November 27, 2024

Mr. Brad Davison, Environmental Specialist
IDNR – Land Quality Bureau
6200 Park Avenue, Suite 200
Des Moines, Iowa 50321

HLW Engineering Group
Engineering Management

RE: Required Groundwater and Gas Monitoring – 2024
Permit Amendment #14 (Doc #94603) & Permit Amendment #15 (Doc #95242) – HMSP/GMSP
Permit Correspondence (Doc #110511 and Doc #110617) – Delineation MW-4/MW-16
Poweshiek County Sanitary Landfill 79-SDP-01-73C

Dear Mr. Davidson:

This letter is offered to address the water quality and gas monitoring results based on the monitoring under the Hydrologic Monitoring System Plan (HMSP) and the Gas Monitoring System Plan (GMSP) required by Permit Amendment #14 (Doc #94603) and Permit Amendment #15 (Doc #95242).

September site work was amended by IDNR on August 2, 2024 (Doc #110617) to restrict water quality testing to cobalt only at MW-4 and at a recently installed monitoring well (MW-16). MW-16 was installed August 8, 2024 (see Doc #111145).

Hydrologic Monitoring System Plan (HMSP) and Gas Monitoring System Plan (GMSP)

1) On March 13, 2024, Monitoring Wells MW-3, MW-4, MW-5, and MW-9 (Figure 1) were sampled. Each sample was analyzed for parameters listed in Permit Amendment #14 (Appendix I VOC, plus total Cobalt at MW-3 and MW-4). On September 12, 2024, Monitoring Wells MW-4 and MW-16 (Figure 1) were sampled. The two (2) water samples at MW-4 and MW-16 were analyzed for Cobalt, total, and confirm the restricted movement of cobalt at the site. On November 14, 2025 a water sample was again collected from MW-16 and analyzed for cobalt.
2) Water Elevation Measurements were collected at the time of sample collection at each water table monitoring well on March 13, 2024, and again on September 12, 2024.
3) Explosive gas was monitored in the well head space at MW-2, MW-5, MW-8, MW-9, and MW-10 and in gas probes GP-1 and GP-2 semi-annually on March 13, 2024 and September 12, 2024 in accordance with Permit Amendment #15. Explosive gas was also monitored semi-annually in the site structures. Permit Amendment #13, dated October 9, 2018 (Doc #93471), changed the frequency of gas monitoring in both the subsurface features and in the site structures to a semi-annual basis.
4) The results of the 2024 HMSP/GMSP activities are reported in this letter which serves as the 2024 Annual Water Quality Report/2024 Landfill Gas Report.
5) Delineation of cobalt at MW-4 and MW-16 was completed September 12, 2024 and the findings are reported herein.

Results of HMSP Activities

Water Quality - The Analytical Report for sample analyses are included in Attachment A. Field Sampling Forms for March 13, 2024; September 12, 2024; and November 14, 2025 are included in Attachment B.

Review of the 2024 data indicates that a total of six (6) different compounds were detected at this site based on the five (5) wells sampled. A summary of the detected compounds at each monitoring well is included in Attachment A.

Volatile Organic Compounds (VOC) – VOC were analyzed at monitoring wells MW-3, MW-4, MW-5, and MW-9 on March 13, 2024. VOC were detected as follows:

MW-3 (none)
MW-4 (chloroethane (1.4 ug/L), cis-1,2-dichloroethylene (1.0 ug/L), benzene (2.2 ug/L), and chlorobenzene (9.7 ug/L))
MW-5 (1,1-dichloroethane (1.0 ug/L))
MW-9 (none)

As illustrated on the summary table in Appendix A, the detected VOCs at the referenced wells are all reported at concentrations well below the groundwater protection standard (GWPS) listed in IAC 567, Chapter 137 Statewide Standard for Protected Groundwater.

Historically, the benzene concentrations at MW-11R were reported at concentrations that were in excess of the GWPS. The consistent and historic absence of VOC at the designated step-out wells to MW-11R demonstrate that the benzene impact is isolated to MW-11R. MW-11R and the step-out wells were removed from the HMSP in Permit Amendment #11 dated December 21, 2016 (Doc #88021).

Inorganic Compounds – Based on the absence of inorganic compounds above appreciable concentrations at the site monitoring wells, the inorganic compound testing has been reduced to cobalt at MW-3 and MW-4. Cobalt testing at MW-16 was required in September 2024. Review of the Summary of Detections (Attachment A) indicates the following <u>detected</u> inorganic compound concentrations over time:

MW-3 - 9/03/15 - cobalt (0.0128 mg/L), exceeds the GWPS of 0.0028 mg/L
9/12/16 - cobalt (0.0099 mg/L), exceeds the GWPS of 0.0028 mg/L
9/13/17 - cobalt (0.0263 mg/L), exceeds the GWPS of 0.0028 mg/L
9/11/19 - cobalt (0.0054 mg/L), exceeds the GWPS of 0.0021 mg/L
9/20/21 - cobalt (0.001 mg/L), <u>does not</u> exceed the GWPS of 0.0021 mg/L
9/01/23 - cobalt (0.0006 mg/L), <u>does not</u> exceed the GWPS of 0.0021 mg/L

MW-4 - 9/3/15 - cobalt (0.0097 mg/L), exceeds the GWPS of 0.0028 mg/L
3/9/16 - cobalt (0.0229 mg/L), exceeds the GWPS of 0.0028 mg/L
9/12/16 - cobalt (0.0218 mg/L), exceeds the GWPS of 0.0028 mg/L
3/6/17 - cobalt (0.0241 mg/L), exceeds the GWPS of 0.0028 mg/L
9/13/17 - cobalt (0.0415 mg/L), exceeds the GWPS of 0.0028 mg/L
3/15/18 - cobalt (0.0314 mg/L), exceeds the GWPS of 0.0021 mg/L
9/11/19 - cobalt (0.0678 mg/L), exceeds the GWPS of 0.0021 mg/L
3/2/20 - cobalt (0.0730 mg/L), exceeds the GWPS of 0.0021 mg/L
9/20/21 - cobalt (0.0717 mg/L), exceeds the GWPS of 0.0021 mg/L
3/1/22 - cobalt (0.0511 mg/L), exceeds the GWPS of 0.0021 mg/L
9/1/23 - cobalt (0.0781 mg/L), exceeds the GWPS of 0.0021 mg/L
3/13/24 - cobalt (0.0382 mg/L), exceeds the GWPS of 0.0021 mg/L
9/12/24 - cobalt (0.0440 mg/L), exceeds the GWPS of 0.0021 mg/L

MW-16 - 9/12/24 - cobalt (0.0033 mg/L), exceeds the GWPS of 0.0021 mg/L
11/14/24 - cobalt (0.0025 mg/L), exceeds the GWPS of 0.0021 mg/L

Cobalt Delineation near MW-4 and MW-16 (September 12, 2024 & November 14, 2024)– The detected cobalt concentration at MW-4 (44.0 ug/L) continues to be elevated in relation to other site monitoring wells and in relation to the Statewide Groundwater Protection Standard (GWPS) published in IAC 567, Chapter 137 (2.1 ug/L). The concentration of cobalt appears to diminish between MW-4 and MW-16 by over tenfold.

The first round of water quality collected from delineation step-out well MW-16 reports cobalt at 3.3 ug/L, slightly above the GWPS of 2.1ug/L. The second round of samples collected from delineation step-out well MW-16 reports cobalt at 2.5 ug/L, slightly above the GWPS of 2.1ug/L.

The annual water quality sampling at Monitoring Wells MW-3, MW-4, MW-5, and MW-9 in accordance with Permit Amendment #14 (Appendix I VOC, plus total Cobalt at MW-3 and MW-4) is scheduled next for September 2025.

We recommend that the cobalt testing at MW-16 be performed again in December 2024 and March 2025 (ahead of the September 2025 Annual sampling event) to determine whether the cobalt concentrations in the recently constructed MW-16 diminish, increase, or remain steady as this well and the associated well formation establishes an equilibrium.

Quality Assurance/Quality Control - A blind duplicate sample was collected at MW-4 during the March 13, 2024, sampling episode.

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

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

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

The results of the blind duplicate and the monitoring well results for March 13, 2024 are within the limits established and indicate that the data quality is acceptable without restriction.

Water Elevation Measurements - Water elevation measurements were collected at each well on March 13, 2024 and September 12, 2024 and are included in the Table in Attachment C. Review of the water elevation data for 2024 does not indicate excessive variability compared to historic water elevation data. The variability in water levels appears to be cyclic over time. A copy of the September 12, 2024 Water Table Contour Map (Figure 2) is included herein and illustrates groundwater flow paths across the site. The shape of the water table surface illustrated in the map is relatively unchanged from the previous year's map.

Explosive Gas Monitoring – Explosive gas monitoring is conducted in the on-site structures on a semi-annual basis. Explosive gas monitoring was conducted in the head space of monitoring wells MW-2, MW-5, MW-8, MW-9, and MW-10 and in subsurface gas probes GP-1 and GP-2 on a semi-annual basis. The gas monitoring is performed in accordance with Permit Amendment #13 (Doc #93471) and Permit Amendment #15 (Doc #95242). The explosive gas monitoring is summarized in the Tables in Attachment D.

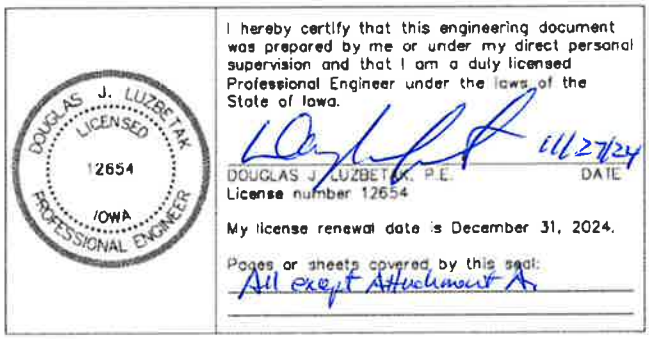
The results of the monitoring indicate that gas concentrations were undetected in structures and were undetected in MW-2, MW-5, MW-8, MW-9, MW-10, GP-1, and GP-2 and are reported as 0% LEL.

As requested in Permit Amendment #15 (Doc #95242), an evaluation of the screen interval is made in MW-2, MW-5, MW-8, MW-9, and MW-10 with reference to the water table elevation. This is included on the water elevation table in Appendix C and in the data tables in Appendix D. Review of the data indicates that all wells (MW-2, MW-5, MW-8, MW-9, and MW-10) had a portion of the screened interval exposed on either March 13, 2024 and/or September 12, 2024.

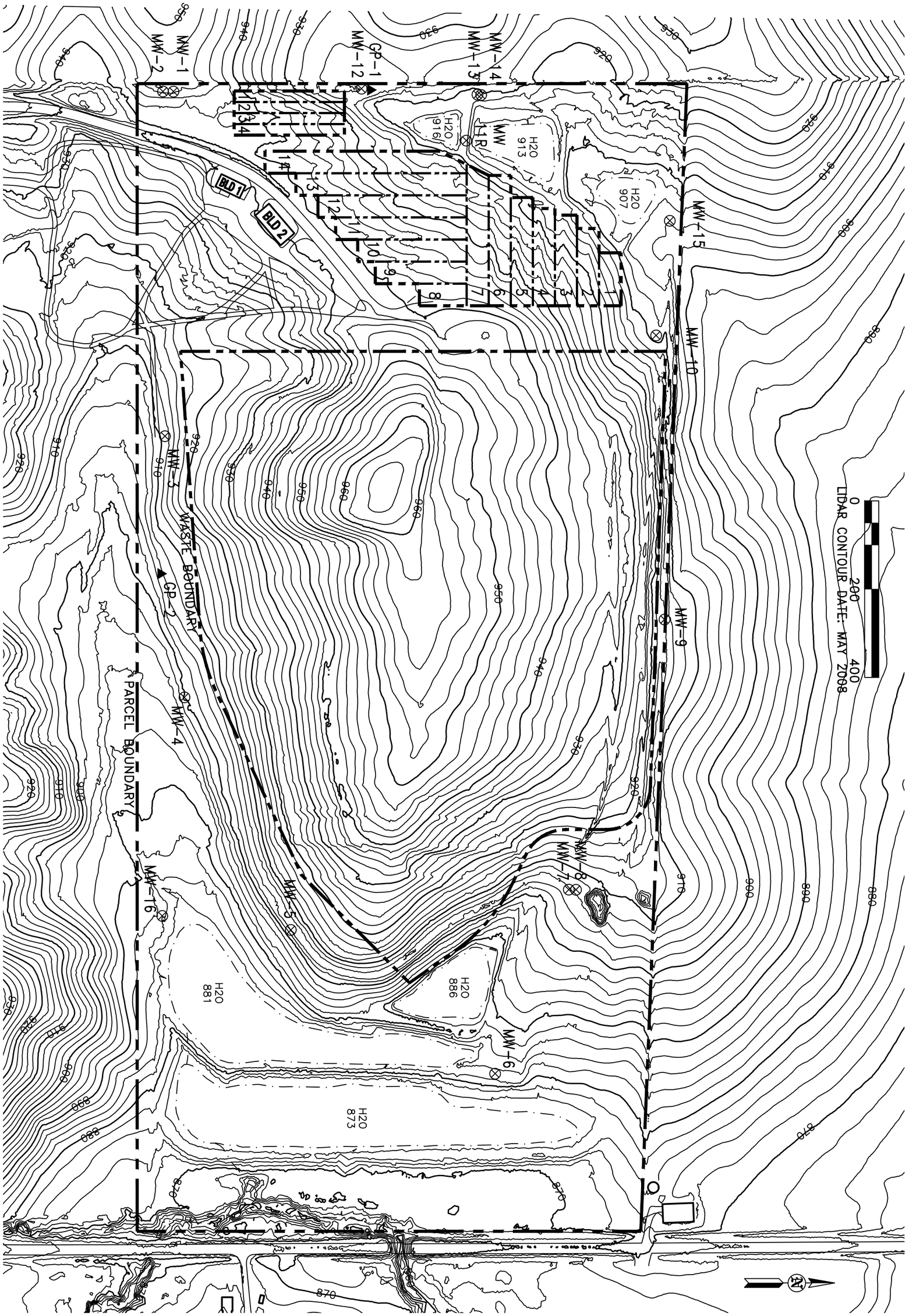
Conclusions

1) Continue sampling of the HMSP monitoring wells on an *annual* frequency. The next episode should occur in September 2025 in order to accommodate the alternating seasons required by Permit Amendment #14 (Doc #94063).
2) Cobalt testing at MW-16 should be performed again in December, 2024 and March, 2025 (ahead of the 2025 Annual sampling event). This information will aid in determining whether this new well and the associated well formation reaches an equilibrium and will help delineate the cobalt limits in this portion of the site.
3) The GMSP should continue at MW-2, MW-5, MW-8, MW-9, MW-10, GP-1, GP-2, Building #1, and Building #2 on a *semi-annual* basis.
4) The results of the 2025 HMSP & GMSP activities should be reported in the Annual Water Quality Report due November 30, 2025.
5) Continue to evaluate the condition of the site (water quality, landfill gas concentrations, leachate control, and cover integrity) with regard to the impending Closure Permit expiration (on March 2, 2025) and a desired future Environmental Covenant.

Please feel free to contact our office at (515) 733-4144 with any questions you may have.



cc: *Lyle Brehm, P.E., Poweshiek County Engineer*



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SITE PLAN

POWESHIEK COUNTY SANITARY LANDFILL
MONTEZUMA, IOWA

FIGURE: 1

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6011	DATE 10-9-24

WATER ELEVATION SEPTEMBER 12, 2024			
WELL	ELEV.	WELL	ELEV.
MW-2	933.80	MW-10	896.67
MW-3	903.44	MW-11R	911.03
MW-4	890.01	MW-12	918.70
MW-5	887.47	MW-13	911.98
MW-6	876.08	MW-15	899.93
MW-8	899.35	MW-16	879.60
MW-9	904.73		

0 200 400
LIDAR CONTOUR DATE: MAY 2008

MW-15 MW-10 MW-9 MW-8 MW-6 MW-13 MW-11R MW-12 MW-5 MW-3 MW-4 MW-2 MW-16

H2O 907 H2O 913 H2O 916/ H2O 886 H2O 873 H2O 881

BLD 1 BLD 2

WASTE BOUNDARY

PARCEL BOUNDARY

FIGURE: 2

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6011	DATE 10-9-24

GROUNDWATER CONTOURS

POWESHIEK COUNTY SANITARY LANDFILL
MONTEZUMA, IOWA

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ATTACHMENT A

Water Quality Results & Summary

HMSP Sampling & Testing Results
Summary of Detections

Date	Compound	Statewide Standard IAC-137	Units	MW-1 (upgradient) (bedrock)	MW-2 (upgradient)	MW-3	MW-4	MW-5	MW-6	MW-7 (bedrock)	MW-8	MW-9	MW-10	MW-11R	MW-12 Step-Out Well	MW-13 Step-Out Well	MW-15 Step-Out Well	MW-16 Step-Out Well
9/3/2015	Chloroethane	2,800	ug/L	<1	<1	<1	**1.5**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/9/2016	Chloroethane	2,800	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
9/12/2016	Chloroethane	2,800	ug/L	<1	<1	**2.7**	**2.6**	**1.0**	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/6/2017	Chloroethane	2,800	ug/L	NT	NT	<1	**1.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/13/2017	Chloroethane	2,800	ug/L	NT	NT	**1.0**	**2.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	Chloroethane	2,800	ug/L	NT	NT	<1	**1.8**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/11/2019	Chloroethane	2,800	ug/L	NT	NT	<1	**5.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/2/2020	Chloroethane	2,800	ug/L	NT	NT	<1	**2.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/20/2021	Chloroethane	2,800	ug/L	NT	NT	**1.0**	**4.6**	**1.0**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/1/2022	Chloroethane	2,800	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/1/2023	Chloroethane	2,800	ug/L	NT	NT	<1	**1.5**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	Chloroethane	2,800	ug/L	NT	NT	<1	**1.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/3/2015	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**18.8**	<10	<10	<10	
3/9/2016	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
9/12/2016	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
3/6/2017	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
9/13/2017	Acetone	6,300	ug/L	NT	NT	<10	<10	**NR***	NT	NT	NT	<10	NT	NT	NT	NT	NT	
3/15/2018	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
9/11/2019	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
3/2/2020	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
9/20/2021	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
3/1/2022	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
9/1/2023	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
3/13/2024	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	
9/3/2015	cis-1,2-DCE	70	ug/L	<1	<1	<1	**1.4**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/9/2016	cis-1,2-DCE	70	ug/L	<1	<1	<1	**2.1**	<1	<1	<1	<1	**1.7**	<1	<1	<1	<1	<1	
9/12/2016	cis-1,2-DCE	70	ug/L	<1	<1	**3.6**	**1.3**	<1	<1	<1	<1	**3.5**	<1	<1	<1	<1	<1	
3/6/2017	cis-1,2-DCE	70	ug/L	NT	NT	<1	**3.1**	<1	NT	NT	NT	**2.8**	NT	NT	NT	NT	NT	
9/13/2017	cis-1,2-DCE	70	ug/L	NT	NT	<1	**4.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	cis-1,2-DCE	70	ug/L	NT	NT	<1	**4.9**	<1	NT	NT	NT	**3.1**	NT	NT	NT	NT	NT	
9/11/2019	cis-1,2-DCE	70	ug/L	NT	NT	<1	**5**	<1	NT	NT	NT	**3.3**	NT	NT	NT	NT	NT	
3/2/2020	cis-1,2-DCE	70	ug/L	NT	NT	<1	**3**	<1	NT	NT	NT	**2.3**	NT	NT	NT	NT	NT	
9/20/2021	cis-1,2-DCE	70	ug/L	NT	NT	**1.4**	**3.6**	<1	NT	NT	NT	**2.3**	NT	NT	NT	NT	NT	
3/1/2022	cis-1,2-DCE	70	ug/L	NT	NT	<1	**2.1**	<1	NT	NT	NT	**2.5**	NT	NT	NT	NT	NT	
9/1/2023	cis-1,2-DCE	70	ug/L	NT	NT	**1.2**	**1.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	cis-1,2-DCE	70	ug/L	NT	NT	<1	**1.0**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/3/2015	Benzene	5	ug/L	<1	<1	<1	**1.0**	<1	<1	<1	<1	<1	<1	**8.0**	<1	<1	<1	
3/9/2016	Benzene	5	ug/L	<1	<1	<1	**1.1**	<1	<1	<1	<1	<1	<1	**5.7**	<1	<1	<1	
9/12/2016	Benzene	5	ug/L	<1	<1	**1.5**	<1	<1	<1	<1	<1	<1	<1	**6.7**	<1	<1	<1	
3/6/2017	Benzene	5	ug/L	NT	NT	<1	**1.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/13/2017	Benzene	5	ug/L	NT	NT	<1	**1.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	Benzene	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/11/2019	Benzene	5	ug/L	NT	NT	<1	**1.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/2/2020	Benzene	5	ug/L	NT	NT	<1	**2.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/20/2021	Benzene	5	ug/L	NT	NT	<1	**2.0**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/1/2022	Benzene	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/1/2023	Benzene	5	ug/L	NT	NT	<1	**3.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	Benzene	5	ug/L	NT	NT	<1	**2.2**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/3/2015	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**4.3**	<1	<1	<1	
3/9/2016	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
9/12/2016	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/6/2017	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/13/2017	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/11/2019	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/2/2020	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/20/2021	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/1/2022	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/1/2023	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/3/2015	Chlorobenzene	100	ug/L	<1	<1	<1	**1.4**	<1	<1	<1	<1	<1	<1	**2.1**	<1	<1	<1	
3/9/2016	Chlorobenzene	100	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**2.9**	<1	<1	<1	
9/12/2016	Chlorobenzene	100	ug/L	<1	<1	**1.9**	<1	<1	<1	<1	<1	<1	<1	**5.2**	<1	<1	<1	
3/6/2017	Chlorobenzene	100	ug/L	NT	NT	<1	**1.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/13/2017	Chlorobenzene	100	ug/L	NT	NT	<1	**2.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	Chlorobenzene	100	ug/L	NT	NT	<1	**1.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/11/2019	Chlorobenzene	100	ug/L	NT	NT	<1	**3.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/2/2020	Chlorobenzene	100	ug/L	NT	NT	<1	**4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/20/2021	Chlorobenzene	100	ug/L	NT	NT	<1	**5.9**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/1/2022	Chlorobenzene	100	ug/L	NT	NT	<1	**2.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/1/2023	Chlorobenzene	100	ug/L	NT	NT	<1	**9.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	Chlorobenzene	100	ug/L	NT	NT	<1	**9.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/3/2015	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	**2.8**	<2	<2	<2	
3/9/2016	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
9/12/2016	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	
3/6/2017	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
9/13/2017	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
3/15/2018	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
9/11/2019	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
3/2/2020	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
9/20/2021	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
3/1/2022	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
9/1/2023	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
3/13/2024	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	
9/3/2015	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/9/2016	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
9/12/2016	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	
3/6/2017	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**3.3**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/13/2017	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.8**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/15/2018	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/11/2019	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/2/2020	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/20/2021	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.8**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/1/2022	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.6**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
9/1/2023	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**1.2**	NT	NT	NT	<1	NT	NT	NT	NT	NT	
3/13/2024	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**1.0**	NT	NT	NT	<1	NT	NT	NT	NT	NT	

Date	Compound	Statewide Standard IAC-137	Units	MW-1 (upgradient) (bedrock)	MW-2 (upgradient)	MW-3	MW-4	MW-5	MW-6	MW-7 (bedrock)	MW-8	MW-9	MW-10	MW-11R	MW-12 Step-Out Well	MW-13 Step-Out Well	MW-15 Step-Out Well	MW-16 Step-Out Well
9/3/2015	Arsenic, total	0.01	mg/L	<0.004	<0.004	**0.0144**	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	**0.0099**	<0.004	<0.004	<0.004	
3/9/2016	Arsenic, total	0.01	mg/L	<0.004	<0.004	<0.004	**0.0042**	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	**0.0246**	<0.004	<0.004	<0.004	
9/12/2016	Arsenic, total	0.01	mg/L	<0.004	<0.004	**0.0053**	<0.004	<0.004	<0.004	<0.004	**0.0049**	<0.004	<0.004	**0.0574**	<0.004	<0.004	<0.004	
3/6/2017	Arsenic, total	0.01	mg/L	NT	NT	<0.004	<0.004	NT	NT	NT	<0.004	NT	NT	NT	NT	NT	NT	
9/13/2017	Arsenic, total	0.01	mg/L	NT	NT	<0.004	<0.004	NT	NT	NT	<0.004	NT	NT	NT	NT	NT	NT	
3/15/2018	Arsenic, total	0.01	mg/L	NT	NT	<0.004	<0.004	NT	NT	NT	<0.004	NT	NT	NT	NT	NT	NT	
9/11/2019	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Barium, total	2	mg/L	**0.0147**	**0.160**	**0.208**	**0.298**	**0.187**	**0.207**	**0.0369**	**0.136**	**1.99**	**0.158**	**0.417**	**0.335**	**0.179**	**0.129**	
3/9/2016	Barium, total	2	mg/L	**0.026**	**0.186**	**0.228**	**0.388**	**0.227**	**0.216**	**0.0363**	**0.144**	**1.26**	**0.195**	**0.675**	**0.34**	**0.162**	**0.175**	
9/12/2016	Barium, total	2	mg/L	**0.029**	**0.182**	**0.326**	**0.412**	**0.292**	**0.209**	**0.0307**	**0.261**	**0.999**	**0.185**	**0.647**	**0.306**	**0.16**	**0.133**	
3/6/2017	Barium, total	2	mg/L	**0.0286**	**0.188**	**0.312**	**0.381**	**0.207**	NT	NT	**0.435**	**1.67**	**0.445**	NT	NT	NT	NT	
9/13/2017	Barium, total	2	mg/L	**0.0131**	**0.195**	**0.324**	**0.427**	**0.305**	NT	NT	**0.223**	**1.03**	**0.207**	NT	NT	NT	NT	
3/15/2018	Barium, total	2	mg/L	NT	**0.177**	**0.268**	**0.418**	**0.233**	NT	NT	**0.103**	**1.28**	**0.187**	NT	NT	NT	NT	
9/11/2019	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Cadmium, total	0.005	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
3/9/2016	Cadmium, total	0.005	mg/L	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
9/12/2016	Cadmium, total	0.005	mg/L	**0.0013**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	
3/6/2017	Cadmium, total	0.005	mg/L	<0.0008	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/13/2017	Cadmium, total	0.005	mg/L	<0.0008	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/15/2018	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/11/2019	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Cobalt, total	0.0028	mg/L	**0.0011**	<0.0008	**0.0128**	**0.0097**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	**0.0052**	<0.0008	<0.0008	<0.0008	
3/9/2016	Cobalt, total	0.0028	mg/L	**0.0011**	<0.0008	<0.0008	**0.0229**	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	<0.0008	**0.0077**	<0.0008	<0.0008	<0.0008	
9/12/2016	Cobalt, total	0.0028	mg/L	<0.0008	<0.0008	**0.0099**	**0.0218**	**0.0012**	<0.0008	<0.0008	**0.0011**	<0.0008	<0.0008	**0.0089**	<0.0008	<0.0008	<0.0008	
3/6/2017	Cobalt, total	0.0028	mg/L	**0.0021**	NT	<0.0008	**0.0241**	<0.0008	NT	NT	**0.0018**	NT	NT	NT	NT	NT	NT	
9/13/2017	Cobalt, total	0.0028	mg/L	**0.0014**	NT	**0.0263**	**0.0415**	**0.0008**	NT	NT	<0.0008	NT	NT	NT	NT	NT	NT	
3/15/2018	Cobalt, total	0.0021	mg/L	NT	NT	<0.0008	**0.0314**	**0.0022**	NT	NT	<0.0008	NT	NT	NT	NT	NT	NT	
9/11/2019	Cobalt, total	0.0021	mg/L	NT	NT	**0.0054**	**0.0678**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Cobalt, total	0.0021	mg/L	NT	NT	<0.0008	**0.0730**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Cobalt, total	0.0021	mg/L	NT	NT	**0.0010**	**0.0717**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Cobalt, total	0.0021	mg/L	NT	NT	<0.0004	**0.0511**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Cobalt, total	0.0021	mg/L	NT	NT	**0.0006**	**0.0781**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Cobalt, total	0.0021	mg/L	NT	NT	<0.0004	**0.0382**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/12/2024	Cobalt, total	0.0021	mg/L	NT	NT	NT	**0.0440**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0033**
9/3/2015	Copper, total	1.3	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	
3/9/2016	Copper, total	1.3	mg/L	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	
9/12/2016	Copper, total	1.3	mg/L	**0.0064**	<0.004	<0.004	<0.004	<0.004	<0.004	<0.004	**0.0058**	<0.004	**0.0043**	<0.004	<0.004	**0.0043**	<0.004	
3/6/2017	Copper, total	1.3	mg/L	<0.004	NT	NT	NT	NT	NT	NT	**0.0072**	NT	NT	NT	NT	NT	NT	
9/13/2017	Copper, total	1.3	mg/L	<0.004	NT	NT	NT	NT	NT	NT	<0.004	NT	<0.004	NT	NT	NT	NT	
3/15/2018	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.004	NT	<0.004	NT	NT	NT	NT	
9/11/2019	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Nickel, total	0.1	mg/L	**0.0044**	<0.004	**0.0076**	**0.048**	<0.004	<0.004	<0.004	**0.0166**	<0.004	<0.004	**0.0287**	<0.004	<0.004	<0.004	
3/9/2016	Nickel, total	0.1	mg/L	<0.004	<0.004	<0.004	**0.0577**	**0.0075**	<0.004	<0.004	**0.0053**	<0.004	<0.004	**0.0282**	<0.004	<0.004	<0.004	
9/12/2016	Nickel, total	0.1	mg/L	**0.0045**	**0.0114**	**0.0067**	**0.0462**	**0.0192**	<0.004	<0.004	**0.0162**	<0.004	<0.004	**0.0257**	<0.004	<0.004	<0.004	
3/6/2017	Nickel, total	0.1	mg/L	**0.0063**	<0.004	<0.004	**0.0515**	**0.0195**	NT	NT	**0.0268**	NT	NT	NT	NT	NT	NT	
9/13/2017	Nickel, total	0.1	mg/L	<0.004	<0.004	**0.0110**	**0.0614**	**0.0161**	NT	NT	**0.0112**	NT	NT	NT	NT	NT	NT	
3/15/2018	Nickel, total	0.1	mg/L	NT	<0.004	<0.004	**0.0514**	**0.0194**	NT	NT	**0.0053**	NT	NT	NT	NT	NT	NT	
9/11/2019	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Antimony, total	0.006	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
3/9/2016	Antimony, total	0.006	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
9/12/2016	Antimony, total	0.006	mg/L	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	**0.0032**	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	
3/6/2017	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	
9/13/2017	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	
3/15/2018	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	
9/11/2019	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Zinc, total	2	mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	**0.0095**	<0.008	<0.008	<0.008	
3/9/2016	Zinc, total	2	mg/L	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	<0.008	
9/12/2016	Zinc, total	2	mg/L	**0.0161**	<0.008	<0.008	<0.008	**0.0091**	<0.008	<0.008	**0.0092**	**0.0284**	**0.0107**	**0.0118**	<0.008	**0.0165**	<0.008	
3/6/2017	Zinc, total	2	mg/L	**0.0095**	NT	NT	NT	<0.008	NT	NT	**0.0088**	<0.008	<0.008	NT	NT	NT	NT	
9/13/2017	Zinc, total	2	mg/L	<0.008	NT	NT	NT	<0.008	NT	NT	<0.008	<0.008	<0.008	NT	NT	NT	NT	
3/15/2018	Zinc, total	2	mg/L	NT	NT	NT	NT	<0.008	NT	NT	<0.008	<0.008	<0.008	NT	NT	NT	NT	
9/11/2019	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/2/2020	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/20/2021	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/1/2022	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/1/2023	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
3/13/2024	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	
9/3/2015	Turbidity	N/A	NTU	**106.2**	**1.1**	**1.86**	**0.87**	**0.41**	**0.18**	**5.19**	**0.01**	**0.06**	**0.01**	NR	**3.59**	**0.54**	**0.01**	
3/9/2016	Turbidity	N/A	NTU	**1.71**	**0.88**	**1.99**	**144**	**3.7**	**1.74**	**1.67**	**1.37**	**4.44**	**2.63**	**86.1**	**2.36**	**5.24**	**1.86**	
9/12/2016	Turbidity	N/A	NTU	**2.42**	**7.45**	**4.11**	**1.95**	**1.37**	**0.8**	**4.17**	**2.4**	**1.17**	**4.57**	**6.5**	**2.61**	**3.88**	**1.51**	
3/6/2017	Turbidity	N/A	NTU	**33.14**	**3.32**	**3.86**	**7.81**	**2.95**	NT	NT	**1.31**	**0.32**	**0.72**	NT	NT	NT	NT	
9/13/2017	Turbidity	N/A	NTU	**5.54**	**4.8**	**8.16**	**0.56**	**0.68**	NT	NT	**0.33**	**0.48**	**0.75**	NT	NT	NT	NT	
3/15/2018	Turbidity	N/A	NTU	NT	**3.03**	**4.02**	**2.24**	**0.57**	NT	NT	**0.74**	**2.93**	**2.38**	NT	NT	NT	NT	
9/11/2019	Turbidity	N/A	NTU	NT	NT	**7.13**	**1.07**	**1.03**	NT	NT	NT	**0.88**	NT	NT	NT	NT	NT	
3/2/2020	Turbidity	N/A	NTU	NT	NT	**0.73**	**11.49**	**0.45**	NT	NT	NT	**1.07**	NT	NT	NT	NT	NT	
9/20/2021	Turbidity	N/A	NTU	NT	NT	**2.09**	**8.89**	**1.01**	NT	NT	NT	**0.81**	NT	NT	NT	NT	NT	
3/1/2022	Turbidity	N/A	NTU	NT	NT	**1.32**	**22.07**	**1.69**	NT	NT	NT	**1.78**	NT	NT	NT	NT	NT	
9/1/2023	Turbidity	N/A	NTU	NT	NT	**2.18**	**5.90**	**1.50**	NT	NT	NT	**1.49**	NT	NT	NT	NT	NT	
3/13/2024	Turbidity	N/A	NTU	NT	NT	**2.34**	**5.76**	**2.40**	NT	NT	NT	**3.37**	NT	NT	NT	NT	NT	

Bold = detected compound

= value exceeds the Statewide Standard for protected Groundwater

NR* = acetone was detected in the trip blank vials and the reported result is dismissed for this sample event.

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HC1046

Project Description

6011

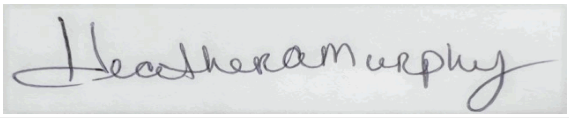
For:

Todd Whipple

HLW Engineering

PO Box 314

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Tuesday, March 26, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HC1046

HLW Engineering

Todd Whipple
PO Box 314
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 03/14/2024
Reported: 03/26/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-3	1HC1046-01	Water	GRAB		03/13/24 11:01	03/14/24 09:38
MW-4	1HC1046-02	Water	GRAB		03/13/24 11:24	03/14/24 09:38
MW-5	1HC1046-03	Water	GRAB		03/13/24 11:40	03/14/24 09:38
MW-9	1HC1046-04	Water	GRAB		03/13/24 12:00	03/14/24 09:38
Duplicate	1HC1046-05	Water	GRAB		03/13/24 00:00	03/14/24 09:38

Analytical Testing Parameters

Client Sample ID:	MW-3		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-01	**Collection Date:**	03/13/2024 11:01

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Bromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Chloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Acetone	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Chloroform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Benzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Dibromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Toluene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Xylenes, total	<2.0	2.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Styrene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM

Client Sample ID:	MW-3		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-01	**Collection Date:**	03/13/2024 11:01

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
Bromoform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: Dibromofluoromethane	85.1	Limit: 75-136	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: Dibromofluoromethane	85.1	Limit: 80-126	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: 1,2-Dichloroethane-d4	79.3	Limit: 63-138	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: 1,2-Dichloroethane-d4	79.3	Limit: 61-142	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: Toluene-d8	104	Limit: 82-121	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: Toluene-d8	104	Limit: 87-116	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: 4-Bromofluorobenzene	86.4	Limit: 80-116	% Rec	1		03/18/24 0000	03/18/24 2032	CSM
Surrogate: 4-Bromofluorobenzene	86.4	Limit: 85-111	% Rec	1		03/18/24 0000	03/18/24 2032	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	<0.0004	0.0004	mg/L	4		03/21/24 0917	03/22/24 1320	RVV

Client Sample ID:	MW-4		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-02	**Collection Date:**	03/13/2024 11:24

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Bromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Chloroethane	**1.4**	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Acetone	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
cis-1,2-Dichloroethylene	**1.0**	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Chloroform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Benzene	**2.2**	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Dibromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Toluene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Chlorobenzene	**9.7**	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Xylenes, total	<2.0	2.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Styrene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Bromoform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM

Client Sample ID:	MW-4		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-02	**Collection Date:**	03/13/2024 11:24

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,4-Dichlorobenzene	**2.5**	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: Dibromofluoromethane	94.9	Limit: 75-136	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: Dibromofluoromethane	94.9	Limit: 80-126	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: 1,2-Dichloroethane-d4	91.3	Limit: 63-138	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: 1,2-Dichloroethane-d4	91.3	Limit: 61-142	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: Toluene-d8	105	Limit: 82-121	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: Toluene-d8	105	Limit: 87-116	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: 4-Bromofluorobenzene	88.2	Limit: 80-116	% Rec	1		03/18/24 0000	03/18/24 2058	CSM
Surrogate: 4-Bromofluorobenzene	88.2	Limit: 85-111	% Rec	1		03/18/24 0000	03/18/24 2058	CSM

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0382**	0.0004	mg/L	4		03/21/24 0917	03/22/24 1326	RVV

Client Sample ID:	MW-5		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-03	**Collection Date:**	03/13/2024 11:40

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Bromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Chloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Acetone	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1-Dichloroethane	**1.0**	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Chloroform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Benzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Dibromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Toluene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Xylenes, total	<2.0	2.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Styrene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Bromoform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM

Client Sample ID:	MW-5		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-03	**Collection Date:**	03/13/2024 11:40

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: Dibromofluoromethane	77.2	Limit: 75-136	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: Dibromofluoromethane	77.2	Limit: 80-126	% Rec	1	S-GC	03/18/24 0000	03/18/24 2124	CSM
Surrogate: 1,2-Dichloroethane-d4	73.8	Limit: 63-138	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: 1,2-Dichloroethane-d4	73.8	Limit: 61-142	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: Toluene-d8	106	Limit: 82-121	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: Toluene-d8	106	Limit: 87-116	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: 4-Bromofluorobenzene	85.4	Limit: 80-116	% Rec	1		03/18/24 0000	03/18/24 2124	CSM
Surrogate: 4-Bromofluorobenzene	85.4	Limit: 85-111	% Rec	1		03/18/24 0000	03/18/24 2124	CSM

Client Sample ID:	MW-9		
Sample Matrix:	Water	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HC1046-04	**Collection Date:**	03/13/2024 12:00

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260B								
Chloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Vinyl Chloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Bromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Chloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Trichlorofluoromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Acetone	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Methyl Iodide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Carbon Disulfide	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Methylene Chloride	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Acrylonitrile	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Vinyl Acetate	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
2-Butanone (MEK)	<10.0	10.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Bromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Chloroform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1,1-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Carbon Tetrachloride	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Benzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2-Dichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Trichloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2-Dichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Dibromomethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Bromodichloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
cis-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Toluene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
trans-1,3-Dichloropropene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1,2-Trichloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Tetrachloroethylene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
2-Hexanone (MBK)	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Dibromochloromethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2-Dibromoethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Chlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Ethylbenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Xylenes, total	<2.0	2.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Styrene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Bromoform	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2,3-Trichloropropane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM

Client Sample ID: MW-9
Sample Matrix: Water
Lab Sample ID: 1HC1046-04
Collected By: Whipple, Todd
Collection Date: 03/13/2024 12:00

Determination of Volatile Organic Compounds	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,4-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2-Dichlorobenzene	<1.0	1.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: Dibromofluoromethane	81.7	Limit: 75-136	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: Dibromofluoromethane	81.7	Limit: 80-126	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: 1,2-Dichloroethane-d4	77.2	Limit: 61-142	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: 1,2-Dichloroethane-d4	77.2	Limit: 63-138	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: Toluene-d8	105	Limit: 82-121	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: Toluene-d8	105	Limit: 87-116	% Rec	1		03/18/24 0000	03/18/24 2150	CSM
Surrogate: 4-Bromofluorobenzene	83.6	Limit: 85-111	% Rec	1	S-GC	03/18/24 0000	03/18/24 2150	CSM
Surrogate: 4-Bromofluorobenzene	83.6	Limit: 80-116	% Rec	1		03/18/24 0000	03/18/24 2150	CSM

Client Sample ID: Duplicate
Sample Matrix: Water
Lab Sample ID: 1HC1046-05
Collected By: Whipple, Todd
Collection Date: 03/13/2024

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0394**	0.0004	mg/L	4		03/21/24 0917	03/22/24 1332	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260B	1HC0977	1HC0977-BS1	
		1HC0977-BSD1	
		1HC0977-BLK1	
		1HC1046-01	MW-3
		1HC1046-02	MW-4
		1HC1046-03	MW-5
		1HC1046-04	MW-9
		1HC0977-MS1	1HC1004-08
		1HC0977-MSD1	1HC1004-08

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HC1176	1HC1176-BLK1	
		1HC1176-BS1	
		1HC1046-01	MW-3
		1HC1046-02	MW-4
		1HC1046-05	Duplicate
		1HC1176-MS1	1HC1337-01
		1HC1176-MSD1	1HC1337-01
		1HC1176-PS1	1HC1337-01

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
Blank (1HC0977-BLK1)			Prepared: 03/18/24 00:00 Analyzed: 03/18/24 11:08							
Chloromethane	<1.0	1.0	ug/L							
Vinyl Chloride	<1.0	1.0	ug/L							
Bromomethane	<1.0	1.0	ug/L							
Chloroethane	<1.0	1.0	ug/L							
Trichlorofluoromethane	<1.0	1.0	ug/L							
1,1-Dichloroethylene	<1.0	1.0	ug/L							
Acetone	<10.0	10.0	ug/L							
Methyl Iodide	<1.0	1.0	ug/L							
Carbon Disulfide	<1.0	1.0	ug/L							
Methylene Chloride	<5.0	5.0	ug/L							
Acrylonitrile	<5.0	5.0	ug/L							
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Vinyl Acetate	<5.0	5.0	ug/L							
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L							
2-Butanone (MEK)	<10.0	10.0	ug/L							

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
Blank (1HC0977-BLK1)				Prepared: 03/18/24 00:00 Analyzed: 03/18/24 11:08						
Bromochloromethane	<1.0	1.0	ug/L							
Chloroform	<1.0	1.0	ug/L							
1,1,1-Trichloroethane	<1.0	1.0	ug/L							
Carbon Tetrachloride	<1.0	1.0	ug/L							
Benzene	<1.0	1.0	ug/L							
1,2-Dichloroethane	<1.0	1.0	ug/L							
Trichloroethylene	<1.0	1.0	ug/L							
1,2-Dichloropropane	<1.0	1.0	ug/L							
Dibromomethane	<1.0	1.0	ug/L							
Bromodichloromethane	<1.0	1.0	ug/L							
cis-1,3-Dichloropropene	<1.0	1.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L							
Toluene	<1.0	1.0	ug/L							
trans-1,3-Dichloropropene	<1.0	1.0	ug/L							
1,1,2-Trichloroethane	<1.0	1.0	ug/L							
Tetrachloroethylene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<5.0	5.0	ug/L							
Dibromochloromethane	<1.0	1.0	ug/L							
1,2-Dibromoethane	<1.0	1.0	ug/L							
Chlorobenzene	<1.0	1.0	ug/L							
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L							
Ethylbenzene	<1.0	1.0	ug/L							
Xylenes, total	<2.0	2.0	ug/L							
Styrene	<1.0	1.0	ug/L							
Bromoform	<1.0	1.0	ug/L							
1,2,3-Trichloropropane	<1.0	1.0	ug/L							
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L							
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L							
1,4-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L							
Surrogate: Dibromofluoromethane	*33.4*		ug/L	*50.2*		*66.6*	*80-126*			*S-GC*
Surrogate: Dibromofluoromethane	*33.4*		ug/L	*50.2*		*66.6*	*75-136*			*S-GC*
Surrogate: 1,2-Dichloroethane-d4	*32.2*		ug/L	*50.1*		*64.3*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*32.2*		ug/L	*50.1*		*64.3*	*61-142*			
Surrogate: Toluene-d8	*51.6*		ug/L	*50.4*		*102*	*87-116*			
Surrogate: Toluene-d8	*51.6*		ug/L	*50.4*		*102*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*44.7*		ug/L	*50.1*		*89.1*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*44.7*		ug/L	*50.1*		*89.1*	*80-116*			
LCS (1HC0977-BS1)				Prepared: 03/18/24 00:00 Analyzed: 03/18/24 09:49						
Chloromethane	25.59	1.0	ug/L	30.0		85.2	63-155			
Vinyl Chloride	25.71	1.0	ug/L	30.0		85.6	70-154			
Bromomethane	23.44	1.0	ug/L	30.1		77.9	52-176			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
LCS (1HC0977-BS1)				Prepared: 03/18/24 00:00 Analyzed: 03/18/24 09:49						
Chloroethane	26.67	1.0	ug/L	30.0		88.9	72-148			
Trichlorofluoromethane	24.89	1.0	ug/L	30.0		83.0	70-152			
1,1-Dichloroethylene	45.04	1.0	ug/L	50.1		89.8	70-148			
Acetone	85.66	10.0	ug/L	100		85.6	43-172			
Methyl Iodide	95.51	1.0	ug/L	100		95.3	69-170			
Carbon Disulfide	96.87	1.0	ug/L	100		96.8	72-162			
Methylene Chloride	44.08	5.0	ug/L	50.2		87.8	68-142			
Acrylonitrile	43.04	5.0	ug/L	50.0		86.1	67-144			
trans-1,2-Dichloroethylene	47.97	1.0	ug/L	50.3		95.4	66-148			
1,1-Dichloroethane	47.24	1.0	ug/L	50.2		94.0	66-143			
Vinyl Acetate	134.1	5.0	ug/L	162		83.0	43-153			
cis-1,2-Dichloroethylene	46.40	1.0	ug/L	50.2		92.3	71-149			
2-Butanone (MEK)	89.33	10.0	ug/L	100		89.2	52-159			
Bromochloromethane	44.28	1.0	ug/L	50.3		88.1	69-143			
Chloroform	46.55	1.0	ug/L	50.2		92.8	69-144			
1,1,1-Trichloroethane	48.45	1.0	ug/L	50.3		96.3	62-129			
Carbon Tetrachloride	48.56	1.0	ug/L	50.2		96.7	63-141			
Benzene	53.40	1.0	ug/L	50.2		106	71-134			
1,2-Dichloroethane	48.27	1.0	ug/L	50.2		96.2	72-132			
Trichloroethylene	52.28	1.0	ug/L	50.3		104	71-135			
1,2-Dichloropropane	50.62	1.0	ug/L	50.2		101	69-136			
Dibromomethane	46.80	1.0	ug/L	50.3		93.1	73-147			
Bromodichloromethane	49.77	1.0	ug/L	50.3		99.0	68-129			
cis-1,3-Dichloropropene	48.37	1.0	ug/L	50.2		96.3	65-134			
4-Methyl-2-pentanone (MIBK)	89.96	5.0	ug/L	100		89.8	58-147			
Toluene	52.43	1.0	ug/L	50.4		104	72-133			
trans-1,3-Dichloropropene	46.98	1.0	ug/L	50.3		93.5	67-130			
1,1,2-Trichloroethane	47.99	1.0	ug/L	50.2		95.6	69-135			
Tetrachloroethylene	55.71	1.0	ug/L	50.2		111	69-130			
2-Hexanone (MBK)	93.27	5.0	ug/L	100		93.2	55-144			
Dibromochloromethane	49.86	1.0	ug/L	50.3		99.1	73-127			
1,2-Dibromoethane	48.59	1.0	ug/L	50.4		96.4	67-132			
Chlorobenzene	54.76	1.0	ug/L	50.2		109	72-123			
1,1,1,2-Tetrachloroethane	53.02	1.0	ug/L	50.2		106	73-127			
Ethylbenzene	53.25	1.0	ug/L	50.3		106	71-127			
Xylenes, total	159.4	2.0	ug/L	151		106	74-127			
Styrene	52.34	1.0	ug/L	50.3		104	66-126			
Bromoform	53.08	1.0	ug/L	50.2		106	68-130			
1,2,3-Trichloropropane	49.92	1.0	ug/L	50.2		99.4	63-136			
trans-1,4-Dichloro-2-butene	93.78	5.0	ug/L	100		93.5	54-134			
1,1,2,2-Tetrachloroethane	49.64	1.0	ug/L	50.2		98.9	61-131			
1,4-Dichlorobenzene	49.90	1.0	ug/L	50.2		99.5	70-129			
1,2-Dichlorobenzene	51.38	1.0	ug/L	50.2		102	69-126			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
LCS (1HC0977-BS1)				Prepared: 03/18/24 00:00 Analyzed: 03/18/24 09:49						
1,2-Dibromo-3-chloropropane	46.44	5.0	ug/L	50.4		92.1	50-143			
Surrogate: Dibromofluoromethane	*47.8*		ug/L	*50.2*		*95.3*	*80-126*			
Surrogate: Dibromofluoromethane	*47.8*		ug/L	*50.2*		*95.3*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*48.2*		ug/L	*50.1*		*96.2*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*48.2*		ug/L	*50.1*		*96.2*	*61-142*			
Surrogate: Toluene-d8	*49.9*		ug/L	*50.4*		*99.0*	*87-116*			
Surrogate: Toluene-d8	*49.9*		ug/L	*50.4*		*99.0*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*51.0*		ug/L	*50.1*		*102*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*51.0*		ug/L	*50.1*		*102*	*80-116*			
LCS Dup (1HC0977-BSD1)				Prepared: 03/18/24 00:00 Analyzed: 03/18/24 10:15						
Chloromethane	24.16	1.0	ug/L	30.0		80.5	63-155	5.75	24	
Vinyl Chloride	24.17	1.0	ug/L	30.0		80.5	70-154	6.17	25	
Bromomethane	22.59	1.0	ug/L	30.1		75.1	52-176	3.69	27	
Chloroethane	25.51	1.0	ug/L	30.0		85.0	72-148	4.45	25	
Trichlorofluoromethane	24.00	1.0	ug/L	30.0		80.0	70-152	3.64	26	
1,1-Dichloroethylene	43.42	1.0	ug/L	50.1		86.6	70-148	3.66	24	
Acetone	87.51	10.0	ug/L	100		87.4	43-172	2.14	30	
Methyl Iodide	90.94	1.0	ug/L	100		90.8	69-170	4.90	30	
Carbon Disulfide	91.00	1.0	ug/L	100		90.9	72-162	6.25	24	
Methylene Chloride	42.70	5.0	ug/L	50.2		85.1	68-142	3.18	21	
Acrylonitrile	43.04	5.0	ug/L	50.0		86.1	67-144	0.00	24	
trans-1,2-Dichloroethylene	46.53	1.0	ug/L	50.3		92.5	66-148	3.05	27	
1,1-Dichloroethane	45.90	1.0	ug/L	50.2		91.3	66-143	2.88	24	
Vinyl Acetate	131.7	5.0	ug/L	162		81.5	43-153	1.83	30	
cis-1,2-Dichloroethylene	45.38	1.0	ug/L	50.2		90.3	71-149	2.22	26	
2-Butanone (MEK)	94.25	10.0	ug/L	100		94.1	52-159	5.36	27	
Bromochloromethane	43.87	1.0	ug/L	50.3		87.3	69-143	0.930	23	
Chloroform	45.32	1.0	ug/L	50.2		90.3	69-144	2.68	23	
1,1,1-Trichloroethane	46.19	1.0	ug/L	50.3		91.8	62-129	4.78	24	
Carbon Tetrachloride	46.66	1.0	ug/L	50.2		92.9	63-141	3.99	25	
Benzene	51.56	1.0	ug/L	50.2		103	71-134	3.51	24	
1,2-Dichloroethane	48.24	1.0	ug/L	50.2		96.1	72-132	0.0622	24	
Trichloroethylene	50.49	1.0	ug/L	50.3		100	71-135	3.48	24	
1,2-Dichloropropane	49.54	1.0	ug/L	50.2		98.6	69-136	2.16	24	
Dibromomethane	47.38	1.0	ug/L	50.3		94.3	73-147	1.23	25	
Bromodichloromethane	48.90	1.0	ug/L	50.3		97.3	68-129	1.76	22	
cis-1,3-Dichloropropene	48.00	1.0	ug/L	50.2		95.6	65-134	0.768	23	
4-Methyl-2-pentanone (MIBK)	90.63	5.0	ug/L	100		90.4	58-147	0.742	27	
Toluene	50.03	1.0	ug/L	50.4		99.2	72-133	4.68	24	
trans-1,3-Dichloropropene	46.81	1.0	ug/L	50.3		93.1	67-130	0.363	24	
1,1,2-Trichloroethane	47.97	1.0	ug/L	50.2		95.5	69-135	0.0417	23	
Tetrachloroethylene	52.42	1.0	ug/L	50.2		104	69-130	6.09	25	
2-Hexanone (MBK)	93.86	5.0	ug/L	100		93.8	55-144	0.631	25	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
LCS Dup (1HC0977-BSD1)			Prepared: 03/18/24 00:00 Analyzed: 03/18/24 10:15							
Dibromochloromethane	49.63	1.0	ug/L	50.3		98.6	73-127	0.462	22	
1,2-Dibromoethane	48.30	1.0	ug/L	50.4		95.8	67-132	0.599	24	
Chlorobenzene	52.77	1.0	ug/L	50.2		105	72-123	3.70	23	
1,1,1,2-Tetrachloroethane	51.73	1.0	ug/L	50.2		103	73-127	2.46	24	
Ethylbenzene	51.15	1.0	ug/L	50.3		102	71-127	4.02	26	
Xylenes, total	153.0	2.0	ug/L	151		101	74-127	4.08	25	
Styrene	50.58	1.0	ug/L	50.3		100	66-126	3.42	23	
Bromoform	52.29	1.0	ug/L	50.2		104	68-130	1.50	23	
1,2,3-Trichloropropane	48.07	1.0	ug/L	50.2		95.8	63-136	3.78	24	
trans-1,4-Dichloro-2-butene	91.74	5.0	ug/L	100		91.5	54-134	2.20	27	
1,1,2,2-Tetrachloroethane	49.42	1.0	ug/L	50.2		98.4	61-131	0.444	29	
1,4-Dichlorobenzene	49.50	1.0	ug/L	50.2		98.7	70-129	0.805	24	
1,2-Dichlorobenzene	50.73	1.0	ug/L	50.2		101	69-126	1.27	26	
1,2-Dibromo-3-chloropropane	45.26	5.0	ug/L	50.4		89.8	50-143	2.57	30	
Surrogate: Dibromofluoromethane	*47.7*		ug/L	*50.2*		*95.0*	*80-126*			
Surrogate: Dibromofluoromethane	*47.7*		ug/L	*50.2*		*95.0*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*48.8*		ug/L	*50.1*		*97.5*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*48.8*		ug/L	*50.1*		*97.5*	*61-142*			
Surrogate: Toluene-d8	*49.4*		ug/L	*50.4*		*98.0*	*87-116*			
Surrogate: Toluene-d8	*49.4*		ug/L	*50.4*		*98.0*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*50.9*		ug/L	*50.1*		*102*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*50.9*		ug/L	*50.1*		*102*	*80-116*			
Matrix Spike (1HC0977-MS1)	**Source: 1HC1004-08**		Prepared: 03/18/24 00:00 Analyzed: 03/18/24 23:36							
Chloromethane	332.8	10.0	ug/L	306	ND	109	61-152			
Vinyl Chloride	305.6	10.0	ug/L	302	ND	101	66-149			
Bromomethane	283.6	10.0	ug/L	288	ND	98.5	43-171			
Chloroethane	331.8	10.0	ug/L	316	ND	105	69-148			
Trichlorofluoromethane	308.6	10.0	ug/L	326	ND	94.6	62-163			
1,1-Dichloroethylene	510.2	10.0	ug/L	500	ND	102	70-148			
Acetone	1006	100	ug/L	1020	ND	98.7	45-173			
Methyl Iodide	1062	10.0	ug/L	997	ND	107	62-167			
Carbon Disulfide	981.2	10.0	ug/L	1010	ND	97.1	71-163			
Methylene Chloride	459.8	50.0	ug/L	500	ND	92.0	69-140			
Acrylonitrile	809.4	50.0	ug/L	1000	ND	80.7	58-151			
trans-1,2-Dichloroethylene	505.6	10.0	ug/L	500	ND	101	69-144			
1,1-Dichloroethane	492.0	10.0	ug/L	500	ND	98.4	70-138			
Vinyl Acetate	844.7	50.0	ug/L	1020	ND	82.9	58-142			
cis-1,2-Dichloroethylene	480.4	10.0	ug/L	495	ND	97.1	68-151			
2-Butanone (MEK)	953.2	100	ug/L	1030	ND	92.3	50-160			
Bromochloromethane	494.4	10.0	ug/L	500	ND	98.9	65-143			
Chloroform	494.0	10.0	ug/L	500	ND	98.8	71-143			
1,1,1-Trichloroethane	456.0	10.0	ug/L	500	ND	91.2	63-133			
Carbon Tetrachloride	491.9	10.0	ug/L	500	ND	98.4	63-142			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
Matrix Spike (1HC0977-MS1)	**Source: 1HC1004-08**		Prepared: 03/18/24 00:00 Analyzed: 03/18/24 23:36							
Benzene	514.3	10.0	ug/L	500	ND	103	69-133			
1,2-Dichloroethane	486.8	10.0	ug/L	500	ND	97.4	63-138			
Trichloroethylene	489.3	10.0	ug/L	500	ND	97.9	71-133			
1,2-Dichloropropane	489.2	10.0	ug/L	500	ND	97.8	69-132			
Dibromomethane	512.5	10.0	ug/L	500	ND	102	70-147			
Bromodichloromethane	467.7	10.0	ug/L	500	ND	93.5	67-130			
cis-1,3-Dichloropropene	439.1	10.0	ug/L	503	ND	87.3	61-126			
4-Methyl-2-pentanone (MIBK)	892.4	50.0	ug/L	1010	ND	88.0	55-147			
Toluene	490.6	10.0	ug/L	500	ND	98.1	71-133			
trans-1,3-Dichloropropene	423.0	10.0	ug/L	504	ND	83.9	63-124			
1,1,2-Trichloroethane	485.5	10.0	ug/L	500	ND	97.1	69-133			
Tetrachloroethylene	495.4	10.0	ug/L	500	ND	99.1	70-124			
2-Hexanone (MBK)	930.5	50.0	ug/L	1030	ND	90.1	53-141			
Dibromochloromethane	484.0	10.0	ug/L	495	ND	97.8	74-122			
1,2-Dibromoethane	468.3	10.0	ug/L	500	ND	93.7	66-127			
Chlorobenzene	493.5	10.0	ug/L	500	ND	98.7	76-116			
1,1,1,2-Tetrachloroethane	508.6	10.0	ug/L	500	ND	102	77-121			
Ethylbenzene	467.1	10.0	ug/L	500	ND	93.4	73-124			
Xylenes, total	1412	20.0	ug/L	1500	ND	94.1	75-123			
Styrene	471.4	10.0	ug/L	500	ND	94.3	70-120			
Bromoform	519.3	10.0	ug/L	500	ND	104	70-124			
1,2,3-Trichloropropane	495.4	10.0	ug/L	500	ND	99.1	62-135			
trans-1,4-Dichloro-2-butene	787.5	50.0	ug/L	1040	ND	75.8	50-120			
1,1,2,2-Tetrachloroethane	457.2	10.0	ug/L	498	ND	91.7	63-126			
1,4-Dichlorobenzene	445.5	10.0	ug/L	500	ND	89.1	72-119			
1,2-Dichlorobenzene	450.5	10.0	ug/L	500	ND	90.1	71-117			
1,2-Dibromo-3-chloropropane	415.7	50.0	ug/L	500	ND	83.1	49-134			
Surrogate: Dibromofluoromethane	*559*		ug/L	*502*		*111*	*80-126*			
Surrogate: Dibromofluoromethane	*559*		ug/L	*502*		*111*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*569*		ug/L	*501*		*114*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*569*		ug/L	*501*		*114*	*61-142*			
Surrogate: Toluene-d8	*513*		ug/L	*504*		*102*	*87-116*			
Surrogate: Toluene-d8	*513*		ug/L	*504*		*102*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*516*		ug/L	*501*		*103*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*516*		ug/L	*501*		*103*	*80-116*			
Matrix Spike Dup (1HC0977-MSD1)	**Source: 1HC1004-08**		Prepared: 03/18/24 00:00 Analyzed: 03/19/24 00:02							
Chloromethane	316.9	10.0	ug/L	306	ND	103	61-152	4.89	26	
Vinyl Chloride	291.5	10.0	ug/L	302	ND	96.4	66-149	4.72	23	
Bromomethane	286.4	10.0	ug/L	288	ND	99.4	43-171	0.982	29	
Chloroethane	318.1	10.0	ug/L	316	ND	101	69-148	4.22	25	
Trichlorofluoromethane	289.7	10.0	ug/L	326	ND	88.8	62-163	6.32	25	
1,1-Dichloroethylene	490.1	10.0	ug/L	500	ND	98.0	70-148	4.02	22	
Acetone	970.0	100	ug/L	1020	ND	95.1	45-173	3.67	30	

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HC0977-MSD1)	**Source: 1HC1004-08**		Prepared: 03/18/24 00:00 Analyzed: 03/19/24 00:02							
Methyl Iodide	1017	10.0	ug/L	997	ND	102	62-167	4.35	24	
Carbon Disulfide	927.7	10.0	ug/L	1010	ND	91.9	71-163	5.61	22	
Methylene Chloride	445.6	50.0	ug/L	500	ND	89.1	69-140	3.14	19	
Acrylonitrile	796.9	50.0	ug/L	1000	ND	79.4	58-151	1.56	15	
trans-1,2-Dichloroethylene	486.9	10.0	ug/L	500	ND	97.4	69-144	3.77	22	
1,1-Dichloroethane	473.0	10.0	ug/L	500	ND	94.6	70-138	3.94	20	
Vinyl Acetate	788.9	50.0	ug/L	1020	ND	77.4	58-142	6.83	24	
cis-1,2-Dichloroethylene	463.6	10.0	ug/L	495	ND	93.7	68-151	3.56	22	
2-Butanone (MEK)	994.1	100	ug/L	1030	ND	96.2	50-160	4.20	23	
Bromochloromethane	485.9	10.0	ug/L	500	ND	97.2	65-143	1.73	22	
Chloroform	474.5	10.0	ug/L	500	ND	94.9	71-143	4.03	21	
1,1,1-Trichloroethane	436.4	10.0	ug/L	500	ND	87.3	63-133	4.39	23	
Carbon Tetrachloride	471.8	10.0	ug/L	500	ND	94.4	63-142	4.17	22	
Benzene	496.9	10.0	ug/L	500	ND	99.4	69-133	3.44	18	
1,2-Dichloroethane	474.8	10.0	ug/L	500	ND	95.0	63-138	2.50	20	
Trichloroethylene	473.8	10.0	ug/L	500	ND	94.8	71-133	3.22	23	
1,2-Dichloropropane	476.0	10.0	ug/L	500	ND	95.2	69-132	2.74	20	
Dibromomethane	488.3	10.0	ug/L	500	ND	97.7	70-147	4.84	22	
Bromodichloromethane	454.3	10.0	ug/L	500	ND	90.9	67-130	2.91	21	
cis-1,3-Dichloropropene	428.3	10.0	ug/L	503	ND	85.1	61-126	2.49	21	
4-Methyl-2-pentanone (MIBK)	899.9	50.0	ug/L	1010	ND	88.7	55-147	0.837	23	
Toluene	474.7	10.0	ug/L	500	ND	94.9	71-133	3.29	19	
trans-1,3-Dichloropropene	415.7	10.0	ug/L	504	ND	82.4	63-124	1.74	21	
1,1,2-Trichloroethane	475.0	10.0	ug/L	500	ND	95.0	69-133	2.19	19	
Tetrachloroethylene	479.8	10.0	ug/L	500	ND	96.0	70-124	3.20	24	
2-Hexanone (MBK)	917.7	50.0	ug/L	1030	ND	88.8	53-141	1.39	24	
Dibromochloromethane	474.5	10.0	ug/L	495	ND	95.9	74-122	1.98	21	
1,2-Dibromoethane	465.9	10.0	ug/L	500	ND	93.2	66-127	0.514	23	
Chlorobenzene	482.8	10.0	ug/L	500	ND	96.6	76-116	2.19	21	
1,1,1,2-Tetrachloroethane	496.4	10.0	ug/L	500	ND	99.3	77-121	2.43	25	
Ethylbenzene	458.7	10.0	ug/L	500	ND	91.7	73-124	1.81	20	
Xylenes, total	1387	20.0	ug/L	1500	ND	92.4	75-123	1.83	20	
Styrene	457.0	10.0	ug/L	500	ND	91.4	70-120	3.10	23	
Bromoform	515.8	10.0	ug/L	500	ND	103	70-124	0.676	22	
1,2,3-Trichloropropane	479.3	10.0	ug/L	500	ND	95.9	62-135	3.30	28	
trans-1,4-Dichloro-2-butene	792.2	50.0	ug/L	1040	ND	76.2	50-120	0.595	26	
1,1,2,2-Tetrachloroethane	462.7	10.0	ug/L	498	ND	92.8	63-126	1.20	24	
1,4-Dichlorobenzene	444.4	10.0	ug/L	500	ND	88.9	72-119	0.247	24	
1,2-Dichlorobenzene	447.3	10.0	ug/L	500	ND	89.5	71-117	0.713	24	
1,2-Dibromo-3-chloropropane	446.0	50.0	ug/L	500	ND	89.2	49-134	7.03	28	
Surrogate: Dibromofluoromethane	*537*		ug/L	*502*		*107*	*80-126*			
Surrogate: Dibromofluoromethane	*537*		ug/L	*502*		*107*	*75-136*			

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC0977 - EPA 5030B - EPA 8260B										
Matrix Spike Dup (1HC0977-MSD1)	**Source: 1HC1004-08**		Prepared: 03/18/24 00:00 Analyzed: 03/19/24 00:02							
Surrogate: 1,2-Dichloroethane-d4	*548*		ug/L	*501*		*110*	*63-138*			
Surrogate: 1,2-Dichloroethane-d4	*548*		ug/L	*501*		*110*	*61-142*			
Surrogate: Toluene-d8	*504*		ug/L	*504*		*100*	*87-116*			
Surrogate: Toluene-d8	*504*		ug/L	*504*		*100*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*518*		ug/L	*501*		*103*	*85-111*			
Surrogate: 4-Bromofluorobenzene	*518*		ug/L	*501*		*103*	*80-116*			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HC1176 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HC1176-BLK1)			Prepared: 03/21/24 09:17 Analyzed: 03/22/24 13:07							
Cobalt, total	<0.0004	0.0004	mg/L							
LCS (1HC1176-BS1)			Prepared: 03/21/24 09:17 Analyzed: 03/22/24 13:14							
Cobalt, total	0.0893	0.0004	mg/L	0.100		89.3	80-120			
Matrix Spike (1HC1176-MS1)	**Source: 1HC1337-01**		Prepared: 03/21/24 09:17 Analyzed: 03/22/24 13:56							
Cobalt, total	0.102	0.0004	mg/L	0.100	0.0140	88.4	75-125			
Matrix Spike Dup (1HC1176-MSD1)	**Source: 1HC1337-01**		Prepared: 03/21/24 09:17 Analyzed: 03/22/24 14:03							
Cobalt, total	0.104	0.0004	mg/L	0.100	0.0140	89.5	75-125	1.12	20	
Post Spike (1HC1176-PS1)	**Source: 1HC1337-01**		Prepared: 03/21/24 09:17 Analyzed: 03/22/24 14:09							
Cobalt, total	0.0906		mg/L	0.0800	0.0137	96.1	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference
S-GC: Surrogate recovery outside of control limits. The data was accepted based on valid recovery of the remaining surrogate.

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.6°C

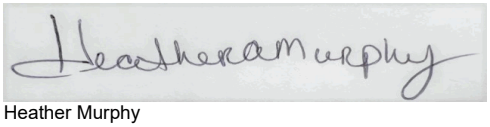
Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:



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03/26/24 09:17

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Keystone LABORATORIES
A Microbac Company
600 East 17th Street South
Newton, IA 50208
641-792-8451

1HC1046

HLW Engineering
PM: Heather Murphy

SITE INFORMATION

Sampler: _____

Project: Poweshiek Co. Landfill-GCC4 6011

REPORT TO

Todd Whipple
HLW Engineering
PO Box 314
Story City, IA 50248

INVOICE TO

Lyle Brehm
Poweshiek County Landfill
PO Box 308
Montezuma, IA 50171

SPECIAL INSTRUCTIONS

None

Turn Around Time

☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order 1HC1046
Temperature 0.6°C
Turn-Cooler: No

☐ Custody Seal
☐ Containers Intact
☐ COC/Labels Agree
☐ Preservation Confirmed
☐ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses		Lab Sample Number
-001	MW-3	Water	GRAB	3/13/24	11:01	7	co-t-6020	lndfill-app1-voc-group	01
-001	MW-4	Water	GRAB	3/13/24	11:24	7	co-t-6020	lndfill-app1-voc-group	02
-001	MW-5	Water	GRAB	3/13/24	11:40	6	lndfill-app1-voc-group		03
-001	MW-9	Water	GRAB	3/13/24	12:00	6	lndfill-app1-voc-group		04
-001	Duplicate	Water	GRAB	3/13/24	✓	1	co-t-6020	~~lndfill-app1-voc-group~~	05

Relinquished By Todd Whipple 3/14/24 Date/Time

Received By Date/Time

Relinquished By Date/Time

Received for Lab By Mahn 3/14/24 Date/Time 9:38

Remarks:

Original - Lab Copy Yellow - Sampler Copy

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HI0975

Project Description

6011

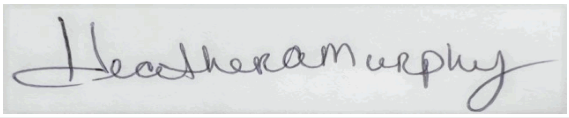
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Wednesday, September 18, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

MICROBAC®

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HI0975

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 09/13/2024
Reported: 09/18/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-4	1HI0975-01	Aqueous	GRAB		09/12/24 17:07	09/13/24 10:55
MW-16	1HI0975-02	Aqueous	GRAB		09/12/24 16:55	09/13/24 10:55

Analytical Testing Parameters

Client Sample ID:	MW-4		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HI0975-01	**Collection Date:**	09/12/2024 17:07

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0440**	0.0004	mg/L	4		09/17/24 0757	09/17/24 2305	RVV

Client Sample ID:	MW-16		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1HI0975-02	**Collection Date:**	09/12/2024 16:55

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0033**	0.0004	mg/L	4		09/17/24 0757	09/17/24 2311	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HI0841	1HI0841-BLK1	
		1HI0841-BS1	
		1HI0841-MS1	1HI0965-01
		1HI0841-MSD1	1HI0965-01
		1HI0841-PS1	1HI0965-01
		1HI0975-01	MW-4
		1HI0975-02	MW-16

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HI0841 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HI0841-BLK1)			Prepared: 09/17/24 07:57 Analyzed: 09/17/24 21:03							
Cobalt, total	<0.0004	0.0004	mg/L							
LCS (1HI0841-BS1)			Prepared: 09/17/24 07:57 Analyzed: 09/17/24 21:09							
Cobalt, total	0.106	0.0004	mg/L	0.100		106	80-120			
Matrix Spike (1HI0841-MS1)	**Source: 1HI0965-01**		Prepared: 09/17/24 07:57 Analyzed: 09/17/24 21:21							
Cobalt, total	0.104	0.0004	mg/L	0.100	ND	104	75-125			
Matrix Spike Dup (1HI0841-MSD1)	**Source: 1HI0965-01**		Prepared: 09/17/24 07:57 Analyzed: 09/17/24 21:39							
Cobalt, total	0.0998	0.0004	mg/L	0.100	ND	99.8	75-125	4.20	20	
Post Spike (1HI0841-PS1)	**Source: 1HI0965-01**		Prepared: 09/17/24 07:57 Analyzed: 09/17/24 21:45							
Cobalt, total	0.0800		mg/L	0.0800	0.000003	100	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

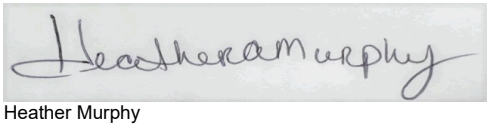
Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:



Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
09/18/24 15:58

CHAIN OF CUSTODY RECORD

MICROBAC®

600 East 17th Street
Newton, IA 50208
641-792-8451

1HI0975

HLW Engineering
PM: Heather Murphy

www.keystonelabs.com

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: Poweshiek Co. Landfill-GCC4 8011

REPORT

Todd Whipple
HLW Engineering
PO Box 314
Story City, IA 50248

O

Lyle Brehm
Poweshiek County Landfill
PO Box 306
Montezuma, IA 50171

SPECIAL INSTRUCTIONS

None

Turn Around Time
☐ Standard ☐ RUSH, need by ___/___/___

LAB USE ONLY

Work Order 1HI0975
Temperature 0.0
Turn-Cooler: No

- ☐ Custody Seal
- ☑ Containers Intact
- ☑ COC/Labels Agree
- ☑ Preservation Confirmed
- ☑ Received on Ice

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	Number of Containers	Analyses	Lab Sample Number
-001	MW-4	Aqueous	GRAB	9/12/24	17:07	1	co-t-6020	01
-001	MW-16	Aqueous	GRAB	9/12/24	16:55	1	co-t-6020	02

Todd Whipple 9/13/24
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Received for Lab By 9/13/24 1055
Date/Time

Remarks:

Original - Lab Copy Yellow - Sampler Copy

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK0996

Project Description

6011

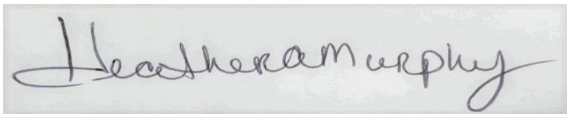
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Tuesday, November 26, 2024

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac Laboratories, Inc., Newton. If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed above.

I certify that all test results meet all of the requirements of the accrediting authority listed within this report. Analytical results are reported on a 'as received' basis unless specified otherwise. Analytical results for solids with units ending in (dry) are reported on a dry weight basis. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories. The reported results are related only to the samples analyzed as received.

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Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HK0996

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 11/14/2024
Reported: 11/26/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-16	1HK0996-01	Aqueous	GRAB		11/14/24 08:20	11/14/24 11:10
MW-2	1HK0996-02	Aqueous	GRAB		11/14/24 08:40	11/14/24 11:10

Analytical Testing Parameters

Client Sample ID: MW-16
Sample Matrix: Aqueous
Lab Sample ID: 1HK0996-01
Collected By: Whipple, Todd
Collection Date: 11/14/2024 8:20

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0025**	0.0004	mg/L	4		11/20/24 1624	11/21/24 1815	RVV

Client Sample ID: MW-2
Sample Matrix: Aqueous
Lab Sample ID: 1HK0996-02
Collected By: Whipple, Todd
Collection Date: 11/14/2024 8:40

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	<0.0004	0.0004	mg/L	4		11/20/24 1624	11/21/24 1839	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HK1173	1HK1173-BLK1	
		1HK1173-BS1	
		1HK0996-01	MW-16
		1HK1173-MS1	1HK0996-01
		1HK1173-MSD1	1HK0996-01
		1HK1173-PS1	1HK0996-01
		1HK0996-02	MW-2

Batch Quality Control Summary: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1HK1173 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HK1173-BLK1)			Prepared: 11/20/24 16:24 Analyzed: 11/21/24 18:03							
Cobalt, total	<0.0004	0.0004	mg/L							
LCS (1HK1173-BS1)			Prepared: 11/20/24 16:24 Analyzed: 11/21/24 18:09							
Cobalt, total	0.0961	0.0004	mg/L	0.100		96.1	80-120			
Matrix Spike (1HK1173-MS1)	**Source: 1HK0996-01**		Prepared: 11/20/24 16:24 Analyzed: 11/21/24 18:21							
Cobalt, total	0.104	0.0004	mg/L	0.100	0.0025	102	75-125			
Matrix Spike Dup (1HK1173-MSD1)	**Source: 1HK0996-01**		Prepared: 11/20/24 16:24 Analyzed: 11/21/24 18:27							
Cobalt, total	0.0981	0.0004	mg/L	0.100	0.0025	95.6	75-125	6.04	20	
Post Spike (1HK1173-PS1)	**Source: 1HK0996-01**		Prepared: 11/20/24 16:24 Analyzed: 11/21/24 18:33							
Cobalt, total	0.0808		mg/L	0.0800	0.0024	97.9	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

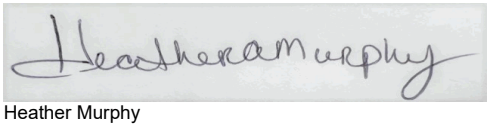
Cooler Inspection Checklist

Custody Seals	No	Containers Intact	Yes
COC/Labels Agree	Yes	Preservation Confirmed	No
Received On Ice	Yes		

Report Comments

The data and information on this, and other accompanying documents, represents only the sample(s) analyzed. This report is incomplete unless all pages indicated in the footnote are present and an authorized signature is included. ***The services were provided under and subject to Microbac's standard terms and conditions which can be located and reviewed at <https://www.microbac.com/standard-terms-conditions>.***

Reviewed and Approved By:



Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
11/26/24 14:35

CHAIN

Keystone LABORATORIES, INC.

600 E. 17th St. S.
Newton, IA 50208
Phone: 641-792-8451
Fax: 641-792-7989

205 E VanBuren St
Centerville, IA 52544
Phone: 641-437-7023
Fax: 641-437-7040

1HK0996

HLW Engineering
PM: Heather Murphy

PAGE 1 OF 1

PRINT OR TYPE INFORMATION BELOW

SAMPLER: TODD WHIPPLE
SITE NAME; Poweshiek Co SLF
ADDRESS:
CITY/ST/ZIP: MALCOM
PHONE:

REPORT TO:

NAME: TODD WHIPPLE
COMPANY NAME: HLW Group
ADDRESS: P.O Box 314
CITY/ST/ZIP: STORY CITY IA 50248
PHONE: 515 733 4144
FAX: 4146

BILL TO:

NAME: LYLE BREHM, P.E
COMPANY NAME: Poweshiek Co Engineer Office
ADDRESS: P.O Box 306
CITY/ST/ZIP: Montezuma, IA 50171
PHONE:

Keystone Quote No: (If Applicable)

CLIENT SAMPLE NUMBER	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	MATRIX	GRAB/COMPOSITE	ANALYSES REQUIRED: Cobalt, total	LAB USE ONLY: LABORATORY SAMPLE NUMBER
MW-16	11/14/24	8:20	MW-16	1	W	G	X	01
MW-2	11/14/24	8:40	MW-2	1	W	G	X	02

LABORATORY WORK ORDER NO.: 1HK0996
SAMPLE TEMPERATURE UPON RECEIPT: 0.0 ice °C
SAMPLE CONDITION/COMMENTS:

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Turn-Around: ☐ Standard ☐ Rush (Contact Lab Prior to Submission)
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature) Amber Fehr	Date 11/14/24 Time 10:20	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

ATTACHMENT B

Field Sampling Forms

POWESHIEK COUNTY SANITARY LANDFILL
PERMIT # 79-SDP-1-73C

3/13/2024 Sampled by: T. Whipple Weather conditions: Sunny, calm, 62-70 degrees

IDNR Form 542-1322

Monitoring Well: MW-3 (dg)

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

GENERAL INFORMATION

TOC	912.42
Well Depth	21.17
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	912.42
Well Depth	21.17
Top Screen	898.54
Bottom Screen	891.25
Bottom Well	891.25
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	15.00
Top sample	897.42
Bottom sample	893.42
Turbidity(NTU)	2.34

Date	Time	Water Level	Water Elevation	Notes
3/13/2024	11:01	9.03	903.39	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.34
Appendix I	Metals	250	150		2.34
Appendix I	VOC	120	240		2.34
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			400	0	

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

TOC	912.42	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	21.17	Before purging	3/13/2024	11:01	9.03	903.39	0	0.0	dry
		After purging				912.42			
		Top of Screen 7/15/1989				898.54			
						13.88	feet above (+) or below (-) top screen		
		Bottom of Well 7/15/1989				891.25			
		Bottom of Well	3/13/2024		21.10	891.32			
						0.07	feet sedimentation		
		Recovery				912.42			
		Recovery				912.42			
		Recovery				912.42			
		Recovery				912.42	pH	Conductivity	Temp.(C)
		Before Sampling				912.42			

Monitoring Well: MW-4 (dg)

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

GENERAL INFORMATION

TOC	902.13
Well Depth	24.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	902.13
Well Depth	24.50
Top Screen	887.41
Bottom Screen	877.63
Bottom Well	877.63
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	19.00
Top sample	883.13
Bottom sample	879.13
Turbidity(NTU)	5.76

Date	Time	Water Level	Water Elevation	Notes
3/13/2024	11:24	11.49	890.64	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		5.76
Appendix I	Metals	250	150		5.76
Appendix I	VOC	120	240		5.76
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			400	0	

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

TOC	902.13	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	24.50	Before purging	3/13/2024	11:24	11.49	890.64	0	0.0	No
		After purging				902.13			
		Top of Screen 9/15/1990				887.41			
						14.72	feet above (+) or below (-) top screen		
		Bottom of Well 9/15/1990				877.63			
		Bottom of Well	3/13/2024		24.40	877.73			
						0.10	feet sedimentation		
		Recovery				902.13			
		Recovery				902.13			
		Recovery				902.13			
		Recovery				902.13	pH	Conductivity	Temp.(C)
		Before Sampling				902.13			

Monitoring Well: MW-5 (dg)

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

GENERAL INFORMATION

TOC	906.43
Well Depth	25.58
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	906.43
Well Depth	25.58
Top Screen	890.59
Bottom Screen	880.85
Bottom Well	880.85
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	886.43
Bottom sample	882.43
Turbidity(NTU)	2.40

Date	Time	Water Level	Water Elevation	Notes
3/13/2024	0:00	19.81	886.62	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.40
Appendix I	Metals	250			
Appendix I	VOC	120	240		2.40
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			250	0	

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

TOC	906.43	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	25.58	Before purging	3/13/2024	0:00	19.81	886.62	0	0.0	dry
		After purging				906.43			
		Top of Screen 1/15/1988				890.59			
						15.84	feet above (+) or below (-) top screen		
		Bottom of Well 1/15/1988				880.85			
		Bottom of Well	3/13/2024		25.50	880.93			
						0.08	feet sedimentation		
		Recovery				906.43			
		Recovery				906.43			
		Recovery				906.43			
		Recovery				906.43	pH	Conductivity	Temp.(C)
		Before Sampling				906.43			

Monitoring Well: MW-9 (dg)

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

GENERAL INFORMATION

TOC	917.72
Well Depth	20.89
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	917.72
Well Depth	20.89
Top Screen	907.33
Bottom Screen	896.83
Bottom Well	896.83
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	14.50
Top sample	903.22
Bottom sample	899.22
Turbidity(NTU)	3.37

Date	Time	Water Level	Water Elevation	Notes
3/13/2024	12:00	11.40	906.32	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		3.37
Appendix I	Metals	250			
Appendix I	VOC	120	240		3.37
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			250	0	

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

TOC	917.72	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	20.89	Before purging	3/13/2024	12:00	11.40	906.32	0	0.0	dry
		After purging				18.30			
		Top of Screen 3/15/1992				907.33			
						-889.03	feet above (+) or below (-) top screen		
		Bottom of Well 3/15/1992				896.83			
		Bottom of Well	3/13/2024		20.20	897.52			
						0.69	feet sedimentation		
		Recovery				917.72			
		Recovery				917.72			
		Recovery				917.72			
		Recovery				917.72	pH	Conductivity	Temp.(C)
		Before Sampling				917.72			

POWESHIEK COUNTY SANITARY LANDFILL
PERMIT # 79-SDP-1-73C

9/12/2024 Sampled by: T. Whipple Weather conditions: Sunny, calm, 62-70 degrees

IDNR Form 542-1322

Monitoring Well: MW-4 (dg)

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

GENERAL INFORMATION

TOC	902.13
Well Depth	24.50
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	902.13
Well Depth	24.50
Top Screen	887.41
Bottom Screen	877.63
Bottom Well	877.63
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	18.50
Top sample	883.63
Bottom sample	879.63
Turbidity(NTU)	2.75

Date	Time	Water Level	Water Elevation	Notes
9/12/2024	17:07	12.12	890.01	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.75
Appendix I	Metals	250	250		2.75
Appendix I	VOC	120			
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			260	0	

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

TOC	902.13	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	24.50	Before purging	9/12/2024	17:07	12.12	890.01	0	0.0	No
		After purging				902.13			
		Top of Screen 9/15/1990				887.41			
						14.72	feet above (+) or below (-) top screen		
		Bottom of Well 9/15/1990				877.63			
		Bottom of Well	9/12/2024		24.40	877.73			
						0.10	feet sedimentation		
		Recovery				902.13			
		Recovery				902.13			
		Recovery				902.13			
		Recovery				902.13	pH	Conductivity	Temp.(C)
		Before Sampling				902.13			

IDNR Form 542-1322

Monitoring Well: MW-16 (dg)

Primary Sampling Method: No-Purge for Appendix I

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

GENERAL INFORMATION

TOC	888.71
Well Depth	26.85
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	888.71
Well Depth	26.85
Top Screen	872.31
Bottom Screen	862.31
Bottom Well	861.86
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	868.71
Bottom sample	864.71
Turbidity(NTU)	5.25

Date	Time	Water Level	Water Elevation	Notes
9/12/2024	16:55	9.11	879.6	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		5.25
Appendix I	Metals	250			
Appendix I	VOC	120	240		5.25
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			250	0	

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

TOC	888.71	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	26.85	Before purging	9/12/2024	16:55	9.11	879.60	0	0.0	dry
		After purging				888.71			
		Top of Screen 3/15/1992				872.31			
						16.40	feet above (+) or below (-) top screen		
		Bottom of Well 3/15/1992				861.86			
		Bottom of Well	9/12/2024		26.85	861.86			
						0.00	feet sedimentation		
		Recovery				888.71			
		Recovery				888.71			
		Recovery				888.71			
		Recovery				888.71	pH	Conductivity	Temp.(C)
		Before Sampling				888.71			

POWESHIEK COUNTY SANITARY LANDFILL
PERMIT # 79-SDP-1-73C

11/14/2024 Sampled by: T. Whipple Weather conditions: Overcast, calm, 46 degrees

IDNR Form 542-1322

Monitoring Well: MW-16 (dg)

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

GENERAL INFORMATION

TOC	888.71
Well Depth	26.85
Capped	YES
Standing Water	NO
Litter	NO
Level Tape	Solinst 101
NTU Meter	Hach 2100P
No-Purge Equipment -	Solinst 429
Purge Equipment -	Waterra

NO PURGE METHOD

TOC	888.71
Well Depth	26.85
Top Screen	872.31
Bottom Screen	862.31
Bottom Well	861.86
Sampler Length (ft)	4.00
Sampler Volume (mL)	440.00
Feet cordage	20.00
Top sample	868.71
Bottom sample	864.71
Turbidity(NTU)	7.71

Date	Time	Water Level	Water Elevation	Notes
11/14/2024	8:20	7.07	881.64	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		7.71
Appendix I	Metals	250			
Appendix I	VOC	120	240		7.71
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			250	0	

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

TOC	888.71	2" dia.	Date	Time	Depth	Elevation	Gallons	# of Vol.	Purged Dry?
Well Depth	26.85	Before purging	11/14/2024	8:20	7.07	881.64	0	0.0	dry
		After purging				888.71			
		Top of Screen 3/15/1992				872.31			
						16.40	feet above (+) or below (-) top screen		
		Bottom of Well 3/15/1992				861.86			
		Bottom of Well	11/14/2024		26.85	861.86			
						0.00	feet sedimentation		
		Recovery				888.71			
		Recovery				888.71			
		Recovery				888.71			
		Recovery				888.71	pH	Conductivity	Temp.(C)
		Before Sampling				888.71			

ATTACHMENT C

Water Elevation Data & Well Screen Evaluation

Water Level Data
Poweshiek County Sanitary Landfill

Well/TOC		MW-2	947.7	MW-3	912.42	MW-4	902.13	MW-5	906.43	MW-6	884.63	MW-8	907.94	MW-9	917.72	MW-10	909.9	MW-11	920.59	MW-12	926.79	MW-13	921.79	MW-15	907.23	MW-116	888.71
																		MW-11R	921.95								
		Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation
	09/21/1994	17.03	930.67	8.30	904.12	9.74	892.39	22.19	884.24	10.08	874.55	10.64	897.3	15.49	902.23	10.78	899.12	7.59	913								
	10/23/1994	17.77	929.93	9.99	902.43	12.44	889.69	24.35	882.08	12.26	872.37	11.25	896.69	15.82	901.9	13.89	896.01	8.38	912.21								
	01/26/1995	17.96	929.74	10.02	902.4	12.05	890.08	23.35	883.08	9.99	874.64	10.58	897.36	16.02	901.7	12.6	897.3	8.62	911.97								
	02/17/1995	18.29	929.41	10.66	901.76	12.54	889.59	23.20	883.23	10.88	873.75	11.10	896.84	16.06	901.66	13.52	896.38	9.16	911.43								
	03/27/1995	18.20	929.5	9.20	903.22	10.20	891.93	22.95	883.48	5.98	878.65	10.04	897.9	13.95	903.77	10.42	899.48	9.05	911.54								
	04/25/1995	13.68	934.02	8.84	903.58	10.68	891.45	21.39	885.04	4.10	880.53	6.70	901.24	11.16	906.56	10.30	899.6	6.33	914.26								
	05/22/1995	9.60	938.1	9.22	903.2	11.40	890.73	18.02	888.41	5.45	879.18	7.40	900.54	11.75	905.97	10.81	899.09	5.28	915.31								
	06/13/1995	9.72	937.98	9.30	903.12	11.30	890.83	17.69	888.74	5.33	879.3	7.46	900.48	10.50	907.22	10.95	898.95	5.16	915.43								
	07/25/1995	13.01	934.69	10.31	902.11	12.52	889.61	19.03	887.4	9.03	875.6	9.63	898.31	11.82	905.9	13.05	896.85	6.45	914.14								
	08/23/1995	14.82	932.88	10.94	901.48	13.76	888.37	20.01	886.42	11.59	873.04	10.62	897.32	13.38	904.34	13.96	895.94	7.54	913.05								
	09/26/1995	16.45	931.25	11.32	901.1	14.87	887.26	20.75	885.68	13.02	871.61	11.20	896.74	14.35	903.37	14.40	895.5	8.25	912.34								
	10/19/1995	17.37	930.33	11.05	901.37	14.24	887.89	22.89	883.54	13.90	870.73	11.65	896.29	15.02	902.7	15.92	893.98	8.43	912.16								
	11/22/1995	17.56	930.14	7.49	904.93	10.65	891.48	22.77	883.66	12.61	872.02	10.94	897	12.28	905.44	14.38	895.52	7.80	912.79	9.82	916.97	10.99	910.8	6.9	900.33		
	12/28/1995	17.63	930.07	9.48	902.94	12.08	890.05	21.85	884.58	11.60	873.03	10.60	897.34	12.34	905.38	14.11	895.79	8.99	911.6	10.02	916.77	11.33	910.46	7.34	899.89		
	01/26/1996	16.32	931.38	9.26	903.16	11.89	890.24	21.62	884.81	11.02	873.61	10.36	897.58	11.94	905.78	14.03	895.87	8.36	912.23	9.21	917.58	10.55	911.24	6.88	900.35		
	02/29/1996	13.55	934.15	10.40	902.02	11.50	890.63	19.60	886.83	10.65	873.98	8.05	899.89	10.90	906.82	13.40	896.5	9.30	911.29	7.9	918.89	6.65	915.14	4.5	902.73		
	03/20/1996	13.83	933.87	9.83	902.59	11.82	890.31	26.01	880.42	9.43	875.20	9.02	898.92	12.07	905.65	16.39	893.51	6.94	913.65	8.76	918.03	7.80	913.99	6.32	900.91		
	04/17/1996	15.82	931.88	10.18	902.24	12.14	889.99	20.75	885.68	9.36	875.27	9.69	898.25	13.09	904.63	14.97	894.93	7.48	913.11	9.34	917.45	9.12	912.67	6.64	900.59		
	05/22/1996	12.00	935.70	8.43	903.99	10.62	891.51	19.87	886.56	4.65	879.98	7.27	900.67	9.96	907.76	9.98	899.92	5.77	914.82	7.69	919.10	6.25	915.54	3.94	903.29		
	06/24/1996	11.56	936.14	9.63	902.79	10.89	891.24	17.68	888.75	6.33	878.30	8.59	899.35	11.30	906.42	11.23	898.67	4.95	915.64	7.51	919.28	5.87	915.92	3.40	903.83		
	07/22/1996	14.33	933.37	10.71	901.71	12.65	889.48	18.92	887.51	9.78	874.85	10.07	897.87	7.14	910.58	13.01	896.89	6.27	914.32	8.63	918.16	8.53	913.26	5.78	901.45		
	08/30/1996	16.31	931.39	11.31	901.11	13.59	888.54	20.30	886.13	11.92	872.71	11.11	896.83	14.58	903.14	14.14	895.76	7.72	912.87	9.37	917.42	10.43	911.36	6.94	900.29		
	09/12/1996	16.75	930.95	11.46	900.96	14.05	888.08	20.50	885.93	12.30	872.33	11.30	896.64	14.85	902.87	14.30	895.60	8.00	912.59	9.55	917.24	10.87	910.92	7.30	899.93		
	10/28/1996	17.96	929.74	10.89	901.53	12.42	889.71	22.48	883.95	12.07	872.56	11.84	896.10	15.50	902.22	15.25	894.65	8.51	912.08	9.83	916.96	11.49	910.30	7.44	899.79		
	11/25/1996	17.98	929.72	17.89	894.53	10.73	891.40	22.35	884.08	12.11	872.52	10.74	897.20	15.52	902.20	15.13	894.77	8.39	912.20	9.66	917.13	11.46	910.33	7.05	900.18		
	12/23/1996	18.39	929.31	9.10	903.32	12.04	890.09	22.23	884.20	10.64	873.99	10.24	897.70	15.03	902.69	11.66	898.24	8.70	911.89	9.72	917.07	11.64	910.15	7.32	899.91		
	01/30/1997	18.62	929.08	9.12	903.30	12.12	890.01	22.31	884.12	10.83	873.80	10.99	896.95	15.86	901.86	13.40	896.50	8.68	911.91	9.91	916.88	11.76	910.03	7.28	899.95		
	02/26/1997	17.47	930.23	8.94	903.48	11.91	890.22	21.92	884.51	11.14	873.49	10.88	897.06	15.72	902.00	14.04	895.86	6.34	914.25	10.06	916.73	8.52	913.27	6.34	900.89		
	03/12/1997	16.20	931.50	8.10	904.32	10.90	891.23	20.50	885.93	9.60	875.03	10.40	897.54	7.60	910.12	13.85	896.05	6.30	914.29	7.97	918.82	7.05	914.74	4.4	902.83		
	04/23/1997	16.35	931.35	8.29	904.13	10.41	891.72	18.46	887.97	8.29	876.34	7.82	900.12	10.38	907.34	10.63	899.27	6.88	913.71	8.71	918.08	8.54	913.25	5.43	901.80		
	05/20/1997	14.50	933.20	9.00	903.42	11.09	891.04	16.93	889.50	6.99	877.64	8.32	899.62	10.68	907.04	10.91	898.99	6.58	914.01	8.33	918.46	7.61	914.18	4.86	902.37		
	06/18/1997	14.47	933.23	9.97	902.45	12.02	890.11	17.78	888.65	6.78	877.85	9.43	898.51	10.96	906.76	12.14	897.76	7.20	913.39	8.91	917.88	8.73	913.06	5.9	901.33		
	07/22/1997	14.88	932.82	10.27	902.15	12.36	889.77	19.00	887.43	7.96	876.67	10.41	897.53	11.46	906.26	13.65	896.25	7.75	912.84	9.27	917.52	9.49	912.30	6.46	900.77		
	08/19/1997	15.98	931.72	10.80	901.62	13.42	888.71	19.85	886.58	10.06	874.57	10.97	896.97	14.27	903.45	14.22	895.68	8.19	912.40	9.61	917.18	10.32	911.47	6.97	900.26		
	09/13/1997	17.05	930.65	11.10	901.32	13.95	888.18	20.42	886.01	11.70	872.93	11.50	896.44	14.93	902.79	14.55	895.35	8.60	911.99	9.9	916.89	11	910.79	7.6	899.63		
	10/23/1997	15.96	931.74	9.19	903.23	11.99	890.14	22.74	883.69	11.62	873.01	10.98	896.96	14.02	903.70	13.95	895.95	8.32	912.27	9.68	917.11	11	910.79	7.05	900.18		
	11/20/1997	15.03	932.67	8.85	903.57	11.01	891.12	21.61	884.82	10.62	874.01	8.95	898.99	12.86	904.86	11.13	898.77	7.27	913.32	9.16	917.63	9.05	912.74	6.03	901.20		
	12/18/1997	15.21	932.49	5.56	906.86	9.65	892.48	20.67	885.76	6.01	878.62	8.72	899.22	13.02	904.70	11.46	898.44	6.97	913.62	8.93	917.86	8.58	913.21	6.11	901.12		
	01/20/1998	13.78	933.92	9.04	903.38	11.05	891.08	17.87	888.56	6.20	878.43	8.40	899.54	12.14	905.58	10.82	899.08	6.53	914.06	8.47	918.32	7.98	913.81	4.94	902.29		
	02/24/1998	13.70	934.00	4.54	907.88	8.17	893.96	13.58	892.85	3.37	881.26	4.16	903.78	9.46	908.26	5.96	903.94	6.10	914.49	7.81	918.98	7.22	914.57	4.21	903.02		
	03/12/1998	12.60	935.10	7.20	905.22	9.40	892.73	15.70	890.73	4.30	880.33	5.65	902.29	10.10	907.62	9.70	900.20	5.85	914.74	7.8	918.99	6.9	914.89	3.85	903.38		
	04/23/1998	12.21	935.49	7.02	905.40	9.01	893.12	14.98	891.45	4.14	880.49	5.52	902.42	9.92	907.80	9.59	900.31	5.74	914.85	7.52	919.27	6.85	914.94	3.78	903.45		
	05/27/1998	10.38	937.32	7.75	904.67	9.62	892.51	15.34	891.09	4.50	880.13	6.24	901.70	10.15	907.57	9.49	900.41	4.80	915.79	7.4	919.39	5.87	915.92	2.96	904.27		
	06/30/1998	10.60	937.10	7.81	904.61	9.84	892.29	13.91	892.52	4.47	880.16	6.32	901.62	9.87	907.85	9.46	900.44	3.44	917.15	6.82	919.97	5.13	916.66	2.71	904.52		
	07/28/1998	13.73	933.97	11.14	901.28	12.06	890.07	16.51	889.92	6.32	878.31	8.94	899.00	11.58	906.14	11.07	898.83	4.89	915.70	8.19	918.60	7.44	914.35	5.04	902.19		
	08/27/1998	15.51	932.19	12.98	899.44	14.52	887.61	17.83	888.60	9.85	874.78	9.76	898.18	13.22	904.50	12.86	897.04	6.37	914.22	8.82	917.97	9.48	912.31	6.06	901.17		
	09/01/1998	15.30	932.40	8.85	903.57	11.35	890.78	18.05	888.38	8.98	875.65	9.25	898.69	13.42	904.30	11.05	898.85	5.60	914.99	8.4	918.39	8.6	913.19	5.4	901.83		
	10/13/1998	15.02	932.68	8.85	903.57	10.88	891.25	20.56	885.87	6.96	877.67	9.03	898.91	13.02	904.70	10.67	899.23	5.74	914.85	8.12	918.67	8.32	913.47	4.89	902.34		
	11/24/1998	13.40	934.30	8.99	903.43	10.95	891.18	18.75	887.68	7.01	877.62	8.66	899.28	13.19	904.53	11.15	898.75	6.00	914.59	8.21	918.58	7.54	914.25	4.92	902.31		
	12/17/1998	14.34	933.36	9.16	903.26	11.25	890.88	19.02	887.41	7.12	877.51	8.91	899.03	13.81	903.91	11.37	898.53	6.21	914.38	8.69	918.10	8.37	913.42	5.65	901.58		
	01/15/1999	14.29	933.41	9.15	903.27	11.17	890.96	18.78	887.65	7.10	877.53	8.85	899.09	13.60	904.12	11.22	898.68	6.19	914.40	8.62	918.17	8.36	913.43	5.61	901.62		
	02/16/1999	11.32	936.38	7.87	904.55	9.99	892.14	16.92	889.51	6.22	878.41	7.14	900.80	12.01	905.71	9.19	900.71	5.27	915.32	7.83	918.96	6.48	915.31	4.86	902.37		
	03/06/1999	13.10	934.60	8.16	904.26	9.90	892.23	17.90	888.53	5.20	879.43	6.30	901.64	10.60	907.12	10.45	899.45	6.50	914.09	8.1	918.69	7.5	914.29	4.15	903.08		
	04/30/1999	10.38	937.32	12.47	899.95	9.79	892.34	16.21	890.22	5.03	879.60	5.96	901.98	9.51	908.21	9.42	900.48	5.48	915.11	7.35	919.44	6.35	915.44	3.91	903.32		
	05/26/1999	10.43	937.27	12.01	900.41	9.53	892.60	15.91	890.52	4.82	879.81	7.84	900.10	9.11	908.61	10.82	899.08	4.71	915.88	7.08	919.71	5.89	915.90	3.34	903.89		
	06/17/1999	10.50	937.20	8.90	903.52	10.35	891.78	16.64	889.79	5.87	878.76	7.43	900.51	8.88	908.84	10.69	899.21	4.08	916.51	6.88	919.91	5.07	916.72	3.64	903.59		
	07/30/1999	14.60	933.10	12.13	900.29	11.96	890.17	18.01	888.42	7.21	877.42	9.02	898.92	11.06	906.66	12.13	897.77	6.53	914.06	8.16	918.63	7.99	913.80	5.46	901.77		
	08/27/1999	15.95	931.75	10.10	902.32	12.10	890.03	19.45	886.98	10.40	874.23	10.10	897.84	14.50	903.22	13.80	896.10	6.80	913.79	8.8	917.99	9.5	912.29	6.25	900.98		
	09/24/1999	17.05	930.65	10.84	901.58	12.96	889.17	22.42	884.01	11.53	873.10	10.55	897.39	14.92	902.80	7.02	902.88	7.59	913.00	9.33	917.46	10.46	911.33	6.97	900.26		
	10/28/1999	18.05	929.65	11.21	901.21	13.39	888.74	22.71	883.72	11.82	872.81	11.02	896.92	15.39	902.33	14.65	895.25	7.84	912.75	9.66	917.13	11.23	910.56	7.39	899.84		
	11/22/1999	18.39	929.31	11.41	901.01	13.51	888.62	22.06	884.37	12.01	872.62	11.12	896.82	15.46	902.26	14.80	895.10	7.96	912.63	9.81	916.98	11.56	910.23	7.48	899.75		
	12/28/1999	18.27	929.43	11.29	901.13	13.47	888.66	21.98	884.45	11.95	872.68	11.04	896.90	15.39	902.33	14.69	895.21	7.90	912.69	9.62	917.17	11.71	910.08	7.5	899.73		

Water Level Data
Poweshiek County Sanitary Landfill

Well/TOC		MW-2	947.7	MW-3	912.42	MW-4	902.13	MW-5	906.43	MW-6	884.63	MW-8	907.94	MW-9	917.72	MW-10	909.9	MW-11	920.59	MW-12	926.79	MW-13	921.79	MW-15	907.23	MW-116	888.71
																		MW-11R	921.95								
		Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation	Water Depth	Water Elevation
	03/06/2000	17.80	929.90	9.70	902.72	11.20	890.93	22.15	884.28	11.48	873.15	10.85	897.09	14.91	902.81	11.85	898.05	8.85	911.74	9.75	917.04	11.3	910.49	7.02	900.21		
	10/02/2000	16.80	930.90	11.01	901.41	12.93	889.20	23.07	883.36	6.22	878.41	10.66	897.28	14.46	903.26	15.96	893.94	8.92	911.67	9.72	917.07	10.83	910.96	7.33	899.90		
	03/23/2001	9.90	937.80	4.50	907.92	7.50	894.63	16.80	889.63	3.00	881.63	3.40	904.54	6.10	911.62	4.25	905.65	5.50	915.09	6	920.79	4.8	916.99	2.5	904.73		
	09/04/2001	16.3	931.40	11.35	901.07	14.2	887.93	18.3	888.13	11.05	873.58	9.8	898.14	14.4	903.32	14.15	895.75	7.5	913.09	9.1	917.69	10.5	911.29	7.25	899.98		
	03/07/2002	19.4	928.30	10.3	902.12	11.9	890.23	21	885.43	10.05	874.58	10.96	896.98	15.7	902.02	15	894.90	9.2	911.39	9.9	916.89	12.05	909.74	7.68	899.55		
	09/03/2002	15.35	932.35	9.15	903.27	10.75	891.38	20.35	886.08	6.35	878.28	8.7	899.24	12.8	904.92	10.9	899.00	7.1	913.49	8.6	918.19	8.7	913.09	6.45	900.78		
	03/07/2003	16.6	931.10	10.3	902.12	12.45	889.68	20.9	885.53	11.18	873.45	10.1	897.84	15.4	902.32	14.7	895.20	9.1	911.49	9.6	917.19	10.4	911.39	6.8	900.43		
	09/22/2003	16.15	931.55	10.7	901.72	12.7	889.43	19	887.43	9.9	874.73	9.45	898.49	14.4	903.32	13.75	896.15	7.4	913.19	9.1	917.69	10	911.79	6.9	900.33		
	03/22/2004	11.6	936.10	7.4	905.02	9.15	892.98	17	889.43	3.75	880.88	6	901.94	9.6	908.12	8.15	901.75	5.2	915.39	6.7	920.09	6.3	915.49	3.4	903.83		
	09/03/2004	16.15	931.55	10.7	901.72	12.7	889.43	19	887.43	9.9	874.73	9.45	898.49	14.4	903.32	13.75	896.15	7.4	913.19	9.1	917.69	10	911.79	6.9	900.33		
	03/15/2005	16.91	930.79	9.69	902.73	10.65	891.48	20.47	885.96	6.55	878.08	8.61	899.33	13.2	904.52	12.7	897.20	6.93	913.66	8.5	918.29	8.6	913.19	5.87	901.36		
	09/01/2005	17.83	929.87	10.9	901.52	13.89	888.24	20.06	886.37	12.11	872.52	9.9	898.04	14.84	902.88	14.28	895.62	8.04	912.55	9.49	917.30	10.3	911.49	7.38	899.85		
	01/24/2006	19.36	928.34	10.18	902.24	12.68	889.45	22.42	884.01	12.78	871.85	10.87	897.07	15.32	902.40	15.32	894.58	9.15	911.44	9.53	917.26	11.84	909.95	7.83	899.40		
	03/06/2006	19.32	928.38	9.9	902.52	12.18	889.95	23.56	882.87	12.03	872.60	10.95	896.99	14.9	902.82	15.97	893.93	9.31	911.28	9.66	917.13	11.85	909.94	7.9	899.33		
	09/11/2006	17.98	929.72	10.3	902.12	13.3	888.83	19.96	886.47	10.31	874.32	10.01	897.93	14.25	903.47	15.04	894.86	8.08	912.51	9.51	917.28	10.98	910.81	8.57	898.66		
	03/28/2007	13.94	933.76	4.88	907.54	7.92	894.21	19.89	886.54	2.92	881.71	3.37	904.57	7.72	910.00	8.25	901.65	5.28	915.31	6.64	920.15	7.6	914.19	3.36	903.87		
	09/11/2007	15.57	932.13	8.48	903.94	10.08	892.05	18.2	888.23	5.98	878.65	7.86	900.08	13.55	904.17	10.33	899.57	6.05	914.54	7.47	919.32	8.89	912.90	5.91	901.32		
	03/20/2008	7.1	940.60	6.2	906.22	7.98	894.15	11.85	894.58	3	881.63	2.8	905.14	6.1	911.62	8	901.90	4.45	916.14	4.9	921.89	5	916.79	2.7	904.53		
	09/06/2008	14.65	933.05	8.6	903.82	11.05	891.08	16.4	890.03	7.6	877.03	7.98	899.96	13.45	904.27	13.38	896.52	5.65	914.94	7.3	919.49	7.85	913.94	5.38	901.85		
	03/16/2009	11.6	936.10	7.7	904.72	9.7	892.43	16.6	889.83	4.83	879.80	4.4	903.54	10.5	907.22	9.65	900.25	4.3	916.29	6.4	920.39	5.58	916.21	3.2	904.03		
	09/08/2009	12.75	934.95	9.05	903.37	10.95	891.18	16.8	889.63	5.8	878.83	7.1	900.84	11.65	906.07	11.4	898.50	4.4	916.19	6.2	920.59	6.4	915.39	4.5	902.73		
	03/04/2010	NT	NT	8.4	904.02	10.5	891.63	17.4	889.03	5.9	878.73	7.7	900.24	13.5	904.22	13	896.90	5.8	914.79	7.1	919.69	7.4	914.39	4.8	902.43		
	09/08/2010	13.6	934.10	8.5	903.92	10.5	891.63	16.85	889.58	5.75	878.88	7	900.94	12.3	905.42	11.4	898.50	4.4	916.19	5.9	920.89	6.75	915.04	3.9	903.33		
	03/10/2011	16.6	931.10	6.47	905.95	8.75	893.38	20.6	885.83	3.7	880.93	5.55	902.39	11.15	906.57	7.35	902.55	5.5	915.09	6.65	920.14	6.75	915.04	3.25	903.98		
	09/06/2011	17.35	930.35	9.8	902.62	13.2	888.93	18.7	887.73	9.8	874.83	9.2	898.74	13.65	904.07	14	895.90	6.9	913.69	8.35	918.44	9.65	912.14	6.15	901.08		
	03/01/2012	18.30	929.40	5.75	906.67	8.55	893.58	20.75	885.68	3.50	881.13	5.55	902.39	9.15	908.57	9.30	900.60	5.95	914.64	6.95	919.84	9.4	912.39	5.9	901.33		
	09/10/2012	19.10	928.60	12.10	900.32	16.80	885.33	19.55	886.88	13.70	870.93	9.75	898.19	14.30	903.42	15.15	894.75	8.55	912.04	10.05	916.74	11.9	909.89	9.3	897.93		
	03/15/2013	18.10	929.60	5.60	906.82	8.55	893.58	19.80	886.63	8.55	876.08	3.20	904.74	7.60	910.12	10.75	899.15	5.95	914.64	7.75	919.04	6.3	915.49	3.8	903.43		
	09/09/2013	15.80	931.90	10.80	901.62	15.05	887.08	17.35	889.08	11.80	872.83	8.15	899.79	12.60	905.12	14.10	895.80	7.75	912.84	8.9	917.89	11.5	910.29	8.5	898.73		
	03/11/2014	19.30	928.40	9.80	902.62	14.00	888.13	21.00	885.43	13.30	871.33	9.60	898.34	10.70	907.02	15.65	894.25	6.60	913.99	8.9	917.89	11.1	910.69	7.5	899.73		
	09/05/2014	13.90	933.80	8.90	903.52	10.60	891.53	16.35	890.08	4.40	880.23	6.30	901.64	12.00	905.72	11.00	898.90	6.15	914.44	6.7	920.09	8.4	913.39	5.5	901.73		
	03/09/2015	13.50	934.20	5.55	906.87	8.60	893.53	17.70	888.73	6.70	877.93	7.75	900.19	12.30	905.42	9.60	900.30	5.85	914.74	6.85	919.94	6.75	915.04	5.45	901.78		
	09/03/2015	13.03	934.67	8.99	903.43	11.24	890.89	16.45	889.98	5.12	879.51	6.84	901.10	12.20	905.52	12.85	897.05	6.61	913.98	6.45	920.34	7.69	914.10	5.21	902.02		
	03/09/2016	12.18	935.52	8.25	904.17	10.50	891.63	16.60	889.83	4.70	879.93	4.80	903.14	11.05	906.67	11.70	898.20	7.87	914.08	6.7	920.09	6.7	915.09	4.7	902.53		
	09/12/2016	16.65	931.05	9.60	902.82	11.75	890.38	20.70	885.73	8.27	876.36	8.75	899.19	13.72	904.00	13.70	896.20	9.80	912.15	8.35	918.44	9.91	911.88	6.9	900.33		
	03/06/2017	15.22	932.48	8.70	903.72	11.00	891.13	22.03	884.40	4.80	879.83	7.59	900.35	12.43	905.29	12.54	897.36	9.57	912.38	7.88	918.91	8.07	913.72	5.69	901.54		
	09/13/2017	15.40	932.30	10.35	902.07	13.10	889.03	20.05	886.38	10.70	873.93	9.12	898.82	13.65	904.07	14.78	895.12	10.52	911.43	8.84	917.95	10.21	911.58	7.41	899.82		
	03/15/2018	18.33	929.37	8.85	903.57	11.05	891.08	21.02	885.41	5.11	879.52	7.89	900.05	12.43	905.29	13.42	896.48	8.72	913.23	8.48	918.31	9.01	912.78	6.6	900.63		
	09/12/2018	11.51	936.19	8.45	903.97	10.15	891.98	17.08	889.35	4.12	880.51	4.85	903.09	7.91	909.81	9.34	900.56	7.20	914.75	5.47	921.32	5.19	916.60	2.88	904.35		
	04/02/2019	9.14	938.56	NR	NR	10.35	891.78	17.22	889.21	4.31	880.32	3.93	904.01	9.85	907.87	10.68	899.22	7.31	914.64	5.67	921.12	5.72	916.07	3.24	903.99		
	09/11/2019	16.77	930.93	10.31	902.11	13.36	888.77	19.32	887.11	11.43	873.20	8.55	899.39	13.33	904.39	14.34	895.56	10.11	911.84	8.19	918.60	9.96	911.83	6.63	900.60		
	03/02/2020	13.84	933.86	8.03	904.39	10.51	891.62	16.28	890.15	4.77	879.86	5.39	902.55	10.79	906.93	9.41	900.49	8.28	913.67	5.76	921.03	6.79	915.00	3.52	903.71		
	09/01/2020	16.71	930.99	10.45	901.97	13.82	888.31	19.87	886.56	11.22	873.41	8.69	899.25	13.23	904.49	10.33	899.57	10.44	911.51	8.21	918.58	9.75	912.04	6.52	900.71		
	03/01/2021	17.50	930.20	4.89	907.53	7.70	894.43	17.89	888.54			2.55	905.39	12.22	905.50	4.15	905.75	8.41	913.54	6.85	919.94	8.79	913.00	4.98	902.25		
	09/20/2021	18.41	929.29	11.27	901.15	15.44	886.69	20.53	885.90	13.74	870.89	9.25	898.69	13.62	904.10	15.10	894.80	11.22	910.73	9.18	917.61	11.1	910.69	7.78	899.45		
	03/01/2022	18.01	929.69	8.70	903.72	11.22	890.91	21.76	884.67	8.67	875.96	9.06	898.88	12.22	905.50	13.39	896.51	9.60	912.35	8.18	918.61	10.15	911.64	6.74	900.49		
	09/07/2022	18.03	929.67	11.76	900.66	15.87	886.26	19.74	886.69	13.83	870.80	8.99	898.95	13.42	904.30	15.19	894.71	11.23	910.72	9.9	916.89	11.17	910.62	9.05	898.18		
	03/03/2023	17.51	930.19	6.56	905.86	9.01	893.12	19.15	887.28	4.39	880.24	2.48	905.46	7.25	910.47	9.47	900.43	8.13	913.82	6	920.79	6.76	915.03	3.89	903.34		
	09/01/2023	18.10	929.60	11.48	900.94	15.69	886.44	20.26	886.17	14.18	870.45	9.09	898.85	13.56	904.16	15.25	894.65	11.70	910.25	9.6	917.19	12.03	909.76	9.78	897.45		
	03/13/2024	18.36	929.34	9.03	903.39	11.49	890.64	19.81	886.62	11.04	873.59	7.36	900.58	11.40	906.32	13.30	896.60	10.85	911.10	8.77	918.02	12.22	909.57	7.96	899.27		
	09/12/2024	13.90	933.80	8.98	903.44	12.12	890.01	18.96	887.47	8.55	876.08	8.59	899.35	12.99	904.73	13.23	896.67	10.92	911.03	8.09	918.70	9.81	911.98	7.3	899.93	9.11	879.60

EXPOSED SCREEN EVALUATION

Well/TOC	MW-2	947.7	MW-3	912.42	MW-4	902.13	MW-5	906.43	MW-6	884.63	MW-8	907.94	MW-9	917.72	MW-10	909.9	MW-11R	921.95	MW-12	926.79	MW-13	921.79	MW-15	907.23	MW-16	888.71
Top Screen		931.08		898.54		887.41		890.59		870.95		902.2		907.33		899.5		910.1		908.73		909.49		899.11		872.31
SWL - Spring		929.34		903.39		890.64		886.62		873.59		900.58		906.32		896.60		911.10		918.02		909.57		899.27		0.00
SWL - Fall		933.80		903.44		890.01		887.47		876.08		899.35		904.73		896.67		911.03		918.70		911.98		899.93		879.60
Exposed (-) or Submerged (+) Well Screen																										
Most Recent Spring		-1.74		4.85		3.23		-3.97		2.64		-1.62		-1.01		-2.90		1.00		9.29		0.08		0.16		~~-872.31~~
Most Recent Fall		2.72		4.90		2.60		-3.12		5.13		-2.85		-2.60		-2.83		0.93		9.97		2.49		0.82		7.29

ATTACHMENT D

Explosive Gas Monitoring Results

Poweshiek County Sanitary Landfill
INDR Permit No. 79-SDP-1-73C
EXPLOSIVE GAS MONITORING RESULTS

Ambient Air - Breathing Zone						
Location	**Top of Casing Elevation**	**Depth to Water Feet**	**Static Water Elevation**	**Top of Screen Elevation**	**Exposed (-) or Submerged (+) Screen Feet**	**3/13/2024**
						%LEL
Building 1	N/A	N/A	N/A	N/A	N/A	0
Building 2	N/A	N/A	N/A	N/A	N/A	0
Subsurface - Well Headspace						
MW-2	947.70	18.36	929.34	931.08	-1.74	0
MW-5	906.43	19.81	886.62	890.59	-3.97	0
MW-8	907.94	7.36	900.58	902.2	-1.62	0
MW-9	917.72	11.4	906.32	907.33	-1.01	0
MW-10	909.90	13.3	896.6	899.5	-2.9	0
GP-1	N/A	N/A	N/A	N/A	N/A	0
GP-2	N/A	N/A	N/A	N/A	N/A	0
HLW Representative	TDW					
Weather	Mostly Sunny 62-70 degrees Calm					

Ambient Air - Breathing Zone						
Location	**Top of Casing Elevation**	**Depth to Water Feet**	**Static Water Elevation**	**Top of Screen Elevation**	**Exposed (-) or Submerged (+) Screen Feet**	**9/12/2024**
						%LEL
Building 1	N/A	N/A	N/A	N/A	N/A	0
Building 2	N/A	N/A	N/A	N/A	N/A	0
Subsurface - Well Headspace						
MW-2	947.70	13.9	933.80	931.08	2.72	0
MW-5	906.43	18.96	887.47	890.59	-3.12	0
MW-8	907.94	8.59	899.35	902.2	-2.85	0
MW-9	917.72	12.99	904.73	907.33	-2.6	0
MW-10	909.90	13.23	896.67	899.5	-2.83	0
GP-1	N/A	N/A	N/A	N/A	N/A	0
GP-2	N/A	N/A	N/A	N/A	N/A	0
HLW Representative	TDW					
Weather	Sunny 85 degrees Calm					