November 14, 2025

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 – 2025
Permit Amendment #16 (Doc #112277)
Permit Amendment #15 (Doc #95242)
Permit Amendment #14 (Doc #94603)

Delineation MW-4/MW-16
Permit Amendment #16 (Doc #112277)

Poweshiek County Sanitary Landfill 79-SDP-01-73C

Dear Mr. Davison:

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), Permit Amendment #15 (Doc #95242), and Permit Amendment #16 (Doc #112277).

This letter is also offered to document the exploration, assessment, and evaluation of cobalt near MW-4 (Permit Amendment #16 Doc #112277).

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

1) On September 2, 2025, Monitoring Wells MW-3, MW-4, MW-5, MW-9, and MW-16 (Figure 1) were sampled. The water samples were analyzed for Appendix I Volatile Organic Compounds (VOC) at MW-3, MW-5, and MW-9. Cobalt (total) was analyzed at MW-3, MW-4, and MW-16.

   As discussed later in this report, supplemental cobalt sampling episodes were also performed in 2025 at MW-4 and MW-16. Dissolved methane, ethane, and ethene were also analyzed at samples collected from MW-4 and MW-16 on 9/2/2025.
2) Water Elevation Measurements were collected at each water table monitoring well on March 21, 2025, and again at the time of sample collection on September 2, 2025.
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 21, 2025, and September 2, 2025, 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 2025 HMSP/GMSP activities are reported in this letter which serves as the 2025 Annual Water Quality Report/2025 Landfill Gas Report.
5) Delineation and evaluation of cobalt at MW-4 and MW-16 are reported herein.

Water Quality - The Analytical Reports for sample analyses are included in Attachment A. Field Sampling Forms for November 14, 2024; December 11, 2024; March 21, 2025; June 2, 2025; July 15, 2025; September 2, 2025, are included in Attachment B.

Review of the 2025 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-5, and MW-9 on September 2, 2025. VOC were detected as follows:

MW-3 (none)
MW-5 (none)
MW-9 (none)

As illustrated on the summary table in Attachment A, VOCs at the referenced wells are all reported as below detection and therefore 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, MW-4, and MW-16. Cobalt testing at MW-16 was required starting in in September 2024. Review of the Summary of Detections (Attachment A) indicates the following detected 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), does not exceed the GWPS of 0.0021 mg/L
9/01/23 - cobalt (0.0006 mg/L), does not exceed the GWPS of 0.0021 mg/L
9/2/25 - cobalt (0.038 mg/L), exceeds 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
9/2/25 - cobalt (0.0511 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
12/11/24 - cobalt (0.0014 mg/L), does not exceed the GWPS of 0.0021 mg/L
3/21/25 - cobalt (0.0020 mg/L), does not exceed the GWPS of 0.0021 mg/L
6/2/25 - cobalt (0.0023 mg/L), exceeds the GWPS of 0.0021 mg/L
7/15/25 - cobalt (0.0020 mg/L), does not exceed the GWPS of 0.0021 mg/L
9/2/25 - cobalt (0.0016 mg/L), does not exceed the GWPS of 0.0021 mg/L

Cobalt testing was suspended at MW-3 between August 2, 2024 (Doc #110617) and September 2, 2025 (Permit Amendment #16, Doc #112277). Review of the available cobalt testing at MW-3 consistently demonstrates that cobalt is undetected and reported as below the detection limit in *March of every year* (without exception) since the cobalt testing started in 2015. At the same time, cobalt is always detected at MW-3 in *September of every year* (without exception). At times the reported cobalt concentration in September exceeds the GWPS.

The very consistent nature of the alternating cobalt detections in the fall and non-detections in the Spring is interpreted to be an artifact tied directly to differing subsurface formation conditions that exist in the Spring versus the Fall. Significant study has not been performed, however, the cobalt detections are dismissed from further study based on the consistent and predictable nature of the findings over the past decade.

Quality Assurance/Quality Control - A blind duplicate sample was collected at MW-2 during the September 2, 2025, 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 September 2, 2025 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 21, 2025 and September 2, 2025 and are included in the Table in Attachment C. Review of the water elevation data for 2025 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 2, 2025 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 except MW-2 (MW-5, MW-8, MW-9, and MW-10) had a portion of the screened interval exposed on either March 21, 2025, and/or September 2, 2025.

Cobalt Evaluation near MW-4 and MW-16

History - The site was closed in 1995 and was issued a Closure Permit in March 1995, based on the rule in effect at the time.

The detected cobalt concentrations at MW-4 were noted to be elevated in relation to other site monitoring wells across the site and in relation to the Statewide Groundwater Protection Standard (GWPS) published in IAC 567, Chapter 137 (2.1 ug/L).

A step-out monitoring well (MW-16) was installed in August, 2024 to help delineate the extent of the elevated cobalt concentrations and to evaluate whether natural site attenuation mechanisms sufficiently control the fate of the observed cobalt impacts at MW-4.

Water Quality Evaluation – MW-4 and MW-16 - The cobalt concentrations for MW-4 and MW-16 are tabulated side-by-side and are presented in Attachment E. The concentrations of cobalt in both MW-4 and MW-16 are also graphed over time in Attachment E.

A review of the data in Attachment E indicates that the concentrations in MW-4 are generally an order of magnitude greater than the concentrations reported at MW-16. Further, since completion of the MW-16 monitoring well break-in period (September & November of 2024) the reported concentrations are below the GWPS, with exception of the June 2, 2025 sample. A verification sample was performed at MW-16 on July 15, 2025, following the slightly elevated cobalt concentration reported for June 2,2025. The elevated concentration was not verified by the resample on July 15, 2025. Based on the data to date, there are no verified cobalt concentrations at MW-16 that exceed the GWPS, except the initial two (2) samples collected in the first quarter after MW-16 was constructed (during the well break-in period).

Statistical Evaluation of Data – MW-4 and MW-16 - The linear trend line on each graph in Attachment E indicates that MW-4 demonstrates a slightly increasing trend, while MW-16 demonstrates a slightly decreasing trend.

In order to assist with evaluation of the degree of impact, statistical evaluation of the confidence interval for cobalt detections at both MW-4 and MW-16 are made (Attachment F). The 95% Upper Confidence Limit (95% UCL) and the 95% Lower Confidence Limit (95% LCL) are calculated for cobalt at MW-4 and MW-16. The Confidence limits are then compared to the GWPS. If the 95% LCL exceeds the GWPS, then impact is deemed to be excessive.

Review of the data in Attachment F indicates that the 95% LCL for cobalt at MW-4 (47.044 ug/L) exceeds the GWPS (2.1 ug/L). However, the concentrations of cobalt diminish significantly between MW-4 and MW-16. The calculated 95% LCL for cobalt at MW-16 (1.740 ug/L) is less than the GWPS (2.1 ug/L).

The interpretation is readily made that the cobalt concentrations are significantly attenuated on the site and are below the GWPS prior to migration to the property line. Further, the 95% LCL is also below the GWPS at MW-16 (within the property boundaries).

Subsurface Characterizations – On July 15, 2025, the subsurface conditions at MW-4 and MW-16 were evaluated by characterizing several parameters in the formation groundwater at each location, MW-4 and MW-16 were pumped using a electric submersible pump. The discharge of water from each well was passed through a flow cell where temperature, dissolved oxygen content (%), specific conductance, and the oxidation-reduction potential (ORP) were measured. The results are summarized in the table in Attachment G.

The subsurface conditions in the south portion of the site (between MW-4 and MW-16) are characterized as having slightly acidic pH and a negative ORP (reducing conditions in the subsurface). The summary in Attachment G indicates that the measured parameters are similar in MW-4 and MW-16. However, the dissolved oxygen concentration and pH at MW-4 is slightly lower than at MW-16. The ORP at MW-4 is slightly higher than at MW-16. Given the similar nature of the subsurface conditions at MW-4 and MW-16, the observed conditions are interpreted to be sufficient to promote attenuation of cobalt across the south portion of the site.

To augment our understanding of the subsurface near MW-4 and MW-16, a water sample collected from each monitoring well on September 2, 2025 was analyzed for dissolved methane, ethane, and ethene. The intent of the analyses is to help establish whether the presence of cobalt in groundwater may be aided by the presence of landfill gas in the subsurface. The results of methane, ethane, and ethene testing are summarized in the table in Attachment G.

The results indicate that significant levels of dissolved methane (3,780 mg/L) are detected in the groundwater at MW-4, while dissolved methane at MW-16 (8.75 mg/L) is significantly low and may be attributable to organic decay in the adjacent marsh and constructed sedimentation basin(s) nearby. The elevated cobalt concentrations at MW-4 correlate directly with the elevated methane concentrations. Likewise, the de minimis concentrations of dissolved methane correlate directly to a significantly lowered cobalt concentration below the GWPS.

Conclusions

1) There are no new water quality findings based on the water samples collected in 2025 in accordance with Permit Amendment #14 (Doc #94063).
2) There are no new water elevation findings in 2025 based on the semi-annual water elevation measurements collected from monitoring wells at the site.
3) There are no new passive landfill gas monitoring findings in 2025 based on the semi-annual explosive gas monitoring performed at MW-2, MW-5, MW-8, MW-9, MW-10, GP-1, GP-2, Building #1, or Building #2.
4) The limits of water quality impacts at MW-4 appear to be restricted to the vicinity of MW-4 and diminished to acceptable levels at MW-16. Following the well break-in period, cobalt was not verified at MW-16 in concentrations that exceeded the GWPS.
5) The subsurface formation along the south side of the site in the vicinity of MW-4 and MW-16 is characterized as demonstrating slightly acidic pH and a negative ORP (reducing conditions in the subsurface).
6) Significant levels of dissolved methane (3,780 mg/L) are detected in the groundwater at MW-4, while dissolved methane at MW-16 (8.75 mg/L) is significantly low, near to the detection limit of 5.0 mg/L.

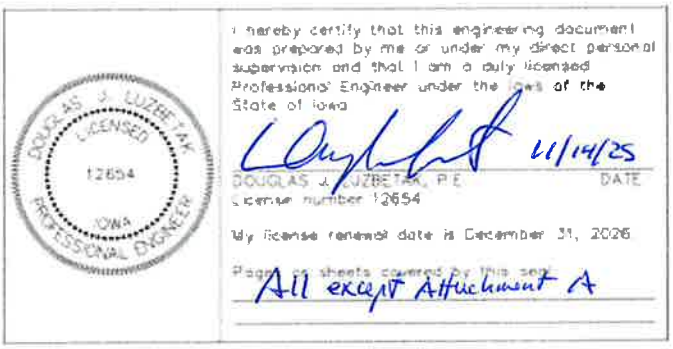
Recommendations

It is recommended that Poweshiek County request the termination of the Closure Permit for the Poweshiek County Sanitary Landfill (79-SDP-01-73C) issued March 2, 1995 (Doc #56228), and the end of regulation of the facility under *historic* Iowa Administrative Code (IAC) 567, *Chapter 103.* It is concluded that the site can be maintained under an Environmental Covenant executed between Poweshiek County and IDNR.

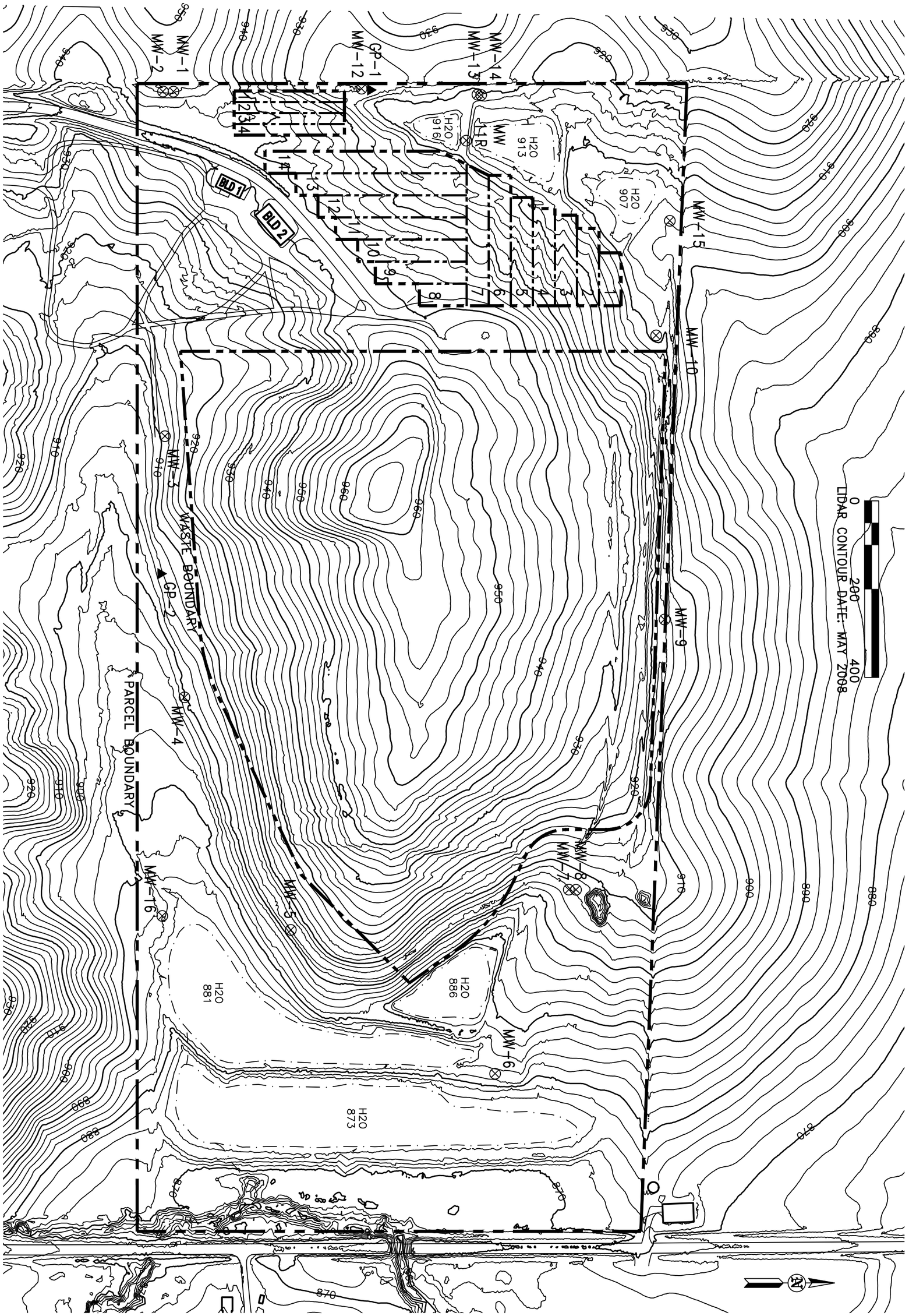
It is recommended that a Post-Closure Care Reduction-Termination Plan (PCC RTP) be offered to satisfy the requirements set forth by IDNR to address Iowa Administrative Code 567, Chapter 113, even though the rule does not specifically apply to this closed facility.

It is recommended that Poweshiek County request the suspension of groundwater monitoring, gas monitoring, water elevation measurements, water quality reporting, and semi-annual engineer's inspections during 2026. The requested suspension of monitoring and engineering tasks in 2026 will help offset the cost of development of both the Environmental Covenant and the Post-Closure Care Reduction-Termination Plan.

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 9–15–25

WATER ELEVATION SEPTEMBER 2, 2025			
WELL	ELEV.	WELL	ELEV.
MW-2	935.15	MW-10	897.38
MW-3	903.46	MW-11R	912.36
MW-4	891.03	MW-12	920.28
MW-5	890.11	MW-13	914.26
MW-6	877.19	MW-15	903.71
MW-8	901.14	MW-16	880.70
MW-9	906.22		

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

H20 907 H20 913 H20 916/ H20 886 H20 873 H20 881

BLD 1 BLD 2

WASTE BOUNDARY

PARCEL BOUNDARY

FIGURE: 2

REVISION	NO.	DATE
DRAWN DRA	PROJECT NO. 6011	DATE 9-15-25

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	DNE
3/9/2016	Chloroethane	2,800	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
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	DNE
3/6/2017	Chloroethane	2,800	ug/L	NT	NT	<1	**1.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/13/2017	Chloroethane	2,800	ug/L	NT	NT	**1.0**	**2.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/15/2018	Chloroethane	2,800	ug/L	NT	NT	<1	**1.8**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/11/2019	Chloroethane	2,800	ug/L	NT	NT	<1	**5.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/2/2020	Chloroethane	2,800	ug/L	NT	NT	<1	**2.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
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	DNE
3/1/2022	Chloroethane	2,800	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/1/2023	Chloroethane	2,800	ug/L	NT	NT	<1	**1.5**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/13/2024	Chloroethane	2,800	ug/L	NT	NT	<1	**1.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/2/2025	Chloroethane	2,800	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	**18.8**	<10	<10	<10	DNE
3/9/2016	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DNE
9/12/2016	Acetone	6,300	ug/L	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	DNE
3/6/2017	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
9/13/2017	Acetone	6,300	ug/L	NT	NT	<10	<10	**NR***	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
3/15/2018	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
9/11/2019	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
3/2/2020	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
9/20/2021	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
3/1/2022	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
9/1/2023	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
3/13/2024	Acetone	6,300	ug/L	NT	NT	<10	<10	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	DNE
9/2/2025	Acetone	6,300	ug/L	NT	NT	<10	NT	<10	NT	NT	NT	<10	NT	NT	NT	NT	NT	NT

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	cis-1,2-DCE	70	ug/L	<1	<1	<1	**1.4**	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/2/2025	cis-1,2-DCE	70	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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	Benzene	5	ug/L	<1	<1	<1	**1.0**	<1	<1	<1	<1	<1	<1	**8.0**	<1	<1	<1	DNE
3/9/2016	Benzene	5	ug/L	<1	<1	<1	**1.1**	<1	<1	<1	<1	<1	<1	**5.7**	<1	<1	<1	DNE
9/12/2016	Benzene	5	ug/L	<1	<1	**1.5**	<1	<1	<1	<1	<1	<1	<1	**6.7**	<1	<1	<1	DNE
3/6/2017	Benzene	5	ug/L	NT	NT	<1	**1.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/13/2017	Benzene	5	ug/L	NT	NT	<1	**1.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/15/2018	Benzene	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/11/2019	Benzene	5	ug/L	NT	NT	<1	**1.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/2/2020	Benzene	5	ug/L	NT	NT	<1	**2.4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/20/2021	Benzene	5	ug/L	NT	NT	<1	**2.0**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/1/2022	Benzene	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/1/2023	Benzene	5	ug/L	NT	NT	<1	**3.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/13/2024	Benzene	5	ug/L	NT	NT	<1	**2.2**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/2/2025	Benzene	5	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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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	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**4.3**	<1	<1	<1	DNE
3/9/2016	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
9/12/2016	TCE	5	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
3/6/2017	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/13/2017	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/15/2018	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/11/2019	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/2/2020	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/20/2021	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/1/2022	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/1/2023	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/13/2024	TCE	5	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/2/2025	TCE	5	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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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	Chlorobenzene	100	ug/L	<1	<1	<1	**1.4**	<1	<1	<1	<1	<1	<1	**2.1**	<1	<1	<1	DNE
3/9/2016	Chlorobenzene	100	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	**2.9**	<1	<1	<1	DNE
9/12/2016	Chlorobenzene	100	ug/L	<1	<1	**1.9**	<1	<1	<1	<1	<1	<1	<1	**5.2**	<1	<1	<1	DNE
3/6/2017	Chlorobenzene	100	ug/L	NT	NT	<1	**1.3**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/13/2017	Chlorobenzene	100	ug/L	NT	NT	<1	**2.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/15/2018	Chlorobenzene	100	ug/L	NT	NT	<1	**1.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/11/2019	Chlorobenzene	100	ug/L	NT	NT	<1	**3.6**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/2/2020	Chlorobenzene	100	ug/L	NT	NT	<1	**4**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/20/2021	Chlorobenzene	100	ug/L	NT	NT	<1	**5.9**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/1/2022	Chlorobenzene	100	ug/L	NT	NT	<1	**2.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/1/2023	Chlorobenzene	100	ug/L	NT	NT	<1	**9.1**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/13/2024	Chlorobenzene	100	ug/L	NT	NT	<1	**9.7**	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/2/2025	Chlorobenzene	100	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	**2.8**	<2	<2	<2	DNE
3/9/2016	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	DNE
9/12/2016	Xylenes, total	10,000	ug/L	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	DNE
3/6/2017	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
9/13/2017	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
3/15/2018	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
9/11/2019	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
3/2/2020	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
9/20/2021	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
3/1/2022	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
9/1/2023	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
3/13/2024	Xylenes, total	10,000	ug/L	NT	NT	<2	<2	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	DNE
9/2/2025	Xylenes, total	10,000	ug/L	NT	NT	<2	NT	<2	NT	NT	NT	<2	NT	NT	NT	NT	NT	NT

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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	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
3/9/2016	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
9/12/2016	1,1-dichloroethane	140	ug/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	DNE
3/6/2017	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**3.3**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/13/2017	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.8**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/15/2018	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/11/2019	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/2/2020	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/20/2021	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.8**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/1/2022	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**2.6**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/1/2023	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**1.2**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
3/13/2024	1,1-dichloroethane	140	ug/L	NT	NT	<1	<1	**1.0**	NT	NT	NT	<1	NT	NT	NT	NT	NT	DNE
9/2/2025	1,1-dichloroethane	140	ug/L	NT	NT	<1	NT	<1	NT	NT	NT	<1	NT	NT	NT	NT	NT	NT

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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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/11/2019	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Arsenic, total	0.01	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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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	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**	DNE
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**	DNE
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**	DNE
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	DNE
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	DNE
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	DNE
9/11/2019	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Barium, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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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	DNE
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	DNE
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	DNE
3/6/2017	Cadmium, total	0.005	mg/L	<0.0008	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/13/2017	Cadmium, total	0.005	mg/L	<0.0008	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/15/2018	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/11/2019	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Cadmium, total	0.005	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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**
11/14/2024	Cobalt, total	0.0021	mg/L	NT	<0.0004	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0025**
12/11/2024	Cobalt, total	0.0021	mg/L	NT	<0.0004	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0014**
3/21/2025	Cobalt, total	0.0021	mg/L	NT	<0.0004	NT	**0.0492**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0020**
6/2/2025	Cobalt, total	0.0021	mg/L	NT	<0.0005	NT	**0.0619**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0023**
7/16/2025	Cobalt, total	0.0021	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0020**
9/2/2025	Cobalt, total	0.0021	mg/L	NT	<0.0005	**0.038**	**0.0511**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**0.0016**

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	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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/11/2019	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Copper, total	1.3	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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	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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/11/2019	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Nickel, total	0.1	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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	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	DNE
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	DNE
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	DNE
3/6/2017	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	DNE
9/13/2017	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	DNE
3/15/2018	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	<0.002	NT	NT	NT	NT	NT	NT	DNE
9/11/2019	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Antimony, total	0.006	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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	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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/11/2019	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/2/2020	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/20/2021	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/1/2022	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/1/2023	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
3/13/2024	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	DNE
9/2/2025	Zinc, total	2	mg/L	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT

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	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**	DNE
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**	DNE
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**	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
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	DNE
9/12/2024	Turbidity	N/A	NTU	NT	NT	NT	**2.75**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**5.25**
11/14/2024	Turbidity	N/A	NTU	NT	**2.56**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**7.71**
12/11/2024	Turbidity	N/A	NTU	NT	**15.61**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**5.20**
3/21/2025	Turbidity	N/A	NTU	NT	**4.26**	NT	**6.79**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**35.3**
6/2/2025	Turbidity	N/A	NTU	NT	**2.15**	NT	**3.43**	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**34.85**
7/16/2025	Turbidity	N/A	NTU	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	NT	**7.75**
9/2/2025	Turbidity	N/A	NTU	NT	**1.91**	**2.93**	**4.07**	2.31	NT	NT	NT	**2.35**	NT	NT	NT	NT	NT	**29.34**

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

1HL1064

Project Description

6011

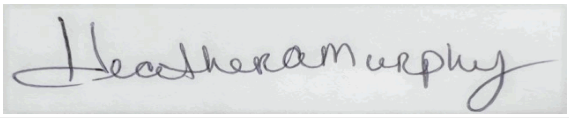
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Friday, December 20, 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

1HL1064

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 12/13/2024
Reported: 12/20/2024

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-16	1HL1064-01	Aqueous	GRAB		12/11/24 14:03	12/13/24 10:51
MW-2	1HL1064-02	Aqueous	GRAB		12/11/24 13:50	12/13/24 10:51

Analytical Testing Parameters

Client Sample ID: MW-16
Sample Matrix: Aqueous
Lab Sample ID: 1HL1064-01
Collected By: Whipple, Todd
Collection Date: 12/11/2024 14:03

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0014**	0.0004	mg/L	4		12/16/24 1534	12/18/24 1908	RVV

Client Sample ID: MW-2
Sample Matrix: Aqueous
Lab Sample ID: 1HL1064-02
Collected By: Whipple, Todd
Collection Date: 12/11/2024 13:50

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		12/16/24 1534	12/18/24 1926	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1HL0900	1HL0900-BLK1	
		1HL0900-BS1	
		1HL0900-MS1	1HL0900-01
		1HL0900-MSD1	1HL0900-01
		1HL0900-PS1	1HL0900-01
		1HL1064-01	MW-16
		1HL1064-02	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 1HL0900 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1HL0900-BLK1)			Prepared: 12/16/24 15:34 Analyzed: 12/18/24 18:31							
Cobalt, total	<0.0004	0.0004	mg/L							
LCS (1HL0900-BS1)			Prepared: 12/16/24 15:34 Analyzed: 12/18/24 18:37							
Cobalt, total	0.102	0.0004	mg/L	0.100		102	80-120			
Matrix Spike (1HL0900-MS1)		**Source: 1HL0900-01**	Prepared: 12/16/24 15:34 Analyzed: 12/18/24 18:49							
Cobalt, total	0.102	0.0004	mg/L	0.100	ND	102	75-125			
Matrix Spike Dup (1HL0900-MSD1)		**Source: 1HL0900-01**	Prepared: 12/16/24 15:34 Analyzed: 12/18/24 18:55							
Cobalt, total	0.101	0.0004	mg/L	0.100	ND	101	75-125	1.08	20	
Post Spike (1HL0900-PS1)		**Source: 1HL0900-01**	Prepared: 12/16/24 15:34 Analyzed: 12/18/24 19:01							
Cobalt, total	0.0831		mg/L	0.0800	0.00009	104	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 3.4°C

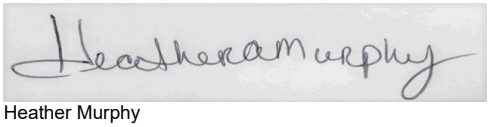
Cooler Inspection Checklist

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

Report Comments

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

Reviewed and Approved By:



Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
12/20/24 15:47

CHAIN OF CUSTO

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1HL1064
HLW Engineering
PM: Heather Murphy

AGE 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 LLC
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: Office of County Engineer
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 WORK ORDER NO. / SAMPLE TEMPERATURE UPON RECEIPT / SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
MW-16	12-11-24		MW-16	1	W	G	X		
MW-2	12-11-24		MW-2	1	W	G	X		

SAMPLE TEMPERATURE UPON RECEIPT: 3.4 °C

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Turn-Around: ☐ Standard ☐ Rush ____ Contact Lab Prior to Submission	
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date 12/13/24 Time 10:51	Remarks:	

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

CHAIN OF CUSTODY RE

Keystone LABORATORIES, INC.

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

☐ 3012 Ansborough Ave.
Waterloo, IA 50701
Phone: 319-235-4440
Fax: 319-235-2480

☐

1HL1064

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 LLC
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: Office of County Engineer
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: Comm'l, total	LAB USE ONLY: LABORATORY SAMPLE NUMBER
MW-16	12-11-24	~~14:00~~ 14:03pm	MW-16	1	W	G	X	
MW-2	12-11-24	13:50pm	MW-2	1	W	G	X	

LABORATORY WORK ORDER NO.: 1HL1064
SAMPLE TEMPERATURE UPON RECEIPT: 3.4 °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)	Date: 12/13/24 Time: 10:51	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IC1615

Project Description

6011

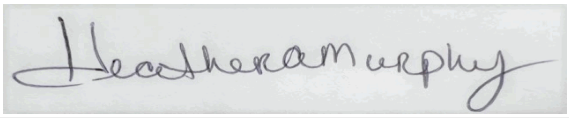
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Monday, April 7, 2025

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

1IC1615

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 03/25/2025
Reported: 04/07/2025

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-4	1IC1615-01	Aqueous	GRAB		03/21/25 12:30	03/25/25 09:45
MW-16	1IC1615-02	Aqueous	GRAB		03/21/25 12:37	03/25/25 09:45
MW-2	1IC1615-03	Aqueous	GRAB		03/21/25 12:17	03/25/25 09:45

Analytical Testing Parameters

Client Sample ID: MW-4
Sample Matrix: Aqueous
Lab Sample ID: 1IC1615-01
Collected By: JGH
Collection Date: 03/21/2025 12:30

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0492**	0.0004	mg/L	4		03/31/25 1022	04/04/25 2224	RVV

Client Sample ID: MW-16
Sample Matrix: Aqueous
Lab Sample ID: 1IC1615-02
Collected By: JGH
Collection Date: 03/21/2025 12:37

Determination of Total Metals	Result	RL	Units	DF	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A								
Cobalt, total	**0.0020**	0.0004	mg/L	4		03/31/25 1022	04/04/25 2230	RVV

Client Sample ID: MW-2
Sample Matrix: Aqueous
Lab Sample ID: 1IC1615-03
Collected By: JGH
Collection Date: 03/21/2025 12:17

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		03/31/25 1022	04/04/25 2236	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1IC1297	1IC1297-BLK1	
		1IC1297-BS1	
		1IC1297-MS1	1IC1317-01
		1IC1297-MSD1	1IC1317-01
		1IC1297-PS1	1IC1317-01
		1IC1615-01	MW-4
		1IC1615-02	MW-16
		1IC1615-03	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 1IC1297 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1IC1297-BLK1)			Prepared: 03/31/25 10:22 Analyzed: 04/04/25 19:39							
Cobalt, total	<0.0004	0.0004	mg/L							
LCS (1IC1297-BS1)			Prepared: 03/31/25 10:22 Analyzed: 04/04/25 19:57							
Cobalt, total	0.0966	0.0004	mg/L	0.100		96.6	80-120			
Matrix Spike (1IC1297-MS1)		**Source: 1IC1317-01**	Prepared: 03/31/25 10:22 Analyzed: 04/04/25 20:21							
Cobalt, total	0.130	0.0004	mg/L	0.100	ND	130	75-125			M4
Matrix Spike Dup (1IC1297-MSD1)		**Source: 1IC1317-01**	Prepared: 03/31/25 10:22 Analyzed: 04/04/25 20:27							
Cobalt, total	0.0905	0.0004	mg/L	0.100	ND	90.5	75-125	35.7	20	R1
Post Spike (1IC1297-PS1)		**Source: 1IC1317-01**	Prepared: 03/31/25 10:22 Analyzed: 04/04/25 20:34							
Cobalt, total	0.102		mg/L	0.0800	0.00006	127	80-120			M4

Definitions

M4: Matrix spike recovery is outside of acceptance limits. The post digestion spike is outside acceptance levels.
R1: Duplicate RPD is outside acceptance criteria.
RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 2.5ºC

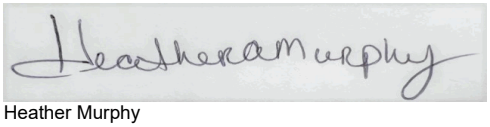
Cooler Inspection Checklist

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
04/07/25 15:57

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Newto
641-7

1 I C 1 6 1 5

HLW Engineering
PM: Heather Murphy

Page 1 of
Printed: 2/11/2025 10:11:25A

www.keystonelabs.com

SITE INFORMATION

Sampler: JGH

Project: Poweshiek Co. Landfill-COC1

8011

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

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

SPECIAL INSTRUCTIONS

None

Turn Around Time

[X] Standard [ ] RUSH, need by ___/___/___

LAB USE ONLY

Work Order 1IC1615

Temperature 2.5

Turn-Cooler: No

[ ] Custody Seal
[X] Containers Intact
[X] COC/Labels Agree
[ ] Preservation Confirmed
[X] 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	3/21/25	12:30	1	co-l-6020	01
-001	MW-16	Aqueous	GRAB	3/21/25	12:37	1	co-l-6020	02
-001	MW-2	Aqueous	GRAB	3/21/25	12:17	1	co-l-6020	03

Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Received for Lab By 3/24/25 0945 Date/Time

Remarks:

Original - Lab Copy Yellow - Sampler Copy

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IF0221

Project Description

6011

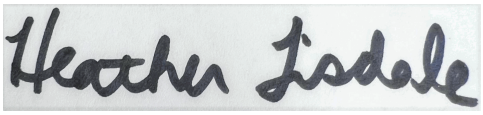
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Tisdale

Customer Relationship Specialist

Friday, June 27, 2025

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

1IF0221

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 06/02/2025
Reported: 06/27/2025

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-2	1IF0221-01	Aqueous	GRAB		06/02/25 07:59	06/02/25 10:55
MW-4	1IF0221-02	Aqueous	GRAB		06/02/25 08:14	06/02/25 10:55
MW-16	1IF0221-03	Aqueous	GRAB		06/02/25 08:22	06/02/25 10:55

Analytical Testing Parameters

Client Sample ID: MW-2
Sample Matrix: Aqueous
Lab Sample ID: 1IF0221-01
Collected By: Whipple, Todd
Collection Date: 06/02/2025 7:59

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	<0.0005	0.0005	mg/L		06/21/25 1011	06/25/25 1950	RVV

Client Sample ID: MW-4
Sample Matrix: Aqueous
Lab Sample ID: 1IF0221-02
Collected By: Whipple, Todd
Collection Date: 06/02/2025 8:14

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0619**	0.0005	mg/L		06/21/25 1011	06/25/25 1952	RVV

Client Sample ID: MW-16
Sample Matrix: Aqueous
Lab Sample ID: 1IF0221-03
Collected By: Whipple, Todd
Collection Date: 06/02/2025 8:22

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0023**	0.0005	mg/L		06/21/25 1011	06/25/25 1955	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1IF1181	1IF1181-BLK1	
		1IF1181-BS1	
		1IF0221-01	MW-2
		1IF0221-02	MW-4
		1IF0221-03	MW-16
		1IF1181-MS1	1IF1411-01
		1IF1181-MSD1	1IF1411-01
		1IF1181-PS1	1IF1411-01

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

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IF1181 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1IF1181-BLK1)			Prepared: 06/21/25 10:11 Analyzed: 06/25/25 19:42							
Cobalt, total	<0.0005	0.0005	mg/L							
LCS (1IF1181-BS1)			Prepared: 06/21/25 10:11 Analyzed: 06/25/25 19:45							
Cobalt, total	0.108	0.0005	mg/L	0.100		108	80-120			
Matrix Spike (1IF1181-MS1)	**Source: 1IF1411-01**		Prepared: 06/21/25 10:11 Analyzed: 06/25/25 20:00							
Cobalt, total	0.106	0.0005	mg/L	0.100	0.0007	106	75-125			
Matrix Spike Dup (1IF1181-MSD1)	**Source: 1IF1411-01**		Prepared: 06/21/25 10:11 Analyzed: 06/25/25 20:02							
Cobalt, total	0.107	0.0005	mg/L	0.100	0.0007	106	75-125	0.478	20	
Post Spike (1IF1181-PS1)	**Source: 1IF1411-01**		Prepared: 06/21/25 10:11 Analyzed: 06/25/25 20:10							
Cobalt, total	0.0205		mg/L	0.0200	0.0007	98.8	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

Cooler ID: Default Cooler Temp: 0.0°C

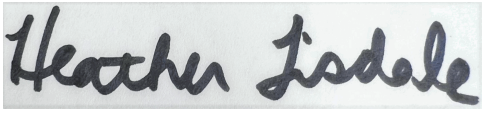
Cooler Inspection Checklist

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 Tisdale
Customer Relationship Specialist
06/27/25 09:07

CHAIN OF CUSTODY R[illegible]

Keystone LABORATORIES, INC.

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Newton, IA 50208
Phone: 641-792-8451
Fax: 641-792-7989

☐ 3012 Ansborough Ave.
Waterloo, IA 50701
Phone: 319-235-4440
Fax: 319-235-2480

nBuren St
e, IA 52544
41-437-7023
41-437-7040

1 I F 0 2 2 1

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:
PHONE:

REPORT TO:

NAME: Todd Whipple
COMPANY NAME: HLW Engineering 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 County Engineer
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-2	6-2-25	7:59	MW-2	1	W	G	X	01
MW-4	6-2-25	8:14	MW-4	1	W	G	X	02
MW-16	6-2-25	8:22	MW-16	1	W	G	X	03

LAB USE ONLY

LABORATORY WORK ORDER NO.: 1IF0221

SAMPLE TEMPERATURE UPON RECEIPT: 0.0 ice °C

SAMPLE CONDITION/COMMENTS:

Relinquished by: (Signature) Todd Whipple	Date 6-2-25 Time 10:55	Received by: (Signature)	Date Time	Turn-Around: ☐ Standard ☐ Rush ____ Contact Lab Prior to Submission	
Relinquished by: (Signature)	Date Time	Received for Lab by: (Signature) Terry Hochstetler	Date 6/2/25 Time 10:55	Remarks:	

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1IG1855

Project Description

6011

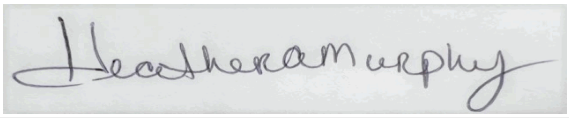
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Thursday, July 24, 2025

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

1IG1855

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 07/16/2025
Reported: 07/24/2025

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-16	1IG1855-01	Aqueous	GRAB		07/16/25 08:20	07/16/25 09:37

Analytical Testing Parameters

Client Sample ID:	MW-16		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1IG1855-01	**Collection Date:**	07/16/2025 8:20

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0020**	0.0005	mg/L		07/22/25 1525	07/23/25 1707	RVV

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 6020A	1IG1243	1IG1243-BLK1	
		1IG1243-BS1	
		1IG1855-01	MW-16
		1IG1243-MS1	1IG1856-01
		1IG1243-MSD1	1IG1856-01
		1IG1243-PS1	1IG1856-01

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

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1IG1243 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1IG1243-BLK1)			Prepared: 07/22/25 15:25 Analyzed: 07/23/25 16:55							
Cobalt, total	<0.0005	0.0005	mg/L							
LCS (1IG1243-BS1)			Prepared: 07/22/25 15:25 Analyzed: 07/23/25 16:57							
Cobalt, total	0.111	0.0005	mg/L	0.100		111	80-120			
Matrix Spike (1IG1243-MS1)		Source: 1IG1856-01	Prepared: 07/22/25 15:25 Analyzed: 07/23/25 17:12							
Cobalt, total	0.103	0.0005	mg/L	0.100	0.00009	103	75-125			
Matrix Spike Dup (1IG1243-MSD1)		Source: 1IG1856-01	Prepared: 07/22/25 15:25 Analyzed: 07/23/25 17:14							
Cobalt, total	0.106	0.0005	mg/L	0.100	0.00009	106	75-125	2.55	20	
Post Spike (1IG1243-PS1)		Source: 1IG1856-01	Prepared: 07/22/25 15:25 Analyzed: 07/23/25 17:17							
Cobalt, total	0.0194		mg/L	0.0200	0.00009	96.3	80-120			

Definitions

RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

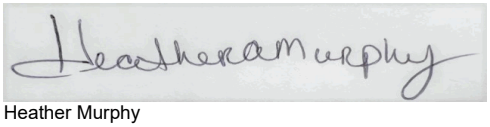
Cooler ID: Default Cooler Temp: 0.0°C

Cooler Inspection Checklist

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

Report Comments

Reviewed and Approved By:



Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
07/24/25 15:01

CHAIN OF CUSTODY

Keystone LABORATORIES, INC.

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

☐ 3012 Ansborough Av
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Phone: 319-235-444(
Fax: 319-235-248(

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terville, IA 52544
ne: 641-437-7023
641-437-7040

1 I G 1 8 5 5

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:
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 (App IV)	LAB USE ONLY: SAMPLE CONDITION/COMMENTS	LABORATORY SAMPLE NUMBER
MW-16	7/15/25	8:20	MW-16	1	W	G	X		01

LABORATORY WORK ORDER NO.: 1IG1855

SAMPLE TEMPERATURE UPON RECEIPT: 0.0 °C

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Date / Time	Turn-Around: ☐ Standard ☐ Rush (Contact Lab Prior to Submission)
Todd Whipple	7/16/25			
Relinquished by: (Signature)	Date / Time	Received for Lab by: (Signature)	Date 7-16-25 / Time 1237	Remarks:

Original - Lab Copy • Yellow - Sampler Copy

FORM: CCR 7-97

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1II0273

Project Description

6011

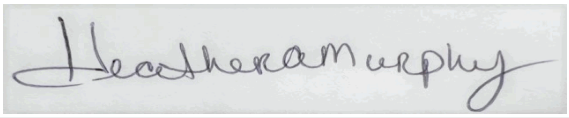
For:

Todd Whipple

HLW Engineering

204 West Broad St

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Tuesday, September 23, 2025

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

1II0273

HLW Engineering

Todd Whipple
204 West Broad St
Story City, IA 50248

Project Name: 6011

Project / PO Number: N/A
Received: 09/02/2025
Reported: 09/23/2025

Case Narrative

Microbac Laboratories Inc., - Marietta, OH
All vials received with bubbles

Sample Summary Report

Sample Name	Laboratory ID	Client Matrix	Sample Type	Sample Begin	Sample Taken	Lab Received
MW-4	1II0273-01	Aqueous	GRAB		09/02/25 14:35	09/02/25 16:36
MW-16	1II0273-02	Aqueous	GRAB		09/02/25 14:48	09/02/25 16:36
MW-2	1II0273-03	Aqueous	GRAB		09/02/25 14:06	09/02/25 16:36
MW-3	1II0273-04	Aqueous	GRAB		09/02/25 14:19	09/02/25 16:36
MW-5	1II0273-05	Aqueous	GRAB		09/02/25 15:03	09/02/25 16:36
MW-9	1II0273-06	Aqueous	GRAB		09/02/25 15:24	09/02/25 16:36
Duplicate	1II0273-07	Aqueous	GRAB		09/02/25 00:00	09/02/25 16:36

CERTIFICATE OF ANALYSIS

1II0273

Analytical Testing Parameters

Client Sample ID: MW-4
Sample Matrix: Aqueous
Lab Sample ID: 1II0273-01
Collected By: Whipple, Todd
Collection Date: 09/02/2025 14:35

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA RSK-175							
Methane	**3780**	250	ug/L	**D3**	09/12/25 1144	09/12/25 1553	KJB
Ethene	<5.00	5.00	ug/L		09/10/25 1101	09/10/25 1725	KJB
Ethane	<5.00	5.00	ug/L	**Q7**	09/10/25 1101	09/10/25 1725	KJB

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0511**	0.0005	mg/L		09/05/25 1609	09/08/25 1837	RVV

Client Sample ID: MW-16
Sample Matrix: Aqueous
Lab Sample ID: 1II0273-02
Collected By: Whipple, Todd
Collection Date: 09/02/2025 14:48

Analyses Performed by: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA RSK-175							
Methane	**8.75**	5.00	ug/L		09/12/25 1144	09/12/25 1622	KJB
Ethene	<5.00	5.00	ug/L		09/10/25 1101	09/10/25 1739	KJB
Ethane	<5.00	5.00	ug/L	**Q7**	09/10/25 1101	09/10/25 1739	KJB

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0016**	0.0005	mg/L		09/05/25 1609	09/08/25 1845	RVV

Client Sample ID: MW-2
Sample Matrix: Aqueous
Lab Sample ID: 1II0273-03
Collected By: Whipple, Todd
Collection Date: 09/02/2025 14:06

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	<0.0005	0.0005	mg/L		09/05/25 1609	09/08/25 1848	RVV

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-3		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-04	**Collection Date:**	09/02/2025 14:19

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260D							
Chloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Vinyl Chloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Bromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Chloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Trichlorofluoromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Acetone	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Methyl Iodide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Carbon Disulfide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Methylene Chloride	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Acrylonitrile	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Vinyl Acetate	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
2-Butanone (MEK)	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Bromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Chloroform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1,1-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Carbon Tetrachloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Benzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,2-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Trichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,2-Dichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Dibromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Bromodichloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
cis-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Toluene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
trans-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1,2-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Tetrachloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
2-Hexanone (MBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Dibromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,2-Dibromoethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Chlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Ethylbenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Xylenes, total	<2.0	2.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Styrene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Bromoform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-3		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-04	**Collection Date:**	09/02/2025 14:19

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,2,3-Trichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,4-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,2-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1104	RAF
Surrogate: Dibromofluoromethane	102	Limit: 75-136	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: Dibromofluoromethane	102	Limit: 57-128	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 49-135	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: 1,2-Dichloroethane-d4	102	Limit: 61-142	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: Toluene-d8	102	Limit: 82-116	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: Toluene-d8	102	Limit: 82-121	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: 4-Bromofluorobenzene	92.7	Limit: 77-114	% Rec		09/04/25 0000	09/04/25 1104	RAF
Surrogate: 4-Bromofluorobenzene	92.7	Limit: 80-116	% Rec		09/04/25 0000	09/04/25 1104	RAF

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	**0.0380**	0.0005	mg/L		09/05/25 1609	09/08/25 1850	RVV

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-5		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-05	**Collection Date:**	09/02/2025 15:03

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260D							
Chloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Vinyl Chloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Bromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Chloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Trichlorofluoromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Acetone	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Methyl Iodide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Carbon Disulfide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Methylene Chloride	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Acrylonitrile	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Vinyl Acetate	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
2-Butanone (MEK)	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Bromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Chloroform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1,1-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Carbon Tetrachloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Benzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,2-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Trichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,2-Dichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Dibromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Bromodichloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
cis-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Toluene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
trans-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1,2-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Tetrachloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
2-Hexanone (MBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Dibromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,2-Dibromoethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Chlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Ethylbenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Xylenes, total	<2.0	2.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Styrene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Bromoform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-5		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-05	**Collection Date:**	09/02/2025 15:03

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,2,3-Trichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,4-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,2-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1127	RAF
Surrogate: Dibromofluoromethane	96.7	Limit: 57-128	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: Dibromofluoromethane	96.7	Limit: 75-136	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: 1,2-Dichloroethane-d4	94.5	Limit: 49-135	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: 1,2-Dichloroethane-d4	94.5	Limit: 61-142	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: Toluene-d8	100	Limit: 82-116	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: 4-Bromofluorobenzene	95.6	Limit: 80-116	% Rec		09/04/25 0000	09/04/25 1127	RAF
Surrogate: 4-Bromofluorobenzene	95.6	Limit: 77-114	% Rec		09/04/25 0000	09/04/25 1127	RAF

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-9		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-06	**Collection Date:**	09/02/2025 15:24

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 5030B/EPA 8260D							
Chloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Vinyl Chloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Bromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Chloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Trichlorofluoromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Acetone	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Methyl Iodide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Carbon Disulfide	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Methylene Chloride	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Acrylonitrile	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Vinyl Acetate	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
2-Butanone (MEK)	<10.0	10.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Bromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Chloroform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1,1-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Carbon Tetrachloride	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Benzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,2-Dichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Trichloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,2-Dichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Dibromomethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Bromodichloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
cis-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Toluene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
trans-1,3-Dichloropropene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1,2-Trichloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Tetrachloroethylene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
2-Hexanone (MBK)	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Dibromochloromethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,2-Dibromoethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Chlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Ethylbenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Xylenes, total	<2.0	2.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Styrene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Bromoform	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF

CERTIFICATE OF ANALYSIS

1II0273

Client Sample ID:	MW-9		
Sample Matrix:	Aqueous	**Collected By:**	Whipple, Todd
Lab Sample ID:	1II0273-06	**Collection Date:**	09/02/2025 15:24

Determination of Volatile Organic Compounds	Result	RL	Units	Note	Prepared	Analyzed	Analyst
1,2,3-Trichloropropane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,4-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,2-Dichlorobenzene	<1.0	1.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L		09/04/25 0000	09/04/25 1150	RAF
Surrogate: Dibromofluoromethane	98.3	Limit: 75-136	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: Dibromofluoromethane	98.3	Limit: 57-128	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 61-142	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: 1,2-Dichloroethane-d4	100	Limit: 49-135	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: Toluene-d8	100	Limit: 82-116	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: Toluene-d8	100	Limit: 82-121	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: 4-Bromofluorobenzene	96.1	Limit: 77-114	% Rec		09/04/25 0000	09/04/25 1150	RAF
Surrogate: 4-Bromofluorobenzene	96.1	Limit: 80-116	% Rec		09/04/25 0000	09/04/25 1150	RAF

Client Sample ID:	Duplicate		
Sample Matrix:	Aqueous	**Collected By:**	whipple, Todd
Lab Sample ID:	1II0273-07	**Collection Date:**	09/02/2025

Analyses Performed by: Microbac Laboratories, Inc., Newton

Determination of Total Metals	Result	RL	Units	Note	Prepared	Analyzed	Analyst
EPA 3005A/EPA 6020A							
Cobalt, total	<0.0005	0.0005	mg/L		09/05/25 1609	09/08/25 1853	RVV

CERTIFICATE OF ANALYSIS

1II0273

Batch Log Summary

Method	Batch	Laboratory ID	Client / Source ID
EPA 8260D	1II0271	1II0271-BS1	
		1II0271-BSD1	
		1II0271-BLK1	
		1II0273-04	MW-3
		1II0273-05	MW-5
		1II0273-06	MW-9
		1II0271-MS1	3IH0157-11
		1II0271-MSD1	3IH0157-11
Method	**Batch**	**Laboratory ID**	**Client / Source ID**
EPA 6020A	1II0356	1II0356-BLK1	
		1II0356-BS1	
		1II0273-01	MW-4
		1II0273-02	MW-16
		1II0273-03	MW-2
		1II0273-04	MW-3
		1II0273-07	Duplicate
		1II0356-MS1	1II0470-01
		1II0356-MSD1	1II0470-01
		1II0356-PS1	1II0470-01
Method	**Batch**	**Laboratory ID**	**Client / Source ID**
EPA 6020A	1II1158	1II1158-BLK1	
		1II1158-BS1	
		1II1158-MS1	1II0273-04RE1
		1II1158-MSD1	1II0273-04RE1
		1II1158-PS1	1II0273-04RE1
Method	**Batch**	**Laboratory ID**	**Client / Source ID**
EPA RSK-175	B5I0550	B5I0550-BLK1	
		1II0273-01	MW-4
		1II0273-02	MW-16
		B5I0550-BS1	
		B5I0550-BSD1	
Method	**Batch**	**Laboratory ID**	**Client / Source ID**
EPA RSK-175	B5I0655	B5I0655-BLK1	
		B5I0655-BS1	
		1II0273-01RE1	MW-4
		1II0273-02RE1	MW-16
		B5I0655-BSD1	

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 1II0271 - EPA 5030B - EPA 8260D										
Blank (1II0271-BLK1)				Prepared: 09/04/25 00:00 Analyzed: 09/04/25 10:41						
Chloromethane	<1.0	1.0	ug/L							
Vinyl Chloride	<1.0	1.0	ug/L							

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
Blank (1II0271-BLK1)				Prepared: 09/04/25 00:00 Analyzed: 09/04/25 10:41						
Bromomethane	<1.0	1.0	ug/L							
Chloroethane	<1.0	1.0	ug/L							
Trichlorofluoromethane	<1.0	1.0	ug/L							
1,1-Dichloroethylene	<1.0	1.0	ug/L							
Acetone	<10.0	10.0	ug/L							
Methyl Iodide	<1.0	1.0	ug/L							
Carbon Disulfide	<1.0	1.0	ug/L							
Methylene Chloride	<5.0	5.0	ug/L							
Acrylonitrile	<5.0	5.0	ug/L							
trans-1,2-Dichloroethylene	<1.0	1.0	ug/L							
1,1-Dichloroethane	<1.0	1.0	ug/L							
Vinyl Acetate	<5.0	5.0	ug/L							
cis-1,2-Dichloroethylene	<1.0	1.0	ug/L							
2-Butanone (MEK)	<10.0	10.0	ug/L							
Bromochloromethane	<1.0	1.0	ug/L							
Chloroform	<1.0	1.0	ug/L							
1,1,1-Trichloroethane	<1.0	1.0	ug/L							
Carbon Tetrachloride	<1.0	1.0	ug/L							
Benzene	<1.0	1.0	ug/L							
1,2-Dichloroethane	<1.0	1.0	ug/L							
Trichloroethylene	<1.0	1.0	ug/L							
1,2-Dichloropropane	<1.0	1.0	ug/L							
Dibromomethane	<1.0	1.0	ug/L							
Bromodichloromethane	<1.0	1.0	ug/L							
cis-1,3-Dichloropropene	<1.0	1.0	ug/L							
4-Methyl-2-pentanone (MIBK)	<5.0	5.0	ug/L							
Toluene	<1.0	1.0	ug/L							
trans-1,3-Dichloropropene	<1.0	1.0	ug/L							
1,1,2-Trichloroethane	<1.0	1.0	ug/L							
Tetrachloroethylene	<1.0	1.0	ug/L							
2-Hexanone (MBK)	<5.0	5.0	ug/L							
Dibromochloromethane	<1.0	1.0	ug/L							
1,2-Dibromoethane	<1.0	1.0	ug/L							
Chlorobenzene	<1.0	1.0	ug/L							
1,1,1,2-Tetrachloroethane	<1.0	1.0	ug/L							
Ethylbenzene	<1.0	1.0	ug/L							
Xylenes, total	<2.0	2.0	ug/L							
Styrene	<1.0	1.0	ug/L							
Bromoform	<1.0	1.0	ug/L							
1,2,3-Trichloropropane	<1.0	1.0	ug/L							
trans-1,4-Dichloro-2-butene	<5.0	5.0	ug/L							
1,1,2,2-Tetrachloroethane	<1.0	1.0	ug/L							
1,4-Dichlorobenzene	<1.0	1.0	ug/L							

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
Blank (1II0271-BLK1)			Prepared: 09/04/25 00:00 Analyzed: 09/04/25 10:41							
1,2-Dichlorobenzene	<1.0	1.0	ug/L							
1,2-Dibromo-3-chloropropane	<5.0	5.0	ug/L							
Surrogate: Dibromofluoromethane	*50.3*		ug/L	*50.2*		*100*	*57-128*			
Surrogate: Dibromofluoromethane	*50.3*		ug/L	*50.2*		*100*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*50.1*		ug/L	*50.4*		*99.5*	*49-135*			
Surrogate: 1,2-Dichloroethane-d4	*50.1*		ug/L	*50.4*		*99.5*	*61-142*			
Surrogate: Toluene-d8	*51.6*		ug/L	*50.5*		*102*	*82-116*			
Surrogate: Toluene-d8	*51.6*		ug/L	*50.5*		*102*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*48.2*		ug/L	*50.2*		*96.0*	*77-114*			
Surrogate: 4-Bromofluorobenzene	*48.2*		ug/L	*50.2*		*96.0*	*80-116*			
LCS (1II0271-BS1)			Prepared: 09/04/25 00:00 Analyzed: 09/04/25 09:10							
Chloromethane	35.16	1.0	ug/L	30.3		116	63-155			
Vinyl Chloride	33.55	1.0	ug/L	30.2		111	70-154			
Bromomethane	28.69	1.0	ug/L	30.1		95.2	52-176			
Chloroethane	30.85	1.0	ug/L	30.3		102	72-148			
Trichlorofluoromethane	34.75	1.0	ug/L	30.3		115	70-152			
1,1-Dichloroethylene	55.48	1.0	ug/L	50.1		111	70-148			
Acetone	146.1	10.0	ug/L	100		146	43-172			
Methyl Iodide	92.60	1.0	ug/L	100		92.6	69-170			
Carbon Disulfide	112.2	1.0	ug/L	100		112	72-162			
Methylene Chloride	50.45	5.0	ug/L	50.1		101	68-142			
Acrylonitrile	98.20	5.0	ug/L	100		98.2	33-163			
trans-1,2-Dichloroethylene	50.15	1.0	ug/L	50.1		100	66-148			
1,1-Dichloroethane	53.83	1.0	ug/L	50.1		107	66-143			
Vinyl Acetate	166.8	5.0	ug/L	131		127	43-153			
cis-1,2-Dichloroethylene	48.60	1.0	ug/L	50.4		96.5	71-149			
2-Butanone (MEK)	134.1	10.0	ug/L	100		134	52-159			
Bromochloromethane	51.09	1.0	ug/L	50.4		101	69-143			
Chloroform	51.56	1.0	ug/L	50.1		103	69-144			
1,1,1-Trichloroethane	53.24	1.0	ug/L	50.1		106	62-129			
Carbon Tetrachloride	54.82	1.0	ug/L	50.1		109	63-141			
Benzene	48.32	1.0	ug/L	50.4		95.8	71-134			
1,2-Dichloroethane	50.91	1.0	ug/L	50.1		102	72-132			
Trichloroethylene	51.96	1.0	ug/L	50.1		104	71-135			
1,2-Dichloropropane	50.44	1.0	ug/L	50.1		101	69-136			
Dibromomethane	48.06	1.0	ug/L	50.4		95.4	73-147			
Bromodichloromethane	52.00	1.0	ug/L	50.1		104	68-129			
cis-1,3-Dichloropropene	53.46	1.0	ug/L	50.1		107	65-134			
4-Methyl-2-pentanone (MIBK)	106.9	5.0	ug/L	100		107	58-147			
Toluene	48.38	1.0	ug/L	50.5		95.8	72-133			
trans-1,3-Dichloropropene	56.43	1.0	ug/L	50.1		113	67-130			
1,1,2-Trichloroethane	48.31	1.0	ug/L	50.1		96.4	69-135			
Tetrachloroethylene	53.19	1.0	ug/L	50.1		106	69-130			

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
LCS (1II0271-BS1)	Prepared: 09/04/25 00:00 Analyzed: 09/04/25 09:10									
2-Hexanone (MBK)	121.7	5.0	ug/L	100		122	55-144			
Dibromochloromethane	52.28	1.0	ug/L	50.1		104	73-127			
1,2-Dibromoethane	55.28	1.0	ug/L	50.2		110	67-132			
Chlorobenzene	49.88	1.0	ug/L	50.1		99.6	72-123			
1,1,1,2-Tetrachloroethane	52.32	1.0	ug/L	50.3		104	73-127			
Ethylbenzene	52.36	1.0	ug/L	50.2		104	71-127			
Xylenes, total	157.4	2.0	ug/L	151		104	74-127			
Styrene	54.44	1.0	ug/L	50.4		108	66-126			
Bromoform	55.15	1.0	ug/L	50.1		110	68-130			
1,2,3-Trichloropropane	55.43	1.0	ug/L	50.3		110	63-136			
trans-1,4-Dichloro-2-butene	112.8	5.0	ug/L	100		113	54-134			
1,1,2,2-Tetrachloroethane	48.51	1.0	ug/L	50.1		96.8	61-131			
1,4-Dichlorobenzene	46.34	1.0	ug/L	50.1		92.4	70-129			
1,2-Dichlorobenzene	48.67	1.0	ug/L	50.1		97.2	69-126			
1,2-Dibromo-3-chloropropane	51.40	5.0	ug/L	50.1		103	50-143			
Surrogate: Dibromofluoromethane	*50.5*		ug/L	*50.2*		*101*	*57-128*			
Surrogate: Dibromofluoromethane	*50.5*		ug/L	*50.2*		*101*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*53.1*		ug/L	*50.4*		*105*	*49-135*			
Surrogate: 1,2-Dichloroethane-d4	*53.1*		ug/L	*50.4*		*105*	*61-142*			
Surrogate: Toluene-d8	*48.8*		ug/L	*50.5*		*96.8*	*82-116*			
Surrogate: Toluene-d8	*48.8*		ug/L	*50.5*		*96.8*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*52.3*		ug/L	*50.2*		*104*	*77-114*			
Surrogate: 4-Bromofluorobenzene	*52.3*		ug/L	*50.2*		*104*	*80-116*			
LCS Dup (1II0271-BSD1)	Prepared: 09/04/25 00:00 Analyzed: 09/04/25 09:33									
Chloromethane	36.13	1.0	ug/L	30.3		119	63-155	2.72	24	
Vinyl Chloride	35.80	1.0	ug/L	30.2		118	70-154	6.49	25	
Bromomethane	29.48	1.0	ug/L	30.1		97.9	52-176	2.72	27	
Chloroethane	31.30	1.0	ug/L	30.3		103	72-148	1.45	25	
Trichlorofluoromethane	34.01	1.0	ug/L	30.3		112	70-152	2.15	26	
1,1-Dichloroethylene	57.11	1.0	ug/L	50.1		114	70-148	2.90	24	
Acetone	119.6	10.0	ug/L	100		120	43-172	19.9	30	
Methyl Iodide	100.3	1.0	ug/L	100		100	69-170	8.02	30	
Carbon Disulfide	116.1	1.0	ug/L	100		116	72-162	3.38	24	
Methylene Chloride	51.76	5.0	ug/L	50.1		103	68-142	2.56	21	
Acrylonitrile	106.2	5.0	ug/L	100		106	33-163	7.78	28	
trans-1,2-Dichloroethylene	51.41	1.0	ug/L	50.1		103	66-148	2.48	27	
1,1-Dichloroethane	52.74	1.0	ug/L	50.1		105	66-143	2.05	24	
Vinyl Acetate	172.6	5.0	ug/L	131		132	43-153	3.42	30	
cis-1,2-Dichloroethylene	50.64	1.0	ug/L	50.4		101	71-149	4.11	26	
2-Butanone (MEK)	128.0	10.0	ug/L	100		128	52-159	4.60	27	
Bromochloromethane	51.29	1.0	ug/L	50.4		102	69-143	0.391	23	
Chloroform	52.26	1.0	ug/L	50.1		104	69-144	1.35	23	
1,1,1-Trichloroethane	54.56	1.0	ug/L	50.1		109	62-129	2.45	24	

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
LCS Dup (1II0271-BSD1)			Prepared: 09/04/25 00:00 Analyzed: 09/04/25 09:33							
Carbon Tetrachloride	56.18	1.0	ug/L	50.1		112	63-141	2.45	25	
Benzene	51.39	1.0	ug/L	50.4		102	71-134	6.16	24	
1,2-Dichloroethane	53.12	1.0	ug/L	50.1		106	72-132	4.25	24	
Trichloroethylene	54.78	1.0	ug/L	50.1		109	71-135	5.28	24	
1,2-Dichloropropane	52.48	1.0	ug/L	50.1		105	69-136	3.96	24	
Dibromomethane	50.59	1.0	ug/L	50.4		100	73-147	5.13	25	
Bromodichloromethane	54.36	1.0	ug/L	50.1		109	68-129	4.44	22	
cis-1,3-Dichloropropene	56.54	1.0	ug/L	50.1		113	65-134	5.60	23	
4-Methyl-2-pentanone (MIBK)	109.3	5.0	ug/L	100		109	58-147	2.19	27	
Toluene	49.54	1.0	ug/L	50.5		98.1	72-133	2.37	24	
trans-1,3-Dichloropropene	60.77	1.0	ug/L	50.1		121	67-130	7.41	24	
1,1,2-Trichloroethane	51.04	1.0	ug/L	50.1		102	69-135	5.50	23	
Tetrachloroethylene	52.87	1.0	ug/L	50.1		106	69-130	0.603	25	
2-Hexanone (MBK)	109.9	5.0	ug/L	100		110	55-144	10.2	25	
Dibromochloromethane	52.66	1.0	ug/L	50.1		105	73-127	0.724	22	
1,2-Dibromoethane	53.73	1.0	ug/L	50.2		107	67-132	2.84	24	
Chlorobenzene	50.64	1.0	ug/L	50.1		101	72-123	1.51	23	
1,1,1,2-Tetrachloroethane	52.65	1.0	ug/L	50.3		105	73-127	0.629	24	
Ethylbenzene	52.67	1.0	ug/L	50.2		105	71-127	0.590	26	
Xylenes, total	160.9	2.0	ug/L	151		107	74-127	2.23	25	
Styrene	55.07	1.0	ug/L	50.4		109	66-126	1.15	23	
Bromoform	56.14	1.0	ug/L	50.1		112	68-130	1.78	23	
1,2,3-Trichloropropane	53.24	1.0	ug/L	50.3		106	63-136	4.03	24	
trans-1,4-Dichloro-2-butene	112.2	5.0	ug/L	100		112	54-134	0.551	27	
1,1,2,2-Tetrachloroethane	49.08	1.0	ug/L	50.1		98.0	61-131	1.17	29	
1,4-Dichlorobenzene	47.70	1.0	ug/L	50.1		95.2	70-129	2.89	24	
1,2-Dichlorobenzene	50.72	1.0	ug/L	50.1		101	69-126	4.13	26	
1,2-Dibromo-3-chloropropane	49.57	5.0	ug/L	50.1		98.9	50-143	3.62	30	
Surrogate: Dibromofluoromethane	*51.7*		ug/L	*50.2*		*103*	*57-128*			
Surrogate: Dibromofluoromethane	*51.7*		ug/L	*50.2*		*103*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*50.7*		ug/L	*50.4*		*101*	*49-135*			
Surrogate: 1,2-Dichloroethane-d4	*50.7*		ug/L	*50.4*		*101*	*61-142*			
Surrogate: Toluene-d8	*50.3*		ug/L	*50.5*		*99.7*	*82-116*			
Surrogate: Toluene-d8	*50.3*		ug/L	*50.5*		*99.7*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*51.8*		ug/L	*50.2*		*103*	*77-114*			
Surrogate: 4-Bromofluorobenzene	*51.8*		ug/L	*50.2*		*103*	*80-116*			
Matrix Spike (1II0271-MS1)	**Source: 3IH0157-11**		Prepared: 09/04/25 00:00 Analyzed: 09/04/25 17:32							
Chloromethane	335.5	10.0	ug/L	303	ND	111	61-152			
Vinyl Chloride	318.4	10.0	ug/L	302	ND	105	66-149			
Bromomethane	303.7	10.0	ug/L	301	ND	101	43-171			
Chloroethane	299.0	10.0	ug/L	303	ND	98.6	69-148			
Trichlorofluoromethane	315.3	10.0	ug/L	303	ND	104	62-163			
1,1-Dichloroethylene	530.1	10.0	ug/L	501	ND	106	70-148			

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
Matrix Spike (1II0271-MS1)	**Source: 3IH0157-11**	Prepared: 09/04/25 00:00 Analyzed: 09/04/25 17:32								
Acetone	902.6	100	ug/L	1000	ND	90.3	45-173			
Methyl Iodide	773.0	10.0	ug/L	1000	ND	77.3	62-167			
Carbon Disulfide	1050	10.0	ug/L	1000	ND	105	71-163			
Methylene Chloride	458.0	50.0	ug/L	501	ND	91.4	69-140			
Acrylonitrile	1224	50.0	ug/L	1000	ND	122	32-159			
trans-1,2-Dichloroethylene	512.7	10.0	ug/L	501	ND	102	69-144			
1,1-Dichloroethane	518.0	10.0	ug/L	501	ND	103	70-138			
Vinyl Acetate	1683	50.0	ug/L	1310	ND	128	58-142			
cis-1,2-Dichloroethylene	497.6	10.0	ug/L	504	ND	98.8	68-151			
2-Butanone (MEK)	1055	100	ug/L	1000	ND	106	50-160			
Bromochloromethane	502.3	10.0	ug/L	504	ND	99.7	65-143			
Chloroform	491.9	10.0	ug/L	501	ND	98.2	71-143			
1,1,1-Trichloroethane	514.7	10.0	ug/L	501	ND	103	63-133			
Carbon Tetrachloride	506.1	10.0	ug/L	501	ND	101	63-142			
Benzene	500.6	10.0	ug/L	504	ND	99.3	69-133			
1,2-Dichloroethane	513.6	10.0	ug/L	501	ND	103	63-138			
Trichloroethylene	529.4	10.0	ug/L	501	ND	106	71-133			
1,2-Dichloropropane	503.2	10.0	ug/L	501	ND	100	69-132			
Dibromomethane	473.0	10.0	ug/L	504	ND	93.9	70-147			
Bromodichloromethane	482.1	10.0	ug/L	501	ND	96.3	67-130			
cis-1,3-Dichloropropene	521.8	10.0	ug/L	501	ND	104	61-126			
4-Methyl-2-pentanone (MIBK)	1021	50.0	ug/L	1000	ND	102	55-147			
Toluene	495.4	10.0	ug/L	505	ND	98.1	71-133			
trans-1,3-Dichloropropene	521.8	10.0	ug/L	501	ND	104	63-124			
1,1,2-Trichloroethane	474.5	10.0	ug/L	501	ND	94.7	69-133			
Tetrachloroethylene	529.3	10.0	ug/L	501	ND	106	70-124			
2-Hexanone (MBK)	1031	50.0	ug/L	1000	ND	103	53-141			
Dibromochloromethane	492.0	10.0	ug/L	501	ND	98.3	74-122			
1,2-Dibromoethane	533.2	10.0	ug/L	502	ND	106	66-127			
Chlorobenzene	515.7	10.0	ug/L	501	ND	103	76-116			
1,1,1,2-Tetrachloroethane	510.1	10.0	ug/L	503	ND	101	77-121			
Ethylbenzene	523.1	10.0	ug/L	502	ND	104	73-124			
Xylenes, total	1570	20.0	ug/L	1510	ND	104	75-123			
Styrene	547.6	10.0	ug/L	504	ND	109	70-120			
Bromoform	516.1	10.0	ug/L	501	ND	103	70-124			
1,2,3-Trichloropropane	556.1	10.0	ug/L	503	ND	110	62-135			
trans-1,4-Dichloro-2-butene	1094	50.0	ug/L	1000	ND	109	50-120			
1,1,2,2-Tetrachloroethane	502.7	10.0	ug/L	501	ND	100	63-126			
1,4-Dichlorobenzene	487.6	10.0	ug/L	501	ND	97.3	72-119			
1,2-Dichlorobenzene	510.4	10.0	ug/L	501	ND	102	71-117			
1,2-Dibromo-3-chloropropane	499.6	50.0	ug/L	501	ND	99.7	49-134			
Surrogate: Dibromofluoromethane	*491*		ug/L	*502*		*97.8*	*57-128*			

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
Matrix Spike (1II0271-MS1)	**Source: 3IH0157-11**		Prepared: 09/04/25 00:00 Analyzed: 09/04/25 17:32							
Surrogate: Dibromofluoromethane	*491*		ug/L	*502*		*97.8*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*504*		ug/L	*504*		*100*	*49-135*			
Surrogate: 1,2-Dichloroethane-d4	*504*		ug/L	*504*		*100*	*61-142*			
Surrogate: Toluene-d8	*487*		ug/L	*505*		*96.4*	*82-116*			
Surrogate: Toluene-d8	*487*		ug/L	*505*		*96.4*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*531*		ug/L	*502*		*106*	*77-114*			
Surrogate: 4-Bromofluorobenzene	*531*		ug/L	*502*		*106*	*80-116*			
Matrix Spike Dup (1II0271-MSD1)	**Source: 3IH0157-11**		Prepared: 09/04/25 00:00 Analyzed: 09/04/25 17:55							
Chloromethane	341.6	10.0	ug/L	303	ND	113	61-152	1.80	26	
Vinyl Chloride	337.0	10.0	ug/L	302	ND	111	66-149	5.68	23	
Bromomethane	287.7	10.0	ug/L	301	ND	95.5	43-171	5.41	29	
Chloroethane	312.7	10.0	ug/L	303	ND	103	69-148	4.48	25	
Trichlorofluoromethane	326.2	10.0	ug/L	303	ND	108	62-163	3.40	25	
1,1-Dichloroethylene	552.2	10.0	ug/L	501	ND	110	70-148	4.08	22	
Acetone	934.4	100	ug/L	1000	ND	93.4	45-173	3.46	30	
Methyl Iodide	896.3	10.0	ug/L	1000	ND	89.6	62-167	14.8	24	
Carbon Disulfide	1064	10.0	ug/L	1000	ND	106	71-163	1.30	22	
Methylene Chloride	488.3	50.0	ug/L	501	ND	97.5	69-140	6.40	19	
Acrylonitrile	1189	50.0	ug/L	1000	ND	119	32-159	2.94	30	
trans-1,2-Dichloroethylene	521.9	10.0	ug/L	501	ND	104	69-144	1.78	22	
1,1-Dichloroethane	543.2	10.0	ug/L	501	ND	108	70-138	4.75	20	
Vinyl Acetate	1776	50.0	ug/L	1310	ND	136	58-142	5.34	24	
cis-1,2-Dichloroethylene	514.5	10.0	ug/L	504	ND	102	68-151	3.34	22	
2-Butanone (MEK)	1189	100	ug/L	1000	ND	119	50-160	11.9	23	
Bromochloromethane	485.3	10.0	ug/L	504	ND	96.3	65-143	3.44	22	
Chloroform	510.9	10.0	ug/L	501	ND	102	71-143	3.79	21	
1,1,1-Trichloroethane	528.6	10.0	ug/L	501	ND	105	63-133	2.66	23	
Carbon Tetrachloride	543.7	10.0	ug/L	501	ND	109	63-142	7.16	22	
Benzene	494.1	10.0	ug/L	504	ND	98.0	69-133	1.31	18	
1,2-Dichloroethane	512.4	10.0	ug/L	501	ND	102	63-138	0.234	20	
Trichloroethylene	519.8	10.0	ug/L	501	ND	104	71-133	1.83	23	
1,2-Dichloropropane	498.5	10.0	ug/L	501	ND	99.5	69-132	0.938	20	
Dibromomethane	471.1	10.0	ug/L	504	ND	93.5	70-147	0.402	22	
Bromodichloromethane	513.0	10.0	ug/L	501	ND	102	67-130	6.21	21	
cis-1,3-Dichloropropene	526.5	10.0	ug/L	501	ND	105	61-126	0.897	21	
4-Methyl-2-pentanone (MIBK)	1032	50.0	ug/L	1000	ND	103	55-147	1.06	23	
Toluene	488.0	10.0	ug/L	505	ND	96.7	71-133	1.50	19	
trans-1,3-Dichloropropene	550.5	10.0	ug/L	501	ND	110	63-124	5.35	21	
1,1,2-Trichloroethane	510.8	10.0	ug/L	501	ND	102	69-133	7.37	19	
Tetrachloroethylene	520.1	10.0	ug/L	501	ND	104	70-124	1.75	24	
2-Hexanone (MBK)	1029	50.0	ug/L	1000	ND	103	53-141	0.155	24	
Dibromochloromethane	497.8	10.0	ug/L	501	ND	99.4	74-122	1.17	21	
1,2-Dibromoethane	522.1	10.0	ug/L	502	ND	104	66-127	2.10	23	

CERTIFICATE OF ANALYSIS

1II0273

Determination of Volatile Organic Compounds	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0271 - EPA 5030B - EPA 8260D										
Matrix Spike Dup (1II0271-MSD1)	**Source: 3IH0157-11**		Prepared: 09/04/25 00:00 Analyzed: 09/04/25 17:55							
Chlorobenzene	511.6	10.0	ug/L	501	ND	102	76-116	0.798	21	
1,1,1,2-Tetrachloroethane	504.9	10.0	ug/L	503	ND	100	77-121	1.02	25	
Ethylbenzene	498.2	10.0	ug/L	502	ND	99.3	73-124	4.88	20	
Xylenes, total	1516	20.0	ug/L	1510	ND	100	75-123	3.45	20	
Styrene	517.1	10.0	ug/L	504	ND	103	70-120	5.73	23	
Bromoform	544.1	10.0	ug/L	501	ND	109	70-124	5.28	22	
1,2,3-Trichloropropane	558.9	10.0	ug/L	503	ND	111	62-135	0.502	28	
trans-1,4-Dichloro-2-butene	1123	50.0	ug/L	1000	ND	112	50-120	2.59	26	
1,1,2,2-Tetrachloroethane	505.4	10.0	ug/L	501	ND	101	63-126	0.536	24	
1,4-Dichlorobenzene	472.8	10.0	ug/L	501	ND	94.3	72-119	3.08	24	
1,2-Dichlorobenzene	497.7	10.0	ug/L	501	ND	99.4	71-117	2.52	24	
1,2-Dibromo-3-chloropropane	520.1	50.0	ug/L	501	ND	104	49-134	4.02	28	
Surrogate: Dibromofluoromethane	*513*		ug/L	*502*		*102*	*57-128*			
Surrogate: Dibromofluoromethane	*513*		ug/L	*502*		*102*	*75-136*			
Surrogate: 1,2-Dichloroethane-d4	*534*		ug/L	*504*		*106*	*49-135*			
Surrogate: 1,2-Dichloroethane-d4	*534*		ug/L	*504*		*106*	*61-142*			
Surrogate: Toluene-d8	*489*		ug/L	*505*		*96.9*	*82-116*			
Surrogate: Toluene-d8	*489*		ug/L	*505*		*96.9*	*82-121*			
Surrogate: 4-Bromofluorobenzene	*523*		ug/L	*502*		*104*	*77-114*			
Surrogate: 4-Bromofluorobenzene	*523*		ug/L	*502*		*104*	*80-116*			

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II0356 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1II0356-BLK1)			Prepared: 09/05/25 16:09 Analyzed: 09/08/25 18:33							
Cobalt, total	<0.0005	0.0005	mg/L							
LCS (1II0356-BS1)			Prepared: 09/05/25 16:09 Analyzed: 09/08/25 18:35							
Cobalt, total	0.106	0.0005	mg/L	0.100		106	80-120			
Matrix Spike (1II0356-MS1)	**Source: 1II0470-01**		Prepared: 09/05/25 16:09 Analyzed: 09/08/25 19:00							
Cobalt, total	0.110	0.0005	mg/L	0.100	0.0089	101	75-125			
Matrix Spike Dup (1II0356-MSD1)	**Source: 1II0470-01**		Prepared: 09/05/25 16:09 Analyzed: 09/08/25 19:03							
Cobalt, total	0.117	0.0005	mg/L	0.100	0.0089	108	75-125	5.99	20	
Post Spike (1II0356-PS1)	**Source: 1II0470-01**		Prepared: 09/05/25 16:09 Analyzed: 09/08/25 19:05							
Cobalt, total	0.0274		mg/L	0.0200	0.0089	92.6	80-120			
Batch 1II1158 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Blank (1II1158-BLK1)			Prepared: 09/19/25 07:24 Analyzed: 09/20/25 02:40							
Cobalt, total	<0.0005	0.0005	mg/L							
LCS (1II1158-BS1)			Prepared: 09/19/25 07:24 Analyzed: 09/20/25 02:43							
Cobalt, total	0.0987	0.0005	mg/L	0.100		98.7	80-120			

CERTIFICATE OF ANALYSIS

1II0273

Determination of Total Metals	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1II1158 - EPA 3005A Total Recoverable Metals - EPA 6020A										
Matrix Spike (1II1158-MS1)		**Source: 1II0273-04RE1**		Prepared: 09/19/25 07:24 Analyzed: 09/20/25 02:53						
Cobalt, total	0.143	0.0005	mg/L	0.100	0.0393	104	75-125			
Matrix Spike Dup (1II1158-MSD1)		**Source: 1II0273-04RE1**		Prepared: 09/19/25 07:24 Analyzed: 09/20/25 02:56						
Cobalt, total	0.142	0.0005	mg/L	0.100	0.0393	103	75-125	0.465	20	
Post Spike (1II1158-PS1)		**Source: 1II0273-04RE1**		Prepared: 09/19/25 07:24 Analyzed: 09/20/25 02:58						
Cobalt, total	0.0577		mg/L	0.0200	0.0385	96.4	80-120			

Batch Quality Control Summary: Microbac Laboratories Inc., - Marietta, OH

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B5I0550 - 5021 - EPA RSK-175										
Blank (B5I0550-BLK1)				Prepared: 09/10/25 11:01 Analyzed: 09/10/25 15:01						
Methane	<5.00	5.00	ug/L							
Ethene	<5.00	5.00	ug/L							
Ethane	<5.00	5.00	ug/L							
Propane	<5.00	5.00	ug/L							
LCS (B5I0550-BS1)				Prepared: 09/10/25 11:01 Analyzed: 09/10/25 18:48						
Methane	124	5.00	ug/L	114.1884		109	85-115			
Ethene	215	5.00	ug/L	199.6873		108	85-115			
Ethane	231	5.00	ug/L	213.9965		108	85-115			
Propane	344	5.00	ug/L	313.9185		110	85-115			
LCS Dup (B5I0550-BSD1)				Prepared: 09/10/25 11:01 Analyzed: 09/10/25 19:02						
Methane	119	5.00	ug/L	114.1884		104	85-115	4.55	40	
Ethene	201	5.00	ug/L	199.6873		101	85-115	6.81	40	
Ethane	214	5.00	ug/L	213.9965		100	85-115	7.69	40	
Propane	310	5.00	ug/L	313.9185		98.7	85-115	10.6	40	
Batch B5I0655 - 5021 - EPA RSK-175										
Blank (B5I0655-BLK1)				Prepared: 09/12/25 11:44 Analyzed: 09/12/25 13:05						
Methane	<5.00	5.00	ug/L							
Ethene	<5.00	5.00	ug/L							
Ethane	<5.00	5.00	ug/L							
Propane	<5.00	5.00	ug/L							
n-Butane	<5.00	5.00	ug/L							
LCS (B5I0655-BS1)				Prepared: 09/12/25 11:44 Analyzed: 09/12/25 14:01						
Methane	108	5.00	ug/L	114.1884		94.9	85-115			
Ethene	196	5.00	ug/L	199.6873		98.2	85-115			
Ethane	212	5.00	ug/L	213.9965		99.1	85-115			
Propane	320	5.00	ug/L	313.9185		102	85-115			

CERTIFICATE OF ANALYSIS

1II0273

Volatile Organic Compounds by GCMS	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B5I0655 - 5021 - EPA RSK-175										
LCS (B5I0655-BS1)	Prepared: 09/12/25 11:44 Analyzed: 09/12/25 14:01									
n-Butane	435	5.00	ug/L	413.7764		105	85-115			
LCS Dup (B5I0655-BSD1)	Prepared: 09/12/25 11:44 Analyzed: 09/12/25 17:04									
Methane	115	5.00	ug/L	114.1884		100	85-115	5.71	40	
Ethene	203	5.00	ug/L	199.6873		102	85-115	3.36	40	
Ethane	216	5.00	ug/L	213.9965		101	85-115	1.71	40	
Propane	318	5.00	ug/L	313.9185		101	85-115	0.797	40	
n-Butane	418	5.00	ug/L	413.7764		101	85-115	4.05	40	

Definitions

D3: Dilution was performed due to high target analyte concentration.
Q: One or more quality control criteria failed.
Q7: CCV recovery is above acceptance limits.
RL: Reporting Limit
RPD: Relative Percent Difference

Cooler Receipt Log

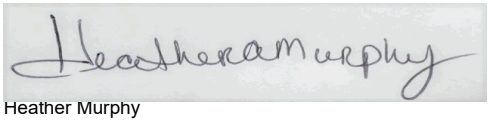
Cooler ID: Default Cooler Temp: 0.4°C

Cooler Inspection Checklist

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

Report Comments

Reviewed and Approved By:



Heather Murphy
Customer Relationship Specialist
heather.murphy@microbac.com
09/23/25 16:39

CHAIN OF CUSTODY RECORD

MICROBAC
600 East 17th Street South
Newton, IA 50208
Phone: 641-792-8451

SITE INFORMATION

Sampler: TODD WHIPPLE

Project: **Poweshiek Co. Landfill-COC1**
6011

REPORT TO

Todd Whipple
HLW Engineering
204 West Broad St
Story City, IA 50248

INVOICE TO

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

SPECIAL INSTRUCTIONS

None

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

1 I I 0 2 7 3
HLW Engineering
PM: Heather Murphy

Temperature: 0.0 icev / 0.4 icev oC

Number	Sample Identification / Client ID	Matrix	Sample Type	Date	Time	# Containers	Analyses	Lab Sample Number
01-001	**MW-4**	Aqueous	GRAB	9/2/25	14:35	4	co-t-6020 permgas-rsk-175	01
02-001	**MW-16**	Aqueous	GRAB	9/2/25	14:48	4	co-t-6020 permgas-rsk-175	02
03-001	**MW-2**	Aqueous	GRAB	9/2/25	14:06	1	co-t-6020	03
04-001	**MW-3**	Aqueous	GRAB	9/2/25	14:19	7	co-t-6020 lndfill-app1-voc-group	04
05-001	**MW-5**	Aqueous	GRAB	9/2/25	15:03	6	lndfill-app1-voc-group	05
06-001	**MW-9**	Aqueous	GRAB	9/2/25	15:24	6	lndfill-app1-voc-group	06
07-001	**Duplicate**	Aqueous	GRAB	9/2/25	V	1	co-t-6020 ~~lndfill-app1-voc-group~~	07

Relinquished By — Date/Time: 9/4/25 16:36

Relinquished By — Date/Time

Received By — Date/Time

Received for Lab By: Amy Hochstetler — Date/Time: 9/2/25 16:36

Remarks:

ATTACHMENT B

Field Sampling Forms

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

12/11/2024 Sampled by: T. Whipple Weather conditions: Sunny, windy, flurries, 21 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	21.00
Top sample	867.71
Bottom sample	863.71
Turbidity(NTU)	5.20

Date	Time	Water Level	Water Elevation	Notes
12/11/2024	14:03	7.45	881.26	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		5.20
Appendix I	Metals	250			
Appendix I	VOC	120	240		5.20
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	12/11/2024	14:03	7.45	881.26	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	12/11/2024		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

3/21/2025 Sampled by: G. Hunter Weather conditions: Overcast, calm,54 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	18.00
Top sample	884.13
Bottom sample	880.13
Turbidity(NTU)	6.79

Date	Time	Water Level	Water Elevation	Notes
3/21/2025	12:30	10.18	891.95	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		6.79
Appendix I	Metals	250	250		6.79
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	3/21/2025	12:30	10.18	891.95	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	3/21/2025		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)	35.30

Date	Time	Water Level	Water Elevation	Notes
3/21/2025	12:37	6.20	882.51	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		35.30
Appendix I	Metals	250			
Appendix I	VOC	120	240		35.30
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	3/21/2025	12:37	6.20	882.51	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	3/21/2025		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

6/2/2025 Sampled by: T. Whipple Weather conditions: Sunny, calm, 78 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	19.00
Top sample	883.13
Bottom sample	879.13
Turbidity(NTU)	3.43

Date	Time	Water Level	Water Elevation	Notes
6/2/2025	8:14	10.62	891.51	

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		3.43
Appendix I	Metals	250	250		3.43
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	6/2/2025	8:14	10.62	891.51	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	6/2/2025		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	21.00
Top sample	867.71
Bottom sample	863.71
Turbidity(NTU)	34.85

Date	Time	Water Level	Water Elevation	Notes
6/2/2025	8:22	7.15	881.56	

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		34.85
Appendix I	Metals	250			
Appendix I	VOC	120	240		34.85
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	6/2/2025	8:22	7.15	881.56	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	6/2/2025		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

7/15/2025 Sampled by: T. Whipple Weather conditions: Sunny, calm, 79 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	21.50
Top sample	867.21
Bottom sample	863.21
Turbidity(NTU)	7.75

Date	Time	Water Level	Water Elevation	Notes
7/15/2025	8:20	5.31	883.4	

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		7.75
Appendix I	Metals	250			
Appendix I	VOC	120	240		7.75
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	7/15/2025	8:20	5.31	883.40	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	7/15/2025		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

9/2/2025 Sampled by: T. Whipple Weather conditions: Sunny, slight breeze, 80 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	15.50
Top sample	896.92
Bottom sample	892.92
Turbidity(NTU)	2.93

Date	Time	Water Level	Water Elevation	Notes
9/2/2025	14:19	8.96	903.46	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		2.93
Appendix I	Metals	250	150		2.93
Appendix I	VOC	120	240		2.93
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	9/2/2025	14:19	8.96	903.46	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	9/2/2025		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)	4.07

Date	Time	Water Level	Water Elevation	Notes
9/2/2025	14:35	11.10	891.03	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		4.07
Appendix I	Metals	250	250		4.07
methane	methane	60	60		4.07
Full Appendix II	10 more containers	5620			
TSS	TSS	1000			
Paragragh e		750			
Paragragh f		480			
Total			320	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	9/2/2025	14:35	11.10	891.03	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	9/2/2025		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)	2.31

Date	Time	Water Level	Water Elevation	Notes
9/2/2025	15:03	16.32	890.11	

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		2.31
Appendix I	Metals	250			
Appendix I	VOC	120	240		2.31
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	9/2/2025	15:03	16.32	890.11	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	9/2/2025		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	15.00
Top sample	902.72
Bottom sample	898.72
Turbidity(NTU)	2.35

Date	Time	Water Level	Water Elevation	Notes
9/2/2025	15:24	11.50	906.22	

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		2.35
Appendix I	Metals	250			
Appendix I	VOC	120	240		2.35
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	9/2/2025	15:24	11.50	906.22	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	9/2/2025		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			

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	21.00
Top sample	867.71
Bottom sample	863.71
Turbidity(NTU)	29.34

Date	Time	Water Level	Water Elevation	Notes
9/2/2025	14:48	8.01	880.7	

ANALYTES, CONTAINERS, AND VOLUMES

Analyte		Required Volume (mL)	Volume Collected No-Purge (mL)	Volume Collected Purge & Sample (mL)	Turbidity this Container (NTU)
All	Field NTU	10	10		29.34
Appendix I	Metals	250			
Appendix I	VOC	120	240		29.34
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	9/2/2025	14:48	8.01	880.70	0	0.0	dry
		After purging				888.71			
		Top of Screen 2024				871.86			
						16.85	feet above (+) or below (-) top screen		
		Bottom of Well 2024				861.86			
		Bottom of Well	9/2/2025		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
	03/21/2025	13.12	934.58	7.95	904.47	10.18	891.95	17.48	888.95	4.65	879.98	4.79	903.15	9.30	908.42	9.85	900.05	8.35	913.60	6.48	920.31	7.22	914.57	3.52	903.71	6.2	882.51
	09/02/2025	12.55	935.15	8.96	903.46	11.10	891.03	16.32	890.11	7.44	877.19	6.80	901.14	11.50	906.22	12.52	897.38	9.59	912.36	6.51	920.28	7.53	914.26	3.52	903.71	8.01	880.70

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		934.58		904.47		891.95		888.95		879.98		903.15		908.42		900.05		913.60		920.31		914.57		903.71		882.51
SWL - Fall		935.15		903.46		891.03		890.11		877.19		901.14		906.22		897.38		912.36		920.28		914.26		903.71		880.70
Exposed (-) or Submerged (+) Well Screen																										
Most Recent Spring		3.50		5.93		4.54		-1.64		9.03		0.95		1.09		0.55		3.50		11.58		5.08		4.60		10.20
Most Recent Fall		4.07		4.92		3.62		-0.48		6.24		-1.06		-1.11		-2.12		2.26		11.55		4.77		4.60		8.39

ATTACHMENT D

Explosive Gas Monitoring Results

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

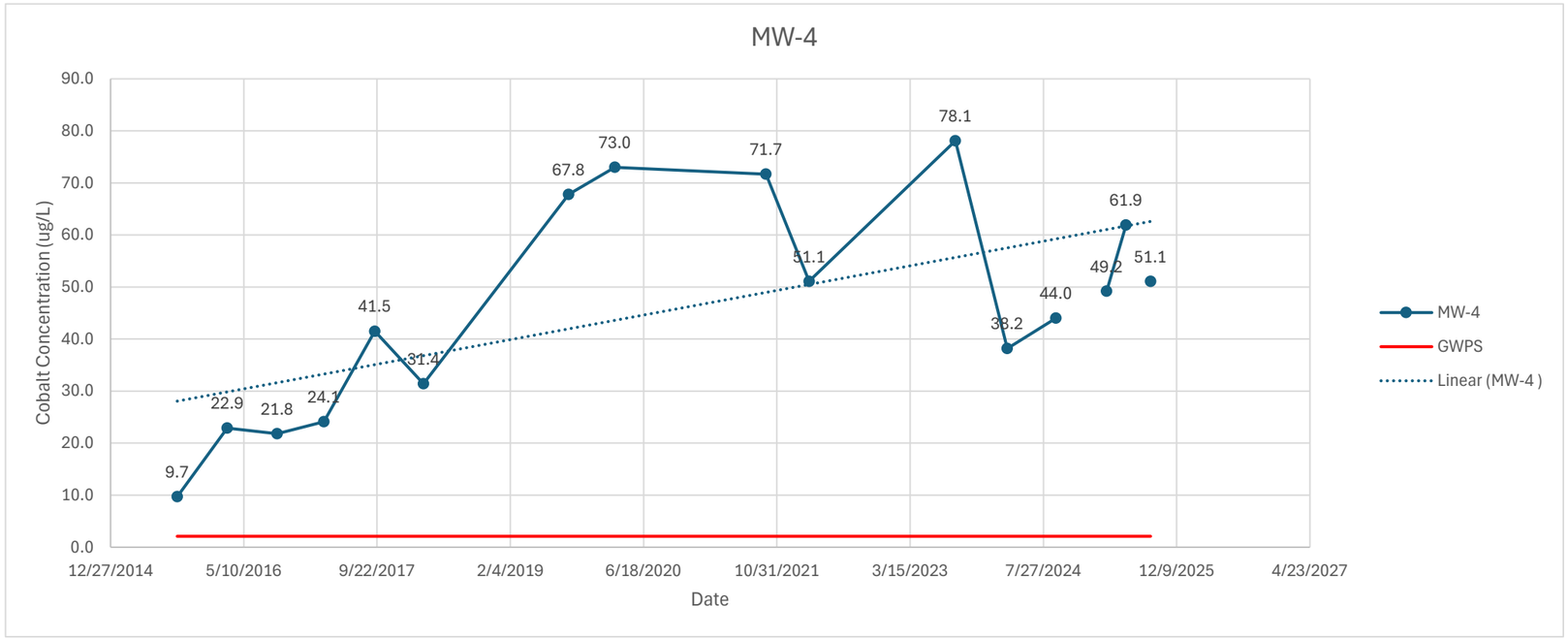
Ambient Air - Breathing Zone						
Location	**Top of Casing Elevation**	**Depth to Water Feet**	**Static Water Elevation**	**Top of Screen Elevation**	**Exposed (-) or Submerged (+) Screen Feet**	**3/21/2025**
						%LEL
Building 1	N/A	N/A	N/A	N/A	N/A	0
Building 2	N/A	N/A	N/A	N/A	N/A	0
Subsurface - Well Headspace						
MW-2	947.70	13.12	934.58	931.08	3.5	0
MW-5	906.43	17.48	888.95	890.59	-1.64	0
MW-8	907.94	4.79	903.15	902.2	0.95	0
MW-9	917.72	9.3	908.42	907.33	1.09	0
MW-10	909.90	9.85	900.05	899.5	0.55	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	JGH					
Weather	Overcast 54 degrees Calm					

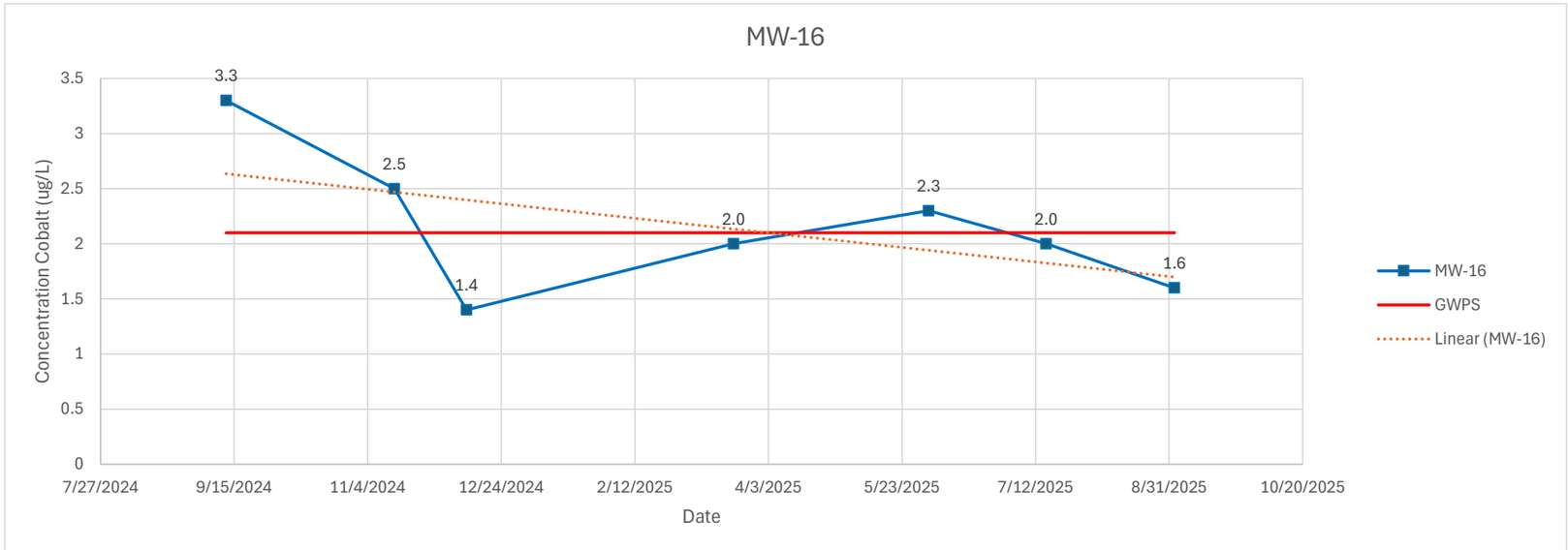
Ambient Air - Breathing Zone						
Location	**Top of Casing Elevation**	**Depth to Water Feet**	**Static Water Elevation**	**Top of Screen Elevation**	**Exposed (-) or Submerged (+) Screen Feet**	**9/2/2025**
						%LEL
Building 1	N/A	N/A	N/A	N/A	N/A	0
Building 2	N/A	N/A	N/A	N/A	N/A	0
Subsurface - Well Headspace						
MW-2	947.70	12.55	935.15	931.08	4.07	0
MW-5	906.43	8.96	897.47	890.59	6.88	0
MW-8	907.94	6.8	901.14	902.2	-1.06	0
MW-9	917.72	11.5	906.22	907.33	-1.11	0
MW-10	909.90	12.52	897.38	899.5	-2.12	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 80 degrees Slight Breeze					

ATTACHMENT E

Water Quality Summary – MW-4 and MW-16 Evaluation

		GWPS (ug/L)	MW-4 (ug/L)	MW-16 (ug/L)
9/3/2015	Cobalt, total	2.1	9.7	
3/9/2016	Cobalt, total	2.1	22.9	
9/12/2016	Cobalt, total	2.1	21.8	
3/6/2017	Cobalt, total	2.1	24.1	
9/13/2017	Cobalt, total	2.1	41.5	
3/15/2018	Cobalt, total	2.1	31.4	
9/11/2019	Cobalt, total	2.1	67.8	
3/2/2020	Cobalt, total	2.1	73.0	
9/20/2021	Cobalt, total	2.1	71.7	
3/1/2022	Cobalt, total	2.1	51.1	
9/1/2023	Cobalt, total	2.1	78.1	
3/13/2024	Cobalt, total	2.1	38.2	
9/12/2024	Cobalt, total	2.1	44.0	3.3
11/14/2024	Cobalt, total	2.1		2.5
12/11/2024	Cobalt, total	2.1		1.4
3/21/2025	Cobalt, total	2.1	49.2	2.0
6/2/2025	Cobalt, total	2.1	61.9	2.3
7/16/2025	Cobalt, total	2.1		2.0
9/2/2025	Cobalt, total	2.1	51.1	1.6





ATTACHMENT F

Statistical Evaluation Summary – MW-4 and MW-16

Confidence Limits MW-4 and MW-16 (Step-Out Well)
Poweshiek County Sanitary Landfill
Permit 79-SDP-01-73C

Date	MW-4 Cobalt, ug/L
9/3/2015	9.7
3/9/2016	22.9
9/12/2016	21.8
3/6/2017	24.1
9/13/2017	41.5
3/15/2018	31.4
9/11/2019	67.8
3/2/2020	73
9/20/2021	71.7
3/1/2022	51.1
9/1/2023	78.1
3/13/2024	38.2
9/12/2024	44
3/21/2025	49.2
6/2/2025	61.9
9/2/2025	51.1
Sample size = 8	8
Mean value	55.6625
standard deviation	12.86418842
95% Confidence Z(0.95)	1.895
Standard Error (ST Dev/√8)	4.548177434
Margin of Error	8.618796237
95% UCL (mean + Margin of Error)	64.28129624
95% LCL (mean - Margin of Error)	47.04370376
GWPS (ug/L)	2.1
Does 95% LCL Value exceed GWPS?	Yes

Date	MW-16 Cobalt, ug/L
9/12/2024	3.3
11/14/2024	2.5
12/11/2024	1.4
3/21/2025	2.0
6/2/2025	2.3
7/16/2025	2.0
9/2/2025	1.6
Sample size = 7	7
Mean value	2.2
standard deviation	0.582745087
95% Confidence Z(0.95)	1.895
Standard Error (ST Dev/√8)	0.22025694
Margin of Error	0.417386901
95% UCL (mean + Margin of Error)	2.574529758
95% LCL (mean - Margin of Error)	1.739755956
GWPS (ug/L)	2.1
Does 95% LCL Value exceed GWPS?	No

ATTACHMENT G

Subsurface Characterization and Dissolved Methane Summary – MW-4 and MW-16

Poweshiek County Sanitary Landfill
79-SDP-01-73C
Subsurface Conditions Assessment

Date	Monitoring Point	Temperature degrees C	Dissolved Oxygen %	Specific Conductance us/cm	pH	Oxidation-Reduction Potential	Dissolved Methane ug/L	Dissolved Ethane ug/L	Dissolved Ethene ug/L
7/15/2025	**MW-4**	11.5	34.6	3013	6.37	-57.8	---	---	---
9/2/2025	**MW-4**	---	---	---	---	---	3,780	<5	<5
7/15/2025	**MW-16**	11.3	35.2	723	6.76	-76.9	---	---	---
9/2/2025	**MW-16**	---	---	---	---	---	8.75	<5	<5