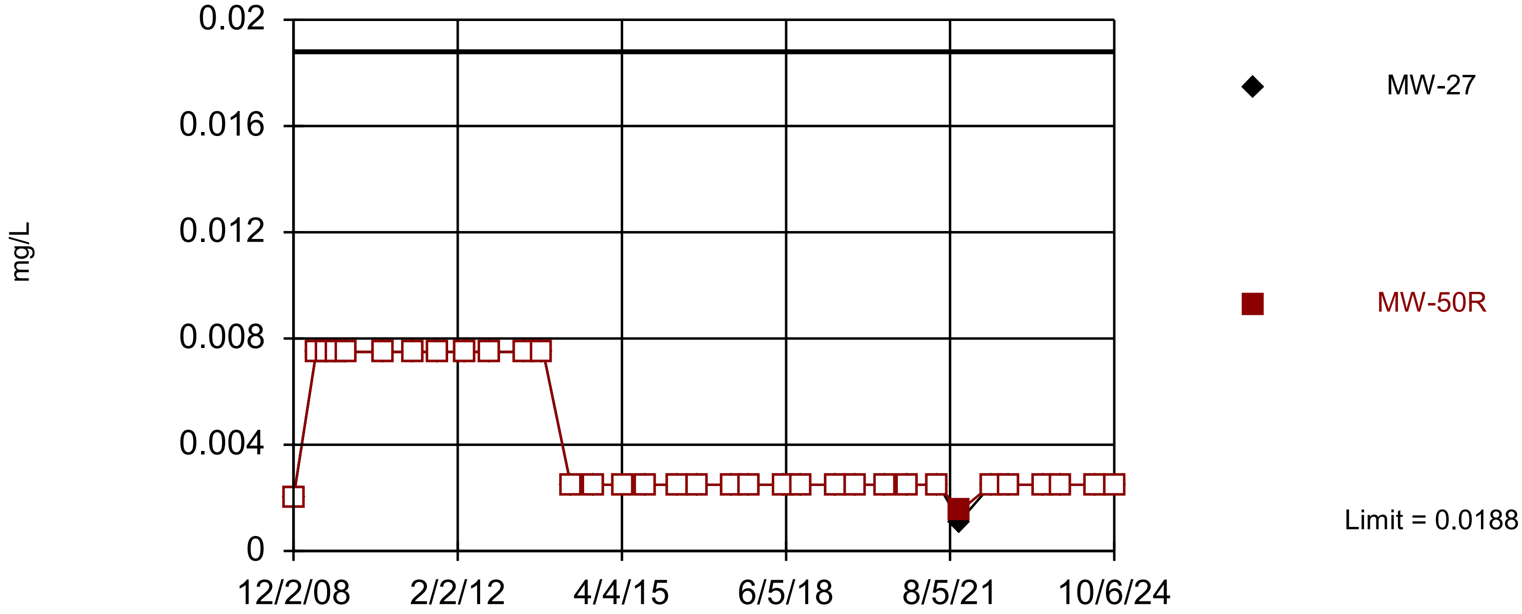
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 53 background values. 84.91% NDs. Annual per-constituent alpha = 0.00273. Individual comparison alpha = 0.0006833 (1 of 2).

Constituent: Selenium Analysis Run 11/17/2024 4:23 PM
RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

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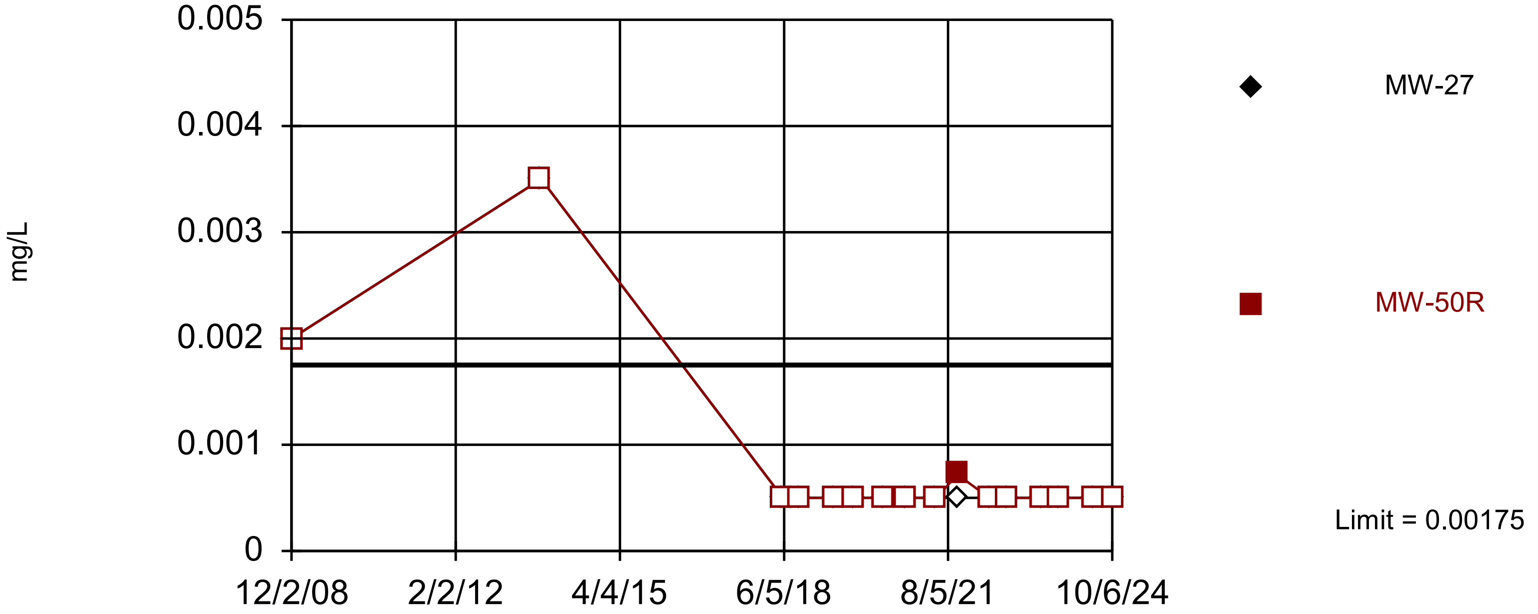
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 25 background values. 96% NDs. Annual per-constituent alpha = 0.01115. Individual comparison alpha = 0.002799 (1 of 2).

Constituent: Silver Analysis Run 11/17/2024 4:23 PM

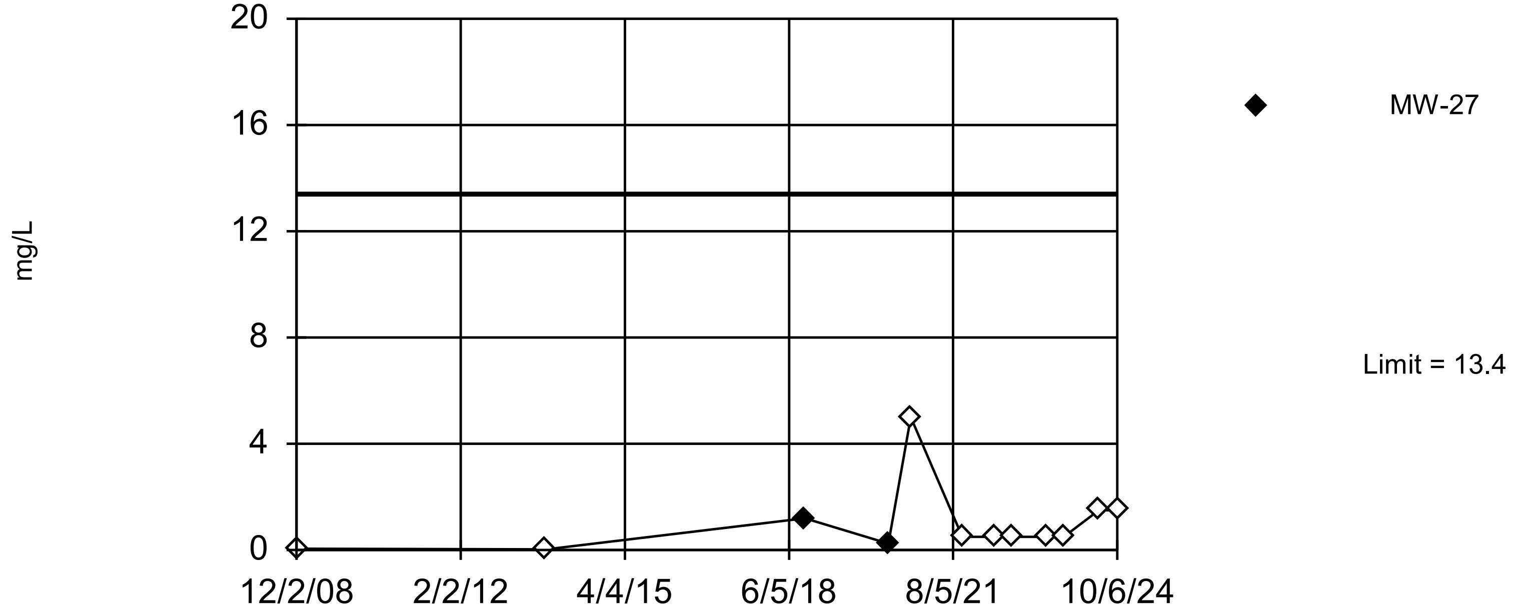
RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

Sanitas™ v.10.0.23 Software licensed to Foth Infrastructure & Environment, LLC. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 23 background values. 65.22% NDs. Annual per-constituent alpha = 0.0134. Individual comparison alpha = 0.003366 (1 of 2).

Constituent: Sulfide   Analysis Run 11/17/2024 5:20 PM

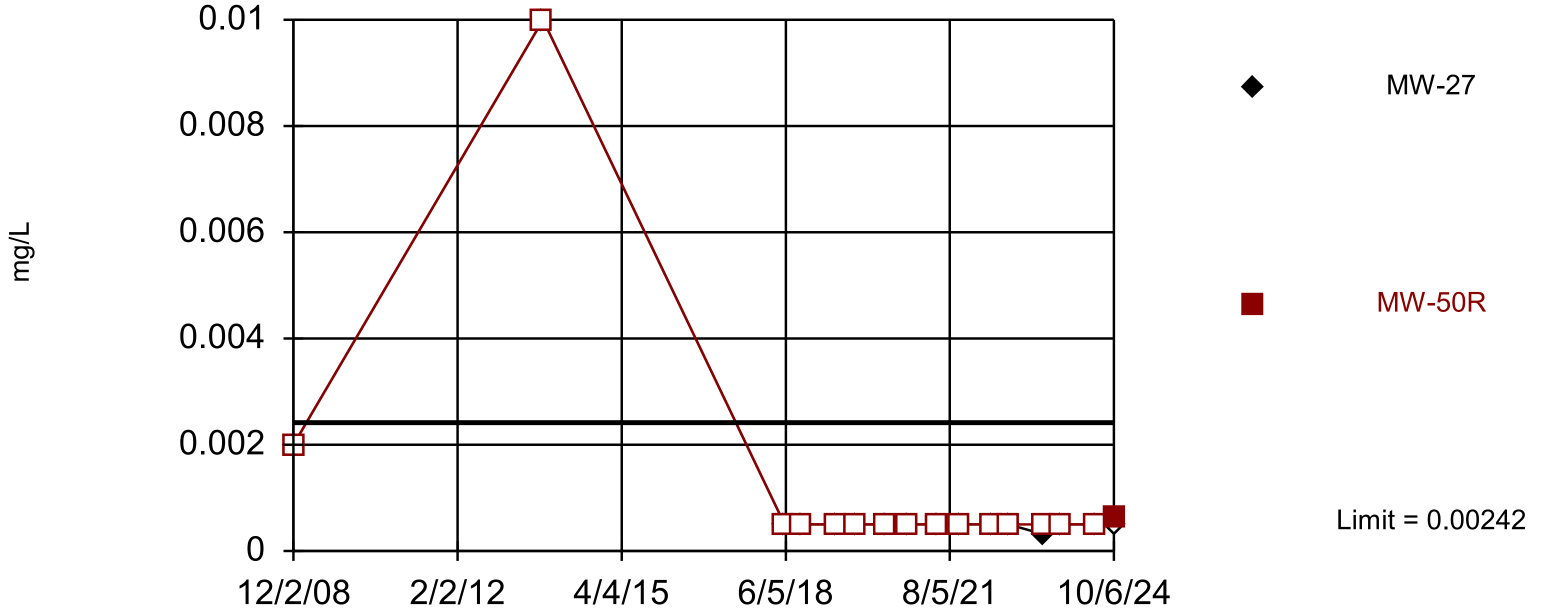
RASWC   Client: Foth   Data: RASWC Fall 2024 Evaluation

Sanitas™ v.10.0.23 Software licensed to Foth Infrastructure & Environment, LLC. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 25 background values. 92% NDs. Annual per-constituent alpha = 0.01115. Individual comparison alpha = 0.002799 (1 of 2).

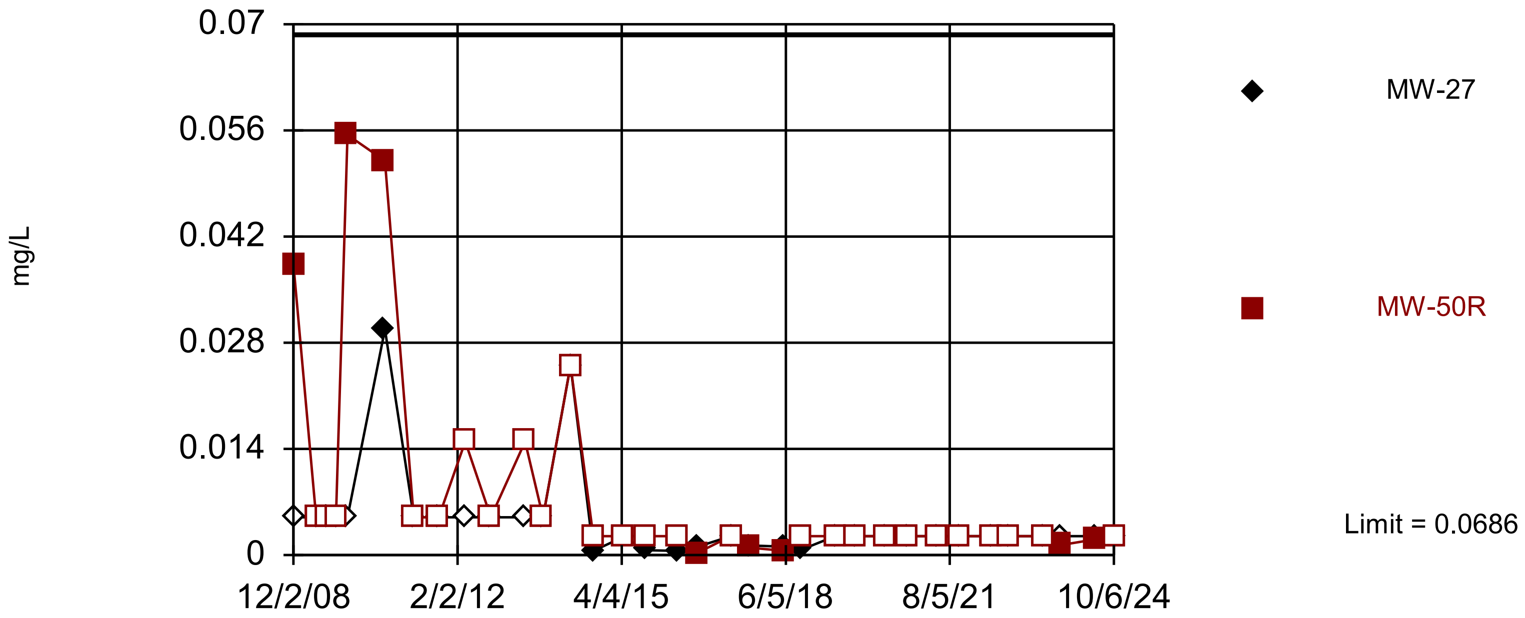
Constituent: Thallium Analysis Run 11/17/2024 4:23 PM
RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

Sanitas™ v.10.0.23 Software licensed to Foth Infrastructure & Environment, LLC. UG
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because censored data exceeded 50%. Limit is highest of 53 background values. 60.38% NDs. Annual per-constituent alpha = 0.00273. Individual comparison alpha = 0.0006833 (1 of 2).

Constituent: Vanadium   Analysis Run 11/17/2024 4:23 PM

RASWC   Client: Foth   Data: RASWC Fall 2024 Evaluation

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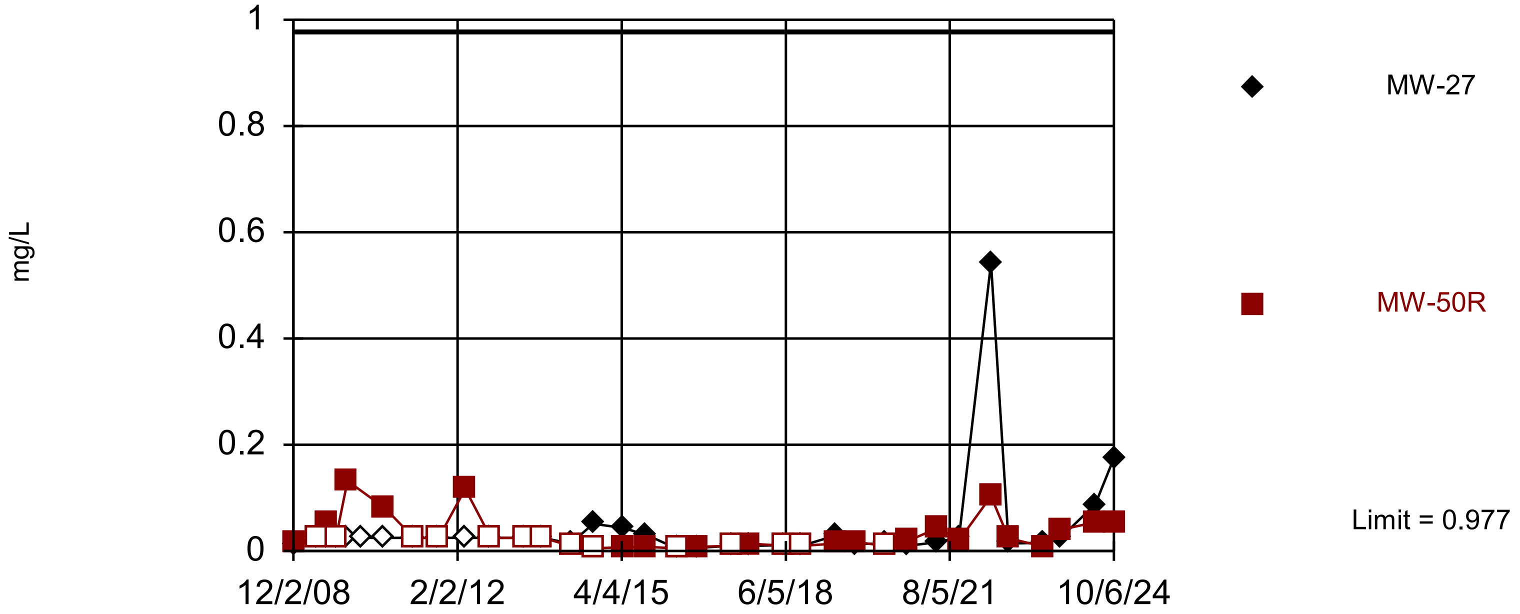
Hollow symbols indicate censored values.

Within Limit

Prediction Limit - Assessment Monitoring

Interwell Non-parametric



Non-parametric test used in lieu of parametric prediction limit because the Shapiro Francia normality test showed the data to be non-normal at the 0.01 alpha level. Limit is highest of 52 background values. 13.46% NDs. Annual per-constituent alpha = 0.00282. Individual comparison alpha = 0.0007056 (1 of 2).

Constituent: Zinc Analysis Run 11/17/2024 4:23 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

Attachment 5

Sanitas Report Output for Double Quantification Rule Evaluation

Data Screening - Assessment Monitoring

Analysis Run 11/17/2024 4:54 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

A listing of detects for 203 constituents in MW-27 and MW-50R in October 2024:

cis-1,2-Dichloroethene, MW-27, 10/6/2024: 2 ug/L

Attachment 6

Sanitas Report Output for Confidence Interval Calculations

Assessment Mode

Attachment 6
Assessment Monitoring
Confidence Interval - Assessment Mode (1)

Constituent Name	Well	Upper Limit	Lower Limit	Compliance Limit (2)	Exceeds	N	Mean	Standard Deviation	CV	a to Achieve 50% Power at R=1.5 (3,4)	a to Achieve 80% Power at R=2.0 (3,4)	% Non-detects	Non-detect Adjustment	Transformation	Alpha	Method
cis-1,2-Dichloroethene (ug/L)	MW-27	2.6	1.9	70	No	34	2.2	0.8	0.38	<0.01	<0.01	9	None	No	0.01	Param.

(1) Under assessment mode, an SSL is indicated when the lower confidence limit exceeds the groundwater protection standard (compliance limit).

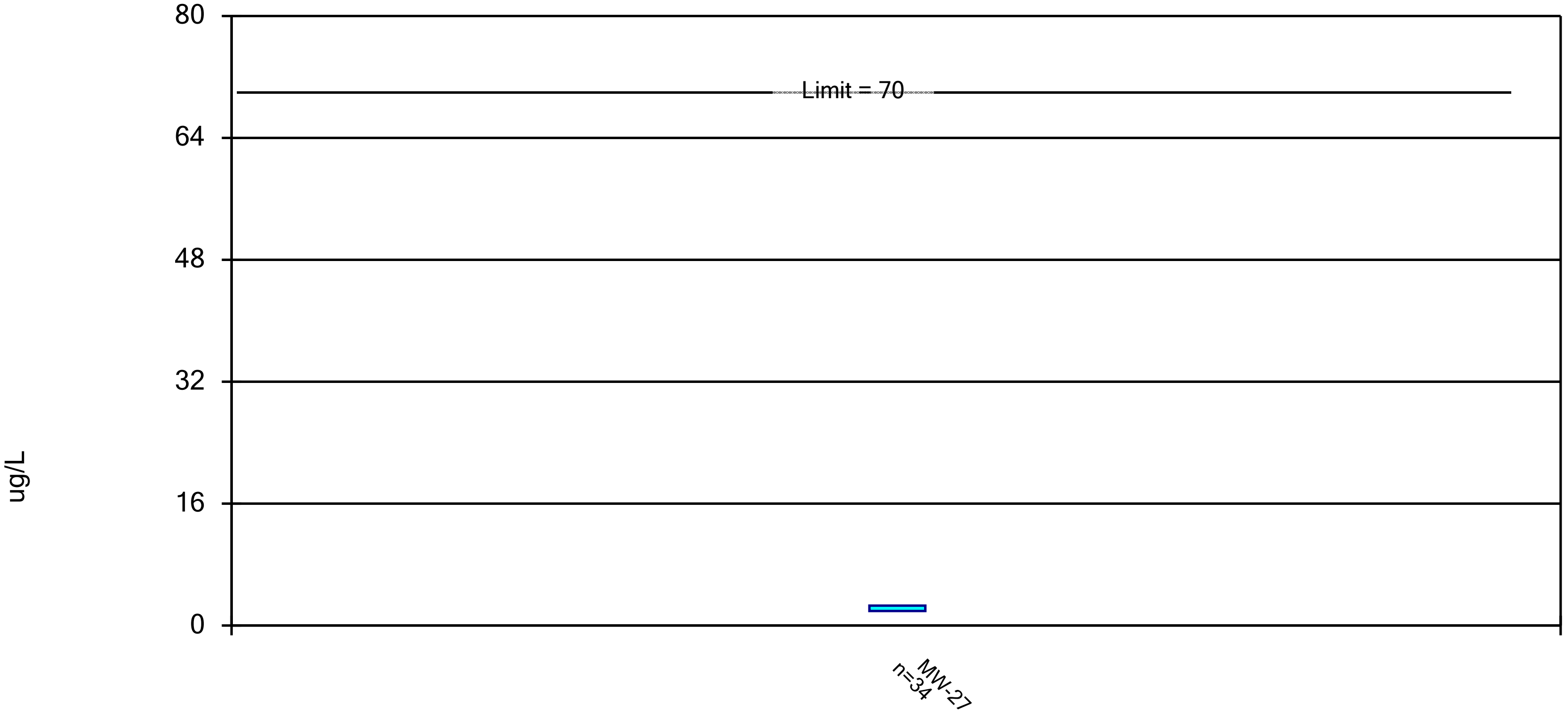
(2) Value is the 40 CFR Part 141 Safe Drinking Water Act MCL or the IAC 567 Chapter 137 Statewide Standard for a Protected Groundwater Source.

(3) For parametric confidence intervals: Except where otherwise indicated, based on Unified Guidance Equation 22.2, i.e., $\alpha \sim 1 - F_{T,n-1}\left(\frac{(R-1)\sqrt{n}}{R \cdot \widehat{CV}} - t_{1-\beta,n-1}\right)$
where R is the desired risk ratio, *n* is the sample size, CV is the estimated sample coefficient of variation, $t_{1-b\,,n-1}$ is the (1−b) Student’s t-quantile with (n−1) degrees of freedom, and F is the cumulative (central) Student’s t-distribution function.

(4) For non-parametric confidence intervals: Based on Unified Guidance Equation 22.1, i.e., $1 - \beta = G_{T,n-1}\left(t_{1-\alpha,n-1} \middle| \Delta = \sqrt{n}(R-1)\right)$
where R is the desired risk ratio, $t_{1-a\,,n-1}$ is the (1−a) Student’s t-quantile with (n−1) degrees of freedom and G represents the cumulative non-central t-distribution with (n−1) degrees of freedom and noncentrality parameter D.

Parametric Confidence Interval - Assessment Monitoring

Compliance Limit is not exceeded. Per-well alpha = 0.01. Normality Test: Shapiro Wilk, alpha based on n.



Constituent: cis-1,2-Dichloroethene   Analysis Run 11/17/2024 5:06 PM

RASWC   Client: Foth   Data: RASWC Fall 2024 Evaluation

Attachment 7

Effective Power and Site-Wide False Positive Rate Discussion

Sanitas Report Output for Power Curve Evaluation

Effective Power and Site-Wide False Positive Rate Discussion

Statistical power refers to the ability of a test to identify real increases in concentration levels given they exist. The Unified Guidance defines the effective power as the "probability of detecting contamination in the monitoring network when one and only one well-constituent pair is contaminated." It further states that any statistical test procedure with effective power at least as high as the appropriate USEPA Reference Power Curve (ERPC) should be considered to have reasonable power.

The Unified Guidance gives the following criteria for comparing the effective power to the ERPC:

If the effective power first exceeds the ERPC at a mean concentration increase no greater than 3 background standard deviations, the power is labeled 'good;' if the effective power first exceeds the ERPC at a mean increase between 3 and 4 standard deviations, the power is considered 'acceptable;' and if the first exceedance of the ERPC does not occur until an increase greater than 4 standard deviations, the power is considered 'low.'

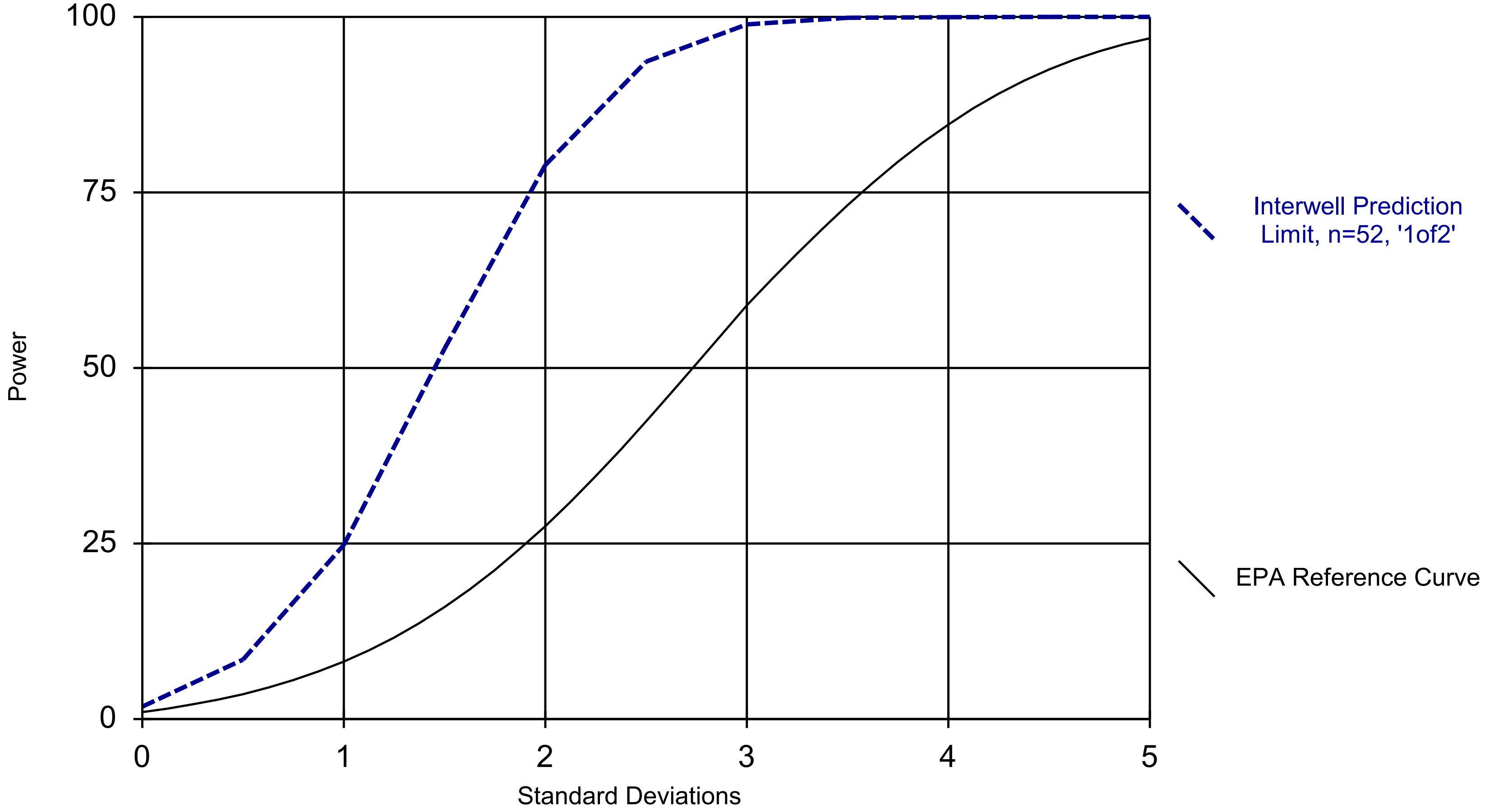
Effective power curves were developed with Sanitas for the 1-of-2 prediction limit plan, with power curves illustrated below. Based on the power curves, both the parametric and non-parametric prediction limits have good power.

The Unified Guidance "strongly encourages use of a comprehensive design strategy to account for both the cumulative site-wide false positive rate (SWFPR) and effective power to identify real exceedances." The Unified Guidance recommends and uses an annual SWFPR target of 10%. The current annual SWFPR based on the 1-of-2 prediction limit plan may be calculated using the basic subdivision principle discussed in Unified Guidance Sections 6.2.2, 19.2.1 and 19.4.

Currently, comparisons were made at 2 wells semiannually with a total of 58 single tests annually. The Sanitas prediction limit report output of Attachment 4 includes annual individual test α-levels for each well/constituent pair. The α-levels reported by Sanitas account for the 1-of-2 plan, as well as two semiannual events conducted at the site.

The cumulative annual SWFPR can be approximated directly from the α-levels reported in the Sanitas output as SWFPR $= 1 - \prod_{i=1}^{58}(1-\alpha_i)^2 = 0.087$ ≈ 8.7%. The current annual SWFPR is in compliance with the Unified Guidance target 10% false positive.

Parametric Power Curve

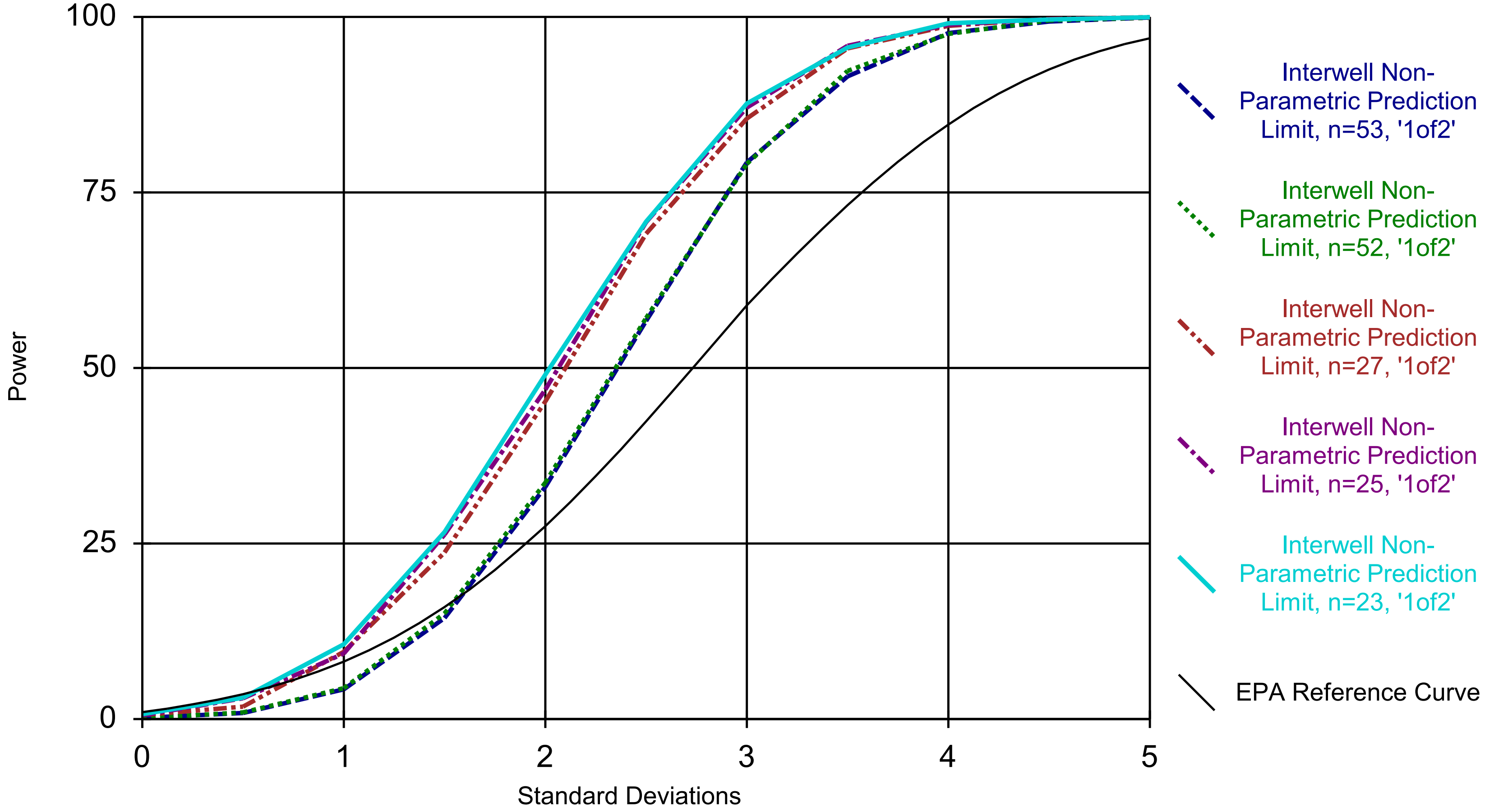


Kappa = 1.37, based on 6 constituent/well pairs, evaluated semi-annually (this report reflects annual total).

Analysis Run 11/18/2024 12:54 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

Non-Parametric Power Curves



Analysis Run 11/18/2024 12:53 PM

RASWC Client: Foth Data: RASWC Fall 2024 Evaluation

APPENDIX FOUR

1. 05/28/2024 Sampling Analytical Report
2. 10/06/2024 Sampling Analytical Report

ANALYTICAL REPORT

PREPARED FOR

Attn: Bill Buss
Hall Engineering Company
PO BOX 825
Centerville, Iowa 52544

Generated 10/24/2024 2:09:04 PM

JOB DESCRIPTION

Appanoose County Landfill

JOB NUMBER

310-292199-1

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

Eurofins Cedar Falls

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

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Authorized for release by
Conner Calhoun, Client Service Manager
Conner.Calhoun@et.eurofinsus.com
(319)277-2401

Table of Contents

Job ID: 310-292199-1 Eurofins Cedar Falls

Job Narrative
310-292199-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable.

- Matrix QC may not be reported if insufficient sample is provided or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 10/8/2024 9:04 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 0.6°C.

GC/MS VOA
Method 8260D: The continuing calibration verification (CCV) associated with batch 310-435986 recovered above the upper control limit for Carbon disulfide(23.5%D). The samples associated with this CCV were non-detects for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-435986/3).

Method 8260D: The initial calibration verification (ICV) result for batch 310-435986 was above the upper control limit. The affected analyte is: Iodomethane. Sample results were non-detects, and have been reported as qualified data.

Method 8260D: The continuing calibration verification (CCV) associated with batch 310-436434 recovered above outside of the control limits for 2-Hexanone (-20.5%D). The LCS associated with this CCV passed CCV criteria for the affected analyte; therefore, the data have been reported. The associated sample is impacted: (CCV 310-436434/3).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Pesticides
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-292199-1	MW-51	Water	10/06/24 07:45	10/08/24 09:04
310-292199-2	MW-60	Water	10/06/24 09:34	10/08/24 09:04
310-292199-3	MW-27	Water	10/06/24 10:32	10/08/24 09:04
310-292199-4	MW-50R	Water	10/06/24 11:08	10/08/24 09:04
310-292199-5	Field Blank	Water	10/06/24 10:35	10/08/24 09:04
310-292199-6	Trip Blank	Water	10/06/24 00:00	10/08/24 09:04

Detection Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: MW-51

Lab Sample ID: 310-292199-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Antimony	0.00112	J	0.00200	0.00100	mg/L	1		6020B	Total/NA
Barium	0.00631		0.00200	0.000660	mg/L	1		6020B	Total/NA
Nickel	0.00601		0.00500	0.00210	mg/L	1		6020B	Total/NA
Thallium	0.000919	J	0.00100	0.000570	mg/L	1		6020B	Total/NA
Zinc	0.885		0.0200	0.00970	mg/L	1		6020B	Total/NA

Client Sample ID: MW-60

Lab Sample ID: 310-292199-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	8.79	J	10.0	3.10	ug/L	1		8260D	Total/NA
2-Butanone (MEK)	3.53	J	10.0	2.10	ug/L	1		8260D	Total/NA
Antimony	0.00620		0.00200	0.00100	mg/L	1		6020B	Total/NA
Arsenic	0.00492		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0203		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000146	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.000453	J	0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.00195		0.000500	0.000260	mg/L	1		6020B	Total/NA
Vanadium	0.00111	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0119	J	0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	6.00		5.00	3.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-27

Lab Sample ID: 310-292199-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
cis-1,2-Dichloroethene	2.00		1.00	0.210	ug/L	1		8260D	Total/NA
1,1-Dichloroethane	0.223	J	1.00	0.220	ug/L	1		8260D	Total/NA
Arsenic	0.000907	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0669		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cobalt	0.00108		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00330	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000309	J	0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0180		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.175		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	5.33		5.00	3.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-50R

Lab Sample ID: 310-292199-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Arsenic	0.00130	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0532		0.00200	0.000660	mg/L	1		6020B	Total/NA
Chromium	0.00120	J	0.00500	0.00120	mg/L	1		6020B	Total/NA
Cobalt	0.00136		0.000500	0.000170	mg/L	1		6020B	Total/NA
Lead	0.00150		0.000500	0.000260	mg/L	1		6020B	Total/NA
Thallium	0.000615	J	0.00100	0.000570	mg/L	1		6020B	Total/NA
Zinc	0.0547		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	21.3		5.00	3.70	mg/L	1		I-3765-85	Total/NA

Client Sample ID: Field Blank

Lab Sample ID: 310-292199-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	3.82	J	10.0	3.10	ug/L	1		8260D	Total/NA
Toluene	0.993	J	1.00	0.430	ug/L	1		8260D	Total/NA
Xylenes, Total	0.482	J	3.00	0.400	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-292199-6

No Detections.

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: MW-51
Date Collected: 10/06/24 07:45
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/12/24 02:32	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 02:32	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 02:32	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 02:32	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 02:32	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 02:32	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 02:32	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/12/24 02:32	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/12/24 02:32	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 02:32	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 02:32	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 02:32	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 02:32	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 02:32	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 02:32	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/12/24 02:32	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 02:32	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 02:32	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 02:32	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 02:32	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 02:32	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 02:32	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/12/24 02:32	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 02:32	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 02:32	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 02:32	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 02:32	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 02:32	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 02:32	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 02:32	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 02:32	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 02:32	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 02:32	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 02:32	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 02:32	1
Toluene	<0.430		1.00	0.430	ug/L			10/12/24 02:32	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 02:32	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 02:32	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 02:32	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 02:32	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 02:32	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 02:32	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 02:32	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 02:32	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 02:32	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 02:32	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/12/24 02:32	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/12/24 02:32*	*1*

Client Sample ID: MW-51 Lab Sample ID: 310-292199-1

Date Collected: 10/06/24 07:45 **Matrix: Water**
Date Received: 10/08/24 09:04

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*10/12/24 02:32*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/12/24 02:32*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00112**	**J**	0.00200	0.00100	mg/L		10/10/24 09:30	10/11/24 19:12	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 19:12	1
Barium	**0.00631**		0.00200	0.000660	mg/L		10/10/24 09:30	10/11/24 19:12	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 15:43	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/10/24 09:30	10/11/24 19:12	1
Chromium	<0.00120		0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 19:12	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 19:12	1
Copper	<0.00180		0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 19:12	1
Lead	<0.000260		0.000500	0.000260	mg/L		10/10/24 09:30	10/11/24 19:12	1
Nickel	**0.00601**		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 19:12	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 19:12	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/11/24 19:12	1
Thallium	**0.000919**	**J**	0.00100	0.000570	mg/L		10/10/24 09:30	10/18/24 13:34	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 19:12	1
Zinc	**0.885**		0.0200	0.00970	mg/L		10/10/24 09:30	10/11/24 19:12	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		10/10/24 12:42	10/10/24 15:58	1
Total Suspended Solids (USGS I-3765-85)	<3.70		5.00	3.70	mg/L			10/08/24 19:39	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: MW-60

Date Collected: 10/06/24 09:34
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-2

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**8.79**	**J**	10.0	3.10	ug/L			10/12/24 02:54	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 02:54	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 02:54	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 02:54	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 02:54	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 02:54	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 02:54	1
2-Butanone (MEK)	**3.53**	**J**	10.0	2.10	ug/L			10/12/24 02:54	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/17/24 07:19	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 02:54	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 02:54	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 02:54	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 02:54	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 02:54	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 02:54	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/12/24 02:54	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 02:54	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 02:54	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 02:54	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 02:54	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 02:54	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 02:54	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/12/24 02:54	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 02:54	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 02:54	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 02:54	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 02:54	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 02:54	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 02:54	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 02:54	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 02:54	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 02:54	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 02:54	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 02:54	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 02:54	1
Toluene	<0.430		1.00	0.430	ug/L			10/12/24 02:54	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 02:54	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 02:54	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 02:54	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 02:54	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 02:54	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 02:54	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 02:54	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 02:54	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 02:54	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 02:54	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/12/24 02:54	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*10/12/24 02:54*	*1*

Client Sample Results

Client Sample ID: MW-60

Lab Sample ID: 310-292199-2
Date Collected: 10/06/24 09:34
Matrix: Water
Date Received: 10/08/24 09:04

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*10/17/24 07:19*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 130*		*10/12/24 02:54*	*1*
Dibromofluoromethane (Surr)	*110*		*73 - 130*		*10/17/24 07:19*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/12/24 02:54*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/17/24 07:19*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00620**		0.00200	0.00100	mg/L		10/10/24 09:30	10/11/24 19:14	1
Arsenic	**0.00492**		0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 19:14	1
Barium	**0.0203**		0.00200	0.000660	mg/L		10/10/24 09:30	10/11/24 19:14	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 15:47	1
Cadmium	**0.000146**	**J**	0.000200	0.000100	mg/L		10/10/24 09:30	10/11/24 19:14	1
Chromium	<0.00120		0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 19:14	1
Cobalt	**0.000453**	**J**	0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 19:14	1
Copper	<0.00180		0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 19:14	1
Lead	**0.00195**		0.000500	0.000260	mg/L		10/10/24 09:30	10/11/24 19:14	1
Nickel	<0.00210		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 19:14	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 19:14	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/11/24 19:14	1
Thallium	<0.000570	^+	0.00100	0.000570	mg/L		10/10/24 09:30	10/17/24 13:21	1
Vanadium	**0.00111**	**J**	0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 19:14	1
Zinc	**0.0119**	**J**	0.0200	0.00970	mg/L		10/10/24 09:30	10/11/24 19:14	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		10/10/24 12:42	10/10/24 15:58	1
Total Suspended Solids (USGS I-3765-85)	**6.00**		5.00	3.70	mg/L			10/08/24 19:39	1

Client Sample Results

Client Sample ID: MW-27

Lab Sample ID: 310-292199-3

Date Collected: 10/06/24 10:32
Date Received: 10/08/24 09:04

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/12/24 03:17	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 03:17	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 03:17	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 03:17	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 03:17	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 03:17	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 03:17	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/12/24 03:17	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/12/24 03:17	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 03:17	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 03:17	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 03:17	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 03:17	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 03:17	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 03:17	1
cis-1,2-Dichloroethene	**2.00**		1.00	0.210	ug/L			10/12/24 03:17	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 03:17	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 03:17	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 03:17	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 03:17	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 03:17	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 03:17	1
1,1-Dichloroethane	**0.223**	**J**	1.00	0.220	ug/L			10/12/24 03:17	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 03:17	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 03:17	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 03:17	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 03:17	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 03:17	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 03:17	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 03:17	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 03:17	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 03:17	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 03:17	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 03:17	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 03:17	1
Toluene	<0.430		1.00	0.430	ug/L			10/12/24 03:17	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 03:17	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 03:17	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 03:17	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 03:17	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 03:17	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 03:17	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 03:17	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 03:17	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 03:17	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 03:17	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/12/24 03:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*10/12/24 03:17*	*1*

Client Sample ID: MW-27

Date Collected: 10/06/24 10:32
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*100*		*73 - 130*		*10/12/24 03:17*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/12/24 03:17*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0383		0.0911	0.0383	ug/L		10/11/24 10:56	10/14/24 19:28	1
delta-BHC	<0.0292		0.0911	0.0292	ug/L		10/11/24 10:56	10/14/24 19:28	1
Dieldrin	<0.0191		0.0911	0.0191	ug/L		10/11/24 10:56	10/14/24 19:28	1
Endosulfan sulfate	<0.0164		0.0911	0.0164	ug/L		10/11/24 10:56	10/14/24 19:28	1
Endrin	<0.0255		0.0911	0.0255	ug/L		10/11/24 10:56	10/14/24 19:28	1
Endrin aldehyde	<0.0246		0.0911	0.0246	ug/L		10/11/24 10:56	10/14/24 19:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*42*		*10 - 136*	*10/11/24 10:56*	*10/14/24 19:28*	*1*
Tetrachloro-m-xylene (Surr)	*77*		*10 - 130*	*10/11/24 10:56*	*10/14/24 19:28*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		10/10/24 09:30	10/11/24 19:16	1
Arsenic	**0.000907**	**J**	0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 19:16	1
Barium	**0.0669**		0.00200	0.000660	mg/L		10/10/24 09:30	10/11/24 19:16	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 15:51	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/10/24 09:30	10/11/24 19:16	1
Chromium	<0.00120		0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 19:16	1
Cobalt	**0.00108**		0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 19:16	1
Copper	**0.00330**	**J**	0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 19:16	1
Lead	**0.000309**	**J**	0.000500	0.000260	mg/L		10/10/24 09:30	10/11/24 19:16	1
Nickel	**0.0180**		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 19:16	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 19:16	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/11/24 19:16	1
Thallium	<0.000570	^+	0.00100	0.000570	mg/L		10/10/24 09:30	10/17/24 13:23	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 19:16	1
Zinc	**0.175**		0.0200	0.00970	mg/L		10/10/24 09:30	10/11/24 19:16	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		10/10/24 12:42	10/10/24 15:58	1
Total Suspended Solids (USGS I-3765-85)	**5.33**		5.00	3.70	mg/L			10/08/24 19:39	1

Client Sample ID: MW-50R
Date Collected: 10/06/24 11:08
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-4
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/12/24 03:40	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 03:40	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 03:40	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 03:40	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 03:40	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 03:40	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 03:40	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/12/24 03:40	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/12/24 03:40	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 03:40	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 03:40	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 03:40	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 03:40	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 03:40	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 03:40	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/12/24 03:40	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 03:40	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 03:40	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 03:40	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 03:40	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 03:40	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 03:40	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/12/24 03:40	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 03:40	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 03:40	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 03:40	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 03:40	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 03:40	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 03:40	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 03:40	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 03:40	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 03:40	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 03:40	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 03:40	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 03:40	1
Toluene	<0.430		1.00	0.430	ug/L			10/12/24 03:40	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 03:40	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 03:40	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 03:40	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 03:40	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 03:40	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 03:40	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 03:40	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 03:40	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 03:40	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 03:40	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/12/24 03:40	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*10/12/24 03:40*	*1*

Client Sample ID: MW-50R

Lab Sample ID: 310-292199-4

Date Collected: 10/06/24 11:08
Matrix: Water
Date Received: 10/08/24 09:04

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*106*		*73 - 130*		*10/12/24 03:40*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/12/24 03:40*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		10/10/24 09:30	10/17/24 13:25	1
Arsenic	**0.00130**	**J**	0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 19:18	1
Barium	**0.0532**		0.00200	0.000660	mg/L		10/10/24 09:30	10/14/24 15:54	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 15:54	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/10/24 09:30	10/14/24 15:54	1
Chromium	**0.00120**	**J**	0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 19:18	1
Cobalt	**0.00136**		0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 19:18	1
Copper	<0.00180		0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 19:18	1
Lead	**0.00150**		0.000500	0.000260	mg/L		10/10/24 09:30	10/14/24 15:54	1
Nickel	<0.00210		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 19:18	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 19:18	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/11/24 19:18	1
Thallium	**0.000615**	**J**	0.00100	0.000570	mg/L		10/10/24 09:30	10/18/24 13:41	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 19:18	1
Zinc	**0.0547**		0.0200	0.00970	mg/L		10/10/24 09:30	10/11/24 19:18	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**21.3**		5.00	3.70	mg/L			10/08/24 19:39	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: Field Blank

Date Collected: 10/06/24 10:35
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-5

Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**3.82**	**J**	10.0	3.10	ug/L			10/12/24 00:17	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 00:17	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 00:17	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 00:17	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 00:17	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 00:17	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 00:17	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/12/24 00:17	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/12/24 00:17	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 00:17	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 00:17	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 00:17	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 00:17	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 00:17	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 00:17	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/12/24 00:17	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 00:17	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 00:17	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 00:17	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 00:17	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 00:17	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 00:17	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/12/24 00:17	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 00:17	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 00:17	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 00:17	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 00:17	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 00:17	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 00:17	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 00:17	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 00:17	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 00:17	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 00:17	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 00:17	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 00:17	1
Toluene	**0.993**	**J**	1.00	0.430	ug/L			10/12/24 00:17	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 00:17	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 00:17	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 00:17	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 00:17	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 00:17	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 00:17	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 00:17	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 00:17	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 00:17	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 00:17	1
Xylenes, Total	**0.482**	**J**	3.00	0.400	ug/L			10/12/24 00:17	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*10/12/24 00:17*	*1*

Client Sample ID: Field Blank

Lab Sample ID: 310-292199-5

Date Collected: 10/06/24 10:35

Matrix: Water

Date Received: 10/08/24 09:04

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*10/12/24 00:17*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/12/24 00:17*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0381		0.0907	0.0381	ug/L		10/11/24 10:56	10/14/24 18:42	1
delta-BHC	<0.0290		0.0907	0.0290	ug/L		10/11/24 10:56	10/14/24 18:42	1
Dieldrin	<0.0190		0.0907	0.0190	ug/L		10/11/24 10:56	10/14/24 18:42	1
Endosulfan sulfate	<0.0163		0.0907	0.0163	ug/L		10/11/24 10:56	10/14/24 18:42	1
Endrin	<0.0254		0.0907	0.0254	ug/L		10/11/24 10:56	10/14/24 18:42	1
Endrin aldehyde	<0.0245		0.0907	0.0245	ug/L		10/11/24 10:56	10/14/24 18:42	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*35*		*10 - 136*	*10/11/24 10:56*	*10/14/24 18:42*	*1*
Tetrachloro-m-xylene (Surr)	*109*		*10 - 130*	*10/11/24 10:56*	*10/14/24 18:42*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		10/10/24 09:30	10/17/24 13:36	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 19:21	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/10/24 09:30	10/14/24 15:58	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 15:58	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/10/24 09:30	10/14/24 15:58	1
Chromium	<0.00120		0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 19:21	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 19:21	1
Copper	<0.00180		0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 19:21	1
Lead	<0.000260		0.000500	0.000260	mg/L		10/10/24 09:30	10/14/24 15:58	1
Nickel	<0.00210		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 19:21	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 19:21	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/14/24 15:58	1
Thallium	<0.000570		0.00100	0.000570	mg/L		10/10/24 09:30	10/18/24 13:43	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 19:21	1
Zinc	<0.00970		0.0200	0.00970	mg/L		10/10/24 09:30	10/14/24 15:58	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		10/10/24 12:42	10/10/24 15:58	1
Total Suspended Solids (USGS I-3765-85)	<3.70		5.00	3.70	mg/L			10/08/24 19:39	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Client Sample ID: Trip Blank
Date Collected: 10/06/24 00:00
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/12/24 00:39	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/12/24 00:39	1
Benzene	<0.220		0.500	0.220	ug/L			10/12/24 00:39	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/12/24 00:39	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/12/24 00:39	1
Bromoform	<0.780		5.00	0.780	ug/L			10/12/24 00:39	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/12/24 00:39	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/12/24 00:39	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/12/24 00:39	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/12/24 00:39	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/12/24 00:39	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/12/24 00:39	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/12/24 00:39	1
Chloroform	<1.30		3.00	1.30	ug/L			10/12/24 00:39	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/12/24 00:39	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/12/24 00:39	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/12/24 00:39	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/12/24 00:39	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/12/24 00:39	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/12/24 00:39	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/12/24 00:39	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/12/24 00:39	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/12/24 00:39	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/12/24 00:39	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/12/24 00:39	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/12/24 00:39	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/12/24 00:39	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/12/24 00:39	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/12/24 00:39	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/12/24 00:39	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/12/24 00:39	1
Styrene	<0.370		1.00	0.370	ug/L			10/12/24 00:39	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/12/24 00:39	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/12/24 00:39	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/12/24 00:39	1
Toluene	<0.430		1.00	0.430	ug/L			10/12/24 00:39	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/12/24 00:39	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/12/24 00:39	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/12/24 00:39	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/12/24 00:39	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/12/24 00:39	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/12/24 00:39	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/12/24 00:39	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/12/24 00:39	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/12/24 00:39	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/12/24 00:39	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/12/24 00:39	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*10/12/24 00:39*	*1*

Client Sample ID: Trip Blank
Date Collected: 10/06/24 00:00
Date Received: 10/08/24 09:04

Lab Sample ID: 310-292199-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	99		73 - 130		10/12/24 00:39	1
Toluene-d8 (Surr)	97		80 - 120		10/12/24 00:39	1

Definitions/Glossary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Metals

Qualifier	Qualifier Description
^+	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
		BFB	DBFM	TOL
Lab Sample ID	Client Sample ID	(80-120)	(73-130)	(80-120)
310-292199-1	MW-51	99	99	98
310-292199-2	MW-60	101	106	98
310-292199-2	MW-60	105	110	97
310-292199-3	MW-27	101	100	98
310-292199-4	MW-50R	99	106	97
310-292199-5	Field Blank	101	99	97
310-292199-6	Trip Blank	101	99	97
LCS 310-435986/6	Lab Control Sample	100	95	101
LCS 310-435986/7	Lab Control Sample	101	103	98
LCS 310-436434/6	Lab Control Sample	104	102	100
LCS 310-436434/7	Lab Control Sample	106	106	97
MB 310-435986/5	Method Blank	104	102	98
MB 310-436434/5	Method Blank	103	106	97

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX1
Lab Sample ID	Client Sample ID	(10-136)	(10-130)
310-292199-3	MW-27	42	77
310-292199-5	Field Blank	35	109
LCS 310-435953/16-A	Lab Control Sample	16	50
MB 310-435953/1-A	Method Blank	64	124

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-435986/5
Matrix: Water
Analysis Batch: 435986

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/11/24 22:46	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/11/24 22:46	1
Benzene	<0.220		0.500	0.220	ug/L			10/11/24 22:46	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/11/24 22:46	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/11/24 22:46	1
Bromoform	<0.780		5.00	0.780	ug/L			10/11/24 22:46	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/11/24 22:46	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/11/24 22:46	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/11/24 22:46	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/11/24 22:46	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/11/24 22:46	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/11/24 22:46	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/11/24 22:46	1
Chloroform	<1.30		3.00	1.30	ug/L			10/11/24 22:46	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/11/24 22:46	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/11/24 22:46	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/11/24 22:46	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/11/24 22:46	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/11/24 22:46	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/11/24 22:46	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/11/24 22:46	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/11/24 22:46	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/11/24 22:46	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/11/24 22:46	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/11/24 22:46	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/11/24 22:46	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/11/24 22:46	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/11/24 22:46	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/11/24 22:46	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/11/24 22:46	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/11/24 22:46	1
Styrene	<0.370		1.00	0.370	ug/L			10/11/24 22:46	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/11/24 22:46	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/11/24 22:46	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/11/24 22:46	1
Toluene	<0.430		1.00	0.430	ug/L			10/11/24 22:46	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/11/24 22:46	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/11/24 22:46	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/11/24 22:46	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/11/24 22:46	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/11/24 22:46	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/11/24 22:46	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/11/24 22:46	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/11/24 22:46	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/11/24 22:46	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/11/24 22:46	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/11/24 22:46	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-435986/5
Matrix: Water
Analysis Batch: 435986

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*10/11/24 22:46*	*1*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*10/11/24 22:46*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*10/11/24 22:46*	*1*

Lab Sample ID: LCS 310-435986/6
Matrix: Water
Analysis Batch: 435986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	**Spike Added**	**LCS Result**	**LCS Qualifier**	**Unit**	**D**	**%Rec**	**%Rec Limits**
Acetone	40.0	42.76		ug/L		107	50 - 150
Acrylonitrile	200	224.2		ug/L		112	50 - 150
Benzene	20.0	23.26		ug/L		116	72 - 124
Bromochloromethane	20.0	21.57		ug/L		108	73 - 130
Bromodichloromethane	20.0	20.05		ug/L		100	74 - 122
Bromoform	20.0	18.86		ug/L		94	61 - 122
2-Butanone (MEK)	40.0	38.75		ug/L		97	50 - 150
Carbon disulfide	20.0	25.99		ug/L		130	59 - 135
Carbon tetrachloride	20.0	23.31		ug/L		117	67 - 132
Chlorobenzene	20.0	20.98		ug/L		105	76 - 120
Chlorodibromomethane	20.0	19.83		ug/L		99	71 - 121
Chloroform	20.0	21.41		ug/L		107	72 - 125
cis-1,2-Dichloroethene	20.0	21.65		ug/L		108	74 - 123
cis-1,3-Dichloropropene	20.0	21.71		ug/L		109	71 - 125
1,2-Dibromo-3-Chloropropane	20.0	21.75		ug/L		109	50 - 150
1,2-Dibromoethane (EDB)	20.0	19.61		ug/L		98	75 - 125
Dibromomethane	20.0	20.85		ug/L		104	74 - 125
1,2-Dichlorobenzene	20.0	21.07		ug/L		105	74 - 120
1,4-Dichlorobenzene	20.0	20.36		ug/L		102	72 - 120
1,1-Dichloroethane	20.0	24.26		ug/L		121	70 - 127
1,2-Dichloroethane	20.0	20.88		ug/L		104	71 - 125
1,1-Dichloroethene	20.0	25.88		ug/L		129	63 - 132
1,2-Dichloropropane	20.0	23.28		ug/L		116	73 - 124
Ethylbenzene	20.0	21.95		ug/L		110	74 - 122
2-Hexanone	40.0	40.00		ug/L		100	60 - 140
Iodomethane	20.0	23.88		ug/L		119	10 - 150
Methylene Chloride	20.0	24.66		ug/L		123	50 - 150
4-Methyl-2-pentanone (MIBK)	40.0	38.72		ug/L		97	60 - 139
Styrene	20.0	21.25		ug/L		106	74 - 121
1,1,1,2-Tetrachloroethane	20.0	20.08		ug/L		100	71 - 120
1,1,2,2-Tetrachloroethane	20.0	20.64		ug/L		103	68 - 124
Tetrachloroethene	20.0	21.18		ug/L		106	71 - 130
Toluene	20.0	21.16		ug/L		106	74 - 123
trans-1,4-Dichloro-2-butene	20.0	19.34		ug/L		97	50 - 150
trans-1,2-Dichloroethene	20.0	22.44		ug/L		112	70 - 126
trans-1,3-Dichloropropene	20.0	19.94		ug/L		100	69 - 123
1,1,1-Trichloroethane	20.0	23.34		ug/L		117	73 - 129
1,1,2-Trichloroethane	20.0	21.28		ug/L		106	73 - 123
Trichloroethene	20.0	22.19		ug/L		111	72 - 126

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-435986/6
Matrix: Water
Analysis Batch: 435986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,3-Trichloropropane	20.0	20.06		ug/L		100	65 - 127
Vinyl acetate	40.0	43.81		ug/L		110	50 - 150
Xylenes, Total	40.0	42.18		ug/L		105	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*95*		*73 - 130*
Toluene-d8 (Surr)	*101*		*80 - 120*

Lab Sample ID: LCS 310-435986/7
Matrix: Water
Analysis Batch: 435986

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	20.37		ug/L		102	23 - 150
Chloroethane	20.0	20.04		ug/L		100	54 - 136
Chloromethane	20.0	19.99		ug/L		100	38 - 150
Trichlorofluoromethane	20.0	18.98		ug/L		95	54 - 149
Vinyl chloride	20.0	19.78		ug/L		99	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*
Dibromofluoromethane (Surr)	*103*		*73 - 130*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: MB 310-436434/5
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			10/17/24 05:30	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			10/17/24 05:30	1
Benzene	<0.220		0.500	0.220	ug/L			10/17/24 05:30	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			10/17/24 05:30	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			10/17/24 05:30	1
Bromoform	<0.780		5.00	0.780	ug/L			10/17/24 05:30	1
Bromomethane	<1.10		4.00	1.10	ug/L			10/17/24 05:30	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			10/17/24 05:30	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			10/17/24 05:30	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			10/17/24 05:30	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			10/17/24 05:30	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			10/17/24 05:30	1
Chloroethane	<0.790		4.00	0.790	ug/L			10/17/24 05:30	1
Chloroform	<1.30		3.00	1.30	ug/L			10/17/24 05:30	1
Chloromethane	<0.610		3.00	0.610	ug/L			10/17/24 05:30	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			10/17/24 05:30	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			10/17/24 05:30	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			10/17/24 05:30	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-436434/5
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			10/17/24 05:30	1
Dibromomethane	<0.330		1.00	0.330	ug/L			10/17/24 05:30	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			10/17/24 05:30	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			10/17/24 05:30	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			10/17/24 05:30	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			10/17/24 05:30	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			10/17/24 05:30	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			10/17/24 05:30	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			10/17/24 05:30	1
2-Hexanone	<2.00		10.0	2.00	ug/L			10/17/24 05:30	1
Iodomethane	<7.00		10.0	7.00	ug/L			10/17/24 05:30	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			10/17/24 05:30	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			10/17/24 05:30	1
Styrene	<0.370		1.00	0.370	ug/L			10/17/24 05:30	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			10/17/24 05:30	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			10/17/24 05:30	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			10/17/24 05:30	1
Toluene	<0.430		1.00	0.430	ug/L			10/17/24 05:30	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			10/17/24 05:30	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			10/17/24 05:30	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			10/17/24 05:30	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			10/17/24 05:30	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			10/17/24 05:30	1
Trichloroethene	<0.430		1.00	0.430	ug/L			10/17/24 05:30	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			10/17/24 05:30	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			10/17/24 05:30	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			10/17/24 05:30	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			10/17/24 05:30	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			10/17/24 05:30	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*103*		*80 - 120*		*10/17/24 05:30*	*1*
Dibromofluoromethane (Surr)	*106*		*73 - 130*		*10/17/24 05:30*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*10/17/24 05:30*	*1*

Lab Sample ID: LCS 310-436434/6
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	37.99		ug/L		95	50 - 150
Acrylonitrile	200	186.4		ug/L		93	50 - 150
Benzene	20.0	19.88		ug/L		99	72 - 124
Bromochloromethane	20.0	20.96		ug/L		105	73 - 130
Bromodichloromethane	20.0	19.11		ug/L		96	74 - 122
Bromoform	20.0	17.54		ug/L		88	61 - 122
2-Butanone (MEK)	40.0	33.73		ug/L		84	50 - 150
Carbon disulfide	20.0	18.97		ug/L		95	59 - 135

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-436434/6
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Carbon tetrachloride	20.0	20.78		ug/L		104	67 - 132
Chlorobenzene	20.0	18.99		ug/L		95	76 - 120
Chlorodibromomethane	20.0	18.75		ug/L		94	71 - 121
Chloroform	20.0	19.65		ug/L		98	72 - 125
cis-1,2-Dichloroethene	20.0	19.29		ug/L		96	74 - 123
cis-1,3-Dichloropropene	20.0	18.87		ug/L		94	71 - 125
1,2-Dibromo-3-Chloropropane	20.0	18.97		ug/L		95	50 - 150
1,2-Dibromoethane (EDB)	20.0	20.21		ug/L		101	75 - 125
Dibromomethane	20.0	19.86		ug/L		99	74 - 125
1,2-Dichlorobenzene	20.0	20.17		ug/L		101	74 - 120
1,4-Dichlorobenzene	20.0	19.53		ug/L		98	72 - 120
1,1-Dichloroethane	20.0	19.76		ug/L		99	70 - 127
1,2-Dichloroethane	20.0	19.44		ug/L		97	71 - 125
1,1-Dichloroethene	20.0	19.84		ug/L		99	63 - 132
1,2-Dichloropropane	20.0	20.21		ug/L		101	73 - 124
Ethylbenzene	20.0	19.32		ug/L		97	74 - 122
2-Hexanone	40.0	34.45		ug/L		86	60 - 140
Iodomethane	20.0	16.13		ug/L		81	10 - 150
Methylene Chloride	20.0	20.13		ug/L		101	50 - 150
4-Methyl-2-pentanone (MIBK)	40.0	34.49		ug/L		86	60 - 139
Styrene	20.0	18.55		ug/L		93	74 - 121
1,1,1,2-Tetrachloroethane	20.0	18.21		ug/L		91	71 - 120
1,1,2,2-Tetrachloroethane	20.0	18.61		ug/L		93	68 - 124
Tetrachloroethene	20.0	19.98		ug/L		100	71 - 130
Toluene	20.0	19.08		ug/L		95	74 - 123
trans-1,4-Dichloro-2-butene	20.0	17.02		ug/L		85	50 - 150
trans-1,2-Dichloroethene	20.0	19.65		ug/L		98	70 - 126
trans-1,3-Dichloropropene	20.0	17.86		ug/L		89	69 - 123
1,1,1-Trichloroethane	20.0	20.35		ug/L		102	73 - 129
1,1,2-Trichloroethane	20.0	20.44		ug/L		102	73 - 123
Trichloroethene	20.0	20.31		ug/L		102	72 - 126
1,2,3-Trichloropropane	20.0	19.31		ug/L		97	65 - 127
Vinyl acetate	40.0	34.78		ug/L		87	50 - 150
Xylenes, Total	40.0	38.11		ug/L		95	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*102*		*73 - 130*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCS 310-436434/7
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	15.86		ug/L		79	23 - 150
Chloroethane	20.0	17.74		ug/L		89	54 - 136
Chloromethane	20.0	16.98		ug/L		85	38 - 150

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-436434/7
Matrix: Water
Analysis Batch: 436434

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Trichlorofluoromethane	20.0	18.04		ug/L		90	54 - 149
Vinyl chloride	20.0	17.96		ug/L		90	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*106*		*73 - 130*
Toluene-d8 (Surr)	*97*		*80 - 120*

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 310-435953/1-A
Matrix: Water
Analysis Batch: 436114

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 435953

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0391		0.0931	0.0391	ug/L		10/11/24 10:56	10/14/24 14:01	1
delta-BHC	<0.0298		0.0931	0.0298	ug/L		10/11/24 10:56	10/14/24 14:01	1
Dieldrin	<0.0195		0.0931	0.0195	ug/L		10/11/24 10:56	10/14/24 14:01	1
Endosulfan sulfate	<0.0168		0.0931	0.0168	ug/L		10/11/24 10:56	10/14/24 14:01	1
Endrin	<0.0261		0.0931	0.0261	ug/L		10/11/24 10:56	10/14/24 14:01	1
Endrin aldehyde	<0.0251		0.0931	0.0251	ug/L		10/11/24 10:56	10/14/24 14:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*64*		*10 - 136*	*10/11/24 10:56*	*10/14/24 14:01*	*1*
Tetrachloro-m-xylene (Surr)	*124*		*10 - 130*	*10/11/24 10:56*	*10/14/24 14:01*	*1*

Lab Sample ID: LCS 310-435953/16-A
Matrix: Water
Analysis Batch: 436114

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 435953

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
beta-BHC	2.56	2.147		ug/L		84	37 - 136
delta-BHC	2.56	2.228		ug/L		87	33 - 134
Dieldrin	2.56	2.025		ug/L		79	39 - 130
Endosulfan sulfate	2.56	2.488		ug/L		97	36 - 147
Endrin	2.56	2.244		ug/L		88	39 - 140
Endrin aldehyde	2.56	1.780		ug/L		69	32 - 137

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*16*		*10 - 136*
Tetrachloro-m-xylene (Surr)	*50*		*10 - 130*

QC Sample Results

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-435735/1-A
Matrix: Water
Analysis Batch: 436085

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 435735

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		10/10/24 09:30	10/11/24 18:16	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		10/10/24 09:30	10/11/24 18:16	1
Barium	<0.000660		0.00200	0.000660	mg/L		10/10/24 09:30	10/11/24 18:16	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		10/10/24 09:30	10/11/24 18:16	1
Chromium	<0.00120		0.00500	0.00120	mg/L		10/10/24 09:30	10/11/24 18:16	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		10/10/24 09:30	10/11/24 18:16	1
Copper	<0.00180		0.00500	0.00180	mg/L		10/10/24 09:30	10/11/24 18:16	1
Lead	<0.000260		0.000500	0.000260	mg/L		10/10/24 09:30	10/11/24 18:16	1
Nickel	<0.00210		0.00500	0.00210	mg/L		10/10/24 09:30	10/11/24 18:16	1
Selenium	<0.00140		0.00500	0.00140	mg/L		10/10/24 09:30	10/11/24 18:16	1
Silver	<0.000500		0.00100	0.000500	mg/L		10/10/24 09:30	10/11/24 18:16	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		10/10/24 09:30	10/11/24 18:16	1
Zinc	<0.00970		0.0200	0.00970	mg/L		10/10/24 09:30	10/11/24 18:16	1

Lab Sample ID: MB 310-435735/1-A
Matrix: Water
Analysis Batch: 436228

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 435735

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	<0.000330		0.00100	0.000330	mg/L		10/10/24 09:30	10/14/24 14:39	1

Lab Sample ID: MB 310-435735/1-A
Matrix: Water
Analysis Batch: 436697

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 435735

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	<0.000570		0.00100	0.000570	mg/L		10/10/24 09:30	10/17/24 12:41	1

Lab Sample ID: LCS 310-435735/2-A
Matrix: Water
Analysis Batch: 436085

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 435735

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Antimony	0.200	0.2234		mg/L		112	80 - 120
Arsenic	0.200	0.2126		mg/L		106	80 - 120
Barium	0.100	0.1018		mg/L		102	80 - 120
Cadmium	0.100	0.1010		mg/L		101	80 - 120
Chromium	0.100	0.1049		mg/L		105	80 - 120
Cobalt	0.100	0.1132		mg/L		113	80 - 120
Copper	0.200	0.2217		mg/L		111	80 - 120
Lead	0.200	0.2119		mg/L		106	80 - 120
Nickel	0.200	0.2060		mg/L		103	80 - 120
Selenium	0.400	0.4020		mg/L		101	80 - 120
Silver	0.100	0.1056		mg/L		106	80 - 120
Vanadium	0.100	0.1005		mg/L		100	80 - 120
Zinc	0.200	0.1876		mg/L		94	80 - 120

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: LCS 310-435735/2-A
Matrix: Water
Analysis Batch: 436228

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 435735

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Beryllium	0.100	0.09166		mg/L		92	80 - 120

Lab Sample ID: LCS 310-435735/2-A
Matrix: Water
Analysis Batch: 436697

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 435735

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Thallium	0.100	0.08193		mg/L		82	80 - 120

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 240-630273/1-A
Matrix: Water
Analysis Batch: 630341

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 630273

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<1.41		3.00	1.41	mg/L		10/10/24 12:42	10/10/24 15:58	1

Lab Sample ID: LCS 240-630273/2-A
Matrix: Water
Analysis Batch: 630341

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 630273

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Sulfide	8.00	8.000		mg/L		100	70 - 120

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-435596/1
Matrix: Water
Analysis Batch: 435596

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.70		5.00	3.70	mg/L			10/08/24 19:39	1

Lab Sample ID: LCS 310-435596/2
Matrix: Water
Analysis Batch: 435596

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Suspended Solids	100	90.00		mg/L		90	81 - 116

GC/MS VOA

Analysis Batch: 435986

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	8260D	
310-292199-2	MW-60	Total/NA	Water	8260D	
310-292199-3	MW-27	Total/NA	Water	8260D	
310-292199-4	MW-50R	Total/NA	Water	8260D	
310-292199-5	Field Blank	Total/NA	Water	8260D	
310-292199-6	Trip Blank	Total/NA	Water	8260D	
MB 310-435986/5	Method Blank	Total/NA	Water	8260D	
LCS 310-435986/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-435986/7	Lab Control Sample	Total/NA	Water	8260D	

Analysis Batch: 436434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-2	MW-60	Total/NA	Water	8260D	
MB 310-436434/5	Method Blank	Total/NA	Water	8260D	
LCS 310-436434/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-436434/7	Lab Control Sample	Total/NA	Water	8260D	

GC Semi VOA

Prep Batch: 435953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-3	MW-27	Total/NA	Water	3511	
310-292199-5	Field Blank	Total/NA	Water	3511	
MB 310-435953/1-A	Method Blank	Total/NA	Water	3511	
LCS 310-435953/16-A	Lab Control Sample	Total/NA	Water	3511	

Analysis Batch: 436114

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-3	MW-27	Total/NA	Water	8081B	435953
310-292199-5	Field Blank	Total/NA	Water	8081B	435953
MB 310-435953/1-A	Method Blank	Total/NA	Water	8081B	435953
LCS 310-435953/16-A	Lab Control Sample	Total/NA	Water	8081B	435953

Metals

Prep Batch: 435735

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	3005A	
310-292199-2	MW-60	Total/NA	Water	3005A	
310-292199-3	MW-27	Total/NA	Water	3005A	
310-292199-4	MW-50R	Total/NA	Water	3005A	
310-292199-5	Field Blank	Total/NA	Water	3005A	
MB 310-435735/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-435735/2-A	Lab Control Sample	Total/NA	Water	3005A	

Analysis Batch: 436085

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	6020B	435735
310-292199-2	MW-60	Total/NA	Water	6020B	435735
310-292199-3	MW-27	Total/NA	Water	6020B	435735
310-292199-4	MW-50R	Total/NA	Water	6020B	435735
310-292199-5	Field Blank	Total/NA	Water	6020B	435735

Metals (Continued)

Analysis Batch: 436085 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 310-435735/1-A	Method Blank	Total/NA	Water	6020B	435735
LCS 310-435735/2-A	Lab Control Sample	Total/NA	Water	6020B	435735

Analysis Batch: 436228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	6020B	435735
310-292199-2	MW-60	Total/NA	Water	6020B	435735
310-292199-3	MW-27	Total/NA	Water	6020B	435735
310-292199-4	MW-50R	Total/NA	Water	6020B	435735
310-292199-5	Field Blank	Total/NA	Water	6020B	435735
MB 310-435735/1-A	Method Blank	Total/NA	Water	6020B	435735
LCS 310-435735/2-A	Lab Control Sample	Total/NA	Water	6020B	435735

Analysis Batch: 436697

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-2	MW-60	Total/NA	Water	6020B	435735
310-292199-3	MW-27	Total/NA	Water	6020B	435735
310-292199-4	MW-50R	Total/NA	Water	6020B	435735
310-292199-5	Field Blank	Total/NA	Water	6020B	435735
MB 310-435735/1-A	Method Blank	Total/NA	Water	6020B	435735
LCS 310-435735/2-A	Lab Control Sample	Total/NA	Water	6020B	435735

Analysis Batch: 436888

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	6020B	435735
310-292199-4	MW-50R	Total/NA	Water	6020B	435735
310-292199-5	Field Blank	Total/NA	Water	6020B	435735

General Chemistry

Analysis Batch: 435596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	I-3765-85	
310-292199-2	MW-60	Total/NA	Water	I-3765-85	
310-292199-3	MW-27	Total/NA	Water	I-3765-85	
310-292199-4	MW-50R	Total/NA	Water	I-3765-85	
310-292199-5	Field Blank	Total/NA	Water	I-3765-85	
MB 310-435596/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-435596/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Prep Batch: 630273

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	9030B	
310-292199-2	MW-60	Total/NA	Water	9030B	
310-292199-3	MW-27	Total/NA	Water	9030B	
310-292199-5	Field Blank	Total/NA	Water	9030B	
MB 240-630273/1-A	Method Blank	Total/NA	Water	9030B	
LCS 240-630273/2-A	Lab Control Sample	Total/NA	Water	9030B	

General Chemistry

Analysis Batch: 630341

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-292199-1	MW-51	Total/NA	Water	9034	630273
310-292199-2	MW-60	Total/NA	Water	9034	630273
310-292199-3	MW-27	Total/NA	Water	9034	630273
310-292199-5	Field Blank	Total/NA	Water	9034	630273
MB 240-630273/1-A	Method Blank	Total/NA	Water	9034	630273
LCS 240-630273/2-A	Lab Control Sample	Total/NA	Water	9034	630273

Lab Chronicle

Client Sample ID: MW-51

Lab Sample ID: 310-292199-1

Date Collected: 10/06/24 07:45

Matrix: Water

Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 02:32
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436228	A6US	EET CF	10/14/24 15:43
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436085	A6US	EET CF	10/11/24 19:12
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436888	NFT2	EET CF	10/18/24 13:34
Total/NA	Prep	9030B			630273	PQD2	EET CLE	10/10/24 12:42
Total/NA	Analysis	9034		1	630341	PQD2	EET CLE	10/10/24 15:58
Total/NA	Analysis	I-3765-85		1	435596	MDU9	EET CF	10/08/24 19:39

Client Sample ID: MW-60

Lab Sample ID: 310-292199-2

Date Collected: 10/06/24 09:34

Matrix: Water

Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	436434	WSE8	EET CF	10/17/24 07:19
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 02:54
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436228	A6US	EET CF	10/14/24 15:47
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436085	A6US	EET CF	10/11/24 19:14
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436697	NFT2	EET CF	10/17/24 13:21
Total/NA	Prep	9030B			630273	PQD2	EET CLE	10/10/24 12:42
Total/NA	Analysis	9034		1	630341	PQD2	EET CLE	10/10/24 15:58
Total/NA	Analysis	I-3765-85		1	435596	MDU9	EET CF	10/08/24 19:39

Client Sample ID: MW-27

Lab Sample ID: 310-292199-3

Date Collected: 10/06/24 10:32

Matrix: Water

Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 03:17
Total/NA	Prep	3511			435953	AYK7	EET CF	10/11/24 10:56
Total/NA	Analysis	8081B		1	436114	BW2O	EET CF	10/14/24 19:28
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436228	A6US	EET CF	10/14/24 15:51
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436085	A6US	EET CF	10/11/24 19:16
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436697	NFT2	EET CF	10/17/24 13:23
Total/NA	Prep	9030B			630273	PQD2	EET CLE	10/10/24 12:42
Total/NA	Analysis	9034		1	630341	PQD2	EET CLE	10/10/24 15:58

Lab Chronicle

Client: Hall Engineering Company
Job ID: 310-292199-1
Project/Site: Appanoose County Landfill

Client Sample ID: MW-27
Lab Sample ID: 310-292199-3

Date Collected: 10/06/24 10:32
Matrix: Water
Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	I-3765-85		1	435596	MDU9	EET CF	10/08/24 19:39

Client Sample ID: MW-50R
Lab Sample ID: 310-292199-4

Date Collected: 10/06/24 11:08
Matrix: Water
Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 03:40
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436228	A6US	EET CF	10/14/24 15:54
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436085	A6US	EET CF	10/11/24 19:18
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436697	NFT2	EET CF	10/17/24 13:25
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436888	NFT2	EET CF	10/18/24 13:41
Total/NA	Analysis	I-3765-85		1	435596	MDU9	EET CF	10/08/24 19:39

Client Sample ID: Field Blank
Lab Sample ID: 310-292199-5

Date Collected: 10/06/24 10:35
Matrix: Water
Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 00:17
Total/NA	Prep	3511			435953	AYK7	EET CF	10/11/24 10:56
Total/NA	Analysis	8081B		1	436114	BW2O	EET CF	10/14/24 18:42
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436228	A6US	EET CF	10/14/24 15:58
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436085	A6US	EET CF	10/11/24 19:21
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436697	NFT2	EET CF	10/17/24 13:36
Total/NA	Prep	3005A			435735	F5MW	EET CF	10/10/24 09:30
Total/NA	Analysis	6020B		1	436888	NFT2	EET CF	10/18/24 13:43
Total/NA	Prep	9030B			630273	PQD2	EET CLE	10/10/24 12:42
Total/NA	Analysis	9034		1	630341	PQD2	EET CLE	10/10/24 15:58
Total/NA	Analysis	I-3765-85		1	435596	MDU9	EET CF	10/08/24 19:39

Client Sample ID: Trip Blank
Lab Sample ID: 310-292199-6

Date Collected: 10/06/24 00:00
Matrix: Water
Date Received: 10/08/24 09:04

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	435986	WSE8	EET CF	10/12/24 00:39

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: Hall Engineering Company
Job ID: 310-292199-1
Project/Site: Appanoose County Landfill

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-28-25
Connecticut	State	PH-0806	12-31-26
Georgia	State	4062	02-27-25
Illinois	NELAP	200004	08-31-25
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-27-25
Kentucky (WW)	State	KY98016	12-30-24
Minnesota	NELAP	039-999-348	12-31-24
New Hampshire	NELAP	225024	09-30-25
New Jersey	NELAP	OH001	07-03-25
New York	NELAP	10975	04-02-25
Ohio VAP	State	ORELAP 4062	02-27-25
Oregon	NELAP	4062	02-27-25
Pennsylvania	NELAP	68-00340	08-31-25
Texas	NELAP	T104704517-22-19	08-31-25
USDA	US Federal Programs	P330-18-00281	01-05-27
Virginia	NELAP	460175	09-14-25
West Virginia DEP	State	210	12-31-24

Method Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-292199-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
8081B	Organochlorine Pesticides (GC)	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CLE
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
3511	Microextraction of Organic Compounds	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.
USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401
EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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310-292199 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Hull Engineering

City/State: CITY STATE IA | Project:

Receipt Information

Date/Time Received: DATE 10/8/24 TIME 820 | Received By.

Delivery Type: ☑ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☐ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:________

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # _____ of _____

Cooler Custody Seals Present? ☑ Yes ☐ No *If yes:* Cooler custody seals intact? ☐ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ☒ No *If yes:* Which VOA samples are in cooler? ↓

AM

Temperature Record

Coolant: ☒ Wet ice ☐ Blue ice ☐ Dry ice ☐ Other:________ ☐ NONE

Thermometer ID: R | Correction Factor (°C): +0.0

• **Temp Blank Temperature** – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 0.6 | Corrected Temp (°C): 0.6

• **Sample Container Temperature**

Container(s) used:	CONTAINER 1	CONTAINER 2
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding If no, proceed with login

Additional Comments

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone (319) 277-2401 Phone (319) 277-2425

Chain of Custody Record

eurofins | Environment Testing

Client Information	Sampler: Bill Buss	Lab PM: Calhoun, Conner M	Carrier Tracking No(s):	COC No: 310-98146-22844 1
Client Contact: Bill Buss	Phone:	E-Mail: Conner Calhoun@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Hall Engineering Company	PWSID:	**Analysis Requested**		Job #:
Address: PO BOX 825	**Due Date Requested:**			**Preservation Codes:** D - HNO3 A - HCL N - None CB - ZnAcetate/NaOH
City: Centerville	***TAT Requested (days):***			
State, Zip: IA, 52544	**Compliance Project:** ∆ Yes ∆ No			
Phone:	PO #: Purchase Order not required			
Email: bbuss@hall-engineering us	WO #:			
Project Name: Appanoose County Landfill	Project #: 31010067			
Site:	SSOW#:			Other:

Sample Identification	**Sample Date**	**Sample Time**	**Sample Type (C=comp, G=grab)**	**Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)**	**Field Filtered Sample (Yes or No)**	**Perform MS/MSD (Yes or No)**	**App 1 List- 8260D - VOC, 6020 Metlas**	**I_3765_85 - Residue, Non-filterable (TSS)**	**9034_Calc - Sulfide**	**8081B - Pesticides - Short List**	**App 1 VOCs only**	**Total Number of containers**	**Special Instructions/Note:**
				Preservation Code:									
MW-51	10/6/24	7:45	G	Water	N		X	X	X				
MW-60	10/6/24	9:34	G	Water	N		X	X	X				
MW-27	10/6/24	10:32	G	Water	N		X	X	X	X			See attached Sample Label Data
MW-50R	10/6/24	11:08	G	Water	N		X	X					
Field Blank	10/6/24	10:35	G	Water	N		X	X	X				
Trip Blank				Water							X		

Possible Hazard Identification
☐ *Non-Hazard* ☐ *Flammable* ☐ *Skin Irritant* ☐ *Poison B* ☐ *Unknown* ☐ *Radiological*

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☒ *Disposal By Lab* ☐ *Archive For* ________ *Months*

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by: Bill Buss	Date/Time: 10/7/24 2:15 PM	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 10/8/24 0820	Company

Custody Seals Intact: ∆ Yes ∆ No | Custody Seal No. | Cooler Temperature(s) °C and Other Remarks.

Ver: 05/06/2024

SAMPLE LABEL DATA

All samples collected for the Rathbun Area Solid Waste Management Commission – Appanoose County Sanitary Landfill

All samples collected by Utilities Service Company/Bill Buss.

NORTH LANDFILL – Fall 2024

MW-51:

6020B – Appendix 1 Metals Sample Collected 10-6-2024 @ 7:45AM

8260D – Volatile Appendix 1 Sublist Sample Collected 10-6-2024 @ 7:45 AM

9034_Calc – Sulfide Sample Collected 10-6-2024 @ 7:45 AM

I_3765_85 – Residue (TSS) Sample Collected 10-6-2024 @ 7:45 AM

MW-27:

6020B – Appendix 1 Metals Sample Collected 10-6-2023 @ 10:32 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 10-6-2024 @ 10:32 AM

8081B – (MOD) Standard Pesticides – Short List Sample Collected 10-6-2024 @ 10:32 AM

9034_Calc – Sulfide Sample Collected 10-6-2024 @ 10:32 AM

I_3765_85 – Residue (TSS) Sample Collected 10-6-2024 @ 10:32 AM

MW-50R:

6020B – Appendix 1 Metals Sample Collected 10-6-2024 @ 11:08 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 10-6-2024 @ 11:08 AM

I_3765_85 – Residue (TSS) Sample Collected 10-6-2024 @ 11:08 AM

MW-60:

6020B – Appendix 1 Metals Sample Collected 10-6-2024 @ 9:34 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 10-6-2024 @ 9:34 AM

9034_Calc - Sulfide Sample Collected 10-6-2024 @ 9:34 AM

I_3765_85 – Residue (TSS) Sample Collected 10-6-2024 @ 9:34 AM

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

eurofins | Environment Testing

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Client Information (Sub Contract Lab)
Sampler:
Lab PM: Calhoun, Conner M
Carrier Tracking No(s):
COC No: 310-77131.1

Client Contact: Shipping/Receiving
Phone:
E-Mail: Conner.Calhoun@et.eurofinsus.com
State of Origin: Iowa
Page: Page 1 of 1

Company: Eurofins Environment Testing North Centr
Accreditations Required (See note): State Program - Iowa
Job #: 310-292199-1

Address: 180 S. Van Buren Avenue, ,
Due Date Requested: 10/21/2024
City: Barberton
TAT Requested (days):
State, Zip: OH, 44203
Phone: 330-497-9396(Tel) 330-497-0772(Fax)
PO #:
Email:
WO #:
Project Name: Appanoose County Landfill
Project #: 31010067
Site:
SSOW#:

Analysis Requested

Preservation Codes: -

Other:

689

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034_Calc/9030B Sulfide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
MW-51 (310-292199-1)	10/6/24	07:45 Central	G	Water			X	1	
MW-60 (310-292199-2)	10/6/24	09:34 Central	G	Water			X	1	
MW-27 (310-292199-3)	10/6/24	10:32 Central	G	Water			X	1	
Field Blank (310-292199-5)	10/6/24	10:35 Central	G	Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For ________ Months*

Deliverable Requested: I, II, III, IV, Other (specify)
Primary Deliverable Rank: 2
Special Instructions/QC Requirements:

Empty Kit Relinquished by:
Date:
Time:
Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
	10824 1450		MALISSA LOAR	10-9-24 9:00	

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.:
Cooler Temperature(s) °C and Other Remarks:

Ver: 05/06/2024

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :**
Barberton Facility

Client Eur Cedar Falls Site Name ______

Cooler unpacked by: MALISSA LOAR

Cooler Received on 10-9-24 Opened on 10-9-24

FedEx: 1st Grd [✓ Exp] UPS FAS Waypoint Client Drop Off Eurofins Courier Other ______

Receipt After-hours Drop-off Date/Time ______ Storage Location ______

Eurofins Cooler # Cl Foam Box Client Cooler Box Other ______

Packing material used. Bubble Wrap Foam Plastic Bag [✓ None] Other ______

COOLANT: [✓ Wet Ice] Blue Ice Dry Ice Water None

1 Cooler temperature upon receipt ______ ☐ See Multiple Cooler Form

IR GUN # ~~22~~ 17 (CF 0.1 °C) Observed Cooler Temp. 2.1 °C Corrected Cooler Temp. 2.2 °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity ______ [✓ Yes] No
-Were the seals on the outside of the cooler(s) signed & dated? [✓ Yes] No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)? Yes [✓ No]
-Were tamper/custody seals intact and uncompromised? Yes [✓ No] NA
3 Shippers' packing slip attached to the cooler(s)? [✓ Yes] No
4. Did custody papers accompany the sample(s)? [✓ Yes] No
5 Were the custody papers relinquished & signed in the appropriate place? [✓ Yes] No
6. Was/were the person(s) who collected the samples clearly identified on the COC? Yes [✓ No]
7 Did all bottles arrive in good condition (Unbroken)? [✓ Yes] No
8 Could all bottle labels (ID/Date/Time) be reconciled with the COC? [✓ Yes] No
9 For each sample, does the COC specify preservatives (Y/[✓ N]), # of containers ([✓ Y]/N), and sample type of grab/comp(Y/[✓ N])?
10 Were correct bottle(s) used for the test(s) indicated? [✓ Yes] No
11 Sufficient quantity received to perform indicated analyses? [✓ Yes] No
12. Are these work share samples and all listed on the COC? [✓ Yes] No
If yes, Questions 13-17 have been checked at the originating laboratory
13 Were all preserved sample(s) at the correct pH upon receipt? Yes No NA pH Strip Lot# HC447997
14 Were VOAs on the COC? Yes No
15 Were air bubbles >6 mm in any VOA vials? ● ← Larger than this. Yes No NA
16 Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ______ Yes No
17 Was a LL Hg or Me Hg trip blank present? ______ Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ______ Date ______ by ______ via Verbal Voice Mail Other

Concerning ______

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page

Samples processed by:

19. SAMPLE CONDITION

Sample(s) ______ were received after the recommended holding time had expired.
Sample(s) ______ were received in a broken container
Sample(s) ______ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ______ were further preserved in the laboratory
Time preserved. ______ Preservative(s) added/Lot number(s). ______

VOA Sample Preservation - Date/Time VOAs Frozen. ______

WI-NC-099-092324 Cooler Receipt Form.doc

Login Sample Receipt Checklist

Client: Hall Engineering Company

Job Number: 310-292199-1

Login Number: 292199
List Number: 1
Creator: Homolar, Dana J

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Hall Engineering Company
Job Number: 310-292199-1

Login Number: 292199
List Number: 2
Creator: Loar, Malissa

List Source: Eurofins Cleveland
List Creation: 10/09/24 12:03 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

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Environment Testing

ANALYTICAL REPORT

PREPARED FOR

Attn: Bill Buss
Hall Engineering Company
PO BOX 825
Centerville, Iowa 52544
Generated 6/13/2024 9:24:01 AM

JOB DESCRIPTION

Appanoose County Landfill

JOB NUMBER

310-282195-1

1
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Eurofins Cedar Falls
3019 Venture Way
Cedar Falls IA 50613

See page two for job notes and contact information.

myEOL

Eurofins Cedar Falls

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing North Central, LLC Project Manager.

Authorization

Generated
6/13/2024 9:24:01 AM

Authorized for release by
Matthew Hummel, Project Manager I
Matthew.Hummel@et.eurofinsus.com
(319)595-2010

Table of Contents

Job ID: 310-282195-1 — Eurofins Cedar Falls

Job Narrative
310-282195-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt
The samples were received on 5/29/2024 8:50 AM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 3.7°C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC/MS Semi VOA
Method 8270E: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-423001. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

Method 8270E: Surrogate recovery for the following sample was outside control limits: MW-50R (310-282195-4). Evidence of matrix interference is present; therefore, re-extraction and/or re-analysis was not performed.

Method 8270E: The laboratory control sample and/or the laboratory control sample duplicate (LCS/LCSD) for preparation batch 310-423001 and analytical batch 310-423476 recovered outside control limits for the following analyte(s): p-Phenylene diamine. p-Phenylene diamine has been identified as a poor performing analyte when analyzed using this method; therefore, re-extraction/re-analysis was not performed.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Pesticides
Method 8081B: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 310-423264. The laboratory control sample (LCS) was performed in duplicate (LCSD) to provide precision data for this batch.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
Method 6020B: The reference method requires samples to be preserved to a pH of <2. The following sample was received with insufficient preservation at a pH of >2: MW-27 (310-282195-3). The sample(s) was preserved to the appropriate pH in the laboratory.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Sample Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
310-282195-1	MW-51	Water	05/28/24 06:02	05/29/24 08:50
310-282195-2	PZ-12	Water	05/28/24 08:42	05/29/24 08:50
310-282195-3	MW-27	Water	05/28/24 10:36	05/29/24 08:50
310-282195-4	MW-50R	Water	05/28/24 11:41	05/29/24 08:50
310-282195-5	Trip Blank	Water	05/28/24 00:00	05/29/24 08:50
310-282195-6	Field Blank	Water	05/28/24 10:30	05/29/24 08:50

Detection Summary

Client Sample ID: MW-51 — Lab Sample ID: 310-282195-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Barium	0.00555		0.00200	0.000660	mg/L	1		6020B	Total/NA
Nickel	0.00246	J	0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.101		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	1.63	J	1.88	1.39	mg/L	1		I-3765-85	Total/NA

Client Sample ID: PZ-12 — Lab Sample ID: 310-282195-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	26.3		10.0	3.10	ug/L	1		8260D	Total/NA
Arsenic	0.00202		0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0176		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000176	J	0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.0131		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00227	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000734		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0160		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0592		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	75.0		15.0	11.1	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-27 — Lab Sample ID: 310-282195-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	0.856		0.500	0.220	ug/L	1		8260D	Total/NA
cis-1,2-Dichloroethene	2.24		1.00	0.210	ug/L	1		8260D	Total/NA
1,1-Dichloroethane	0.241	J	1.00	0.220	ug/L	1		8260D	Total/NA
Arsenic	0.00184	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0903		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000326		0.000200	0.000100	mg/L	1		6020B	Total/NA
Cobalt	0.00821		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00195	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.000604		0.000500	0.000260	mg/L	1		6020B	Total/NA
Nickel	0.0184		0.00500	0.00210	mg/L	1		6020B	Total/NA
Zinc	0.0880		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	65.5		7.50	5.55	mg/L	1		I-3765-85	Total/NA

Client Sample ID: MW-50R — Lab Sample ID: 310-282195-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Acetone	7.07	J	10.0	3.10	ug/L	1		8260D	Total/NA
Antimony	0.00112	J	0.00200	0.00100	mg/L	1		6020B	Total/NA
Arsenic	0.00195	J	0.00200	0.000530	mg/L	1		6020B	Total/NA
Barium	0.0635		0.00200	0.000660	mg/L	1		6020B	Total/NA
Cadmium	0.000328		0.000200	0.000100	mg/L	1		6020B	Total/NA
Chromium	0.00132	J	0.00500	0.00120	mg/L	1		6020B	Total/NA
Cobalt	0.00221		0.000500	0.000170	mg/L	1		6020B	Total/NA
Copper	0.00359	J	0.00500	0.00180	mg/L	1		6020B	Total/NA
Lead	0.00585		0.000500	0.000260	mg/L	1		6020B	Total/NA
Vanadium	0.00208	J	0.00500	0.00110	mg/L	1		6020B	Total/NA
Zinc	0.0542		0.0200	0.00970	mg/L	1		6020B	Total/NA
Total Suspended Solids	241		15.0	11.1	mg/L	1		I-3765-85	Total/NA

This Detection Summary does not include radiochemical test results.

Detection Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: Trip Blank

Lab Sample ID: 310-282195-5

No Detections.

Client Sample ID: Field Blank

Lab Sample ID: 310-282195-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Toluene	0.438	J	1.00	0.430	ug/L	1		8260D	Total/NA

This Detection Summary does not include radiochemical test results.

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: MW-51
Date Collected: 05/28/24 06:02
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-1
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			06/01/24 03:02	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			06/01/24 03:02	1
Benzene	<0.220		0.500	0.220	ug/L			06/01/24 03:02	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			06/01/24 03:02	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			06/01/24 03:02	1
Bromoform	<0.780		5.00	0.780	ug/L			06/01/24 03:02	1
Bromomethane	<1.10		4.00	1.10	ug/L			06/01/24 03:02	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			06/01/24 03:02	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			06/01/24 03:02	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			06/01/24 03:02	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			06/01/24 03:02	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			06/01/24 03:02	1
Chloroethane	<0.790		4.00	0.790	ug/L			06/01/24 03:02	1
Chloroform	<1.30		3.00	1.30	ug/L			06/01/24 03:02	1
Chloromethane	<0.610		3.00	0.610	ug/L			06/01/24 03:02	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			06/01/24 03:02	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			06/01/24 03:02	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			06/01/24 03:02	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			06/01/24 03:02	1
Dibromomethane	<0.330		1.00	0.330	ug/L			06/01/24 03:02	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			06/01/24 03:02	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			06/01/24 03:02	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			06/01/24 03:02	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			06/01/24 03:02	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			06/01/24 03:02	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			06/01/24 03:02	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			06/01/24 03:02	1
2-Hexanone	<2.00		10.0	2.00	ug/L			06/01/24 03:02	1
Iodomethane	<7.00		10.0	7.00	ug/L			06/01/24 03:02	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			06/01/24 03:02	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			06/01/24 03:02	1
Styrene	<0.370		1.00	0.370	ug/L			06/01/24 03:02	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			06/01/24 03:02	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			06/01/24 03:02	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			06/01/24 03:02	1
Toluene	<0.430		1.00	0.430	ug/L			06/01/24 03:02	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			06/01/24 03:02	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			06/01/24 03:02	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			06/01/24 03:02	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			06/01/24 03:02	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			06/01/24 03:02	1
Trichloroethene	<0.430		1.00	0.430	ug/L			06/01/24 03:02	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			06/01/24 03:02	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			06/01/24 03:02	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			06/01/24 03:02	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			06/01/24 03:02	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			06/01/24 03:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*111*		*80 - 120*		*06/01/24 03:02*	*1*

Client Sample Results

Client Sample ID: MW-51

Lab Sample ID: 310-282195-1

Date Collected: 05/28/24 06:02
Matrix: Water
Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*103*		*73 - 130*		*06/01/24 03:02*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/01/24 03:02*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/30/24 09:00	05/31/24 18:13	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		05/30/24 09:00	05/31/24 18:13	1
Barium	**0.00555**		0.00200	0.000660	mg/L		05/30/24 09:00	05/31/24 18:13	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/30/24 09:00	05/31/24 18:13	1
Cadmium	<0.000400		0.000800	0.000400	mg/L		05/30/24 09:00	06/03/24 23:45	4
Chromium	<0.00120		0.00500	0.00120	mg/L		05/30/24 09:00	05/31/24 18:13	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		05/30/24 09:00	05/31/24 18:13	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/30/24 09:00	05/31/24 18:13	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/30/24 09:00	05/31/24 18:13	1
Nickel	**0.00246**	**J**	0.00500	0.00210	mg/L		05/30/24 09:00	05/31/24 18:13	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/30/24 09:00	05/31/24 18:13	1
Silver	<0.00200		0.00400	0.00200	mg/L		05/30/24 09:00	06/12/24 17:22	4
Thallium	<0.000570		0.00100	0.000570	mg/L		05/30/24 09:00	05/31/24 18:13	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/30/24 09:00	05/31/24 18:13	1
Zinc	**0.101**		0.0200	0.00970	mg/L		05/30/24 09:00	05/31/24 18:13	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		06/03/24 07:31	06/03/24 09:32	1
Total Suspended Solids (USGS I-3765-85)	**1.63**	**J**	1.88	1.39	mg/L			05/30/24 10:29	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: PZ-12

Date Collected: 05/28/24 08:42
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-2
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**26.3**		10.0	3.10	ug/L			06/01/24 03:24	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			06/01/24 03:24	1
Benzene	<0.220		0.500	0.220	ug/L			06/01/24 03:24	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			06/01/24 03:24	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			06/01/24 03:24	1
Bromoform	<0.780		5.00	0.780	ug/L			06/01/24 03:24	1
Bromomethane	<1.10		4.00	1.10	ug/L			06/01/24 03:24	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			06/01/24 03:24	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			06/01/24 03:24	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			06/01/24 03:24	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			06/01/24 03:24	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			06/01/24 03:24	1
Chloroethane	<0.790		4.00	0.790	ug/L			06/01/24 03:24	1
Chloroform	<1.30		3.00	1.30	ug/L			06/01/24 03:24	1
Chloromethane	<0.610		3.00	0.610	ug/L			06/01/24 03:24	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			06/01/24 03:24	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			06/01/24 03:24	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			06/01/24 03:24	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			06/01/24 03:24	1
Dibromomethane	<0.330		1.00	0.330	ug/L			06/01/24 03:24	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			06/01/24 03:24	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			06/01/24 03:24	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			06/01/24 03:24	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			06/01/24 03:24	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			06/01/24 03:24	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			06/01/24 03:24	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			06/01/24 03:24	1
2-Hexanone	<2.00		10.0	2.00	ug/L			06/01/24 03:24	1
Iodomethane	<7.00		10.0	7.00	ug/L			06/01/24 03:24	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			06/01/24 03:24	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			06/01/24 03:24	1
Styrene	<0.370		1.00	0.370	ug/L			06/01/24 03:24	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			06/01/24 03:24	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			06/01/24 03:24	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			06/01/24 03:24	1
Toluene	<0.430		1.00	0.430	ug/L			06/01/24 03:24	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			06/01/24 03:24	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			06/01/24 03:24	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			06/01/24 03:24	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			06/01/24 03:24	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			06/01/24 03:24	1
Trichloroethene	<0.430		1.00	0.430	ug/L			06/01/24 03:24	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			06/01/24 03:24	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			06/01/24 03:24	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			06/01/24 03:24	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			06/01/24 03:24	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			06/01/24 03:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*06/01/24 03:24*	*1*

Client Sample ID: PZ-12

Lab Sample ID: 310-282195-2

Date Collected: 05/28/24 08:42
Matrix: Water
Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*105*		*73 - 130*		*06/01/24 03:24*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/01/24 03:24*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/30/24 09:00	05/31/24 18:17	1
Arsenic	**0.00202**		0.00200	0.000530	mg/L		05/30/24 09:00	05/31/24 18:17	1
Barium	**0.0176**		0.00200	0.000660	mg/L		05/30/24 09:00	05/31/24 18:17	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/30/24 09:00	05/31/24 18:17	1
Cadmium	**0.000176**	**J**	0.000200	0.000100	mg/L		05/30/24 09:00	06/03/24 23:52	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/30/24 09:00	05/31/24 18:17	1
Cobalt	**0.0131**		0.000500	0.000170	mg/L		05/30/24 09:00	05/31/24 18:17	1
Copper	**0.00227**	**J**	0.00500	0.00180	mg/L		05/30/24 09:00	05/31/24 18:17	1
Lead	**0.000734**		0.000500	0.000260	mg/L		05/30/24 09:00	05/31/24 18:17	1
Nickel	**0.0160**		0.00500	0.00210	mg/L		05/30/24 09:00	05/31/24 18:17	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/30/24 09:00	05/31/24 18:17	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/30/24 09:00	06/12/24 17:26	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/30/24 09:00	05/31/24 18:17	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/30/24 09:00	05/31/24 18:17	1
Zinc	**0.0592**		0.0200	0.00970	mg/L		05/30/24 09:00	05/31/24 18:17	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		06/03/24 07:31	06/03/24 09:32	1
Total Suspended Solids (USGS I-3765-85)	**75.0**		15.0	11.1	mg/L			05/30/24 10:29	1

Client Sample Results

Client Sample ID: MW-27
Date Collected: 05/28/24 10:36
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-3
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			06/01/24 03:45	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			06/01/24 03:45	1
Benzene	**0.856**		0.500	0.220	ug/L			06/01/24 03:45	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			06/01/24 03:45	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			06/01/24 03:45	1
Bromoform	<0.780		5.00	0.780	ug/L			06/01/24 03:45	1
Bromomethane	<1.10		4.00	1.10	ug/L			06/01/24 03:45	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			06/01/24 03:45	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			06/01/24 03:45	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			06/01/24 03:45	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			06/01/24 03:45	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			06/01/24 03:45	1
Chloroethane	<0.790		4.00	0.790	ug/L			06/01/24 03:45	1
Chloroform	<1.30		3.00	1.30	ug/L			06/01/24 03:45	1
Chloromethane	<0.610		3.00	0.610	ug/L			06/01/24 03:45	1
cis-1,2-Dichloroethene	**2.24**		1.00	0.210	ug/L			06/01/24 03:45	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			06/01/24 03:45	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			06/01/24 03:45	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			06/01/24 03:45	1
Dibromomethane	<0.330		1.00	0.330	ug/L			06/01/24 03:45	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			06/01/24 03:45	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			06/01/24 03:45	1
1,1-Dichloroethane	**0.241**	**J**	1.00	0.220	ug/L			06/01/24 03:45	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			06/01/24 03:45	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			06/01/24 03:45	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			06/01/24 03:45	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			06/01/24 03:45	1
2-Hexanone	<2.00		10.0	2.00	ug/L			06/01/24 03:45	1
Iodomethane	<7.00		10.0	7.00	ug/L			06/01/24 03:45	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			06/01/24 03:45	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			06/01/24 03:45	1
Styrene	<0.370		1.00	0.370	ug/L			06/01/24 03:45	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			06/01/24 03:45	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			06/01/24 03:45	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			06/01/24 03:45	1
Toluene	<0.430		1.00	0.430	ug/L			06/01/24 03:45	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			06/01/24 03:45	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			06/01/24 03:45	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			06/01/24 03:45	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			06/01/24 03:45	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			06/01/24 03:45	1
Trichloroethene	<0.430		1.00	0.430	ug/L			06/01/24 03:45	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			06/01/24 03:45	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			06/01/24 03:45	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			06/01/24 03:45	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			06/01/24 03:45	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			06/01/24 03:45	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*108*		*80 - 120*		*06/01/24 03:45*	*1*

Client Sample ID: MW-27

Lab Sample ID: 310-282195-3

Date Collected: 05/28/24 10:36

Matrix: Water

Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*06/01/24 03:45*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*06/01/24 03:45*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Phenylenediamine	<1.86	*-	9.80	1.86	ug/L		05/29/24 13:18	06/04/24 14:33	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*97*		*45 - 129*	*05/29/24 13:18*	*06/03/24 12:46*	*1*
2-Fluorobiphenyl (Surr)	*78*		*39 - 118*	*05/29/24 13:18*	*06/03/24 12:46*	*1*
Terphenyl-d14 (Surr)	*85*		*12 - 144*	*05/29/24 13:18*	*06/03/24 12:46*	*1*

Method: SW846 8081B - Organochlorine Pesticides (GC)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0349		0.0604	0.0349	ug/L		05/31/24 13:32	06/07/24 20:47	1
delta-BHC	<0.0255		0.0604	0.0255	ug/L		05/31/24 13:32	06/07/24 20:47	1
Dieldrin	<0.0245		0.0604	0.0245	ug/L		05/31/24 13:32	06/07/24 20:47	1
Endosulfan sulfate	<0.0283		0.0604	0.0283	ug/L		05/31/24 13:32	06/07/24 20:47	1
Endrin	<0.0245		0.0604	0.0245	ug/L		05/31/24 13:32	06/07/24 20:47	1
Endrin aldehyde	<0.0274		0.0604	0.0274	ug/L		05/31/24 13:32	06/07/24 20:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*62*		*10 - 136*	*05/31/24 13:32*	*06/07/24 20:47*	*1*
Tetrachloro-m-xylene (Surr)	*76*		*10 - 130*	*05/31/24 13:32*	*06/07/24 20:47*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/30/24 09:00	05/31/24 18:19	1
Arsenic	**0.00184**	**J**	0.00200	0.000530	mg/L		05/30/24 09:00	05/31/24 18:19	1
Barium	**0.0903**		0.00200	0.000660	mg/L		05/30/24 09:00	05/31/24 18:19	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/30/24 09:00	05/31/24 18:19	1
Cadmium	**0.000326**		0.000200	0.000100	mg/L		05/30/24 09:00	06/03/24 23:56	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/30/24 09:00	05/31/24 18:19	1
Cobalt	**0.00821**		0.000500	0.000170	mg/L		05/30/24 09:00	05/31/24 18:19	1
Copper	**0.00195**	**J**	0.00500	0.00180	mg/L		05/30/24 09:00	05/31/24 18:19	1
Lead	**0.000604**		0.000500	0.000260	mg/L		05/30/24 09:00	05/31/24 18:19	1
Nickel	**0.0184**		0.00500	0.00210	mg/L		05/30/24 09:00	05/31/24 18:19	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/30/24 09:00	05/31/24 18:19	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/30/24 09:00	06/12/24 17:28	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/30/24 09:00	05/31/24 18:19	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/30/24 09:00	05/31/24 18:19	1
Zinc	**0.0880**		0.0200	0.00970	mg/L		05/30/24 09:00	05/31/24 18:19	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide (SW846 9034)	<1.41		3.00	1.41	mg/L		06/03/24 07:31	06/03/24 09:32	1
Total Suspended Solids (USGS I-3765-85)	**65.5**		7.50	5.55	mg/L			05/30/24 10:29	1

Client Sample Results

Client: Hall Engineering Company

Job ID: 310-282195-1

Project/Site: Appanoose County Landfill

Client Sample ID: MW-50R

Lab Sample ID: 310-282195-4

Date Collected: 05/28/24 11:41

Matrix: Water

Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	**7.07**	**J**	10.0	3.10	ug/L			06/01/24 05:12	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			06/01/24 05:12	1
Benzene	<0.220		0.500	0.220	ug/L			06/01/24 05:12	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			06/01/24 05:12	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			06/01/24 05:12	1
Bromoform	<0.780		5.00	0.780	ug/L			06/01/24 05:12	1
Bromomethane	<1.10		4.00	1.10	ug/L			06/01/24 05:12	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			06/01/24 05:12	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			06/01/24 05:12	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			06/01/24 05:12	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			06/01/24 05:12	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			06/01/24 05:12	1
Chloroethane	<0.790		4.00	0.790	ug/L			06/01/24 05:12	1
Chloroform	<1.30		3.00	1.30	ug/L			06/01/24 05:12	1
Chloromethane	<0.610		3.00	0.610	ug/L			06/01/24 05:12	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			06/01/24 05:12	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			06/01/24 05:12	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			06/01/24 05:12	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			06/01/24 05:12	1
Dibromomethane	<0.330		1.00	0.330	ug/L			06/01/24 05:12	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			06/01/24 05:12	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			06/01/24 05:12	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			06/01/24 05:12	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			06/01/24 05:12	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			06/01/24 05:12	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			06/01/24 05:12	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			06/01/24 05:12	1
2-Hexanone	<2.00		10.0	2.00	ug/L			06/01/24 05:12	1
Iodomethane	<7.00		10.0	7.00	ug/L			06/01/24 05:12	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			06/01/24 05:12	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			06/01/24 05:12	1
Styrene	<0.370		1.00	0.370	ug/L			06/01/24 05:12	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			06/01/24 05:12	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			06/01/24 05:12	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			06/01/24 05:12	1
Toluene	<0.430		1.00	0.430	ug/L			06/01/24 05:12	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			06/01/24 05:12	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			06/01/24 05:12	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			06/01/24 05:12	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			06/01/24 05:12	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			06/01/24 05:12	1
Trichloroethene	<0.430		1.00	0.430	ug/L			06/01/24 05:12	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			06/01/24 05:12	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			06/01/24 05:12	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			06/01/24 05:12	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			06/01/24 05:12	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			06/01/24 05:12	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*80 - 120*		*06/01/24 05:12*	*1*

Client Sample ID: MW-50R

Lab Sample ID: 310-282195-4

Date Collected: 05/28/24 11:41

Matrix: Water

Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*73 - 130*		*06/01/24 05:12*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*06/01/24 05:12*	*1*

Method: SW846 8270E - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Phenylenediamine	<1.90	*-	10.0	1.90	ug/L		05/29/24 13:18	06/04/24 14:58	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*42*	*S1-*	*45 - 129*	*05/29/24 13:18*	*06/03/24 13:12*	*1*
2-Fluorobiphenyl (Surr)	*35*	*S1-*	*39 - 118*	*05/29/24 13:18*	*06/03/24 13:12*	*1*
Terphenyl-d14 (Surr)	*42*		*12 - 144*	*05/29/24 13:18*	*06/03/24 13:12*	*1*

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	**0.00112**	**J**	0.00200	0.00100	mg/L		05/30/24 09:00	05/31/24 18:30	1
Arsenic	**0.00195**	**J**	0.00200	0.000530	mg/L		05/30/24 09:00	05/31/24 18:30	1
Barium	**0.0635**		0.00200	0.000660	mg/L		05/30/24 09:00	05/31/24 18:30	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/30/24 09:00	05/31/24 18:30	1
Cadmium	**0.000328**		0.000200	0.000100	mg/L		05/30/24 09:00	06/03/24 23:59	1
Chromium	**0.00132**	**J**	0.00500	0.00120	mg/L		05/30/24 09:00	05/31/24 18:30	1
Cobalt	**0.00221**		0.000500	0.000170	mg/L		05/30/24 09:00	05/31/24 18:30	1
Copper	**0.00359**	**J**	0.00500	0.00180	mg/L		05/30/24 09:00	05/31/24 18:30	1
Lead	**0.00585**		0.000500	0.000260	mg/L		05/30/24 09:00	05/31/24 18:30	1
Nickel	<0.00210		0.00500	0.00210	mg/L		05/30/24 09:00	05/31/24 18:30	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/30/24 09:00	05/31/24 18:30	1
Silver	<0.000500		0.00100	0.000500	mg/L		05/30/24 09:00	06/12/24 17:30	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/30/24 09:00	05/31/24 18:30	1
Vanadium	**0.00208**	**J**	0.00500	0.00110	mg/L		05/30/24 09:00	05/31/24 18:30	1
Zinc	**0.0542**		0.0200	0.00970	mg/L		05/30/24 09:00	06/03/24 23:59	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (USGS I-3765-85)	**241**		15.0	11.1	mg/L			05/30/24 10:29	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: Trip Blank

Date Collected: 05/28/24 00:00
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-5
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			05/31/24 23:02	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			05/31/24 23:02	1
Benzene	<0.220		0.500	0.220	ug/L			05/31/24 23:02	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			05/31/24 23:02	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			05/31/24 23:02	1
Bromoform	<0.780		5.00	0.780	ug/L			05/31/24 23:02	1
Bromomethane	<1.10		4.00	1.10	ug/L			05/31/24 23:02	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			05/31/24 23:02	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			05/31/24 23:02	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			05/31/24 23:02	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			05/31/24 23:02	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			05/31/24 23:02	1
Chloroethane	<0.790		4.00	0.790	ug/L			05/31/24 23:02	1
Chloroform	<1.30		3.00	1.30	ug/L			05/31/24 23:02	1
Chloromethane	<0.610		3.00	0.610	ug/L			05/31/24 23:02	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			05/31/24 23:02	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			05/31/24 23:02	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			05/31/24 23:02	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			05/31/24 23:02	1
Dibromomethane	<0.330		1.00	0.330	ug/L			05/31/24 23:02	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			05/31/24 23:02	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			05/31/24 23:02	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			05/31/24 23:02	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			05/31/24 23:02	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			05/31/24 23:02	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			05/31/24 23:02	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			05/31/24 23:02	1
2-Hexanone	<2.00		10.0	2.00	ug/L			05/31/24 23:02	1
Iodomethane	<7.00		10.0	7.00	ug/L			05/31/24 23:02	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			05/31/24 23:02	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			05/31/24 23:02	1
Styrene	<0.370		1.00	0.370	ug/L			05/31/24 23:02	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			05/31/24 23:02	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			05/31/24 23:02	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			05/31/24 23:02	1
Toluene	<0.430		1.00	0.430	ug/L			05/31/24 23:02	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			05/31/24 23:02	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			05/31/24 23:02	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			05/31/24 23:02	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			05/31/24 23:02	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			05/31/24 23:02	1
Trichloroethene	<0.430		1.00	0.430	ug/L			05/31/24 23:02	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			05/31/24 23:02	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			05/31/24 23:02	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			05/31/24 23:02	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			05/31/24 23:02	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			05/31/24 23:02	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*		*05/31/24 23:02*	*1*

Client Sample ID: Trip Blank
Lab Sample ID: 310-282195-5
Date Collected: 05/28/24 00:00
Matrix: Water
Date Received: 05/29/24 08:50

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	103		73 - 130		05/31/24 23:02	1
Toluene-d8 (Surr)	99		80 - 120		05/31/24 23:02	1

Client Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: Field Blank
Date Collected: 05/28/24 10:30
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			05/31/24 23:24	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			05/31/24 23:24	1
Benzene	<0.220		0.500	0.220	ug/L			05/31/24 23:24	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			05/31/24 23:24	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			05/31/24 23:24	1
Bromoform	<0.780		5.00	0.780	ug/L			05/31/24 23:24	1
Bromomethane	<1.10		4.00	1.10	ug/L			05/31/24 23:24	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			05/31/24 23:24	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			05/31/24 23:24	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			05/31/24 23:24	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			05/31/24 23:24	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			05/31/24 23:24	1
Chloroethane	<0.790		4.00	0.790	ug/L			05/31/24 23:24	1
Chloroform	<1.30		3.00	1.30	ug/L			05/31/24 23:24	1
Chloromethane	<0.610		3.00	0.610	ug/L			05/31/24 23:24	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			05/31/24 23:24	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			05/31/24 23:24	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			05/31/24 23:24	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			05/31/24 23:24	1
Dibromomethane	<0.330		1.00	0.330	ug/L			05/31/24 23:24	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			05/31/24 23:24	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			05/31/24 23:24	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			05/31/24 23:24	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			05/31/24 23:24	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			05/31/24 23:24	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			05/31/24 23:24	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			05/31/24 23:24	1
2-Hexanone	<2.00		10.0	2.00	ug/L			05/31/24 23:24	1
Iodomethane	<7.00		10.0	7.00	ug/L			05/31/24 23:24	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			05/31/24 23:24	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			05/31/24 23:24	1
Styrene	<0.370		1.00	0.370	ug/L			05/31/24 23:24	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			05/31/24 23:24	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			05/31/24 23:24	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			05/31/24 23:24	1
Toluene	**0.438**	**J**	1.00	0.430	ug/L			05/31/24 23:24	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			05/31/24 23:24	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			05/31/24 23:24	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			05/31/24 23:24	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			05/31/24 23:24	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			05/31/24 23:24	1
Trichloroethene	<0.430		1.00	0.430	ug/L			05/31/24 23:24	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			05/31/24 23:24	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			05/31/24 23:24	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			05/31/24 23:24	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			05/31/24 23:24	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			05/31/24 23:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*		*05/31/24 23:24*	*1*

Client Sample ID: Field Blank
Date Collected: 05/28/24 10:30
Date Received: 05/29/24 08:50

Lab Sample ID: 310-282195-6
Matrix: Water

Method: SW846 8260D - Volatile Organic Compounds by GC/MS (Continued)

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*104*		*73 - 130*		*05/31/24 23:24*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*05/31/24 23:24*	*1*

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

GC/MS Semi VOA

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
S1-	Surrogate recovery exceeds control limits, low biased.

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

General Chemistry

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Surrogate Summary

Method: 8260D - Volatile Organic Compounds by GC/MS

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	**Client Sample ID**	**BFB (80-120)**	**DBFM (73-130)**	**TOL (80-120)**
310-282195-1	MW-51	111	103	96
310-282195-2	PZ-12	104	105	97
310-282195-3	MW-27	108	104	97
310-282195-4	MW-50R	105	102	96
310-282195-5	Trip Blank	106	103	99
310-282195-6	Field Blank	104	104	99
LCS 310-423206/6	Lab Control Sample	100	95	104
LCS 310-423206/7	Lab Control Sample	106	100	98
MB 310-423206/5	Method Blank	107	99	100

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
DBFM = Dibromofluoromethane (Surr)
TOL = Toluene-d8 (Surr)

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	**Client Sample ID**	**NBZ (45-129)**	**FBP (39-118)**	**TPHL (12-144)**
310-282195-3	MW-27	97	78	85
310-282195-4	MW-50R	42 S1-	35 S1-	42
LCS 310-423001/2-A	Lab Control Sample	60	55	65
LCSD 310-423001/3-A	Lab Control Sample Dup	84	76	90
MB 310-423001/1-A	Method Blank	84	72	83

Surrogate Legend

NBZ = Nitrobenzene-d5 (Surr)
FBP = 2-Fluorobiphenyl (Surr)
TPHL = Terphenyl-d14 (Surr)

Method: 8081B - Organochlorine Pesticides (GC)

Matrix: Water **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	**Client Sample ID**	**DCB1 (10-136)**	**TCX1 (10-130)**
310-282195-3	MW-27	62	76
LCS 310-423264/2-A	Lab Control Sample	76	69
LCSD 310-423264/3-A	Lab Control Sample Dup	79	72
MB 310-423264/1-A	Method Blank	72	61

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Method: 8260D - Volatile Organic Compounds by GC/MS

Lab Sample ID: MB 310-423206/5
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423206

	MB	MB							
Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Acetone	<3.10		10.0	3.10	ug/L			05/31/24 21:35	1
Acrylonitrile	<2.20		5.00	2.20	ug/L			05/31/24 21:35	1
Benzene	<0.220		0.500	0.220	ug/L			05/31/24 21:35	1
Bromochloromethane	<0.540		5.00	0.540	ug/L			05/31/24 21:35	1
Bromodichloromethane	<0.390		1.00	0.390	ug/L			05/31/24 21:35	1
Bromoform	<0.780		5.00	0.780	ug/L			05/31/24 21:35	1
Bromomethane	<1.10		4.00	1.10	ug/L			05/31/24 21:35	1
2-Butanone (MEK)	<2.10		10.0	2.10	ug/L			05/31/24 21:35	1
Carbon disulfide	<0.450		1.00	0.450	ug/L			05/31/24 21:35	1
Carbon tetrachloride	<0.650		2.00	0.650	ug/L			05/31/24 21:35	1
Chlorobenzene	<0.400		1.00	0.400	ug/L			05/31/24 21:35	1
Chlorodibromomethane	<0.750		5.00	0.750	ug/L			05/31/24 21:35	1
Chloroethane	<0.790		4.00	0.790	ug/L			05/31/24 21:35	1
Chloroform	<1.30		3.00	1.30	ug/L			05/31/24 21:35	1
Chloromethane	<0.610		3.00	0.610	ug/L			05/31/24 21:35	1
cis-1,2-Dichloroethene	<0.210		1.00	0.210	ug/L			05/31/24 21:35	1
cis-1,3-Dichloropropene	<0.250		5.00	0.250	ug/L			05/31/24 21:35	1
1,2-Dibromo-3-Chloropropane	<1.20		5.00	1.20	ug/L			05/31/24 21:35	1
1,2-Dibromoethane (EDB)	<0.340		1.00	0.340	ug/L			05/31/24 21:35	1
Dibromomethane	<0.330		1.00	0.330	ug/L			05/31/24 21:35	1
1,2-Dichlorobenzene	<0.370		1.00	0.370	ug/L			05/31/24 21:35	1
1,4-Dichlorobenzene	<0.230		1.00	0.230	ug/L			05/31/24 21:35	1
1,1-Dichloroethane	<0.220		1.00	0.220	ug/L			05/31/24 21:35	1
1,2-Dichloroethane	<0.390		1.00	0.390	ug/L			05/31/24 21:35	1
1,1-Dichloroethene	<0.560		2.00	0.560	ug/L			05/31/24 21:35	1
1,2-Dichloropropane	<0.270		1.00	0.270	ug/L			05/31/24 21:35	1
Ethylbenzene	<0.310		1.00	0.310	ug/L			05/31/24 21:35	1
2-Hexanone	<2.00		10.0	2.00	ug/L			05/31/24 21:35	1
Iodomethane	<7.00		10.0	7.00	ug/L			05/31/24 21:35	1
Methylene Chloride	<1.70		5.00	1.70	ug/L			05/31/24 21:35	1
4-Methyl-2-pentanone (MIBK)	<2.10		10.0	2.10	ug/L			05/31/24 21:35	1
Styrene	<0.370		1.00	0.370	ug/L			05/31/24 21:35	1
1,1,1,2-Tetrachloroethane	<0.380		1.00	0.380	ug/L			05/31/24 21:35	1
1,1,2,2-Tetrachloroethane	<0.470		1.00	0.470	ug/L			05/31/24 21:35	1
Tetrachloroethene	<0.480		1.00	0.480	ug/L			05/31/24 21:35	1
Toluene	<0.430		1.00	0.430	ug/L			05/31/24 21:35	1
trans-1,4-Dichloro-2-butene	<1.10		10.0	1.10	ug/L			05/31/24 21:35	1
trans-1,2-Dichloroethene	<0.270		1.00	0.270	ug/L			05/31/24 21:35	1
trans-1,3-Dichloropropene	<0.560		5.00	0.560	ug/L			05/31/24 21:35	1
1,1,1-Trichloroethane	<0.190		1.00	0.190	ug/L			05/31/24 21:35	1
1,1,2-Trichloroethane	<0.450		1.00	0.450	ug/L			05/31/24 21:35	1
Trichloroethene	<0.430		1.00	0.430	ug/L			05/31/24 21:35	1
Trichlorofluoromethane	<0.380		4.00	0.380	ug/L			05/31/24 21:35	1
1,2,3-Trichloropropane	<0.590		1.00	0.590	ug/L			05/31/24 21:35	1
Vinyl acetate	<2.50		10.0	2.50	ug/L			05/31/24 21:35	1
Vinyl chloride	<0.180		1.00	0.180	ug/L			05/31/24 21:35	1
Xylenes, Total	<0.400		3.00	0.400	ug/L			05/31/24 21:35	1

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: MB 310-423206/5
Matrix: Water
Analysis Batch: 423206

Client Sample ID: Method Blank
Prep Type: Total/NA

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*107*		*80 - 120*		*05/31/24 21:35*	*1*
Dibromofluoromethane (Surr)	*99*		*73 - 130*		*05/31/24 21:35*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*05/31/24 21:35*	*1*

Lab Sample ID: LCS 310-423206/6
Matrix: Water
Analysis Batch: 423206

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acetone	40.0	37.31		ug/L		93	50 - 150
Acrylonitrile	200	189.9		ug/L		95	50 - 150
Benzene	20.0	19.18		ug/L		96	72 - 124
Bromochloromethane	20.0	18.26		ug/L		91	73 - 130
Bromodichloromethane	20.0	18.13		ug/L		91	74 - 122
Bromoform	20.0	17.03		ug/L		85	61 - 122
2-Butanone (MEK)	40.0	40.21		ug/L		101	50 - 150
Carbon disulfide	20.0	18.32		ug/L		92	59 - 135
Carbon tetrachloride	20.0	18.76		ug/L		94	67 - 132
Chlorobenzene	20.0	19.05		ug/L		95	76 - 120
Chlorodibromomethane	20.0	17.83		ug/L		89	71 - 121
Chloroform	20.0	18.14		ug/L		91	72 - 125
cis-1,2-Dichloroethene	20.0	18.78		ug/L		94	74 - 123
cis-1,3-Dichloropropene	20.0	19.11		ug/L		96	71 - 125
1,2-Dibromo-3-Chloropropane	20.0	18.65		ug/L		93	50 - 150
1,2-Dibromoethane (EDB)	20.0	18.26		ug/L		91	75 - 125
Dibromomethane	20.0	18.30		ug/L		92	74 - 125
1,2-Dichlorobenzene	20.0	18.77		ug/L		94	74 - 120
1,4-Dichlorobenzene	20.0	18.08		ug/L		90	72 - 120
1,1-Dichloroethane	20.0	18.84		ug/L		94	70 - 127
1,2-Dichloroethane	20.0	17.88		ug/L		89	71 - 125
1,1-Dichloroethene	20.0	18.29		ug/L		91	63 - 132
1,2-Dichloropropane	20.0	19.24		ug/L		96	73 - 124
Ethylbenzene	20.0	19.85		ug/L		99	74 - 122
2-Hexanone	40.0	37.50		ug/L		94	60 - 140
Iodomethane	20.0	10.83		ug/L		54	10 - 150
Methylene Chloride	20.0	20.64		ug/L		103	50 - 150
4-Methyl-2-pentanone (MIBK)	40.0	36.96		ug/L		92	60 - 139
Styrene	20.0	19.13		ug/L		96	74 - 121
1,1,1,2-Tetrachloroethane	20.0	18.86		ug/L		94	71 - 120
1,1,2,2-Tetrachloroethane	20.0	19.01		ug/L		95	68 - 124
Tetrachloroethene	20.0	18.79		ug/L		94	71 - 130
Toluene	20.0	18.73		ug/L		94	74 - 123
trans-1,4-Dichloro-2-butene	20.0	16.82		ug/L		84	50 - 150
trans-1,2-Dichloroethene	20.0	18.25		ug/L		91	70 - 126
trans-1,3-Dichloropropene	20.0	17.24		ug/L		86	69 - 123
1,1,1-Trichloroethane	20.0	18.01		ug/L		90	73 - 129
1,1,2-Trichloroethane	20.0	19.52		ug/L		98	73 - 123
Trichloroethene	20.0	18.70		ug/L		94	72 - 126

Method: 8260D - Volatile Organic Compounds by GC/MS (Continued)

Lab Sample ID: LCS 310-423206/6
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423206

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,2,3-Trichloropropane	20.0	17.95		ug/L		90	65 - 127
Vinyl acetate	40.0	34.52		ug/L		86	50 - 150
Xylenes, Total	40.0	39.48		ug/L		99	73 - 123

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*95*		*73 - 130*
Toluene-d8 (Surr)	*104*		*80 - 120*

Lab Sample ID: LCS 310-423206/7
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423206

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Bromomethane	20.0	16.10		ug/L		80	23 - 150
Chloroethane	20.0	19.41		ug/L		97	54 - 136
Chloromethane	20.0	19.95		ug/L		100	38 - 150
Trichlorofluoromethane	20.0	18.69		ug/L		93	54 - 149
Vinyl chloride	20.0	20.30		ug/L		102	56 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*106*		*80 - 120*
Dibromofluoromethane (Surr)	*100*		*73 - 130*
Toluene-d8 (Surr)	*98*		*80 - 120*

Method: 8270E - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 310-423001/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423326
Prep Batch: 423001

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Nitrobenzene-d5 (Surr)	*84*		*45 - 129*	*05/29/24 13:18*	*06/03/24 11:01*	*1*
2-Fluorobiphenyl (Surr)	*72*		*39 - 118*	*05/29/24 13:18*	*06/03/24 11:01*	*1*
Terphenyl-d14 (Surr)	*83*		*12 - 144*	*05/29/24 13:18*	*06/03/24 11:01*	*1*

Lab Sample ID: MB 310-423001/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423476
Prep Batch: 423001

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Phenylenediamine	<1.90		10.0	1.90	ug/L		05/29/24 13:18	06/04/24 13:18	1

QC Sample Results

Method: 8270E - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 310-423001/2-A
Matrix: Water
Analysis Batch: 423326

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423001

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*60*		*45 - 129*
2-Fluorobiphenyl (Surr)	*55*		*39 - 118*
Terphenyl-d14 (Surr)	*65*		*12 - 144*

Lab Sample ID: LCS 310-423001/2-A
Matrix: Water
Analysis Batch: 423476

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423001

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
1,4-Phenylenediamine	64.0	<1.90	*-	ug/L		-0.9	20 - 120

Lab Sample ID: LCSD 310-423001/3-A
Matrix: Water
Analysis Batch: 423326

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 423001

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
Nitrobenzene-d5 (Surr)	*84*		*45 - 129*
2-Fluorobiphenyl (Surr)	*76*		*39 - 118*
Terphenyl-d14 (Surr)	*90*		*12 - 144*

Lab Sample ID: LCSD 310-423001/3-A
Matrix: Water
Analysis Batch: 423476

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 423001

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Phenylenediamine	64.0	<1.90	*-	ug/L		-0.8	20 - 120	12	35

Method: 8081B - Organochlorine Pesticides (GC)

Lab Sample ID: MB 310-423264/1-A
Matrix: Water
Analysis Batch: 423815

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 423264

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
beta-BHC	<0.0370		0.0640	0.0370	ug/L		05/31/24 13:32	06/07/24 18:54	1
delta-BHC	<0.0270		0.0640	0.0270	ug/L		05/31/24 13:32	06/07/24 18:54	1
Dieldrin	<0.0260		0.0640	0.0260	ug/L		05/31/24 13:32	06/07/24 18:54	1
Endosulfan sulfate	<0.0300		0.0640	0.0300	ug/L		05/31/24 13:32	06/07/24 18:54	1
Endrin	<0.0260		0.0640	0.0260	ug/L		05/31/24 13:32	06/07/24 18:54	1
Endrin aldehyde	<0.0290		0.0640	0.0290	ug/L		05/31/24 13:32	06/07/24 18:54	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*72*		*10 - 136*	*05/31/24 13:32*	*06/07/24 18:54*	*1*
Tetrachloro-m-xylene (Surr)	*61*		*10 - 130*	*05/31/24 13:32*	*06/07/24 18:54*	*1*

QC Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Method: 8081B - Organochlorine Pesticides (GC) (Continued)

Lab Sample ID: LCS 310-423264/2-A
Matrix: Water
Analysis Batch: 423815

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 423264

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
beta-BHC	1.00	0.8163		ug/L		82	37 - 136
delta-BHC	1.00	0.8134		ug/L		81	33 - 134
Dieldrin	1.00	0.8729		ug/L		87	39 - 130
Endosulfan sulfate	1.00	0.9194		ug/L		92	36 - 147
Endrin	1.00	0.8637		ug/L		86	39 - 140
Endrin aldehyde	1.00	0.7366		ug/L		74	32 - 137

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*76*		*10 - 136*
Tetrachloro-m-xylene (Surr)	*69*		*10 - 130*

Lab Sample ID: LCSD 310-423264/3-A
Matrix: Water
Analysis Batch: 423815

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 423264

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
beta-BHC	1.00	0.8568		ug/L		86	37 - 136	5	35
delta-BHC	1.00	0.8494		ug/L		85	33 - 134	4	35
Dieldrin	1.00	0.9062		ug/L		91	39 - 130	4	35
Endosulfan sulfate	1.00	0.9393		ug/L		94	36 - 147	2	35
Endrin	1.00	0.8738		ug/L		87	39 - 140	1	35
Endrin aldehyde	1.00	0.7737		ug/L		77	32 - 137	5	35

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*79*		*10 - 136*
Tetrachloro-m-xylene (Surr)	*72*		*10 - 130*

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 310-422997/1-A
Matrix: Water
Analysis Batch: 423331

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422997

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Antimony	<0.00100		0.00200	0.00100	mg/L		05/30/24 09:00	05/31/24 17:28	1
Arsenic	<0.000530		0.00200	0.000530	mg/L		05/30/24 09:00	05/31/24 17:28	1
Barium	<0.000660		0.00200	0.000660	mg/L		05/30/24 09:00	05/31/24 17:28	1
Beryllium	<0.000330		0.00100	0.000330	mg/L		05/30/24 09:00	05/31/24 17:28	1
Cadmium	<0.000100		0.000200	0.000100	mg/L		05/30/24 09:00	05/31/24 17:28	1
Chromium	<0.00120		0.00500	0.00120	mg/L		05/30/24 09:00	05/31/24 17:28	1
Cobalt	<0.000170		0.000500	0.000170	mg/L		05/30/24 09:00	05/31/24 17:28	1
Copper	<0.00180		0.00500	0.00180	mg/L		05/30/24 09:00	05/31/24 17:28	1
Lead	<0.000260		0.000500	0.000260	mg/L		05/30/24 09:00	05/31/24 17:28	1
Nickel	<0.00210		0.00500	0.00210	mg/L		05/30/24 09:00	05/31/24 17:28	1
Selenium	<0.00140		0.00500	0.00140	mg/L		05/30/24 09:00	05/31/24 17:28	1
Thallium	<0.000570		0.00100	0.000570	mg/L		05/30/24 09:00	05/31/24 17:28	1
Vanadium	<0.00110		0.00500	0.00110	mg/L		05/30/24 09:00	05/31/24 17:28	1
Zinc	<0.00970		0.0200	0.00970	mg/L		05/30/24 09:00	05/31/24 17:28	1

QC Sample Results

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: MB 310-422997/1-A
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 422997

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	<0.000500		0.00100	0.000500	mg/L		05/30/24 09:00	06/12/24 17:02	1

Lab Sample ID: LCS 310-422997/2-A
Matrix: Water
Analysis Batch: 423331

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422997

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony			0.200	0.2043		mg/L		102	80 - 120		
Arsenic			0.200	0.2142		mg/L		107	80 - 120		
Barium			0.100	0.1045		mg/L		104	80 - 120		
Beryllium			0.100	0.09595		mg/L		96	80 - 120		
Cadmium			0.100	0.1084		mg/L		108	80 - 120		
Chromium			0.100	0.1024		mg/L		102	80 - 120		
Cobalt			0.100	0.1041		mg/L		104	80 - 120		
Copper			0.200	0.2059		mg/L		103	80 - 120		
Lead			0.200	0.2116		mg/L		106	80 - 120		
Nickel			0.200	0.2083		mg/L		104	80 - 120		
Selenium			0.400	0.3954		mg/L		99	80 - 120		
Thallium			0.100	0.1109		mg/L		111	80 - 120		
Vanadium			0.100	0.1009		mg/L		101	80 - 120		
Zinc			0.200	0.1861		mg/L		93	80 - 120		

Lab Sample ID: LCS 310-422997/2-A
Matrix: Water
Analysis Batch: 424410

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 422997

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Silver			0.100	0.1087		mg/L		109	80 - 120		

Lab Sample ID: 310-282195-1 DU
Matrix: Water
Analysis Batch: 423331

Client Sample ID: MW-51
Prep Type: Total/NA
Prep Batch: 422997

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Antimony	<0.00100			<0.00100		mg/L				NC	20
Arsenic	<0.000530			<0.000530		mg/L				NC	20
Barium	0.00555			0.005605		mg/L				1	20
Beryllium	<0.000330			<0.000330		mg/L				NC	20
Chromium	<0.00120			<0.00120		mg/L				NC	20
Cobalt	<0.000170			0.002140		mg/L				NC	20
Copper	<0.00180			<0.00180		mg/L				NC	20
Lead	<0.000260			<0.000260		mg/L				NC	20
Nickel	0.00246	J		0.002825	J	mg/L				14	20
Selenium	<0.00140			<0.00140		mg/L				NC	20
Thallium	<0.000570			<0.000570		mg/L				NC	20
Vanadium	<0.00110			<0.00110		mg/L				NC	20
Zinc	0.101			0.1025		mg/L				2	20

Method: 6020B - Metals (ICP/MS) (Continued)

Lab Sample ID: 310-282195-1 DU
Client Sample ID: MW-51
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423437
Prep Batch: 422997

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cadmium	<0.000400			<0.000400		mg/L				NC	20

Lab Sample ID: 310-282195-1 DU
Client Sample ID: MW-51
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 424410
Prep Batch: 422997

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Silver	<0.00200			<0.00200		mg/L				NC	20

Method: 9034 - Sulfide, Acid soluble and Insoluble (Titrimetric)

Lab Sample ID: MB 240-615163/1-A
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 615202
Prep Batch: 615163

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	<1.41		3.00	1.41	mg/L		06/03/24 07:31	06/03/24 09:32	1

Lab Sample ID: LCS 240-615163/2-A
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 615202
Prep Batch: 615163

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Sulfide			8.80	8.667		mg/L		98	70 - 120		

Method: I-3765-85 - Residue, Non-filterable (TSS)

Lab Sample ID: MB 310-423107/1
Client Sample ID: Method Blank
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423107

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	<3.70		5.00	3.70	mg/L			05/30/24 10:29	1

Lab Sample ID: LCS 310-423107/2
Client Sample ID: Lab Control Sample
Matrix: Water
Prep Type: Total/NA
Analysis Batch: 423107

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Suspended Solids			100	107.0		mg/L		107	81 - 116		

QC Association Summary

GC/MS VOA

Analysis Batch: 423206

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	8260D	
310-282195-2	PZ-12	Total/NA	Water	8260D	
310-282195-3	MW-27	Total/NA	Water	8260D	
310-282195-4	MW-50R	Total/NA	Water	8260D	
310-282195-5	Trip Blank	Total/NA	Water	8260D	
310-282195-6	Field Blank	Total/NA	Water	8260D	
MB 310-423206/5	Method Blank	Total/NA	Water	8260D	
LCS 310-423206/6	Lab Control Sample	Total/NA	Water	8260D	
LCS 310-423206/7	Lab Control Sample	Total/NA	Water	8260D	

GC/MS Semi VOA

Prep Batch: 423001

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	3510C	
310-282195-4	MW-50R	Total/NA	Water	3510C	
MB 310-423001/1-A	Method Blank	Total/NA	Water	3510C	
LCS 310-423001/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 310-423001/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 423326

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	8270E	423001
310-282195-4	MW-50R	Total/NA	Water	8270E	423001
MB 310-423001/1-A	Method Blank	Total/NA	Water	8270E	423001
LCS 310-423001/2-A	Lab Control Sample	Total/NA	Water	8270E	423001
LCSD 310-423001/3-A	Lab Control Sample Dup	Total/NA	Water	8270E	423001

Analysis Batch: 423476

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	8270E	423001
310-282195-4	MW-50R	Total/NA	Water	8270E	423001
MB 310-423001/1-A	Method Blank	Total/NA	Water	8270E	423001
LCS 310-423001/2-A	Lab Control Sample	Total/NA	Water	8270E	423001
LCSD 310-423001/3-A	Lab Control Sample Dup	Total/NA	Water	8270E	423001

GC Semi VOA

Prep Batch: 423264

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	3510C	
MB 310-423264/1-A	Method Blank	Total/NA	Water	3510C	
LCS 310-423264/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 310-423264/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	

Analysis Batch: 423815

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	8081B	423264
MB 310-423264/1-A	Method Blank	Total/NA	Water	8081B	423264
LCS 310-423264/2-A	Lab Control Sample	Total/NA	Water	8081B	423264
LCSD 310-423264/3-A	Lab Control Sample Dup	Total/NA	Water	8081B	423264

QC Association Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Metals

Prep Batch: 422997

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	3005A	
310-282195-2	PZ-12	Total/NA	Water	3005A	
310-282195-3	MW-27	Total/NA	Water	3005A	
310-282195-4	MW-50R	Total/NA	Water	3005A	
MB 310-422997/1-A	Method Blank	Total/NA	Water	3005A	
LCS 310-422997/2-A	Lab Control Sample	Total/NA	Water	3005A	
310-282195-1 DU	MW-51	Total/NA	Water	3005A	

Analysis Batch: 423331

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	6020B	422997
310-282195-2	PZ-12	Total/NA	Water	6020B	422997
310-282195-3	MW-27	Total/NA	Water	6020B	422997
310-282195-4	MW-50R	Total/NA	Water	6020B	422997
MB 310-422997/1-A	Method Blank	Total/NA	Water	6020B	422997
LCS 310-422997/2-A	Lab Control Sample	Total/NA	Water	6020B	422997
310-282195-1 DU	MW-51	Total/NA	Water	6020B	422997

Analysis Batch: 423437

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	6020B	422997
310-282195-2	PZ-12	Total/NA	Water	6020B	422997
310-282195-3	MW-27	Total/NA	Water	6020B	422997
310-282195-4	MW-50R	Total/NA	Water	6020B	422997
310-282195-1 DU	MW-51	Total/NA	Water	6020B	422997

Analysis Batch: 424410

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	6020B	422997
310-282195-2	PZ-12	Total/NA	Water	6020B	422997
310-282195-3	MW-27	Total/NA	Water	6020B	422997
310-282195-4	MW-50R	Total/NA	Water	6020B	422997
MB 310-422997/1-A	Method Blank	Total/NA	Water	6020B	422997
LCS 310-422997/2-A	Lab Control Sample	Total/NA	Water	6020B	422997
310-282195-1 DU	MW-51	Total/NA	Water	6020B	422997

General Chemistry

Analysis Batch: 423107

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	I-3765-85	
310-282195-2	PZ-12	Total/NA	Water	I-3765-85	
310-282195-3	MW-27	Total/NA	Water	I-3765-85	
310-282195-4	MW-50R	Total/NA	Water	I-3765-85	
MB 310-423107/1	Method Blank	Total/NA	Water	I-3765-85	
LCS 310-423107/2	Lab Control Sample	Total/NA	Water	I-3765-85	

Prep Batch: 615163

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	9030B	
310-282195-2	PZ-12	Total/NA	Water	9030B	

General Chemistry (Continued)

Prep Batch: 615163 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-3	MW-27	Total/NA	Water	9030B	
MB 240-615163/1-A	Method Blank	Total/NA	Water	9030B	
LCS 240-615163/2-A	Lab Control Sample	Total/NA	Water	9030B	

Analysis Batch: 615202

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
310-282195-1	MW-51	Total/NA	Water	9034	615163
310-282195-2	PZ-12	Total/NA	Water	9034	615163
310-282195-3	MW-27	Total/NA	Water	9034	615163
MB 240-615163/1-A	Method Blank	Total/NA	Water	9034	615163
LCS 240-615163/2-A	Lab Control Sample	Total/NA	Water	9034	615163

Lab Chronicle

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Client Sample ID: MW-51

Lab Sample ID: 310-282195-1

Date Collected: 05/28/24 06:02
Date Received: 05/29/24 08:50

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	06/01/24 03:02
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		4	423437	NFT2	EET CF	06/03/24 23:45
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423331	NFT2	EET CF	05/31/24 18:13
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		4	424410	NFT2	EET CF	06/12/24 17:22
Total/NA	Prep	9030B			615163	BLW	EET CLE	06/03/24 07:31
Total/NA	Analysis	9034		1	615202	BLW	EET CLE	06/03/24 09:32
Total/NA	Analysis	I-3765-85		1	423107	HE7K	EET CF	05/30/24 10:29

Client Sample ID: PZ-12

Lab Sample ID: 310-282195-2

Date Collected: 05/28/24 08:42
Date Received: 05/29/24 08:50

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	06/01/24 03:24
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 23:52
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423331	NFT2	EET CF	05/31/24 18:17
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 17:26
Total/NA	Prep	9030B			615163	BLW	EET CLE	06/03/24 07:31
Total/NA	Analysis	9034		1	615202	BLW	EET CLE	06/03/24 09:32
Total/NA	Analysis	I-3765-85		1	423107	HE7K	EET CF	05/30/24 10:29

Client Sample ID: MW-27

Lab Sample ID: 310-282195-3

Date Collected: 05/28/24 10:36
Date Received: 05/29/24 08:50

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	06/01/24 03:45
Total/NA	Prep	3510C			423001	JT8P	EET CF	05/29/24 13:18
Total/NA	Analysis	8270E		1	423476	L0FS	EET CF	06/04/24 14:33
Total/NA	Prep	3510C			423001	JT8P	EET CF	05/29/24 13:18
Total/NA	Analysis	8270E		1	423326	L0FS	EET CF	06/03/24 12:46
Total/NA	Prep	3510C			423264	JT8P	EET CF	05/31/24 13:32
Total/NA	Analysis	8081B		1	423815	BW2O	EET CF	06/07/24 20:47
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 23:56
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423331	NFT2	EET CF	05/31/24 18:19

Lab Chronicle

Client Sample ID: MW-27

Lab Sample ID: 310-282195-3

Date Collected: 05/28/24 10:36

Matrix: Water

Date Received: 05/29/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 17:28
Total/NA	Prep	9030B			615163	BLW	EET CLE	06/03/24 07:31
Total/NA	Analysis	9034		1	615202	BLW	EET CLE	06/03/24 09:32
Total/NA	Analysis	I-3765-85		1	423107	HE7K	EET CF	05/30/24 10:29

Client Sample ID: MW-50R

Lab Sample ID: 310-282195-4

Date Collected: 05/28/24 11:41

Matrix: Water

Date Received: 05/29/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	06/01/24 05:12
Total/NA	Prep	3510C			423001	JT8P	EET CF	05/29/24 13:18
Total/NA	Analysis	8270E		1	423476	L0FS	EET CF	06/04/24 14:58
Total/NA	Prep	3510C			423001	JT8P	EET CF	05/29/24 13:18
Total/NA	Analysis	8270E		1	423326	L0FS	EET CF	06/03/24 13:12
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423437	NFT2	EET CF	06/03/24 23:59
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	423331	NFT2	EET CF	05/31/24 18:30
Total/NA	Prep	3005A			422997	KM3E	EET CF	05/30/24 09:00
Total/NA	Analysis	6020B		1	424410	NFT2	EET CF	06/12/24 17:30
Total/NA	Analysis	I-3765-85		1	423107	HE7K	EET CF	05/30/24 10:29

Client Sample ID: Trip Blank

Lab Sample ID: 310-282195-5

Date Collected: 05/28/24 00:00

Matrix: Water

Date Received: 05/29/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	05/31/24 23:02

Client Sample ID: Field Blank

Lab Sample ID: 310-282195-6

Date Collected: 05/28/24 10:30

Matrix: Water

Date Received: 05/29/24 08:50

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	8260D		1	423206	WSE8	EET CF	05/31/24 23:24

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

Accreditation/Certification Summary

Client: Hall Engineering Company
Job ID: 310-282195-1
Project/Site: Appanoose County Landfill

Laboratory: Eurofins Cedar Falls

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Iowa	State	007	12-01-25

Laboratory: Eurofins Cleveland

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
California	State	2927	02-28-25
Georgia	State	4062	02-27-25
Illinois	NELAP	200004	07-31-24
Iowa	State	421	06-01-25
Kentucky (UST)	State	112225	02-27-25
Kentucky (WW)	State	KY98016	12-30-24
Minnesota	NELAP	039-999-348	12-31-24
New Jersey	NELAP	OH001	06-30-24
New York	NELAP	10975	04-02-25
Ohio VAP	State	ORELAP 4062	02-27-25
Oregon	NELAP	4062	02-27-25
Pennsylvania	NELAP	68-00340	08-31-24
Texas	NELAP	T104704517-22-19	08-31-24
USDA	US Federal Programs	P330-18-00281	01-05-27
Virginia	NELAP	460175	09-14-24
West Virginia DEP	State	210	12-31-24

Method Summary

Client: Hall Engineering Company
Project/Site: Appanoose County Landfill

Job ID: 310-282195-1

Method	Method Description	Protocol	Laboratory
8260D	Volatile Organic Compounds by GC/MS	SW846	EET CF
8270E	Semivolatile Organic Compounds (GC/MS)	SW846	EET CF
8081B	Organochlorine Pesticides (GC)	SW846	EET CF
6020B	Metals (ICP/MS)	SW846	EET CF
9034	Sulfide, Acid soluble and Insoluble (Titrimetric)	SW846	EET CLE
I-3765-85	Residue, Non-filterable (TSS)	USGS	EET CF
3005A	Preparation, Total Metals	SW846	EET CF
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET CF
5030B	Purge and Trap	SW846	EET CF
9030B	Sulfide, Distillation (Acid Soluble and Insoluble)	SW846	EET CLE

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

USGS = "Methods For Analysis Of Water And Fluvial Sediments", USGS, 1989

Laboratory References:

EET CF = Eurofins Cedar Falls, 3019 Venture Way, Cedar Falls, IA 50613, TEL (319)277-2401

EET CLE = Eurofins Cleveland, 180 S. Van Buren Avenue, Barberton, OH 44203, TEL (330)497-9396

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310-282195 Chain of Custody

Cooler/Sample Receipt and Temperature Log Form

Client Information

Client: Hall Engineering

City/State: CITY | STATE IA | Project:

Receipt Information

Date/Time Received: DATE 5-29-24 | TIME 880 | Received By: M

Delivery Type: ☒ UPS ☐ FedEx ☐ FedEx Ground ☐ US Mail ☐ Spee-Dee
☒ Lab Courier ☐ Lab Field Services ☐ Client Drop-off ☐ Other:________

Condition of Cooler/Containers

Sample(s) received in Cooler? ☒ Yes ☐ No *If yes:* Cooler ID:

Multiple Coolers? ☐ Yes ☒ No *If yes:* Cooler # ____ of ____

Cooler Custody Seals Present? ☒ Yes ☐ No *If yes:* Cooler custody seals intact? ☒ Yes ☐ No

Sample Custody Seals Present? ☐ Yes ☒ No *If yes:* Sample custody seals intact? ☐ Yes ☐ No

Trip Blank Present? ☒ Yes ~~☒ No~~ *If yes:* Which VOA samples are in cooler? ↓

All

Temperature Record

Coolant: ☒ Wet Ice ☐ Blue Ice ☐ Dry Ice ☐ Other:________ ☐ NONE

Thermometer ID: | Correction Factor (°C): 0

Temp Blank Temperature – If no temp blank, or temp blank temperature above criteria, proceed to Sample Container Temperature

Uncorrected Temp (°C): 3.7 | Corrected Temp (°C): 3.7

Sample Container Temperature

	CONTAINER 1	CONTAINER 2
Container(s) used:		
Uncorrected Temp (°C):		
Corrected Temp (°C):		

Exceptions Noted

1) If temperature exceeds criteria, was sample(s) received same day of sampling? ☐ Yes ☐ No
   a) *If yes:* Is there evidence that the chilling process began? ☐ Yes ☐ No

2) If temperature is <0°C, are there obvious signs that the integrity of sample containers is compromised? (e.g., bulging septa, broken/cracked bottles, frozen solid?) ☐ Yes ☐ No

NOTE If yes, contact PM before proceeding. If no, proceed with login

Additional Comments

General temperature criteria is 0 to 6°C
Bacteria temperature criteria is 0 to 10°C

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone. 319-277-2401 Fax: 319-277-2425

Chain of Custody Record

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Client Information	Sampler:	Lab PM: Hummel, Matthew R	Carrier Tracking No(s):	COC No: 310-93255-22844.1
Client Contact: Bill Buss	Phone:	E-Mail: Matthew Hummel@et.eurofinsus.com	State of Origin:	Page: Page 1 of 1
Company: Hall Engineering Company	PWSID:			Job #:
Address: PO BOX 825	Due Date Requested:			**Preservation Codes:** D - HNO3 A - HCL N - None CB - ZnAcetate/NaOH
City: Centerville	TAT Requested (days):			
State, Zip: IA, 52544	Compliance Project: ∆ Yes ∆ No			
Phone:	PO #: Purchase Order not required			
Email: bbuss@hall-engineering us	WO #:			
Project Name: Appanoose County Landfill	Project #: 31010067			
Site:	SSOW#:			Other:

Analysis Requested

Sample Identification	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	6020B - Appendix I	8260D - Volatile Appendix 1 Sublist	I_3765_85 - Residue, Non-filterable (TSS)	9034_Calc - Sulfide	8081B, 8270E	8270E - (MOD) Appendix II Semivolatile List (low	8260D - Volatile Appendix I Sublist							Total Number of containers	Special Instructions/Note:
				Preservation Code:			D	A	N	CB	N	N	A								
MW-51	5/28/24	6:02	G	Water	N		X	X	X	X											
PZ -12	5/28/24	8:42	G	Water	N		X	X	X	X											
MW-27	5/28/24	10:36	G	Water	N		X	X	X	X	X	X									See attached Sample Label Data
MW-50R	5/28/24	11:41	G	Water	N		X	X	X			X									
Trip Blank				Water				X													
Field Blank	5/28/24	10:30	G	Water	N			X													

Second 1 liter sample bottle for TSS could not be filled for PZ-12 due to low ground water conditions. Bottle was not returned in cooler.

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☒ Disposal By Lab ☐ Archive For ______ Months

Deliverable Requested. I, II, III, IV, Other (specify)

Special Instructions/QC Requirements.

Empty Kit Relinquished by:	Date.	Time:	Method of Shipment:

Relinquished by: Bill Buss	Date/Time: 5/28/24 3:05 PM	Company	Received by:	Date/Time: 5·29·24 850	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No	Cooler Temperature(s) °C and Other Remarks:

Ver: 06/08/2021

1
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14
15

SAMPLE LABEL DATA

All samples collected for the Rathbun Area Solid Waste Management Commission – Appanoose County Sanitary Landfill

All samples collected by Utilities Service Company/Bill Buss.

NORTH LANDFILL – Spring 2024

MW-51:

6020B – Appendix 1 Metals Sample Collected 5-28-2024 @ 6:02 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-28-2024 @ 6:02 AM

9034_Calc – Sulfide Sample Collected 5-28-2024 @ 6:02 AM

I_3765_85 – Residue (TSS) Sample Collected 5-28-2024 @ 6:02 AM

MW-27:

6020B – Appendix 1 Metals Sample Collected 5-28-2023 @ 10:36 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-28-2024 @ 10:36 AM

8081B – (MOD) Standard Pesticides – Short List Sample Collected 5-28-2024 @ 10:36 AM

8270E – (MOD) Appendix II Semivolatile List (low) Sample Collected 5-28-2024 @ 10:36 AM

9034_Calc – Sulfide Sample Collected 5-28-2024 @ 10:36 AM

I_3765_85 – Residue (TSS) Sample Collected 5-28-2024 @ 10:36 AM

MW-50R:

6020B – Appendix 1 Metals Sample Collected 5-28-2024 @ 11:41 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-28-2024 @ 11:41 AM

I_3765_85 – Residue (TSS) Sample Collected 5-28-2024 @ 11:41 AM

8270E – (MOD) Appendix II Semivolatile List (low) Sample Collected 5-28-2024 @ 11:41 AM

PZ-12:

6020B – Appendix 1 Metals Sample Collected 5-28-2024 @ 8:42 AM

8260D – Volatile Appendix 1 Sublist Sample Collected 5-28-2024 @ 8:42 AM

9034_Calc - Sulfide Sample Collected 5-28-2024 @ 8:42 AM

I_3765_85 – Residue (TSS) Sample Collected 5-28-2024 @ 8:42 AM

> **NOTE: Second 1 liter sample bottle for TSS could not be filled for PZ-12 due low ground water conditions in well.**

Eurofins Cedar Falls
3019 Venture Way
Cedar Falls, IA 50613
Phone: 319-277-2401 Fax: 319-277-2425

3.2 | ~~4.7~~ 4.7 5-30-24

Chain of Custody Record

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Client Information (Sub Contract Lab)

Sampler:

Lab PM: Hummel, Matthew R

Carrier Tracking No(s):

COC No: 310-72872.1

Client Contact: Shipping/Receiving

Phone:

E-Mail: Matthew.Hummel@et.eurofinsus.com

State of Origin: Iowa

Page: Page 1 of 1

Company: Eurofins Environment Testing North Centr

Accreditations Required (See note): State Program - Iowa

Job #: 310-282195-1

Address: 180 S. Van Buren Avenue, ,

Due Date Requested: 6/11/2024

City: Barberton

TAT Requested (days):

State, Zip: OH, 44203

Phone: 330-497-9396(Tel) 330-497-0772(Fax)

PO #:

Email:

WO #:

Project Name: Appanoose County Landfill

Project #: 31010067

Site:

SSOW#:

Preservation Codes: -

Other:

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	9034_Calc/9030B Sulfide	Total Number of containers	Special Instructions/Note: G24
			Preservation Code:						
MW-51 (310-282195-1)	5/28/24	06:02 Central		Water			X	1	
PZ-12 (310-282195-2)	5/28/24	08:42 Central		Water			X	1	
MW-27 (310-282195-3)	5/28/24	10:36 Central		Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing North Central, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing North Central, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing North Central, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing North Central, LLC.

Possible Hazard Identification
Unconfirmed

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ______ *Months*

Deliverable Requested: I, II, III, IV, Other (specify)

Primary Deliverable Rank: 2

Special Instructions/QC Requirements:

Empty Kit Relinquished by:

Date:

Time:

Method of Shipment:

Relinquished by:	Date/Time: 5-29-24 1315	Company	Received by: JESSICA RIGDON	Date/Time: 5-30-24 1000	Company EETNC
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.:

Cooler Temperature(s) °C and Other Remarks:

Eurofins – Cleveland Sample Receipt Form/Narrative **Login # :** ____
Barberton Facility

Client Eurofins – CF Site Name ____ Cooler unpacked by:

Cooler Received on 5 30 24 Opened on 5 30 24

FedEx: 1st Grd [✓ Exp] UPS FAS Waypoint Client Drop Off Eurofins Courier Other ____

Receipt After-hours Drop-off Date/Time ____ Storage Location ____

Eurofins Cooler # EC Foam Box Client Cooler Box Other ____

Packing material used: Bubble Wrap Foam Plastic Bag [✓ None] Other ____

COOLANT: [✓ Wet Ice] Blue Ice Dry Ice Water None

1 Cooler temperature upon receipt ☐ See Multiple Cooler Form

IR GUN # 19 (CF +1.5 °C) Observed Cooler Temp. 3.2 °C Corrected Cooler Temp 4.7 °C

2.	Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	[✓ Yes] No
	-Were the seals on the outside of the cooler(s) signed & dated?	[✓ Yes] No NA
	-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes [✓ No]
	-Were tamper/custody seals intact and uncompromised?	[✓ Yes] No NA
3	Shippers' packing slip attached to the cooler(s)?	[✓ Yes] No
4.	Did custody papers accompany the sample(s)?	[✓ Yes] No
5	Were the custody papers relinquished & signed in the appropriate place?	[✓ Yes] No
6.	Was/were the person(s) who collected the samples clearly identified on the COC?	Yes [✓ No]
7	Did all bottles arrive in good condition (Unbroken)?	[✓ Yes] No
8	Could all bottle labels (ID/Date/Time) be reconciled with the COC?	[✓ Yes] No
9	For each sample, does the COC specify preservatives (Y/[✓ N]) # of containers ([✓ Y]/N), and sample type of grab/comp(Y/[✓ N])?	
10	Were correct bottle(s) used for the test(s) indicated?	[✓ Yes] No
11	Sufficient quantity received to perform indicated analyses?	[✓ Yes] No
12	Are these work share samples and all listed on the COC?	[✓ Yes] No
	If yes, Questions 13-17 have been checked at the originating laboratory	
13	Were all preserved sample(s) at the correct pH upon receipt?	Yes No NA pH Strip Lot# HC339814
14	Were VOAs on the COC?	Yes No
15	Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this	Yes No NA
16	Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # ____	Yes No
17	Was a LL Hg or Me Hg trip blank present? ____	Yes No

Tests that are not checked for pH by Receiving:

VOAs
Oil and Grease
TOC

Contacted PM ____ Date ____ by ____ via Verbal Voice Mail Other

Concerning ____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page Samples processed by:

19. SAMPLE CONDITION

Sample(s) ____ were received after the recommended holding time had expired
Sample(s) ____ were received in a broken container
Sample(s) ____ were received with bubble >6 mm in diameter (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) ____ were further preserved in the laboratory
Time preserved: ____ Preservative(s) added/Lot number(s) ____

VOA Sample Preservation - Date/Time VOAs Frozen: ____

WI NC-099-052324 Cooler Receipt Form.doc

eurofins | Environment Testing **Temperature Controlled**

IF THIS SHIPMENT IS DELAYED IN TRANSIT,
STORE REFRIGERATED (2° TO 8° C / 36° TO 47° F)

TAL-0090(1016)

ORIGIN ID ALOA (319) 277-2401
SAMPLE RECEIVING
EUROFINS TESTAMERICA
3019 VENTURE WAY

CEDAR FALLS, IA 50613
UNITED STATES US

MAY24
LB
AFE3765

TO SHIPPING/RECEIVING
EUROFINS ENVIRONMENT TESTING NORTH
180 S. VAN BUREN AVENUE

BARBERTON OH 44203
(330) 497-9396
REF: S310-93860

585C4/C458/AED7

FedEx
Express

E

J233023051201uv

TRK# 0201 7008 5809 3210

THU - 30 MAY 10:30A
PRIORITY OVERNIGHT

XS CAKA

44203
OH-US CLE

Login Sample Receipt Checklist

Client: Hall Engineering Company

Job Number: 310-282195-1

Login Number: 282195

List Number: 1

Creator: Costello, Mackenzie K

List Source: Eurofins Cedar Falls

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	