# 2023-2024 LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION

# FOR THE

# BUCHANAN COUNTY SANITARY LANDFILL

# BUCHANAN COUNTY, IOWA

**by:**

**HLW Engineering Group**
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**P.O. Box 314**
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**(515) 733-4144**

**April, 2025**

**6032-20A.750**

# Certification

Prepared by: _____ Date: 4/15/25

Printed: Douglas J. Luzbetak, P.E.

# Table of Contents

# Section 1.0 Background Information

*Site Location*

The Buchanan County Sanitary Landfill is located in the South one-half of the NW¼ of Section 2, T89N, R9W, Buchanan County, Iowa. The site encompasses approximately 80 acres.

*Landfill Layout*

The site is situated in low-relief terrain and adjacent properties are cultivated farm ground. Surface runoff from the site follows site topography and flows radially from the closed landfill area. Figure 1 is attached illustrating the current site features, property lines, waste boundaries, and leachate piezometer locations. The facility includes the closed landfill area of approximately 21 acres.

*Status of Permit*

The facility was closed in 1998 under Iowa Department of Natural Resources (IDNR) Permit Number 10-SDP-01-75C, issued June 25, 1998. The Buchanan County Landfill Commission has entered into an Environmental Covenant with the IDNR detailing future maintenance and monitoring requirements. The Environmental Covenant was recorded with the Buchanan County Recorder as Instrument 2020-R00293 on January 29, 2020. The Environmental Covenant rescinds IDNR Permit Number 10-SDP-01-75C.

# Section 2.0 Leachate Collection System Performance Evaluation

IDNR Field Office #1 visited the site on October 9, 2024 for an Industrial Pretreatment Inspection. The report recommended updating the treatment agreement with the City of Independence as some of the phone numbers/contact information in the current treatment agreement are not current. Tom Halverson, Buchanan County Household Hazardous Waste Center, will work with the City on updating the agreement.

*Leachate System Performance*

A retrofitted leachate collection system exists at the facility. The system is described as 4,273 feet of leachate collection drain line, 18 leachate collection laterals, three (3) lift stations (Manhole #1, #2, and #3), two underground leachate storage tanks with a combined capacity of 29,000 gallons, and a load-out station. Attachment A includes the As-Constructed diagrams dated April, 1999 for the collection system. The leachate collection system was constructed in the same years that the final closure cap was installed (1997/1998).

Mr. Halverson reported that the pump in Manhole #3 was replaced. Manhole #3 was operating during the inspection. We observed the flow into the leachate storage tank.

The collected leachate is hauled to the City of Independence POTW for treatment and disposal. A tanker had been loaded prior to the inspection and was awaiting hauling to the City of

Independence POTW. The portion of the NPDES Permit for the City of Independence that specifically deals with leachate from the Buchanan County Landfill is included in Attachment B. Based on information provided by landfill staff, a total of 39,000 gallons were transported to the City of Independence POTW in 2023 and 149,500 gallons were transported to the City of Independence POTW in 2024 (Attachment C).

Leachate level measurements are currently by landfill staff. Leachate head measurements are summarized in the table in Attachment D. Based on the leachate head data, the leachate collection system appears to be performing as designed and indicates that a static condition exists within the fill areas.

No modifications are recommended to the leachate collection system.

*Leachate Treatment and Testing*

Test results from the annual leachate samples for 2023 and 2024 are included in Attachment E. Test results from the leachate grab samples during 2023 and 2024 are included in Attachment F.

*Leachate Line Cleaning*

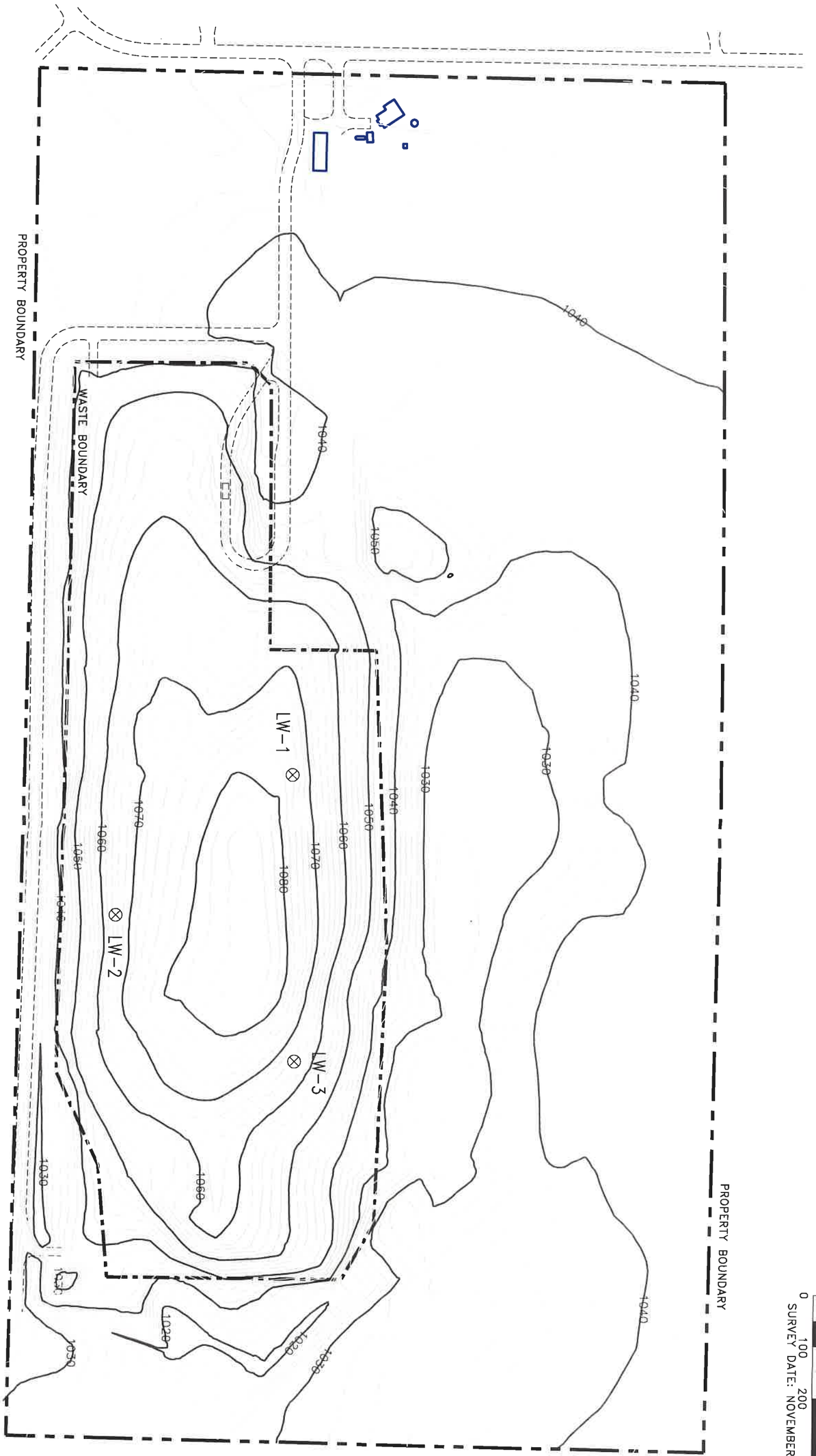
Leachate collection piping was last cleaned during August of 2022. Mr. Halverson and I discussed future leachate line cleaning and the system will continue to be cleaned on an as needed basis.

# Section 3.0 Recommendations

- Update the leachate treatment with the City of Independence.
- Continue to follow the maintenance and monitoring provisions of the Environmental Covenant.
- Continue operating the leachate collection system with reporting to IDNR in the form of a biennial Leachate Control System Performance Evaluation to be submitted in conjunction with the biennial Engineer's Inspection Reports.

The next Leachate Control System Performance Evaluation will be submitted in Spring, 2027.

Figures

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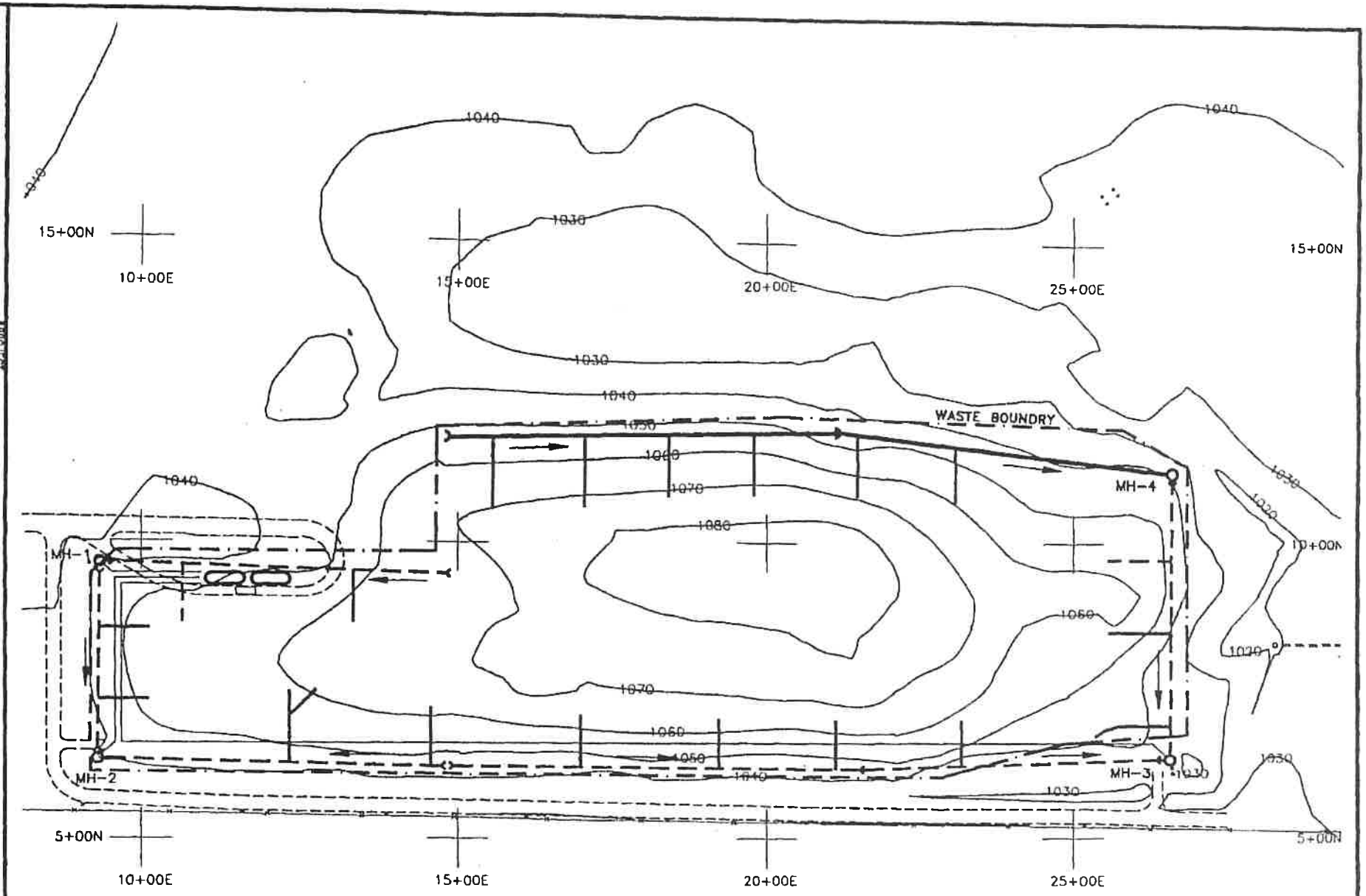
# SITE PLAN
## LEACHATE CONTROL SYSTEM PERFORMANCE EVALUATION
BUCHANAN COUNTY SANITARY LANDFILL
INDEPENDENCE, IOWA

FIGURE: 1

| REVISION | NO. | DATE |
|---|---|---|
| DRAWN DRA | PROJECT NO. 6032-20A | DATE 3/17/21 |

# Attachment A

# Leachate Collection System Mapping




MIDWEST ENVIRONMENTAL CONSULTING

PROJECT: BUCHANAN COUNTY SANITARY LANDFILL

TITLE: LEACHATE COLLECTION SYSTEM LAYOUT

SHEET 3

DRAWN: DRA/RY

DATE: FEB 1999

MIDWEST ENVIRONMENTAL CONSULTING

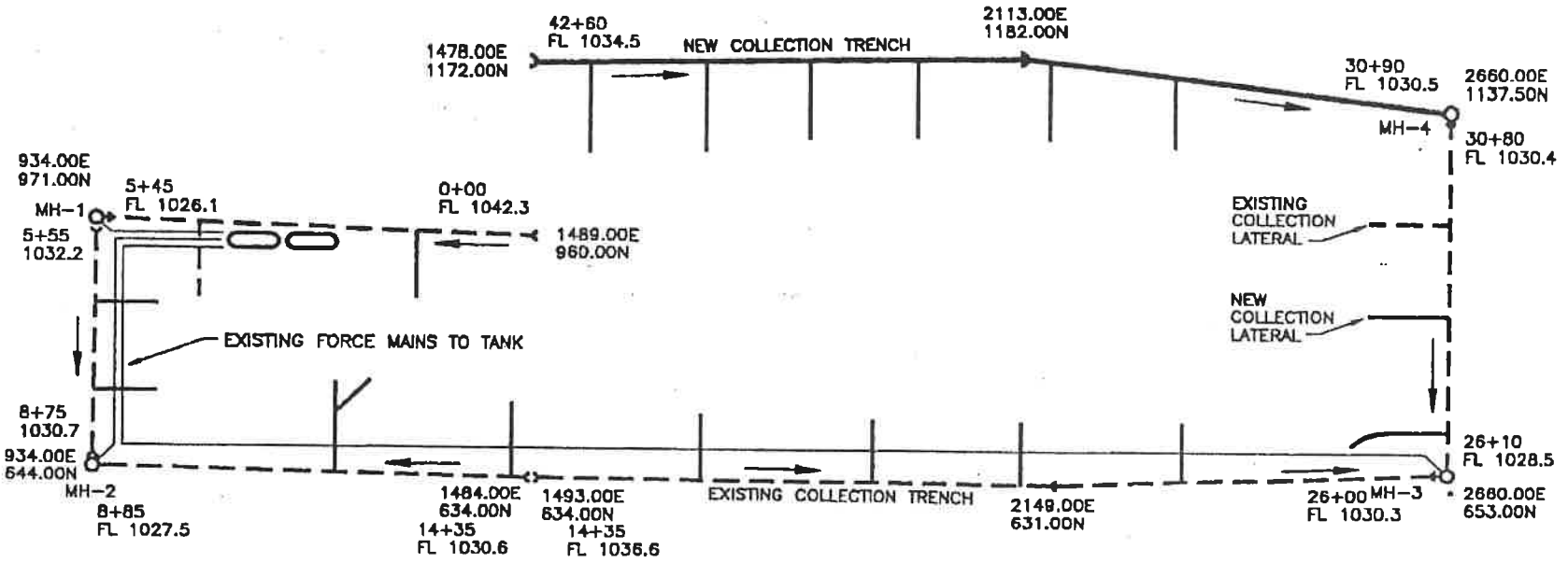
PROJECT: BUCHANAN COUNTY SANITARY LANDFILL

TITLE: LEACHATE COLLECTION SYSTEM DETAIL

SHEET 4

DRAWN DRA/RY

DATE FEB 1999




FORCE MAINS BURIED WITH TILE IN COLLECTION TRENCHES.

— — — EXISTING COLLECTION TRENCHES AND LATERALS.

——— NEW COLLECTION TRENCHES AND LATERALS.

0 100 200 400 600

SURVEY DATE: NOVEMBER 1998

MIDWEST ENVIRONMENTAL CONSULTING

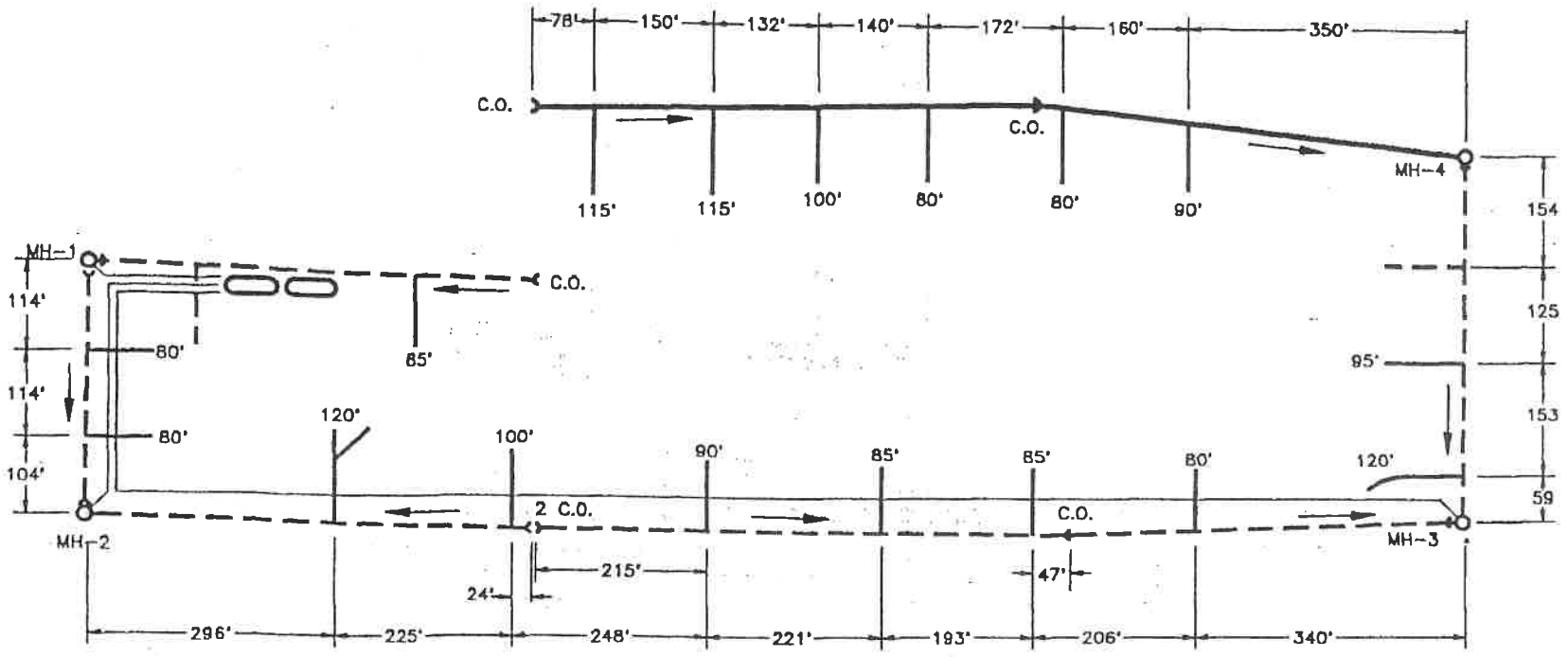
PROJECT: BUCHANAN COUNTY SANITARY LANDFILL

TITLE: LEACHATE COLLECTION LATERALS

SHEET 5

DRAWN: DRA/RY

DATE: FEB 1999




FORCE MAINS BURIED WITH TILE IN COLLECTION TRENCHES.

EXISTING COLLECTION TRENCHES AND LATERALS.

NEW COLLECTION TRENCHES AND LATERALS.

0 100 200 400 600

SURVEY DATE: NOVEMBER 1998

# Attachment B

# City of Independence NPDES Permit (partial) specific to Buchanan County SLF

**Facility Name:** INDEPENDENCE CITY OF STP
**Permit Number:** 1037001

**Significant Industrial User Discharges:**

**Significant Industrial User:** Buchanan County Sanitary Landfill

| **Outfall #** | **Outfall Description** |
|---|---|
| 001 | BATCH DISCHARGE TO SANITARY SEWER PRIOR TO MIXING WITH OTHER WASTE |

**Significant Industrial User Effluent Limitations**

You are prohibited from discharging pollutants except in compliance with the following effluent limitations:

| ***Buchanan County Sanitary Landfill*** ***Outfall: 001 Effective Dates: 10/01/2020 to 09/30/2025*** | | | |
|---|---|---|---|
| **Parameter** | **Season** | **Limit Type** | **Limit Values** |
| **FLOW** | | | |
| | Yearly | DAILY MAXIMUM | 0.017 MGD |
| **BIOCHEMICAL OXYGEN DEMAND (BOD5)** | | | |
| | Yearly | DAILY MAXIMUM | 5.0 LBS/DAY |
| **TOTAL SUSPENDED SOLIDS** | | | |
| | Yearly | DAILY MAXIMUM | 24.0 LBS/DAY |
| **AMMONIA NITROGEN (N)** | | | |
| | Yearly | DAILY MAXIMUM | 24.0 LBS/DAY |
| **PH** | | | |
| | Yearly | DAILY MAXIMUM | 9.0 STD UNITS |
| | Yearly | DAILY MINIMUM | 6.0 STD UNITS |

**Facility Name:** INDEPENDENCE CITY OF STP
**Permit Number:** 1037001

# Monitoring and Reporting Requirements

(a) Samples and measurements taken shall be representative of the volume and nature of the monitored wastewater.

(b) Analytical and sampling methods specified in 40 CFR Part 136 or other methods approved in writing by the department shall be utilized. All effluent samples for which a limit applies must be analyzed using sufficiently sensitive methods (i.e. testing procedures) approved under 567 IAC Chapter 63 and 40 CFR Part 136 for the analysis of pollutants or pollutant parameters or as required under 40 CFR chapter I, subchapter N or O.

For the purposes of this paragraph, an approved method is sufficiently sensitive when:
(1) the method minimum level (ML) is at or below the level of the effluent limit established in the permit for the measured pollutant or pollutant parameter; or
(2) the method has the lowest ML of the approved analytical methods for the measured pollutant or pollutant parameter.

Samples collected for operational testing need not be analyzed by approved analytical methods; however, commonly accepted test methods should be used.

(c) You are required to report all data including calculated results needed to determine compliance with the limitations contained in this permit. The results of any monitoring not specified in this permit performed at the compliance monitoring point and analyzed according to 40 CFR Part 136 shall be included in the calculation and reporting of any data submitted in accordance with this permit. This includes daily maximums and minimums, 30-day averages and 7-day averages for all parameters that have concentration (mg/l) and mass (lbs/day) limits. In addition, flow data shall be reported in million gallons per day (MGD).

(d) Records of monitoring activities and results shall include for all samples: the date, exact place and time of the sampling; the dates the analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses.

(e) Results of all monitoring shall be recorded on forms provided by, or approved by, the department, and shall be submitted to the appropriate regional field office of the department by the fifteenth day following the close of the reporting period. Your reporting period is on a MONTHLY basis, ending on the last day of each reporting period.

(f) Operational performance monitoring for treatment unit process control shall be conducted to ensure that the facility is properly operated in accordance with its design. The results of any operational performance monitoring need not be reported to the department, but shall be maintained in accordance with rule 567 IAC 63.2 (455B). The results of any operational performance monitoring specified in this permit shall be submitted to the department in accordance with these reporting requirements.

(g) Chapter 63 of the rules provides you with further explanation of your monitoring requirements.

**Facility Name:** INDEPENDENCE CITY OF STP
**Permit Number:** 1037001

**Buchanan County Sanitary Landfill**

| Outfall | Wastewater Parameter | Sample Frequency | Sample Type | Monitoring Location |
|---|---|---|---|---|
| 001 | AMMONIA NITROGEN (N) | 1 EVERY BATCH | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |
| 001 | BIOCHEMICAL OXYGEN DEMAND (BOD5) | 1 EVERY BATCH | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |
| 001 | FLOW | 1 EVERY BATCH | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |
| 001 | PH | 1 EVERY BATCH | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |
| 001 | SANITARY LANDFILL LEACHATE | 1 EVERY 12 MONTHS | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |
| 001 | TOTAL SUSPENDED SOLIDS | 1 EVERY BATCH | GRAB | PRIOR TO DISCHARGE TO CITY SEWER |

Facility Name: INDEPENDENCE CITY OF STP
Permit Number: 1037001

**ADDITIONAL MONITORING REQUIREMENTS – BUCHANAN COUNTY SANITARY LANDFILL**

The permittee shall analyze a representative sample of the leachate discharge from the Buchanan County Sanitary Landfill at least annually for each of the pollutants listed below. Also, the permittee shall monitor the volume of waste discharged and BOD5, TSS, pH and Ammonia-Nitrogen at the frequencies specified on page 19 of this permit.

| **Conventional Pollutants and Metals** | **Volatile Compounds** | **Acid Extractable Compounds** |
|---|---|---|
| Biochemical Oxygen Demand ($BOD_5$) | Method of Analysis: EPA Methods 624 or 1624 | Method of Analysis: EPA Methods 625 or 1625 |
| Total Organic Carbon | | |
| Total Dissolved Solids | Chloromethane (methyl chloride) | 2-Chlorophenol |
| Total Suspended Solids | Bromomethane (methyl bromide) | 2-Nitrophenol |
| Ammonia Nitrogen | Vinyl chloride | 2,4-Dimethylphenol |
| pH | Chloroethane (ethyl chloride) | Benzoic acid |
| Arsenic, Total (as As) | Methylene chloride (dichloromethane) | 2,4-Dichlorophenol |
| Barium, Total (as Ba) | 1,1-Dichloroethene (1,1-dichloroethylene) | 4-Chloro-3-methylphenol |
| Cadmium, Total (as Cd) | 1,1-Dichloroethane | 2,4,6-Trichlorophenol |
| Chromium, Total (as Cr) | 1,2-Dichloroethene (1,2-dichloroethylene) | 2,4,5-Trichlorophenol |
| Copper, Total (as Cu) | Chloroform | 2,4-Dinitrophenol |
| Iron, Total (as Fe) | 1,2-Dichloroethane | 4-Nitrophenol |
| Lead, Total (as Pb) | 1,1,1-Trichloroethane (methyl chloroform) | 4,6-Dinitro-2-methylphenol |
| Mercury, Total (as Hg) | Carbon tetrachloride | Pentachlorophenol |
| Nickel, Total (as Ni) | Bromodichloromethane | |
| Selenium, Total (as Se) | 1,1,2,2-Tetrachloroethane | |
| Silver, Total (as Ag) | 1,2-Dichloropropane | |
| Zinc, Total (as Zn) | 1,3-Dichloropropene | |
| | Trichloroethene | |
| | Dibromochloromethane | |
| | 1,1,2-Trichloroethane | |
| | Benzene | |
| | 2-Chloroethyl vinyl ether | |
| | Bromoform | |
| | Tetrachloroethene | |
| | Toluene | |
| | Chlorobenzene | |
| | Ethylbenzene | |

Facility Name: INDEPENDENCE CITY OF STP
Permit Number: 1037001

| Chlorinated Hydrocarbon Insecticides | Base/Neutral Compounds | Base/Neutral Compounds - continued |
|---|---|---|
| Methods of Analysis: EPA Methods 608 or 625 | Methods of Analysis: EPA Methods 625 or 1625 | |
| Beta BHC | bis (2-chloroethyl) ether | Di-n-butyl phthalate |
| Delta BHC | 1,3-Dichlorobenzene | Fluoranthene |
| Gamma BHC | 1,4-Dichlorobenzene | Pyrene |
| Heptachlor | Benzyl alcohol | Butyl benzyl phthalate |
| Aldrin | 1,2-Dichlorobenzene | 3,3'-Dichlorobenzidine |
| Heptachlor epoxide | bis (2-chloroisopropyl) ether | Benzo (a) anthracene |
| Endosulfan | N-Nitroso-dipropylamine | bis (2-ethylhexyl) phthalate |
| Dieldrin | Hexachloroethane | Chrysene |
| 4,4'-DDE | Nitrobenzene | Di-n-octyl phthalate |
| Endrin | Isophorone | Benzo (b) fluoranthene |
| Endosulfan II | bis (2-chloroethoxy) methane | Benzo (k) fluoranthene |
| 4,4'-DDD | 1,2,4-Trichlorobenzene | Benzo (a) pyrene |
| Endosulfan sulfate | Naphthalene | Indeno (1,2,3-cd) pyrene |
| 4,4'-DDT | Hexachlorobutadiene | Dibenz (a,h) anthracene |
| Endrin aldehyde | Hexachlorocyclopentadiene | Benzo (g,h,i) perylene |
| Chlordane | 2-Chloronaphthalene | |
| Toxaphene | Dimethyl phthalate | |
| | Acenaphthylene | |
| **Polychlorinated Biphenyls** | Acenaphthene | |
| Methods of Analysis: EPA Methods 608 or 625 | Dibenzofuran | |
| | 2,4-Dinitrotoluene | |
| Arochlor-1016 | 2,6-Dinitrotoluene | |
| Arochlor-1221 | Diethyl phthalate | |
| Arochlor-1232 | 4-Chlorophenyl phenyl ether | |
| Arochlor-1242 | Fluorene | |
| Arochlor-1248 | N-Nitrosodiphenylamine | |
| Arochlor-1254 | 4-Bromophenyl phenyl ether | |
| Arochlor-1260 | Hexachlorobenzene | |
| | Phenanthrene | |
| | Anthracene | |

# Attachment C

# Leachate Volumes Hauled to Independence POTW

*2023*

## LEACHATE HAULED - 2023

**2023 Leachate Control System**
**Performance Evaluation**
**Buchanan County Sanitary Landfill**
**Permit No. 10-SDP-01-75C (RESCINDED)**

| Month | Gallons |
|---|---|
| January | 0 |
| February | 0 |
| March | 0 |
| April | 26,000 |
| May | 0 |
| June | 0 |
| July | 13,000 |
| August | 0 |
| September | 0 |
| October | 0 |
| November | 0 |
| December | 0 |
| **TOTAL** | **39,000** |

*2024*

## LEACHATE HAULED - 2024

**2024 Leachate Control System**
**Performance Evaluation**
**Buchanan County Sanitary Landfill**
**Permit No. 10-SDP-01-75C (RESCINDED)**

| Month | Gallons |
|---|---|
| January | 0 |
| February | 13,000 |
| March | 0 |
| April | 26,000 |
| May | 78,000 |
| June | 13,000 |
| July | 0 |
| August | 0 |
| September | 0 |
| October | 0 |
| November | 19,500 |
| December | 0 |
| **TOTAL** | **149,500** |

# Attachment D

# Monthly Leachate Levels

**Leachate Level Summary**
**2024 Leachate Control System Performance Evaluation**
**Buchanan County Sanitary Landfill**
**Permit No. 10-SDP-01-75C**

| Well/TOC | LW-1 | 1071 | | | LW-2 | 1065 | | | LW-3 | 1069 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Leachate Depth | Leachate Elevation | Landfill Base Elevation | Leachate Thickness (ft) | Leachate Depth | Leachate Elevation | Landfill Base Elevation | Leachate Thickness (ft) | Leachate Depth | Leachate Elevation | Landfill Base Elevation | Leachate Thickness (ft) |
| December-12 | 27.6 | 1043.4 | 1036 | 7.4 | 29.1 | 1035.9 | 1034 | 1.9 | 24.7 | 1044.3 | 1033 | 11.3 |
| January-13 | 27.1 | 1043.9 | 1036 | 7.9 | 29.1 | 1035.9 | 1034 | 1.9 | 24.9 | 1044.1 | 1033 | 11.1 |
| February-13 | 27.1 | 1043.9 | 1036 | 7.9 | 29.1 | 1035.9 | 1034 | 1.9 | 26.2 | 1042.8 | 1033 | 9.8 |
| March-13 | 27.0 | 1044.0 | 1036 | 8.0 | 28.7 | 1036.3 | 1034 | 2.3 | 25.0 | 1044.0 | 1033 | 11.0 |
| April-13 | 27.2 | 1043.8 | 1036 | 7.8 | 28.4 | 1036.6 | 1034 | 2.6 | 25.4 | 1043.6 | 1033 | 10.6 |
| May-13 | 28.1 | 1042.9 | 1036 | 6.9 | 29.3 | 1035.7 | 1034 | 1.7 | 25.3 | 1043.7 | 1033 | 10.7 |
| June-13 | 27.6 | 1043.4 | 1036 | 7.4 | 29.1 | 1035.9 | 1034 | 1.9 | 23.6 | 1045.4 | 1033 | 12.4 |
| July-13 | 28.0 | 1043.0 | 1036 | 7.0 | 28.1 | 1036.9 | 1034 | 2.9 | 23.2 | 1045.8 | 1033 | 12.8 |
| August-13 | 27.6 | 1043.4 | 1036 | 7.4 | 29.3 | 1035.7 | 1034 | 1.7 | 23.1 | 1045.9 | 1033 | 12.9 |
| September-13 | 27.6 | 1043.4 | 1036 | 7.4 | 29.3 | 1035.7 | 1034 | 1.7 | 24.4 | 1044.6 | 1033 | 11.6 |
| October-13 | 27.1 | 1043.9 | 1036 | 7.9 | 27.2 | 1037.8 | 1034 | 3.8 | 23.3 | 1045.7 | 1033 | 12.7 |
| November-13 | 27.3 | 1043.7 | 1036 | 7.7 | 29.1 | 1035.9 | 1034 | 1.9 | 24.4 | 1044.6 | 1033 | 11.6 |
| December-13 | 27.6 | 1043.4 | 1036 | 7.4 | 29.4 | 1035.6 | 1034 | 1.6 | 24.6 | 1044.4 | 1033 | 11.4 |
| January-14 | Frozen Shut | NR | 1036 | NR | 29.4 | 1035.6 | 1034 | 1.6 | 24.6 | 1044.4 | 1033 | 11.4 |
| February-14 | Frozen Shut | NR | 1036 | NR | Frozen Shut | NR | 1034 | NR | 25.4 | 1043.6 | 1033 | 10.6 |
| March-14 | Frozen Shut | NR | 1036 | NR | 29.3 | 1035.7 | 1034 | 1.7 | Frozen Shut | NR | 1033 | NR |
| April-14 | 28.1 | 1042.9 | 1036 | 6.9 | 29.5 | 1035.5 | 1034 | 1.5 | 25.5 | 1043.5 | 1033 | 10.5 |
| May-14 | 27.9 | 1043.1 | 1036 | 7.1 | 29.6 | 1035.4 | 1034 | 1.4 | 26.0 | 1043.0 | 1033 | 10.0 |
| June-14 | 27.8 | 1043.2 | 1036 | 7.2 | 29.6 | 1035.4 | 1034 | 1.4 | 25.7 | 1043.3 | 1033 | 10.3 |
| July-14 | 28.1 | 1042.9 | 1036 | 6.9 | 29.7 | 1035.3 | 1034 | 1.3 | 25.0 | 1044.0 | 1033 | 11.0 |
| August-14 | 27.9 | 1043.1 | 1036 | 7.1 | 29.8 | 1035.2 | 1034 | 1.2 | 24.8 | 1044.2 | 1033 | 11.2 |
| September-14 | 27.4 | 1043.6 | 1036 | 7.6 | 29.8 | 1035.2 | 1034 | 1.2 | 24.5 | 1044.5 | 1033 | 11.5 |
| October-14 | 27.2 | 1043.8 | 1036 | 7.8 | 29.5 | 1035.5 | 1034 | 1.5 | 24.0 | 1045.0 | 1033 | 12.0 |
| November-14 | 27.6 | 1043.4 | 1036 | 7.4 | 29.8 | 1035.2 | 1034 | 1.2 | 25.1 | 1043.9 | 1033 | 10.9 |
| December-14 | 27.9 | 1043.1 | 1036 | 7.1 | 29.9 | 1035.1 | 1034 | 1.1 | 25.9 | 1043.1 | 1033 | 10.1 |
| January-15 | 28.1 | 1042.9 | 1036 | 6.9 | 29.6 | 1035.4 | 1034 | 1.4 | 25.2 | 1043.8 | 1033 | 10.8 |
| February-15 | 28.1 | 1042.9 | 1036 | 6.9 | 29.3 | 1035.7 | 1034 | 1.7 | 25.1 | 1043.9 | 1033 | 10.9 |
| March-15 | 23.3 | 1047.7 | 1036 | 11.7 | 29.7 | 1035.3 | 1034 | 1.3 | 25.7 | 1043.3 | 1033 | 10.3 |
| April-15 | 27.8 | 1043.2 | 1036 | 7.2 | 29.8 | 1035.2 | 1034 | 1.2 | 25.9 | 1043.1 | 1033 | 10.1 |
| May-15 | 28.0 | 1043.0 | 1036 | 7.0 | 29.6 | 1035.4 | 1034 | 1.4 | 24.9 | 1044.1 | 1033 | 11.1 |
| June-15 | 27.9 | 1043.1 | 1036 | 7.1 | 29.7 | 1035.3 | 1034 | 1.3 | 25.0 | 1044.0 | 1033 | 11.0 |
| July-15 | 27.8 | 1043.2 | 1036 | 7.2 | 30.0 | 1035.0 | 1034 | 1.0 | 24.4 | 1044.6 | 1033 | 11.6 |
| August-15 | 27.8 | 1043.2 | 1036 | 7.2 | 29.8 | 1035.2 | 1034 | 1.2 | 24.0 | 1045.0 | 1033 | 12.0 |
| September-15 | 27.1 | 1043.9 | 1036 | 7.9 | 29.0 | 1036.0 | 1034 | 2.0 | 23.4 | 1045.6 | 1033 | 12.6 |
| October-15 | 27.7 | 1043.3 | 1036 | 7.3 | 29.6 | 1035.4 | 1034 | 1.4 | 24.3 | 1044.7 | 1033 | 11.7 |
| November-15 | 27.3 | 1043.7 | 1036 | 7.7 | 29.3 | 1035.7 | 1034 | 1.7 | 24.0 | 1045.0 | 1033 | 12.0 |
| December-15 | 27.3 | 1043.7 | 1036 | 7.7 | 29.1 | 1035.9 | 1034 | 1.9 | 22.9 | 1046.1 | 1033 | 13.1 |
| January-16 | 28.1 | 1042.9 | 1036 | 6.9 | 29.8 | 1035.2 | 1034 | 1.2 | 23.1 | 1045.9 | 1033 | 12.9 |
| February-16 | 27.9 | 1043.1 | 1036 | 7.1 | 29.9 | 1035.1 | 1034 | 1.1 | 23.3 | 1045.7 | 1033 | 12.7 |
| March-16 | 27.9 | 1043.1 | 1036 | 7.1 | 29.6 | 1035.4 | 1034 | 1.4 | 23.6 | 1045.4 | 1033 | 12.4 |
| April-16 | 27.7 | 1043.3 | 1036 | 7.3 | 29.9 | 1035.1 | 1034 | 1.1 | 21.8 | 1047.2 | 1033 | 14.2 |
| May-16 | 28.6 | 1042.4 | 1036 | 6.4 | 29.2 | 1035.8 | 1034 | 1.8 | 21.6 | 1047.4 | 1033 | 14.4 |
| June-16 | 27.6 | 1043.4 | 1036 | 7.4 | 29.4 | 1035.6 | 1034 | 1.6 | 22.1 | 1046.9 | 1033 | 13.9 |
| July-16 | 27.7 | 1043.3 | 1036 | 7.3 | 29.0 | 1036.0 | 1034 | 2.0 | 21.9 | 1047.1 | 1033 | 14.1 |
| August-16 | 25.4 | 1045.6 | 1036 | 9.6 | 29.2 | 1035.8 | 1034 | 1.8 | 22.2 | 1046.8 | 1033 | 13.8 |
| September-16 | 25.3 | 1045.7 | 1036 | 9.7 | 29.3 | 1035.7 | 1034 | 1.7 | 22.0 | 1047.0 | 1033 | 14.0 |
| October-16 | 29.1 | 1041.9 | 1036 | 5.9 | 29.0 | 1036.0 | 1034 | 2.0 | 21.9 | 1047.1 | 1033 | 14.1 |
| November-16 | 27.1 | 1043.9 | 1036 | 7.9 | 29.2 | 1035.8 | 1034 | 1.8 | 22.7 | 1046.3 | 1033 | 13.3 |
| December-16 | 27.2 | 1043.8 | 1036 | 7.8 | 29.3 | 1035.7 | 1034 | 1.7 | 23.5 | 1045.5 | 1033 | 12.5 |
| January-17 | 26.9 | 1044.1 | 1036 | 8.1 | 29.4 | 1035.6 | 1034 | 1.6 | 23.7 | 1045.3 | 1033 | 12.3 |
| February-17 | 26.9 | 1044.1 | 1036 | 8.1 | 29.3 | 1035.7 | 1034 | 1.7 | 23.5 | 1045.5 | 1033 | 12.5 |
| March-17 | 27.1 | 1043.9 | 1036 | 7.9 | 29.2 | 1035.8 | 1034 | 1.8 | 24.6 | 1044.4 | 1033 | 11.4 |
| April-17 | 26.8 | 1044.2 | 1036 | 8.2 | 29.4 | 1035.6 | 1034 | 1.6 | 23.5 | 1045.5 | 1033 | 12.5 |
| May-17 | 27.8 | 1043.2 | 1036 | 7.2 | 29.4 | 1035.6 | 1034 | 1.6 | 23.2 | 1045.8 | 1033 | 12.8 |
| June-17 | 22.3 | 1048.7 | 1036 | 12.7 | 29.3 | 1035.7 | 1034 | 1.7 | 22.3 | 1046.7 | 1033 | 13.7 |
| July-17 | 26.7 | 1044.3 | 1036 | 8.3 | 29.5 | 1035.5 | 1034 | 1.5 | 22.6 | 1046.4 | 1033 | 13.4 |
| August-17 | 26.8 | 1044.2 | 1036 | 8.2 | 29.3 | 1035.7 | 1034 | 1.7 | 23.5 | 1045.5 | 1033 | 12.5 |
| September-17 | 26.8 | 1044.2 | 1036 | 8.2 | 29.5 | 1035.5 | 1034 | 1.5 | 22.4 | 1046.6 | 1033 | 13.6 |
| October-17 | 26.6 | 1044.4 | 1036 | 8.4 | 29.5 | 1035.5 | 1034 | 1.5 | 22.9 | 1046.1 | 1033 | 13.1 |
| November-17 | 27.0 | 1044.0 | 1036 | 8.0 | 29.2 | 1035.8 | 1034 | 1.8 | 22.9 | 1046.1 | 1033 | 13.1 |
| December-17 | 27.3 | 1043.7 | 1036 | 7.7 | 29.4 | 1035.6 | 1034 | 1.6 | 23.4 | 1045.6 | 1033 | 12.6 |
| January-18 | 27.3 | 1043.7 | 1036 | 7.7 | 29.4 | 1035.6 | 1034 | 1.6 | 23.4 | 1045.6 | 1033 | 12.6 |
| February-18 | 26.9 | 1044.1 | 1036 | 8.1 | 29.4 | 1035.6 | 1034 | 1.6 | 24.3 | 1044.7 | 1033 | 11.7 |
| March-18 | 26.8 | 1044.2 | 1036 | 8.2 | 29.2 | 1035.8 | 1034 | 1.8 | 24.0 | 1045.0 | 1033 | 12.0 |
| April-18 | 27.6 | 1043.4 | 1036 | 7.4 | 28.8 | 1036.2 | 1034 | 2.2 | 24.0 | 1045.0 | 1033 | 12.0 |
| May-18 | 27.2 | 1043.8 | 1036 | 7.8 | 28.6 | 1036.4 | 1034 | 2.4 | 24.4 | 1044.6 | 1033 | 11.6 |
| June-18 | 26.8 | 1044.2 | 1036 | 8.2 | 29.5 | 1035.5 | 1034 | 1.5 | 24.6 | 1044.4 | 1033 | 11.4 |
| July-18 | 26.8 | 1044.2 | 1036 | 8.2 | 29.6 | 1035.4 | 1034 | 1.4 | 23.2 | 1045.8 | 1033 | 12.8 |
| August-18 | 26.9 | 1044.1 | 1036 | 8.1 | 26.4 | 1038.6 | 1034 | 4.6 | 22.8 | 1046.2 | 1033 | 13.2 |
| September-18 | 27.2 | 1043.8 | 1036 | 7.8 | 29.5 | 1035.5 | 1034 | 1.5 | 22.5 | 1046.5 | 1033 | 13.5 |
| October-18 | 26.7 | 1044.3 | 1036 | 8.3 | 29.2 | 1035.8 | 1034 | 1.8 | 22.1 | 1046.9 | 1033 | 13.9 |
| November-18 | 27.2 | 1043.8 | 1036 | 7.8 | 29.5 | 1035.5 | 1034 | 1.5 | 21.9 | 1047.1 | 1033 | 14.1 |
| December-18 | 26.6 | 1044.4 | 1036 | 8.4 | 29.5 | 1035.5 | 1034 | 1.5 | 22.3 | 1046.7 | 1033 | 13.7 |
| January-19 | 27.4 | 1043.6 | 1036 | 7.6 | 29.6 | 1035.4 | 1034 | 1.4 | 23.5 | 1045.5 | 1033 | 12.5 |
| February-19 | 26.4 | 1044.6 | 1036 | 8.6 | 29.1 | 1035.9 | 1034 | 1.9 | 22.9 | 1046.1 | 1033 | 13.1 |
| March-19 | 26.6 | 1044.4 | 1036 | 8.4 | 29.1 | 1035.9 | 1034 | 1.9 | 23.3 | 1045.7 | 1033 | 12.7 |
| April-19 | 26.9 | 1044.1 | 1036 | 8.1 | 29.2 | 1035.8 | 1034 | 1.8 | 24.4 | 1044.6 | 1033 | 11.6 |
| May-19 | 27.2 | 1043.8 | 1036 | 7.8 | 29.3 | 1035.7 | 1034 | 1.7 | 23.7 | 1045.3 | 1033 | 12.3 |
| June-19 | 26.8 | 1044.2 | 1036 | 8.2 | 29.3 | 1035.7 | 1034 | 1.7 | 22.0 | 1047.0 | 1033 | 14.0 |
| July-19 | 26.6 | 1044.4 | 1036 | 8.4 | 29.1 | 1035.9 | 1034 | 1.9 | 21.5 | 1047.5 | 1033 | 14.5 |
| August-19 | 26.8 | 1044.2 | 1036 | 8.2 | 29.7 | 1035.3 | 1034 | 1.3 | 22.7 | 1046.3 | 1033 | 13.3 |
| September-19 | 26.5 | 1044.5 | 1036 | 8.5 | 29.8 | 1035.2 | 1034 | 1.2 | 23.1 | 1045.9 | 1033 | 12.9 |
| October-19 | 26.6 | 1044.4 | 1036 | 8.4 | 29.3 | 1035.7 | 1034 | 1.7 | 22.8 | 1046.2 | 1033 | 13.2 |
| November-19 | 26.9 | 1044.1 | 1036 | 8.1 | 29.3 | 1035.7 | 1034 | 1.7 | 23.6 | 1045.4 | 1033 | 12.4 |
| December-19 | 28.2 | 1042.8 | 1036 | 6.8 | 29.6 | 1035.4 | 1034 | 1.4 | 23.3 | 1045.7 | 1033 | 12.7 |
| January-20 | 27.4 | 1043.6 | 1036 | 7.6 | 28.5 | 1036.5 | 1034 | 2.5 | 21.4 | 1047.6 | 1033 | 14.6 |
| February-20 | 28.1 | 1042.9 | 1036 | 6.9 | 29.2 | 1035.8 | 1034 | 1.8 | 22.9 | 1046.1 | 1033 | 13.1 |
| March-20 | 28.0 | 1043.0 | 1036 | 7.0 | 29.3 | 1035.7 | 1034 | 1.7 | 23.4 | 1045.6 | 1033 | 12.6 |
| April-20 | 27.5 | 1043.5 | 1036 | 7.5 | 29.4 | 1035.6 | 1034 | 1.6 | 23.3 | 1045.7 | 1033 | 12.7 |
| May-20 | 27.6 | 1043.4 | 1036 | 7.4 | 29.3 | 1035.7 | 1034 | 1.7 | 21.9 | 1047.1 | 1033 | 14.1 |
| June-20 | 27.0 | 1044.0 | 1036 | 8.0 | 28.8 | 1036.2 | 1034 | 2.2 | 21.3 | 1047.7 | 1033 | 14.7 |
| July-20 | 27.6 | 1043.4 | 1036 | 7.4 | 29.1 | 1035.9 | 1034 | 1.9 | 22.4 | 1046.6 | 1033 | 13.6 |
| August-20 | 26.6 | 1044.4 | 1036 | 8.4 | 29.3 | 1035.7 | 1034 | 1.7 | 21.8 | 1047.2 | 1033 | 14.2 |
| September-20 | 27.0 | 1044.0 | 1036 | 8.0 | 29.1 | 1035.9 | 1034 | 1.9 | 22.1 | 1046.9 | 1033 | 13.9 |
| October-20 | 27.2 | 1043.8 | 1036 | 7.8 | 29.1 | 1035.9 | 1034 | 1.9 | 21.9 | 1047.1 | 1033 | 14.1 |
| November-20 | 27.2 | 1043.8 | 1036 | 7.8 | 29.2 | 1035.8 | 1034 | 1.8 | 21.8 | 1047.2 | 1033 | 14.2 |
| December-20 | 26.2 | 1044.8 | 1036 | 8.8 | 29.3 | 1035.7 | 1034 | 1.7 | 22.0 | 1047.0 | 1033 | 14.0 |
| January-21 | 26.1 | 1044.9 | 1036 | 8.9 | 29.5 | 1035.5 | 1034 | 1.5 | 22.3 | 1046.7 | 1033 | 13.7 |
| February-21 | 26.6 | 1044.4 | 1036 | 8.4 | 29.1 | 1035.9 | 1034 | 1.9 | 22.7 | 1046.3 | 1033 | 13.3 |
| March-21 | 26.2 | 1044.8 | 1036 | 8.8 | 28.4 | 1036.6 | 1034 | 2.6 | 22.2 | 1046.8 | 1033 | 13.8 |
| April-21 | 26.4 | 1044.6 | 1036 | 8.6 | 28.9 | 1036.1 | 1034 | 2.1 | 22.9 | 1046.1 | 1033 | 13.1 |
| May-21 | 26.0 | 1045.0 | 1036 | 9.0 | 28.4 | 1036.6 | 1034 | 2.6 | 21.3 | 1047.7 | 1033 | 14.7 |
| June-21 | 26.1 | 1044.9 | 1036 | 8.9 | 28.9 | 1036.1 | 1034 | 2.1 | 22.1 | 1046.9 | 1033 | 13.9 |
| July-21 | 26.2 | 1044.8 | 1036 | 8.8 | 29.0 | 1036.0 | 1034 | 2.0 | 22.6 | 1046.4 | 1033 | 13.4 |
| August-21 | 27.3 | 1043.7 | 1036 | 7.7 | 29.5 | 1035.5 | 1034 | 1.5 | 22.7 | 1046.3 | 1033 | 13.3 |
| September-21 | 26.8 | 1044.2 | 1036 | 8.2 | 29.1 | 1035.9 | 1034 | 1.9 | 22.1 | 1046.9 | 1033 | 13.9 |
| October-21 | 26.9 | 1044.1 | 1036 | 8.1 | 29.3 | 1035.7 | 1034 | 1.7 | 22.6 | 1046.4 | 1033 | 13.4 |
| November-21 | 26.4 | 1044.6 | 1036 | 8.6 | 28.9 | 1036.1 | 1034 | 2.1 | 22.2 | 1046.8 | 1033 | 13.8 |
| December-21 | 26.8 | 1044.2 | 1036 | 8.2 | 28.6 | 1036.4 | 1034 | 2.4 | 22.0 | 1047.0 | 1033 | 14.0 |
| January-22 | 26.7 | 1044.3 | 1036 | 8.3 | 29.0 | 1036.0 | 1034 | 2.0 | 23.0 | 1046.0 | 1033 | 13.0 |
| February-22 | 27.5 | 1043.5 | 1036 | 7.5 | 28.8 | 1036.2 | 1034 | 2.2 | 23.3 | 1045.7 | 1033 | 12.7 |
| March-22 | NR | NR | 1036 | NR | 28.7 | 1036.3 | 1034 | 2.3 | 23.5 | 1045.5 | 1033 | 12.5 |
| April-22 | 27.3 | 1043.7 | 1036 | 7.7 | 29.3 | 1035.7 | 1034 | 1.7 | 25.6 | 1043.4 | 1033 | 10.4 |
| May-22 | 27.3 | 1043.7 | 1036 | 7.7 | 29.1 | 1035.9 | 1034 | 1.9 | 23.4 | 1045.6 | 1033 | 12.6 |
| June-22 | 27.2 | 1043.8 | 1036 | 7.8 | 29.0 | 1036.0 | 1034 | 2.0 | 23.7 | 1045.3 | 1033 | 12.3 |
| July-22 | 27.2 | 1043.8 | 1036 | 7.8 | 29.1 | 1035.9 | 1034 | 1.9 | 21.4 | 1047.6 | 1033 | 14.6 |
| August-22 | 27.4 | 1043.6 | 1036 | 7.6 | 29.0 | 1036.0 | 1034 | 2.0 | 23.4 | 1045.6 | 1033 | 12.6 |
| September-22 | 26.6 | 1044.4 | 1036 | 8.4 | 29.0 | 1036.0 | 1034 | 2.0 | 20.9 | 1048.1 | 1033 | 15.1 |
| October-22 | 26.6 | 1044.4 | 1036 | 8.4 | 29.3 | 1035.7 | 1034 | 1.7 | 21.9 | 1047.1 | 1033 | 14.1 |
| November-22 | 27.1 | 1043.9 | 1036 | 7.9 | 29.0 | 1036.0 | 1034 | 2.0 | 23.2 | 1045.8 | 1033 | 12.8 |
| December-22 | 25.8 | 1045.2 | 1036 | 9.2 | 28.6 | 1036.4 | 1034 | 2.4 | 22.0 | 1047.0 | 1033 | 14.0 |
| January-23 | 26.0 | 1045.0 | 1036 | 9.0 | 28.9 | 1036.1 | 1034 | 2.1 | 22.7 | 1046.3 | 1033 | 13.3 |
| February-23 | 26.4 | 1044.6 | 1036 | 8.6 | 29.1 | 1035.9 | 1034 | 1.9 | 23.2 | 1045.8 | 1033 | 12.8 |
| March-23 | 26.6 | 1044.4 | 1036 | 8.4 | 28.4 | 1036.6 | 1034 | 2.6 | 23.5 | 1045.5 | 1033 | 12.5 |
| April-23 | 26.6 | 1044.4 | 1036 | 8.4 | 28.8 | 1036.2 | 1034 | 2.2 | 23.2 | 1045.8 | 1033 | 12.8 |
| May-23 | 26.4 | 1044.6 | 1036 | 8.6 | 28.8 | 1036.2 | 1034 | 2.2 | 23.1 | 1045.9 | 1033 | 12.9 |
| June-23 | 27.0 | 1044.0 | 1036 | 8.0 | 28.9 | 1036.1 | 1034 | 2.1 | 21.9 | 1047.1 | 1033 | 14.1 |
| July-23 | 26.5 | 1044.5 | 1036 | 8.5 | 28.9 | 1036.1 | 1034 | 2.1 | 22.9 | 1046.1 | 1033 | 13.1 |
| August-23 | 26.0 | 1045.0 | 1036 | 9.0 | 28.3 | 1036.7 | 1034 | 2.7 | 22.2 | 1046.8 | 1033 | 13.8 |
| September-23 | 26.6 | 1044.4 | 1036 | 8.4 | 28.6 | 1036.4 | 1034 | 2.4 | 22.4 | 1046.6 | 1033 | 13.6 |
| October-23 | 26.5 | 1044.5 | 1036 | 8.5 | 28.7 | 1036.3 | 1034 | 2.3 | 22.8 | 1046.2 | 1033 | 13.2 |
| November-23 | 26.3 | 1044.7 | 1036 | 8.7 | 28.9 | 1036.1 | 1034 | 2.1 | 23.5 | 1045.5 | 1033 | 12.5 |
| December-23 | 25.7 | 1045.3 | 1036 | 9.3 | 29.1 | 1035.9 | 1034 | 1.9 | 23.1 | 1045.9 | 1033 | 12.9 |
| January-24 | 26.8 | 1044.2 | 1036 | 8.2 | 29.3 | 1035.7 | 1034 | 1.7 | 24.0 | 1045.0 | 1033 | 12.0 |
| February-24 | 26.1 | 1044.9 | 1036 | 8.9 | 29.4 | 1035.6 | 1034 | 1.6 | 24.6 | 1044.4 | 1033 | 11.4 |
| March-24 | 26.3 | 1044.7 | 1036 | 8.7 | 28.7 | 1036.3 | 1034 | 2.3 | 22.9 | 1046.1 | 1033 | 13.1 |
| April-24 | 25.8 | 1045.2 | 1036 | 9.2 | 29.6 | 1035.4 | 1034 | 1.4 | 23.2 | 1045.8 | 1033 | 12.8 |
| May-24 | 25.3 | 1045.7 | 1036 | 9.7 | 29.6 | 1035.4 | 1034 | 1.4 | 22.4 | 1046.6 | 1033 | 13.6 |
| June-24 | 25.3 | 1045.7 | 1036 | 9.7 | 29.4 | 1035.6 | 1034 | 1.6 | 21.3 | 1047.7 | 1033 | 14.7 |
| July-24 | 26.3 | 1044.7 | 1036 | 8.7 | 29.2 | 1035.8 | 1034 | 1.8 | 20.5 | 1048.5 | 1033 | 15.5 |
| August-24 | 25.2 | 1045.8 | 1036 | 9.8 | 29.3 | 1035.7 | 1034 | 1.7 | 21.0 | 1048.0 | 1033 | 15.0 |
| September-24 | 25.2 | 1045.8 | 1036 | 9.8 | 29.6 | 1035.4 | 1034 | 1.4 | 21.7 | 1047.3 | 1033 | 14.3 |
| October-24 | 26.0 | 1045.0 | 1036 | 9.0 | 29.7 | 1035.3 | 1034 | 1.3 | 22.2 | 1046.8 | 1033 | 13.8 |
| November-24 | 26.0 | 1045.0 | 1036 | 9.0 | 29.5 | 1035.5 | 1034 | 1.5 | 22.9 | 1046.1 | 1033 | 13.1 |
| December-24 | 25.9 | 1045.1 | 1036 | 9.1 | 29.4 | 1035.6 | 1034 | 1.6 | 22.7 | 1046.3 | 1033 | 13.3 |

Leachate Depth is measured from the top of well casing to the liquid level in the well in feet.

# Attachment E

# Testing Results - Leachate Annual Sample

*2023*

# ANALYTICAL REPORT

May 04, 2023



**Work Order:** 1GD1085

| Report To | Work Order Information |
|---|---|
| Todd Whipple | Date Received: 4/12/2023 10:30:00AM |
| HLW Engineering | Collector: Bowers, Dennis K. |
| PO Box 314 | Phone: (515) 733-4144 |
| Story City, IA 50248 | PO Number: |

Project: Buchanan Co. Landfill - Leachate

Project Number: Leachate

| Analyte | Result | MRL | Batch | Method | Analyst | Analyzed | Qualifier |
|---|---|---|---|---|---|---|---|
| **1GD1085-01** Buchanan Co. Landfill | | | | Matrix: Water | | Collected: 04/11/23 10:30 | |
| Dibromochloromethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Chloromethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Vinyl Chloride | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Bromomethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| **Chloroethane** | **1.2 ug/L** | **1.0** | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,1-Dichloroethylene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Methylene Chloride | <5.0 ug/L | 5.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| trans-1,2-Dichloroethylene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,1-Dichloroethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| cis-1,2-Dichloroethylene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Chloroform | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,1,1-Trichloroethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Carbon Tetrachloride | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| **Benzene** | **1.9 ug/L** | **1.0** | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,2-Dichloroethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Trichloroethylene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,2-Dichloropropane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Bromodichloromethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 2-Chloroethylvinyl ether | <10.0 ug/L | 10.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| cis-1,3-Dichloropropene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Toluene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| trans-1,3-Dichloropropene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,1,2-Trichloroethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Tetrachloroethylene | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| **Chlorobenzene** | **4.7 ug/L** | **1.0** | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| **Ethylbenzene** | **4.9 ug/L** | **1.0** | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| Bromoform | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |
| 1,1,2,2-Tetrachloroethane | <1.0 ug/L | 1.0 | 1GD0727 | EPA 624 | LNH | 04/14/23 12:50 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.*

HLW Engineering
PO Box 314
Story City, IA 50248

**May 04, 2023**
**Page 2 of 28**

**Work Order: 1GD1085**

| Analyte | Result | MRL | Batch | Method | Analyst | Analyzed | Qualifier |
|---|---|---|---|---|---|---|---|
| **1GD1085-01** Buchanan Co. Landfill | | | | Matrix: Water | | Collected: 04/11/23 10:30 | |
| *Surrogate: 1,2-Dichloroethane-d4* | *102 %* | | | *66-134* | LNH | 04/14/23 12:50 | |
| *Surrogate: Toluene-d8* | *98.0 %* | | | *91-113* | LNH | 04/14/23 12:50 | |
| *Surrogate: 4-Bromofluorobenzene* | *97.2 %* | | | *83-112* | LNH | 04/14/23 12:50 | |
| Bis(2-Chloroethyl) Ether | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2-Chlorophenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 1,3-Dichlorobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 1,4-Dichlorobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzyl Alcohol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 1,2-Dichlorobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Bis[2-Chloroisopropyl]ether | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| n-Nitroso-di-n-propylamine | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Hexachloroethane | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Nitrobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Isophorone | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2-Nitrophenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4-Dimethylphenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Bis (2-Chloroethoxy) Methane | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzoic acid | <50 ug/L | 50 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4-Dichlorophenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 1,2,4-Trichlorobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Naphthalene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Hexachlorobutadiene | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 4-Chloro-3-methylphenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Hexachlorocyclopentadiene | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4,6-Trichlorophenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4,5-Trichlorophenol | <50 ug/L | 50 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2-Chloronaphthalene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Dimethylphthalate | <15 ug/L | 15 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Acenaphthylene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,6-Dinitrotoluene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Acenaphthene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4-Dinitrophenol | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Dibenzofuran | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 2,4-Dinitrotoluene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 4-Nitrophenol | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Diethyl Phthalate | <30 ug/L | 30 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Fluorene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 4-Chlorophenyl Phenyl Ether | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.*

HLW Engineering
PO Box 314
Story City, IA 50248

**May 04, 2023**


**Work Order: 1GD1085**

| Analyte | Result | MRL | Batch | Method | Analyst | Analyzed | Qualifier |
|---|---|---|---|---|---|---|---|
| **1GD1085-01** Buchanan Co. Landfill | | | | Matrix: Water | | Collected: 04/11/23 10:30 | |
| 4,6-Dinitro-2-methylphenol | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| N-Nitrosodiphenylamine | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 4-Bromophenyl Phenyl Ether | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Hexachlorobenzene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Pentachlorophenol | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Phenanthrene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Anthracene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Di-n-butyl Phthalate | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Fluoranthene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Pyrene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Butyl Benzyl Phthalate | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzo(a)anthracene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Chrysene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Bis(2-Ethylhexyl) Phthalate | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Di-n-octyl Phthalate | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Indeno(1,2,3-cd)Pyrene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| 3,3′-Dichlorobenzidine | <20 ug/L | 20 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzo(b)Fluoranthene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzo(k)Fluoranthene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzo(a)Pyrene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Dibenzo(a,h)anthracene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| Benzo(g,h,i)perylene | <10 ug/L | 10 | 1GD0848 | EPA 625 | EPP | 04/27/23 3:33 | |
| *Surrogate: 2-Fluorophenol* | *62.1 %* | | | *19-139* | EPP | 04/27/23 3:33 | |
| *Surrogate: Phenol-d6* | *28.4 %* | | | *14-154* | EPP | 04/27/23 3:33 | |
| *Surrogate: Nitrobenzene-d5* | *81.8 %* | | | *17-146* | EPP | 04/27/23 3:33 | |
| *Surrogate: 2-Fluorobiphenyl* | *90.6 %* | | | *18-122* | EPP | 04/27/23 3:33 | |
| *Surrogate: 2,4,6-Tribromophenol* | *57.0 %* | | | *21-151* | EPP | 04/27/23 3:33 | |
| *Surrogate: Terphenyl-dl4* | *85.3 %* | | | *27-131* | EPP | 04/27/23 3:33 | |
| Gamma-BHC [Lindane] | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Beta-BHC | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Heptachlor | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Delta-BHC | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Aldrin | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Heptachlor Epoxide | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Endosulfan I | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| 4,4`-DDE | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Dieldrin | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Endrin | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |

HLW Engineering
PO Box 314
Story City, IA 50248

**May 04, 2023**
**Page 4 of 28**

**Work Order: 1GD1085**

| Analyte | Result | MRL | Batch | Method | Analyst | Analyzed | Qualifier |
|---|---|---|---|---|---|---|---|
| **1GD1085-01** Buchanan Co. Landfill | | | | Matrix: Water | | Collected: 04/11/23 10:30 | |
| 4,4`-DDD | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Endosulfan II | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| 4,4`-DDT | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Endrin Aldehyde | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Endosulfan Sulfate | <0.05 ug/L | 0.05 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Chlordane | <0.10 ug/L | 0.10 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Toxaphene | <0.20 ug/L | 0.20 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1016 | <0.10 ug/L | 0.10 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1221 | <0.20 ug/L | 0.20 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1232 | <0.20 ug/L | 0.20 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1242 | <0.20 ug/L | 0.20 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1248 | <0.20 ug/L | 0.20 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1254 | <0.10 ug/L | 0.10 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| Arochlor 1260 | <0.10 ug/L | 0.10 | 1GD0712 | EPA 608 | EPP | 05/01/23 14:24 | |
| *Surrogate: Tetrachloro-m-xylene* | *55.7 %* | | | *30-119* | EPP | 05/01/23 14:24 | |
| *Surrogate: Decachlorobiphenyl* | *92.3 %* | | | *19-120* | EPP | 05/01/23 14:24 | |
| **BOD (5 day)** | **12 mg/L** | **4** | 1GD0591 | SM 5210 B | LAE | 04/12/23 15:55 | |
| **Nitrogen, Ammonia** | **68.9 mg/L** | **10.0** | 1GD1213 | TIMBERLINE | TJB | 04/25/23 13:20 | |
| **pH** | **7.2 pH** | **0.5** | 1GD0626 | SM 4500 H+ B | BSS | 04/12/23 16:23 | I-03 |
| **Solids, total dissolved** | **1010 mg/L** | **5** | 1GD0874 | USGS I-1750-85 | MEAH | 04/18/23 11:48 | |
| **Total Organic Carbon** | **41.2 mg/L** | **5.00** | 1GD1232 | 5310B | LNH | 04/24/23 15:37 | |
| **Solids, total suspended** | **82 mg/L** | **7** | 1GD0855 | USGS I-3765-85 | MEAH | 04/18/23 16:00 | |
| Silver, total | <0.0020 mg/L | 0.0020 | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Arsenic, total** | **0.0171 mg/L** | **0.0020** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Barium, total** | **1.26 mg/L** | **0.0020** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| Cadmium, total | <0.0002 mg/L | 0.0002 | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Chromium, total** | **0.0054 mg/L** | **0.0020** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Copper, total** | **0.0048 mg/L** | **0.0020** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Iron, total** | **111 mg/L** | **0.100** | 1GD0631 | 200.7 | JAR | 04/14/23 21:34 | |
| Mercury, total | <0.00050 mg/L | 0.00050 | 1GD0614 | 245.1 | JAR | 04/14/23 11:42 | |
| **Nickel, total** | **0.0159 mg/L** | **0.0040** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Lead, total** | **0.0057 mg/L** | **0.0008** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| Selenium, total | <0.0040 mg/L | 0.0040 | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |
| **Zinc, total** | **0.0216 mg/L** | **0.0200** | 1GD0783 | EPA 200.8 | RVV | 04/17/23 23:54 | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.*

HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Volatile Organic Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0727 - EPA 5030B** | | | | | | | | | | |
| **Blank (1GD0727-BLK1)** | | | | Prepared & Analyzed: 04/14/23 | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *50.3* | | *ug/L* | *50.4080* | | *99.8* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *49.2* | | *"* | *50.2360* | | *97.9* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *48.2* | | *"* | *50.4200* | | *95.6* | *83-112* | | | |
| Chloromethane | ND | 1.0 | " | | | | | | | |
| Vinyl Chloride | ND | 1.0 | " | | | | | | | |
| Bromomethane | ND | 1.0 | " | | | | | | | |
| Chloroethane | ND | 1.0 | " | | | | | | | |
| 1,1-Dichloroethylene | ND | 1.0 | " | | | | | | | |
| Methylene Chloride | ND | 5.0 | " | | | | | | | |
| trans-1,2-Dichloroethylene | ND | 1.0 | " | | | | | | | |
| 1,1-Dichloroethane | ND | 1.0 | " | | | | | | | |
| cis-1,2-Dichloroethylene | ND | 1.0 | " | | | | | | | |
| Chloroform | ND | 1.0 | " | | | | | | | |
| 1,1,1-Trichloroethane | ND | 1.0 | " | | | | | | | |
| Carbon Tetrachloride | ND | 1.0 | " | | | | | | | |
| Benzene | ND | 1.0 | " | | | | | | | |
| 1,2-Dichloroethane | ND | 1.0 | " | | | | | | | |
| Trichloroethylene | ND | 1.0 | " | | | | | | | |
| 1,2-Dichloropropane | ND | 1.0 | " | | | | | | | |
| Bromodichloromethane | ND | 1.0 | " | | | | | | | |
| 2-Chloroethylvinyl ether | ND | 10.0 | " | | | | | | | |
| cis-1,3-Dichloropropene | ND | 1.0 | " | | | | | | | |
| Toluene | ND | 1.0 | " | | | | | | | |
| trans-1,3-Dichloropropene | ND | 1.0 | " | | | | | | | |
| 1,1,2-Trichloroethane | ND | 1.0 | " | | | | | | | |
| Tetrachloroethylene | ND | 1.0 | " | | | | | | | |
| Dibromochloromethane | ND | 1.0 | " | | | | | | | |
| Chlorobenzene | ND | 1.0 | " | | | | | | | |
| Ethylbenzene | ND | 1.0 | " | | | | | | | |
| Bromoform | ND | 1.0 | " | | | | | | | |
| 1,1,2,2-Tetrachloroethane | ND | 1.0 | " | | | | | | | |

HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Volatile Organic Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0727 - EPA 5030B** | | | | | | | | | | |
| **LCS (1GD0727-BS1)** | | | | Prepared & Analyzed: 04/14/23 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *53.6* | | *ug/L* | *50.3520* | | *107* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *49.9* | | *"* | *50.4080* | | *99.0* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *49.6* | | *"* | *50.2360* | | *98.7* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *48.2* | | *"* | *50.4200* | | *95.6* | *83-112* | | | |
| Chloromethane | 26.86 | 1.0 | " | 30.0000 | | 89.5 | 63-145 | | | |
| Vinyl Chloride | 28.21 | 1.0 | " | 30.0000 | | 94.0 | 68-145 | | | |
| Bromomethane | 31.76 | 1.0 | " | 30.0000 | | 106 | 69-150 | | | |
| Chloroethane | 31.61 | 1.0 | " | 30.0000 | | 105 | 74-134 | | | |
| 1,1-Dichloroethylene | 54.56 | 1.0 | " | 50.0000 | | 109 | 76-139 | | | |
| Methylene Chloride | 48.27 | 5.0 | " | 50.0000 | | 96.5 | 67-141 | | | |
| trans-1,2-Dichloroethylene | 52.03 | 1.0 | " | 50.0000 | | 104 | 71-137 | | | |
| 1,1-Dichloroethane | 51.44 | 1.0 | " | 50.0000 | | 103 | 72-130 | | | |
| cis-1,2-Dichloroethylene | 47.96 | 1.0 | " | 50.0000 | | 95.9 | 81-134 | | | |
| 2-Butanone (MEK) | 85.69 | 10.0 | " | 106.200 | | 80.7 | 44-158 | | | |
| Chloroform | 49.64 | 1.0 | " | 50.0000 | | 99.3 | 76-132 | | | |
| 1,1,1-Trichloroethane | 46.36 | 1.0 | " | 49.9750 | | 92.8 | 65-122 | | | |
| Carbon Tetrachloride | 54.10 | 1.0 | " | 50.0000 | | 108 | 66-132 | | | |
| Benzene | 49.29 | 1.0 | " | 50.0000 | | 98.6 | 77-130 | | | |
| 1,2-Dichloroethane | 46.60 | 1.0 | " | 50.0000 | | 93.2 | 75-124 | | | |
| Trichloroethylene | 41.70 | 1.0 | " | 50.0000 | | 83.4 | 79-126 | | | |
| 1,2-Dichloropropane | 48.08 | 1.0 | " | 50.0000 | | 96.2 | 79-128 | | | |
| Dibromomethane | 49.82 | 1.0 | " | 50.0000 | | 99.6 | 71-139 | | | |
| Bromodichloromethane | 46.32 | 1.0 | " | 50.0000 | | 92.6 | 76-122 | | | |
| 2-Chloroethylvinyl ether | 85.97 | 10.0 | " | 103.500 | | 83.1 | 50-169 | | | |
| cis-1,3-Dichloropropene | 48.42 | 1.0 | " | 50.3250 | | 96.2 | 74-122 | | | |
| Toluene | 48.39 | 1.0 | " | 50.0000 | | 96.8 | 76-128 | | | |
| trans-1,3-Dichloropropene | 46.44 | 1.0 | " | 50.4250 | | 92.1 | 73-125 | | | |
| 1,1,2-Trichloroethane | 45.26 | 1.0 | " | 50.0000 | | 90.5 | 74-126 | | | |
| Tetrachloroethylene | 48.44 | 1.0 | " | 50.0000 | | 96.9 | 68-124 | | | |
| Dibromochloromethane | 51.83 | 1.0 | " | 49.5000 | | 105 | 76-125 | | | |
| Chlorobenzene | 47.61 | 1.0 | " | 50.0000 | | 95.2 | 77-120 | | | |
| Ethylbenzene | 46.20 | 1.0 | " | 50.0000 | | 92.4 | 76-118 | | | |
| Xylenes, total | 136.0 | 2.0 | " | 150.000 | | 90.6 | 74-121 | | | |
| Bromoform | 51.00 | 1.0 | " | 50.0000 | | 102 | 68-128 | | | |
| 1,1,2,2-Tetrachloroethane | 46.63 | 1.0 | " | 49.8500 | | 93.5 | 62-128 | | | |
| 1,3-Dichlorobenzene | 47.16 | 1.0 | " | 50.0000 | | 94.3 | 72-123 | | | |
| 1,4-Dichlorobenzene | 48.75 | 1.0 | " | 50.0000 | | 97.5 | 75-120 | | | |
| 1,2-Dichlorobenzene | 47.23 | 1.0 | " | 50.0000 | | 94.5 | 72-121 | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.*

HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Volatile Organic Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0727 - EPA 5030B** | | | | | | | | | | |
| **LCS Dup (1GD0727-BSD1)** | | | | Prepared & Analyzed: 04/14/23 | | | | | | |
| *Surrogate: Dibromofluoromethane* | *54.6* | | *ug/L* | *50.3520* | | *108* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *50.0* | | *"* | *50.4080* | | *99.2* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *49.8* | | *"* | *50.2360* | | *99.1* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *48.4* | | *"* | *50.4200* | | *95.9* | *83-112* | | | |
| Chloromethane | 26.19 | 1.0 | " | 30.0000 | | 87.3 | 63-145 | 2.53 | 27 | |
| Vinyl Chloride | 26.99 | 1.0 | " | 30.0000 | | 90.0 | 68-145 | 4.42 | 30 | |
| Bromomethane | 32.72 | 1.0 | " | 30.0000 | | 109 | 69-150 | 2.98 | 30 | |
| Chloroethane | 30.65 | 1.0 | " | 30.0000 | | 102 | 74-134 | 3.08 | 29 | |
| 1,1-Dichloroethylene | 53.65 | 1.0 | " | 50.0000 | | 107 | 76-139 | 1.68 | 30 | |
| Methylene Chloride | 48.26 | 5.0 | " | 50.0000 | | 96.5 | 67-141 | 0.0207 | 25 | |
| trans-1,2-Dichloroethylene | 51.74 | 1.0 | " | 50.0000 | | 103 | 71-137 | 0.559 | 29 | |
| 1,1-Dichloroethane | 51.39 | 1.0 | " | 50.0000 | | 103 | 72-130 | 0.0972 | 27 | |
| cis-1,2-Dichloroethylene | 47.20 | 1.0 | " | 50.0000 | | 94.4 | 81-134 | 1.60 | 23 | |
| 2-Butanone (MEK) | 94.61 | 10.0 | " | 106.200 | | 89.1 | 44-158 | 9.89 | 25 | |
| Chloroform | 50.17 | 1.0 | " | 50.0000 | | 100 | 76-132 | 1.06 | 26 | |
| 1,1,1-Trichloroethane | 46.12 | 1.0 | " | 49.9750 | | 92.3 | 65-122 | 0.519 | 29 | |
| Carbon Tetrachloride | 55.25 | 1.0 | " | 50.0000 | | 110 | 66-132 | 2.10 | 30 | |
| Benzene | 50.25 | 1.0 | " | 50.0000 | | 100 | 77-130 | 1.93 | 27 | |
| 1,2-Dichloroethane | 47.94 | 1.0 | " | 50.0000 | | 95.9 | 75-124 | 2.83 | 25 | |
| Trichloroethylene | 42.15 | 1.0 | " | 50.0000 | | 84.3 | 79-126 | 1.07 | 28 | |
| 1,2-Dichloropropane | 49.80 | 1.0 | " | 50.0000 | | 99.6 | 79-128 | 3.51 | 26 | |
| Dibromomethane | 51.66 | 1.0 | " | 50.0000 | | 103 | 71-139 | 3.63 | 27 | |
| Bromodichloromethane | 48.12 | 1.0 | " | 50.0000 | | 96.2 | 76-122 | 3.81 | 24 | |
| 2-Chloroethylvinyl ether | 89.87 | 10.0 | " | 103.500 | | 86.8 | 50-169 | 4.44 | 28 | |
| cis-1,3-Dichloropropene | 49.64 | 1.0 | " | 50.3250 | | 98.6 | 74-122 | 2.49 | 27 | |
| Toluene | 49.22 | 1.0 | " | 50.0000 | | 98.4 | 76-128 | 1.70 | 28 | |
| trans-1,3-Dichloropropene | 48.18 | 1.0 | " | 50.4250 | | 95.5 | 73-125 | 3.68 | 27 | |
| 1,1,2-Trichloroethane | 47.56 | 1.0 | " | 50.0000 | | 95.1 | 74-126 | 4.96 | 26 | |
| Tetrachloroethylene | 49.08 | 1.0 | " | 50.0000 | | 98.2 | 68-124 | 1.31 | 28 | |
| Dibromochloromethane | 52.19 | 1.0 | " | 49.5000 | | 105 | 76-125 | 0.692 | 23 | |
| Chlorobenzene | 48.47 | 1.0 | " | 50.0000 | | 96.9 | 77-120 | 1.79 | 27 | |
| Ethylbenzene | 46.96 | 1.0 | " | 50.0000 | | 93.9 | 76-118 | 1.63 | 27 | |
| Xylenes, total | 138.2 | 2.0 | " | 150.000 | | 92.1 | 74-121 | 1.65 | 27 | |
| Bromoform | 53.94 | 1.0 | " | 50.0000 | | 108 | 68-128 | 5.60 | 25 | |
| 1,1,2,2-Tetrachloroethane | 48.07 | 1.0 | " | 49.8500 | | 96.4 | 62-128 | 3.04 | 28 | |
| 1,3-Dichlorobenzene | 48.06 | 1.0 | " | 50.0000 | | 96.1 | 72-123 | 1.89 | 29 | |
| 1,4-Dichlorobenzene | 48.50 | 1.0 | " | 50.0000 | | 97.0 | 75-120 | 0.514 | 26 | |
| 1,2-Dichlorobenzene | 47.73 | 1.0 | " | 50.0000 | | 95.5 | 72-121 | 1.05 | 30 | |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Volatile Organic Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0727 - EPA 5030B** | | | | | | | | | | |
| **Matrix Spike (1GD0727-MS1)** | **Source: 1GD1181-08** | | Prepared & Analyzed: 04/14/23 | | | | | | | |
| *Surrogate: Dibromofluoromethane* | *534* | | *ug/L* | *503.520* | | *106* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *498* | | *"* | *504.080* | | *98.7* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *498* | | *"* | *502.360* | | *99.1* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *494* | | *"* | *504.200* | | *98.0* | *83-112* | | | |
| Chloromethane | 262.7 | 10.0 | " | 300.000 | ND | 87.6 | 50-155 | | | |
| Vinyl Chloride | 269.1 | 10.0 | " | 300.000 | ND | 89.7 | 64-148 | | | |
| Bromomethane | 320.3 | 10.0 | " | 300.000 | ND | 107 | 50-159 | | | |
| Chloroethane | 320.8 | 10.0 | " | 300.000 | ND | 107 | 65-144 | | | |
| 1,1-Dichloroethylene | 530.6 | 10.0 | " | 500.000 | ND | 106 | 78-139 | | | |
| Methylene Chloride | 481.3 | 50.0 | " | 500.000 | ND | 96.3 | 65-144 | | | |
| trans-1,2-Dichloroethylene | 509.0 | 10.0 | " | 500.000 | ND | 102 | 67-142 | | | |
| 1,1-Dichloroethane | 509.1 | 10.0 | " | 500.000 | ND | 102 | 71-133 | | | |
| cis-1,2-Dichloroethylene | 499.0 | 10.0 | " | 500.000 | ND | 99.8 | 76-142 | | | |
| 2-Butanone (MEK) | 907.5 | 100 | " | 1062.00 | ND | 85.5 | 48-169 | | | |
| Chloroform | 494.3 | 10.0 | " | 500.000 | ND | 98.9 | 75-133 | | | |
| 1,1,1-Trichloroethane | 452.0 | 10.0 | " | 499.750 | ND | 90.4 | 66-120 | | | |
| Carbon Tetrachloride | 552.3 | 10.0 | " | 500.000 | ND | 110 | 67-132 | | | |
| Benzene | 488.9 | 10.0 | " | 500.000 | ND | 97.8 | 79-128 | | | |
| 1,2-Dichloroethane | 498.1 | 10.0 | " | 500.000 | ND | 99.6 | 74-124 | | | |
| Trichloroethylene | 405.6 | 10.0 | " | 500.000 | ND | 81.1 | 82-122 | | | QM-05 |
| 1,2-Dichloropropane | 494.9 | 10.0 | " | 500.000 | ND | 99.0 | 80-126 | | | |
| Dibromomethane | 524.3 | 10.0 | " | 500.000 | ND | 105 | 62-141 | | | |
| Bromodichloromethane | 489.1 | 10.0 | " | 500.000 | ND | 97.8 | 77-119 | | | |
| 2-Chloroethylvinyl ether | 950.5 | 100 | " | 1035.00 | ND | 91.8 | 10-157 | | | |
| cis-1,3-Dichloropropene | 499.4 | 10.0 | " | 503.250 | ND | 99.2 | 69-120 | | | |
| Toluene | 487.5 | 10.0 | " | 500.000 | ND | 97.5 | 80-125 | | | |
| trans-1,3-Dichloropropene | 489.6 | 10.0 | " | 504.250 | ND | 97.1 | 70-122 | | | |
| 1,1,2-Trichloroethane | 488.9 | 10.0 | " | 500.000 | ND | 97.8 | 73-127 | | | |
| Tetrachloroethylene | 474.7 | 10.0 | " | 500.000 | ND | 94.9 | 70-122 | | | |
| Dibromochloromethane | 540.2 | 10.0 | " | 495.000 | ND | 109 | 75-122 | | | |
| Chlorobenzene | 487.7 | 10.0 | " | 500.000 | ND | 97.5 | 81-114 | | | |
| Ethylbenzene | 469.6 | 10.0 | " | 500.000 | ND | 93.9 | 79-113 | | | |
| Xylenes, total | 1396 | 20.0 | " | 1500.00 | ND | 93.0 | 79-114 | | | |
| Bromoform | 564.3 | 10.0 | " | 500.000 | ND | 113 | 66-126 | | | |
| 1,1,2,2-Tetrachloroethane | 526.9 | 10.0 | " | 498.500 | ND | 106 | 56-132 | | | |
| 1,3-Dichlorobenzene | 480.3 | 10.0 | " | 500.000 | ND | 96.1 | 69-125 | | | |
| 1,4-Dichlorobenzene | 482.2 | 10.0 | " | 500.000 | ND | 96.4 | 73-119 | | | |
| 1,2-Dichlorobenzene | 479.1 | 10.0 | " | 500.000 | ND | 95.8 | 71-117 | | | |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Volatile Organic Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0727 - EPA 5030B** | | | | | | | | | | |
| **Matrix Spike Dup (1GD0727-MSD1)** | **Source: 1GD1181-08** | | Prepared & Analyzed: 04/14/23 | | | | | | | |
| *Surrogate: Dibromofluoromethane* | *529* | | *ug/L* | *503.520* | | *105* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *496* | | *"* | *504.080* | | *98.3* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *500* | | *"* | *502.360* | | *99.6* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *488* | | *"* | *504.200* | | *96.8* | *83-112* | | | |
| Chloromethane | 259.5 | 10.0 | " | 300.000 | ND | 86.5 | 50-155 | 1.23 | 19 | |
| Vinyl Chloride | 265.6 | 10.0 | " | 300.000 | ND | 88.5 | 64-148 | 1.31 | 24 | |
| Bromomethane | 339.4 | 10.0 | " | 300.000 | ND | 113 | 50-159 | 5.79 | 17 | |
| Chloroethane | 316.3 | 10.0 | " | 300.000 | ND | 105 | 65-144 | 1.41 | 28 | |
| 1,1-Dichloroethylene | 532.8 | 10.0 | " | 500.000 | ND | 107 | 78-139 | 0.414 | 20 | |
| Methylene Chloride | 475.8 | 50.0 | " | 500.000 | ND | 95.2 | 65-144 | 1.15 | 16 | |
| trans-1,2-Dichloroethylene | 509.8 | 10.0 | " | 500.000 | ND | 102 | 67-142 | 0.157 | 18 | |
| 1,1-Dichloroethane | 507.1 | 10.0 | " | 500.000 | ND | 101 | 71-133 | 0.394 | 16 | |
| cis-1,2-Dichloroethylene | 498.6 | 10.0 | " | 500.000 | ND | 99.7 | 76-142 | 0.0802 | 17 | |
| 2-Butanone (MEK) | 885.2 | 100 | " | 1062.00 | ND | 83.4 | 48-169 | 2.49 | 17 | |
| Chloroform | 490.7 | 10.0 | " | 500.000 | ND | 98.1 | 75-133 | 0.731 | 16 | |
| 1,1,1-Trichloroethane | 461.4 | 10.0 | " | 499.750 | ND | 92.3 | 66-120 | 2.06 | 15 | |
| Carbon Tetrachloride | 576.2 | 10.0 | " | 500.000 | ND | 115 | 67-132 | 4.24 | 15 | |
| Benzene | 498.2 | 10.0 | " | 500.000 | ND | 99.6 | 79-128 | 1.88 | 12 | |
| 1,2-Dichloroethane | 484.4 | 10.0 | " | 500.000 | ND | 96.9 | 74-124 | 2.79 | 12 | |
| Trichloroethylene | 412.8 | 10.0 | " | 500.000 | ND | 82.6 | 82-122 | 1.76 | 13 | |
| 1,2-Dichloropropane | 491.3 | 10.0 | " | 500.000 | ND | 98.3 | 80-126 | 0.730 | 10 | |
| Dibromomethane | 520.1 | 10.0 | " | 500.000 | ND | 104 | 62-141 | 0.804 | 11 | |
| Bromodichloromethane | 480.8 | 10.0 | " | 500.000 | ND | 96.2 | 77-119 | 1.71 | 10 | |
| 2-Chloroethylvinyl ether | 943.4 | 100 | " | 1035.00 | ND | 91.1 | 10-157 | 0.750 | 30 | |
| cis-1,3-Dichloropropene | 491.8 | 10.0 | " | 503.250 | ND | 97.7 | 69-120 | 1.53 | 10 | |
| Toluene | 495.4 | 10.0 | " | 500.000 | ND | 99.1 | 80-125 | 1.61 | 12 | |
| trans-1,3-Dichloropropene | 482.9 | 10.0 | " | 504.250 | ND | 95.8 | 70-122 | 1.38 | 10 | |
| 1,1,2-Trichloroethane | 476.7 | 10.0 | " | 500.000 | ND | 95.3 | 73-127 | 2.53 | 10 | |
| Tetrachloroethylene | 489.3 | 10.0 | " | 500.000 | ND | 97.9 | 70-122 | 3.03 | 15 | |
| Dibromochloromethane | 533.3 | 10.0 | " | 495.000 | ND | 108 | 75-122 | 1.29 | 12 | |
| Chlorobenzene | 487.4 | 10.0 | " | 500.000 | ND | 97.5 | 81-114 | 0.0615 | 12 | |
| Ethylbenzene | 478.1 | 10.0 | " | 500.000 | ND | 95.6 | 79-113 | 1.79 | 13 | |
| Xylenes, total | 1412 | 20.0 | " | 1500.00 | ND | 94.1 | 79-114 | 1.18 | 12 | |
| Bromoform | 565.5 | 10.0 | " | 500.000 | ND | 113 | 66-126 | 0.212 | 16 | |
| 1,1,2,2-Tetrachloroethane | 523.0 | 10.0 | " | 498.500 | ND | 105 | 56-132 | 0.743 | 29 | |
| 1,3-Dichlorobenzene | 481.9 | 10.0 | " | 500.000 | ND | 96.4 | 69-125 | 0.333 | 18 | |
| 1,4-Dichlorobenzene | 493.8 | 10.0 | " | 500.000 | ND | 98.8 | 73-119 | 2.38 | 21 | |
| 1,2-Dichlorobenzene | 488.8 | 10.0 | " | 500.000 | ND | 97.8 | 71-117 | 2.00 | 23 | |

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## Determination of Base/Neutral/Acid Extractable Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0848 - EPA 625 Base Neutral** | | | | | | | | | | |
| **Blank (1GD0848-BLK1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| *Surrogate: 2-Fluorophenol* | *43.4* | | *ug/L* | *60.6000* | | *71.7* | *19-139* | | | |
| *Surrogate: Phenol-d6* | *27.7* | | *"* | *61.9000* | | *44.8* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *51.0* | | *"* | *62.8500* | | *81.1* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *51.5* | | *"* | *61.0000* | | *84.4* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *55.9* | | *"* | *62.2500* | | *89.8* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *67.4* | | *"* | *65.1000* | | *104* | *27-131* | | | |
| Bis(2-Chloroethyl) Ether | ND | 10 | " | | | | | | | |
| 2-Chlorophenol | ND | 10 | " | | | | | | | |
| 1,3-Dichlorobenzene | ND | 10 | " | | | | | | | |
| 1,4-Dichlorobenzene | ND | 10 | " | | | | | | | |
| Benzyl Alcohol | ND | 10 | " | | | | | | | |
| 1,2-Dichlorobenzene | ND | 10 | " | | | | | | | |
| Bis[2-Chloroisopropyl]ether | ND | 10 | " | | | | | | | |
| n-Nitroso-di-n-propylamine | ND | 10 | " | | | | | | | |
| Hexachloroethane | ND | 10 | " | | | | | | | |
| Nitrobenzene | ND | 10 | " | | | | | | | |
| Isophorone | ND | 10 | " | | | | | | | |
| 2-Nitrophenol | ND | 10 | " | | | | | | | |
| 2,4-Dimethylphenol | ND | 10 | " | | | | | | | |
| Bis (2-Chloroethoxy) Methane | ND | 10 | " | | | | | | | |
| Benzoic acid | ND | 50 | " | | | | | | | |
| 2,4-Dichlorophenol | ND | 10 | " | | | | | | | |
| 1,2,4-Trichlorobenzene | ND | 10 | " | | | | | | | |
| Naphthalene | ND | 10 | " | | | | | | | |
| Hexachlorobutadiene | ND | 20 | " | | | | | | | |
| 4-Chloro-3-methylphenol | ND | 10 | " | | | | | | | |
| Hexachlorocyclopentadiene | ND | 20 | " | | | | | | | |
| 2,4,6-Trichlorophenol | ND | 10 | " | | | | | | | |
| 2,4,5-Trichlorophenol | ND | 50 | " | | | | | | | |
| 2-Chloronaphthalene | ND | 10 | " | | | | | | | |
| Dimethylphthalate | ND | 15 | " | | | | | | | |
| Acenaphthylene | ND | 10 | " | | | | | | | |
| 2,6-Dinitrotoluene | ND | 10 | " | | | | | | | |
| Acenaphthene | ND | 10 | " | | | | | | | |
| 2,4-Dinitrophenol | ND | 20 | " | | | | | | | |
| Dibenzofuran | ND | 10 | " | | | | | | | |
| 2,4-Dinitrotoluene | ND | 10 | " | | | | | | | |
| 4-Nitrophenol | ND | 10 | " | | | | | | | |

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## Determination of Base/Neutral/Acid Extractable Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0848 - EPA 625 Base Neutral** | | | | | | | | | | |
| **Blank (1GD0848-BLK1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| Diethyl Phthalate | ND | 30 | ug/L | | | | | | | |
| Fluorene | ND | 10 | " | | | | | | | |
| 4-Chlorophenyl Phenyl Ether | ND | 10 | " | | | | | | | |
| 4,6-Dinitro-2-methylphenol | ND | 20 | " | | | | | | | |
| N-Nitrosodiphenylamine | ND | 10 | " | | | | | | | |
| 4-Bromophenyl Phenyl Ether | ND | 10 | " | | | | | | | |
| Hexachlorobenzene | ND | 10 | " | | | | | | | |
| Pentachlorophenol | ND | 20 | " | | | | | | | |
| Phenanthrene | ND | 10 | " | | | | | | | |
| Anthracene | ND | 10 | " | | | | | | | |
| Di-n-butyl Phthalate | ND | 10 | " | | | | | | | |
| Fluoranthene | ND | 10 | " | | | | | | | |
| Pyrene | ND | 10 | " | | | | | | | |
| Butyl Benzyl Phthalate | ND | 10 | " | | | | | | | |
| Benzo(a)anthracene | ND | 10 | " | | | | | | | |
| Chrysene | ND | 10 | " | | | | | | | |
| Bis(2-Ethylhexyl) Phthalate | ND | 10 | " | | | | | | | |
| Di-n-octyl Phthalate | ND | 10 | " | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | ND | 10 | " | | | | | | | |
| 3,3´-Dichlorobenzidine | ND | 20 | " | | | | | | | |
| Benzo(b)Fluoranthene | ND | 10 | " | | | | | | | |
| Benzo(k)Fluoranthene | ND | 10 | " | | | | | | | |
| Benzo(a)Pyrene | ND | 10 | " | | | | | | | |
| Dibenzo(a,h)anthracene | ND | 10 | " | | | | | | | |
| Benzo(g,h,i)perylene | ND | 10 | " | | | | | | | |
| **LCS (1GD0848-BS1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| *Surrogate: 2-Fluorophenol* | *29.5* | | *ug/L* | *60.6000* | | *48.6* | *19-139* | | | |
| *Surrogate: Phenol-d6* | *20.6* | | *"* | *61.9000* | | *33.3* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *48.5* | | *"* | *62.8500* | | *77.2* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *50.3* | | *"* | *61.0000* | | *82.4* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *50.6* | | *"* | *62.2500* | | *81.2* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *58.1* | | *"* | *65.1000* | | *89.2* | *27-131* | | | |
| Bis(2-Chloroethyl) Ether | 25.8 | 10 | " | 41.6667 | | 62.0 | 35-150 | | | |
| 2-Chlorophenol | 35.3 | 10 | " | 41.6667 | | 84.7 | 51-117 | | | |
| 1,3-Dichlorobenzene | 32.9 | 10 | " | 41.6667 | | 78.9 | 27-91.3 | | | |
| 1,4-Dichlorobenzene | 34.1 | 10 | " | 41.6667 | | 81.9 | 28-92.6 | | | |
| 1,2-Dichlorobenzene | 34.6 | 10 | " | 41.6667 | | 83.2 | 32-94.8 | | | |
| Bis[2-Chloroisopropyl]ether | 38.9 | 10 | " | 41.6667 | | 93.3 | 40-125 | | | |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Base/Neutral/Acid Extractable Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0848 - EPA 625 Base Neutral** | | | | | | | | | | |
| **LCS (1GD0848-BS1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| n-Nitroso-di-n-propylamine | 34.8 | 10 | ug/L | 41.6667 | | 83.6 | 47-136 | | | |
| Hexachloroethane | 28.8 | 10 | " | 41.6667 | | 69.0 | 13-110 | | | |
| Nitrobenzene | 33.8 | 10 | " | 41.6667 | | 81.1 | 46-133 | | | |
| Isophorone | 33.2 | 10 | " | 41.6667 | | 79.8 | 48-130 | | | |
| 2-Nitrophenol | 34.3 | 10 | " | 41.6667 | | 82.3 | 54-116 | | | |
| 2,4-Dimethylphenol | 33.9 | 10 | " | 41.6667 | | 81.4 | 47-121 | | | |
| Bis (2-Chloroethoxy) Methane | 31.9 | 10 | " | 41.6667 | | 76.6 | 25-110 | | | |
| 2,4-Dichlorophenol | 34.5 | 10 | " | 41.6667 | | 82.7 | 50-118 | | | |
| 1,2,4-Trichlorobenzene | 32.3 | 10 | " | 41.6667 | | 77.6 | 27-95.5 | | | |
| Naphthalene | 33.6 | 10 | " | 41.6667 | | 80.6 | 42-107 | | | |
| Hexachlorobutadiene | 29.1 | 20 | " | 41.6667 | | 69.8 | 10-110 | | | |
| 4-Chloro-3-methylphenol | 33.0 | 10 | " | 41.6667 | | 79.1 | 54-138 | | | |
| Hexachlorocyclopentadiene | 7.6 | 20 | " | 41.6667 | | 18.3 | 10-110 | | | |
| 2,4,6-Trichlorophenol | 29.1 | 10 | " | 41.6667 | | 69.8 | 46-127 | | | |
| 2,4,5-Trichlorophenol | 35.4 | 50 | " | 41.6667 | | 85.0 | 62-119 | | | |
| 2-Chloronaphthalene | 35.6 | 10 | " | 41.6667 | | 85.5 | 38-118 | | | |
| Dimethylphthalate | 39.8 | 15 | " | 41.6667 | | 95.4 | 58-125 | | | |
| Acenaphthylene | 36.3 | 10 | " | 41.6667 | | 87.1 | 41-116 | | | |
| 2,6-Dinitrotoluene | 43.2 | 10 | " | 41.6667 | | 104 | 58-126 | | | |
| Acenaphthene | 35.0 | 10 | " | 41.6667 | | 84.0 | 45-117 | | | |
| 2,4-Dinitrophenol | 13.7 | 20 | " | 41.6667 | | 32.8 | 21-138 | | | |
| Dibenzofuran | 37.3 | 10 | " | 41.6667 | | 89.4 | 51-126 | | | |
| 2,4-Dinitrotoluene | 46.2 | 10 | " | 41.6667 | | 111 | 52-134 | | | |
| 4-Nitrophenol | 24.4 | 10 | " | 41.6667 | | 58.4 | 41-149 | | | |
| Diethyl Phthalate | 41.2 | 30 | " | 41.6667 | | 98.8 | 53-132 | | | |
| Fluorene | 36.7 | 10 | " | 41.6667 | | 88.1 | 47-126 | | | |
| 4-Chlorophenyl Phenyl Ether | 36.6 | 10 | " | 41.6667 | | 87.7 | 47-124 | | | |
| 4,6-Dinitro-2-methylphenol | 25.2 | 20 | " | 41.6667 | | 60.4 | 50-139 | | | |
| N-Nitrosodiphenylamine | 37.3 | 10 | " | 41.6667 | | 89.5 | 29-129 | | | |
| 4-Bromophenyl Phenyl Ether | 35.2 | 10 | " | 41.6667 | | 84.5 | 48-125 | | | |
| Hexachlorobenzene | 33.2 | 10 | " | 41.6667 | | 79.7 | 29-137 | | | |
| Pentachlorophenol | 12.6 | 20 | " | 41.6667 | | 30.2 | 15-154 | | | |
| Phenanthrene | 37.1 | 10 | " | 41.6667 | | 89.1 | 45-136 | | | |
| Anthracene | 35.6 | 10 | " | 41.6667 | | 85.5 | 43-135 | | | |
| Di-n-butyl Phthalate | 39.7 | 10 | " | 41.6667 | | 95.2 | 42-153 | | | |
| Fluoranthene | 36.9 | 10 | " | 41.6667 | | 88.6 | 42-143 | | | |
| Pyrene | 37.0 | 10 | " | 41.6667 | | 88.8 | 40-146 | | | |
| Butyl Benzyl Phthalate | 40.2 | 10 | " | 41.6667 | | 96.4 | 40-151 | | | |
| Benzo(a)anthracene | 38.0 | 10 | " | 41.6667 | | 91.3 | 48-136 | | | |

*The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety. Samples were preserved in accordance with 40 CFR for pH adjustment unless otherwise noted. MRL= Method Reporting Limit.*

HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Base/Neutral/Acid Extractable Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0848 - EPA 625 Base Neutral** | | | | | | | | | | |
| **LCS (1GD0848-BS1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| Chrysene | 37.1 | 10 | ug/L | 41.6667 | | 89.1 | 50-136 | | | |
| Bis(2-Ethylhexyl) Phthalate | 39.2 | 10 | " | 41.6667 | | 94.1 | 34-180 | | | |
| Di-n-octyl Phthalate | 40.7 | 10 | " | 41.6667 | | 97.6 | 40-165 | | | |
| Indeno(1,2,3-cd)Pyrene | 34.7 | 10 | " | 41.6667 | | 83.2 | 39-152 | | | |
| Benzo(b)Fluoranthene | 38.9 | 10 | " | 41.6667 | | 93.3 | 52-140 | | | |
| Benzo(k)Fluoranthene | 38.7 | 10 | " | 41.6667 | | 92.9 | 47-147 | | | |
| Benzo(a)Pyrene | 38.4 | 10 | " | 41.6667 | | 92.2 | 38-142 | | | |
| Dibenzo(a,h)anthracene | 34.5 | 10 | " | 41.6667 | | 82.9 | 37-153 | | | |
| Benzo(g,h,i)perylene | 33.4 | 10 | " | 41.6667 | | 80.1 | 39-157 | | | |
| **LCS Dup (1GD0848-BSD1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| *Surrogate: 2-Fluorophenol* | *27.4* | | *ug/L* | *60.6000* | | *45.3* | *19-139* | | | |
| *Surrogate: Phenol-d6* | *15.2* | | *"* | *61.9000* | | *24.6* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *56.8* | | *"* | *62.8500* | | *90.3* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *61.0* | | *"* | *61.0000* | | *100* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *32.7* | | *"* | *62.2500* | | *52.5* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *64.7* | | *"* | *65.1000* | | *99.4* | *27-131* | | | |
| Bis(2-Chloroethyl) Ether | 19.2 | 10 | " | 41.6667 | | 46.0 | 35-150 | 29.6 | 30 | |
| 2-Chlorophenol | 27.1 | 10 | " | 41.6667 | | 65.0 | 51-117 | 26.3 | 27 | |
| 1,3-Dichlorobenzene | 28.7 | 10 | " | 41.6667 | | 68.9 | 27-91.3 | 13.5 | 30 | |
| 1,4-Dichlorobenzene | 30.5 | 10 | " | 41.6667 | | 73.3 | 28-92.6 | 11.2 | 30 | |
| 1,2-Dichlorobenzene | 27.2 | 10 | " | 41.6667 | | 65.4 | 32-94.8 | 23.9 | 30 | |
| Bis[2-Chloroisopropyl]ether | 32.8 | 10 | " | 41.6667 | | 78.7 | 40-125 | 16.9 | 26 | |
| n-Nitroso-di-n-propylamine | 24.4 | 10 | " | 41.6667 | | 58.6 | 47-136 | 35.2 | 29 | QR-02 |
| Hexachloroethane | 26.6 | 10 | " | 41.6667 | | 63.8 | 13-110 | 7.88 | 30 | |
| Nitrobenzene | 37.3 | 10 | " | 41.6667 | | 89.5 | 46-133 | 9.88 | 19 | |
| Isophorone | 35.3 | 10 | " | 41.6667 | | 84.8 | 48-130 | 6.15 | 23 | |
| 2-Nitrophenol | 37.0 | 10 | " | 41.6667 | | 88.8 | 54-116 | 7.60 | 25 | |
| 2,4-Dimethylphenol | 31.0 | 10 | " | 41.6667 | | 74.4 | 47-121 | 8.94 | 29 | |
| Bis (2-Chloroethoxy) Methane | 33.3 | 10 | " | 41.6667 | | 79.9 | 25-110 | 4.29 | 30 | |
| 2,4-Dichlorophenol | 29.6 | 10 | " | 41.6667 | | 71.0 | 50-118 | 15.2 | 21 | |
| 1,2,4-Trichlorobenzene | 39.6 | 10 | " | 41.6667 | | 94.9 | 27-95.5 | 20.1 | 30 | |
| Naphthalene | 37.4 | 10 | " | 41.6667 | | 89.8 | 42-107 | 10.7 | 26 | |
| Hexachlorobutadiene | 37.4 | 20 | " | 41.6667 | | 89.6 | 10-110 | 24.9 | 30 | |
| 4-Chloro-3-methylphenol | 20.6 | 10 | " | 41.6667 | | 49.5 | 54-138 | 46.1 | 12 | QS-03 |
| Hexachlorocyclopentadiene | 15.4 | 20 | " | 41.6667 | | 37.1 | 10-110 | 67.9 | 30 | QR-02 |
| 2,4,6-Trichlorophenol | 29.2 | 10 | " | 41.6667 | | 70.1 | 46-127 | 0.446 | 21 | |
| 2,4,5-Trichlorophenol | 28.8 | 50 | " | 41.6667 | | 69.2 | 62-119 | 20.5 | 15 | QR-02 |
| 2-Chloronaphthalene | 44.6 | 10 | " | 41.6667 | | 107 | 38-118 | 22.3 | 24 | |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Base/Neutral/Acid Extractable Compounds - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0848 - EPA 625 Base Neutral** | | | | | | | | | | |
| **LCS Dup (1GD0848-BSD1)** | | | | Prepared: 04/17/23 Analyzed: 04/27/23 | | | | | | |
| Dimethylphthalate | 37.6 | 15 | ug/L | 41.6667 | | 90.4 | 58-125 | 5.43 | 20 | |
| Acenaphthylene | 40.5 | 10 | " | 41.6667 | | 97.2 | 41-116 | 10.9 | 30 | |
| 2,6-Dinitrotoluene | 38.9 | 10 | " | 41.6667 | | 93.3 | 58-126 | 10.5 | 20 | |
| Acenaphthene | 40.1 | 10 | " | 41.6667 | | 96.2 | 45-117 | 13.6 | 27 | |
| 2,4-Dinitrophenol | ND | 20 | " | 41.6667 | | | 21-138 | | 22 | QS-03 |
| Dibenzofuran | 39.4 | 10 | " | 41.6667 | | 94.6 | 51-126 | 5.61 | 15 | |
| 2,4-Dinitrotoluene | 34.5 | 10 | " | 41.6667 | | 82.8 | 52-134 | 29.0 | 22 | QR-02 |
| 4-Nitrophenol | 10.0 | 10 | " | 41.6667 | | 24.0 | 41-149 | 83.6 | 28 | QS-03 |
| Diethyl Phthalate | 33.2 | 30 | " | 41.6667 | | 79.8 | 53-132 | 21.3 | 22 | |
| Fluorene | 34.8 | 10 | " | 41.6667 | | 83.5 | 47-126 | 5.29 | 27 | |
| 4-Chlorophenyl Phenyl Ether | 35.6 | 10 | " | 41.6667 | | 85.4 | 47-124 | 2.63 | 20 | |
| 4,6-Dinitro-2-methylphenol | 20.0 | 20 | " | 41.6667 | | 47.9 | 50-139 | 23.1 | 25 | QS-03 |
| N-Nitrosodiphenylamine | 44.9 | 10 | " | 41.6667 | | 108 | 29-129 | 18.5 | 30 | |
| 4-Bromophenyl Phenyl Ether | 47.6 | 10 | " | 41.6667 | | 114 | 48-125 | 29.9 | 18 | QR-02 |
| Hexachlorobenzene | 49.8 | 10 | " | 41.6667 | | 120 | 29-137 | 40.1 | 30 | QR-02 |
| Pentachlorophenol | 5.6 | 20 | " | 41.6667 | | 13.5 | 15-154 | 76.4 | 29 | QS-03 |
| Phenanthrene | 40.7 | 10 | " | 41.6667 | | 97.8 | 45-136 | 9.27 | 27 | |
| Anthracene | 38.5 | 10 | " | 41.6667 | | 92.4 | 43-135 | 7.72 | 28 | |
| Di-n-butyl Phthalate | 32.7 | 10 | " | 41.6667 | | 78.5 | 42-153 | 19.3 | 29 | |
| Fluoranthene | 27.6 | 10 | " | 41.6667 | | 66.3 | 42-143 | 28.7 | 30 | |
| Pyrene | 47.1 | 10 | " | 41.6667 | | 113 | 40-146 | 24.0 | 25 | |
| Butyl Benzyl Phthalate | 41.1 | 10 | " | 41.6667 | | 98.7 | 40-151 | 2.39 | 29 | |
| Benzo(a)anthracene | 39.5 | 10 | " | 41.6667 | | 94.8 | 48-136 | 3.74 | 30 | |
| Chrysene | 41.0 | 10 | " | 41.6667 | | 98.4 | 50-136 | 9.86 | 30 | |
| Bis(2-Ethylhexyl) Phthalate | 37.3 | 10 | " | 41.6667 | | 89.6 | 34-180 | 4.89 | 30 | |
| Di-n-octyl Phthalate | 36.5 | 10 | " | 41.6667 | | 87.7 | 40-165 | 10.7 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 39.9 | 10 | " | 41.6667 | | 95.8 | 39-152 | 14.1 | 30 | |
| Benzo(b)Fluoranthene | 43.0 | 10 | " | 41.6667 | | 103 | 52-140 | 10.0 | 30 | |
| Benzo(k)Fluoranthene | 41.4 | 10 | " | 41.6667 | | 99.5 | 47-147 | 6.86 | 30 | |
| Benzo(a)Pyrene | 42.2 | 10 | " | 41.6667 | | 101 | 38-142 | 9.43 | 30 | |
| Dibenzo(a,h)anthracene | 39.7 | 10 | " | 41.6667 | | 95.3 | 37-153 | 13.9 | 30 | |
| Benzo(g,h,i)perylene | 38.6 | 10 | " | 41.6667 | | 92.8 | 39-157 | 14.7 | 30 | |

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## Determination of Organochlorine Insecticides & PCBs - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0712 - EPA 608 OC/PCB** | | | | | | | | | | |
| **Blank (1GD0712-BLK1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.202* | | *ug/L* | *0.600000* | | *33.6* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.388* | | *"* | *0.600000* | | *64.7* | *30-119* | | | |
| Gamma-BHC [Lindane] | ND | 0.05 | " | | | | | | | |
| Beta-BHC | ND | 0.05 | " | | | | | | | |
| Heptachlor | ND | 0.05 | " | | | | | | | |
| Delta-BHC | ND | 0.05 | " | | | | | | | |
| Aldrin | ND | 0.05 | " | | | | | | | |
| Heptachlor Epoxide | ND | 0.05 | " | | | | | | | |
| Endosulfan I | ND | 0.05 | " | | | | | | | |
| 4,4`-DDE | ND | 0.05 | " | | | | | | | |
| Dieldrin | ND | 0.05 | " | | | | | | | |
| Endrin | ND | 0.05 | " | | | | | | | |
| 4,4`-DDD | ND | 0.05 | " | | | | | | | |
| Endosulfan II | ND | 0.05 | " | | | | | | | |
| 4,4`-DDT | ND | 0.05 | " | | | | | | | |
| Endrin Aldehyde | ND | 0.05 | " | | | | | | | |
| Endosulfan Sulfate | ND | 0.05 | " | | | | | | | |
| Chlordane | ND | 0.10 | " | | | | | | | |
| Toxaphene | ND | 0.20 | " | | | | | | | |
| Arochlor 1016 | ND | 0.10 | " | | | | | | | |
| Arochlor 1221 | ND | 0.20 | " | | | | | | | |
| Arochlor 1232 | ND | 0.20 | " | | | | | | | |
| Arochlor 1242 | ND | 0.20 | " | | | | | | | |
| Arochlor 1248 | ND | 0.20 | " | | | | | | | |
| Arochlor 1254 | ND | 0.10 | " | | | | | | | |
| Arochlor 1260 | ND | 0.10 | " | | | | | | | |
| **LCS (1GD0712-BS1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.193* | | *ug/L* | *0.600000* | | *32.2* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.420* | | *"* | *0.600000* | | *70.0* | *30-119* | | | |
| Gamma-BHC [Lindane] | 0.254 | 0.05 | " | 0.250000 | | 102 | 37-127 | | | |
| Beta-BHC | 0.222 | 0.05 | " | 0.250000 | | 88.9 | 36-131 | | | |
| Heptachlor | 0.254 | 0.05 | " | 0.250000 | | 101 | 36-128 | | | |
| Delta-BHC | 0.250 | 0.05 | " | 0.250000 | | 100 | 29-147 | | | |
| Aldrin | 0.226 | 0.05 | " | 0.250000 | | 90.4 | 41-120 | | | |
| Heptachlor Epoxide | 0.269 | 0.05 | " | 0.250000 | | 108 | 50-132 | | | |
| Endosulfan I | 0.271 | 0.05 | " | 0.250000 | | 108 | 50-133 | | | |
| 4,4`-DDE | 0.277 | 0.05 | " | 0.250000 | | 111 | 46-140 | | | |
| Dieldrin | 0.254 | 0.05 | " | 0.250000 | | 102 | 41-138 | | | |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Organochlorine Insecticides & PCBs - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0712 - EPA 608 OC/PCB** | | | | | | | | | | |
| **LCS (1GD0712-BS1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| Endrin | 0.322 | 0.05 | ug/L | 0.250000 | | 129 | 32-152 | | | |
| 4,4`-DDD | 0.290 | 0.05 | " | 0.250000 | | 116 | 44-150 | | | |
| Endosulfan II | 0.287 | 0.05 | " | 0.250000 | | 115 | 45-141 | | | |
| 4,4`-DDT | 0.306 | 0.05 | " | 0.250000 | | 123 | 46-145 | | | |
| Endrin Aldehyde | 0.296 | 0.05 | " | 0.250000 | | 118 | 33-145 | | | |
| Endosulfan Sulfate | 0.270 | 0.05 | " | 0.250000 | | 108 | 52-133 | | | |
| **LCS Dup (1GD0712-BSD1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.344* | | *ug/L* | *0.600000* | | *57.3* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.428* | | *"* | *0.600000* | | *71.3* | *30-119* | | | |
| Gamma-BHC [Lindane] | 0.248 | 0.05 | " | 0.250000 | | 99.2 | 37-127 | 2.32 | 30 | |
| Beta-BHC | 0.212 | 0.05 | " | 0.250000 | | 84.9 | 36-131 | 4.55 | 30 | |
| Heptachlor | 0.262 | 0.05 | " | 0.250000 | | 105 | 36-128 | 3.23 | 30 | |
| Delta-BHC | 0.250 | 0.05 | " | 0.250000 | | 100 | 29-147 | 0.0779 | 30 | |
| Aldrin | 0.247 | 0.05 | " | 0.250000 | | 98.8 | 41-120 | 8.85 | 30 | |
| Heptachlor Epoxide | 0.272 | 0.05 | " | 0.250000 | | 109 | 50-132 | 1.19 | 30 | |
| Endosulfan I | 0.279 | 0.05 | " | 0.250000 | | 112 | 50-133 | 2.87 | 30 | |
| 4,4`-DDE | 0.261 | 0.05 | " | 0.250000 | | 104 | 46-140 | 6.01 | 30 | |
| Dieldrin | 0.260 | 0.05 | " | 0.250000 | | 104 | 41-138 | 2.09 | 30 | |
| Endrin | 0.329 | 0.05 | " | 0.250000 | | 132 | 32-152 | 2.06 | 30 | |
| 4,4`-DDD | 0.299 | 0.05 | " | 0.250000 | | 120 | 44-150 | 3.08 | 30 | |
| Endosulfan II | 0.292 | 0.05 | " | 0.250000 | | 117 | 45-141 | 1.71 | 30 | |
| 4,4`-DDT | 0.324 | 0.05 | " | 0.250000 | | 129 | 46-145 | 5.45 | 30 | |
| Endrin Aldehyde | 0.281 | 0.05 | " | 0.250000 | | 112 | 33-145 | 5.10 | 30 | |
| Endosulfan Sulfate | 0.295 | 0.05 | " | 0.250000 | | 118 | 52-133 | 8.88 | 30 | |
| **Reference (1GD0712-SRM1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.631* | | *ug/L* | *0.600000* | | *105* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.519* | | *"* | *0.600000* | | *86.5* | *30-119* | | | |
| Gamma-BHC [Lindane] | 0.258 | 0.05 | " | 0.250000 | | 103 | 80-120 | | | |
| Beta-BHC | 0.240 | 0.05 | " | 0.250000 | | 95.9 | 80-120 | | | |
| Heptachlor | 0.276 | 0.05 | " | 0.250000 | | 110 | 80-120 | | | |
| Delta-BHC | 0.265 | 0.05 | " | 0.250000 | | 106 | 80-120 | | | |
| Aldrin | 0.257 | 0.05 | " | 0.250000 | | 103 | 80-120 | | | |
| Heptachlor Epoxide | 0.276 | 0.05 | " | 0.250000 | | 110 | 80-120 | | | |
| Endosulfan I | 0.283 | 0.05 | " | 0.250000 | | 113 | 80-120 | | | |
| 4,4`-DDE | 0.245 | 0.05 | " | 0.250000 | | 97.9 | 80-120 | | | |
| Dieldrin | 0.266 | 0.05 | " | 0.250000 | | 106 | 80-120 | | | |
| Endrin | 0.310 | 0.05 | " | 0.250000 | | 124 | 80-120 | | | QR-05 |

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HLW Engineering
PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Organochlorine Insecticides & PCBs - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0712 - EPA 608 OC/PCB** | | | | | | | | | | |
| **Reference (1GD0712-SRM1)** | | | | Prepared: 04/13/23 Analyzed: 04/28/23 | | | | | | |
| 4,4`-DDD | 0.293 | 0.05 | ug/L | 0.250000 | | 117 | 80-120 | | | |
| Endosulfan II | 0.293 | 0.05 | " | 0.250000 | | 117 | 80-120 | | | |
| 4,4`-DDT | 0.309 | 0.05 | " | 0.250000 | | 124 | 80-120 | | | QR-05 |
| Endrin Aldehyde | 0.288 | 0.05 | " | 0.250000 | | 115 | 80-120 | | | |
| Endosulfan Sulfate | 0.285 | 0.05 | " | 0.250000 | | 114 | 80-120 | | | |

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**Work Order: 1GD1085**



## Determination of Conventional Chemistry Parameters - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0591 - General Prep Micro** | | | | | | | | | | |
| **Blank (1GD0591-BLK1)** | | | | Prepared & Analyzed: 04/12/23 | | | | | | |
| BOD (5 day) | ND | 4 | mg/L | | | | | | | B-06 |
| **Duplicate (1GD0591-DUP1)** | | **Source: 1GD1084-01** | | Prepared & Analyzed: 04/12/23 | | | | | | |
| BOD (5 day) | 290 | 4 | mg/L | | 302 | | | 4.05 | 29 | |
| **Reference (1GD0591-SRM1)** | | | | Prepared & Analyzed: 04/12/23 | | | | | | |
| BOD (5 day) | 219 | 4 | mg/L | 198.000 | | 111 | 84.6-115.4 | | | |
| **Batch 1GD0626 - Wet Chem Preparation** | | | | | | | | | | |
| **Duplicate (1GD0626-DUP1)** | | **Source: 1GD1085-01** | | Prepared & Analyzed: 04/12/23 | | | | | | |
| pH | 7.2 | 0.5 | pH | | 7.2 | | | 0.0830 | 10 | |
| **Reference (1GD0626-SRM1)** | | | | Prepared & Analyzed: 04/12/23 | | | | | | |
| pH | 7.0 | 0.5 | pH | 7.00000 | | 100 | 90-110 | | | |
| **Reference (1GD0626-SRM2)** | | | | Prepared & Analyzed: 04/12/23 | | | | | | |
| pH | 7.0 | 0.5 | pH | 7.00000 | | 99.8 | 90-110 | | | |
| **Batch 1GD0855 - Wet Chem Preparation** | | | | | | | | | | |
| **Blank (1GD0855-BLK1)** | | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Solids, total suspended | ND | 1 | mg/L | | | | | | | |
| **LCS (1GD0855-BS1)** | | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Solids, total suspended | 13.5 | 1 | mg/L | 15.0000 | | 90.0 | 74-114 | | | |

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## Determination of Conventional Chemistry Parameters - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0855 - Wet Chem Preparation** | | | | | | | | | | |
| **Duplicate (1GD0855-DUP1)** | **Source: 1GD1178-01** | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Solids, total suspended | 118 | 10 | mg/L | | 116 | | | 1.71 | 30 | |
| **Batch 1GD0874 - Wet Chem Preparation** | | | | | | | | | | |
| **Blank (1GD0874-BLK1)** | | | | Prepared & Analyzed: 04/18/23 | | | | | | |
| Solids, total dissolved | ND | 5 | mg/L | | | | | | | |
| **LCS (1GD0874-BS1)** | | | | Prepared & Analyzed: 04/18/23 | | | | | | |
| Solids, total dissolved | 94 | 5 | mg/L | 100.000 | | 93.6 | 71-114 | | | |
| **Duplicate (1GD0874-DUP1)** | **Source: 1GD1191-01** | | | Prepared & Analyzed: 04/18/23 | | | | | | |
| Solids, total dissolved | 2020 | 5 | mg/L | | 1990 | | | 1.59 | 30 | |
| **Batch 1GD1213 - General Prep HPLC/IC** | | | | | | | | | | |
| **Blank (1GD1213-BLK1)** | | | | Prepared: 04/24/23 Analyzed: 04/25/23 | | | | | | |
| Nitrogen, Ammonia | ND | 0.10 | mg/L | | | | | | | |
| **LCS (1GD1213-BS1)** | | | | Prepared: 04/24/23 Analyzed: 04/25/23 | | | | | | |
| Nitrogen, Ammonia | 5.20 | 0.10 | mg/L | 5.00000 | | 104 | 90-114 | | | |
| **Matrix Spike (1GD1213-MS1)** | **Source: 1GD1084-03** | | | Prepared: 04/24/23 Analyzed: 04/25/23 | | | | | | |
| Nitrogen, Ammonia | 5.07 | 0.10 | mg/L | 5.00000 | 0.218 | 97.0 | 84-115 | | | |
| **Matrix Spike Dup (1GD1213-MSD1)** | **Source: 1GD1084-03** | | | Prepared: 04/24/23 Analyzed: 04/25/23 | | | | | | |
| Nitrogen, Ammonia | 5.29 | 0.10 | mg/L | 5.00000 | 0.218 | 101 | 84-115 | 4.25 | 20 | |

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Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Conventional Chemistry Parameters - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD1232 - TOC/DOC** | | | | | | | | | | |
| **Blank (1GD1232-BLK1)** | | | | Prepared & Analyzed: 04/24/23 | | | | | | |
| Total Organic Carbon | ND | 0.50 | mg/L | | | | | | | |
| **LCS (1GD1232-BS1)** | | | | Prepared & Analyzed: 04/24/23 | | | | | | |
| Total Organic Carbon | 5.08 | 0.50 | mg/L | 5.00000 | | 102 | 86-120 | | | |
| **LCS Dup (1GD1232-BSD1)** | | | | Prepared & Analyzed: 04/24/23 | | | | | | |
| Total Organic Carbon | 5.07 | 0.50 | mg/L | 5.00000 | | 101 | 86-120 | 0.256 | 10 | |
| **Matrix Spike (1GD1232-MS1)** | | **Source: 1GD1048-01** | | Prepared & Analyzed: 04/24/23 | | | | | | |
| Total Organic Carbon | 22.77 | 2.00 | mg/L | 20.0000 | 2.98 | 99.0 | 81-128 | | | |
| **Matrix Spike Dup (1GD1232-MSD1)** | | **Source: 1GD1048-01** | | Prepared & Analyzed: 04/24/23 | | | | | | |
| Total Organic Carbon | 23.56 | 2.00 | mg/L | 20.0000 | 2.98 | 103 | 81-128 | 3.40 | 10 | |

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## Determination of Total Metals - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0614 - EPA 7470A Hg Water** | | | | | | | | | | |
| **Blank (1GD0614-BLK1)** | | | | Prepared: 04/12/23 Analyzed: 04/14/23 | | | | | | |
| Mercury, total | ND | 0.00050 | mg/L | | | | | | | |
| **LCS (1GD0614-BS1)** | | | | Prepared: 04/12/23 Analyzed: 04/14/23 | | | | | | |
| Mercury, total | 0.00247 | 0.00050 | mg/L | 0.00250000 | | 98.6 | 85-115 | | | |
| **Matrix Spike (1GD0614-MS1)** | | **Source: 1GD0275-01** | | Prepared: 04/12/23 Analyzed: 04/14/23 | | | | | | |
| Mercury, total | 0.00242 | 0.00050 | mg/L | 0.00250000 | ND | 96.8 | 70-130 | | | |
| **Matrix Spike Dup (1GD0614-MSD1)** | | **Source: 1GD0275-01** | | Prepared: 04/12/23 Analyzed: 04/14/23 | | | | | | |
| Mercury, total | 0.00254 | 0.00050 | mg/L | 0.00250000 | ND | 102 | 70-130 | 5.00 | 10 | |
| **Batch 1GD0631 - EPA 200.2 Total ICP-OES (200.7)** | | | | | | | | | | |
| **Blank (1GD0631-BLK1)** | | | | Prepared: 04/13/23 Analyzed: 04/14/23 | | | | | | |
| Iron, total | ND | 0.100 | mg/L | | | | | | | QB-11 |
| **LCS (1GD0631-BS1)** | | | | Prepared: 04/13/23 Analyzed: 04/14/23 | | | | | | |
| Iron, total | 2.19 | 0.100 | mg/L | 2.20000 | | 99.7 | 85-115 | | | |
| **Matrix Spike (1GD0631-MS1)** | | **Source: 1GD1046-01** | | Prepared: 04/13/23 Analyzed: 04/14/23 | | | | | | |
| Iron, total | 8.97 | 0.100 | mg/L | 2.20000 | 6.39 | 117 | 70-130 | | | |
| **Matrix Spike Dup (1GD0631-MSD1)** | | **Source: 1GD1046-01** | | Prepared: 04/13/23 Analyzed: 04/14/23 | | | | | | |
| Iron, total | 8.61 | 0.100 | mg/L | 2.20000 | 6.39 | 101 | 70-130 | 4.09 | 20 | |
| **Post Spike (1GD0631-PS1)** | | **Source: 1GD1046-01** | | Prepared: 04/13/23 Analyzed: 04/14/23 | | | | | | |
| Iron, total | 15.6 | | mg/L | 8.80000 | 6.39 | 105 | 85-115 | | | |

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PO Box 314
Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Total Metals - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0783 - EPA 200.2 Total ICP-MS** | | | | | | | | | | |
| **Blank (1GD0783-BLK1)** | | | | Prepared & Analyzed: 04/17/23 | | | | | | |
| Arsenic, total | ND | 0.0020 | mg/L | | | | | | | |
| Barium, total | ND | 0.0020 | " | | | | | | | |
| Cadmium, total | ND | 0.0002 | " | | | | | | | |
| Chromium, total | ND | 0.0020 | " | | | | | | | |
| Copper, total | ND | 0.0020 | " | | | | | | | |
| Lead, total | ND | 0.0008 | " | | | | | | | |
| Nickel, total | ND | 0.0040 | " | | | | | | | |
| Selenium, total | ND | 0.0040 | " | | | | | | | |
| Silver, total | ND | 0.0020 | " | | | | | | | |
| Zinc, total | ND | 0.0200 | " | | | | | | | |
| **LCS (1GD0783-BS1)** | | | | Prepared & Analyzed: 04/17/23 | | | | | | |
| Arsenic, total | 0.0935 | 0.0020 | mg/L | 0.100000 | | 93.5 | 85-115 | | | |
| Barium, total | 0.103 | 0.0020 | " | 0.100000 | | 103 | 85-115 | | | |
| Cadmium, total | 0.0932 | 0.0002 | " | 0.100000 | | 93.2 | 85-115 | | | |
| Chromium, total | 0.0947 | 0.0020 | " | 0.100000 | | 94.7 | 85-115 | | | |
| Copper, total | 0.0994 | 0.0020 | " | 0.100000 | | 99.4 | 85-115 | | | |
| Lead, total | 0.0984 | 0.0008 | " | 0.100000 | | 98.4 | 85-115 | | | |
| Nickel, total | 0.101 | 0.0040 | " | 0.100000 | | 101 | 85-115 | | | |
| Selenium, total | 0.0894 | 0.0040 | " | 0.100000 | | 89.4 | 85-115 | | | |
| Silver, total | 0.101 | 0.0020 | " | 0.100000 | | 101 | 85-115 | | | |
| Zinc, total | 0.0920 | 0.0200 | " | 0.100000 | | 92.0 | 85-115 | | | |
| **Matrix Spike (1GD0783-MS1)** | **Source: 1GD1086-02** | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Arsenic, total | 0.0933 | 0.0020 | mg/L | 0.100000 | 0.0009 | 92.4 | 70-130 | | | |
| Barium, total | 0.173 | 0.0020 | " | 0.100000 | 0.0675 | 106 | 70-130 | | | |
| Cadmium, total | 0.0908 | 0.0002 | " | 0.100000 | ND | 90.8 | 70-130 | | | |
| Chromium, total | 0.0911 | 0.0020 | " | 0.100000 | 0.0010 | 90.1 | 70-130 | | | |
| Copper, total | 0.104 | 0.0020 | " | 0.100000 | 0.0121 | 92.1 | 70-130 | | | |
| Lead, total | 0.0913 | 0.0008 | " | 0.100000 | 0.0005 | 91.3 | 70-130 | | | |
| Nickel, total | 0.0953 | 0.0040 | " | 0.100000 | 0.0016 | 93.7 | 70-130 | | | |
| Selenium, total | 0.0897 | 0.0040 | " | 0.100000 | 0.0018 | 87.9 | 70-130 | | | |
| Silver, total | 0.0949 | 0.0020 | " | 0.100000 | ND | 94.9 | 70-130 | | | |
| Zinc, total | 0.116 | 0.0200 | " | 0.100000 | 0.0299 | 86.3 | 70-130 | | | |

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Story City, IA 50248

**Work Order: 1GD1085**



## Determination of Total Metals - Quality Control

## Keystone Laboratories - Newton

| Analyte | Result | Reporting Limit | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1GD0783 - EPA 200.2 Total ICP-MS** | | | | | | | | | | |
| **Matrix Spike Dup (1GD0783-MSD1)** | **Source: 1GD1086-02** | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Arsenic, total | 0.0927 | 0.0020 | mg/L | 0.100000 | 0.0009 | 91.8 | 70-130 | 0.666 | 20 | |
| Barium, total | 0.170 | 0.0020 | " | 0.100000 | 0.0675 | 103 | 70-130 | 1.85 | 20 | |
| Cadmium, total | 0.0880 | 0.0002 | " | 0.100000 | ND | 88.0 | 70-130 | 3.04 | 20 | |
| Chromium, total | 0.0894 | 0.0020 | " | 0.100000 | 0.0010 | 88.4 | 70-130 | 1.87 | 20 | |
| Copper, total | 0.102 | 0.0020 | " | 0.100000 | 0.0121 | 89.6 | 70-130 | 2.51 | 20 | |
| Lead, total | 0.0925 | 0.0008 | " | 0.100000 | 0.0005 | 92.5 | 70-130 | 1.33 | 20 | |
| Nickel, total | 0.0939 | 0.0040 | " | 0.100000 | 0.0016 | 92.3 | 70-130 | 1.44 | 20 | |
| Selenium, total | 0.0881 | 0.0040 | " | 0.100000 | 0.0018 | 86.4 | 70-130 | 1.76 | 20 | |
| Silver, total | 0.0929 | 0.0020 | " | 0.100000 | ND | 92.9 | 70-130 | 2.12 | 20 | |
| Zinc, total | 0.113 | 0.0200 | " | 0.100000 | 0.0299 | 83.1 | 70-130 | 2.83 | 20 | |
| **Post Spike (1GD0783-PS1)** | **Source: 1GD1086-02** | | | Prepared: 04/17/23 Analyzed: 04/18/23 | | | | | | |
| Arsenic, total | 0.0784 | | mg/L | 0.0800000 | 0.0009 | 96.9 | 70-130 | | | |
| Barium, total | 0.147 | | " | 0.0800000 | 0.0662 | 101 | 70-130 | | | |
| Cadmium, total | 0.0746 | | " | 0.0800000 | 0.00005 | 93.2 | 70-130 | | | |
| Chromium, total | 0.0748 | | " | 0.0800000 | 0.0010 | 92.2 | 70-130 | | | |
| Copper, total | 0.0886 | | " | 0.0800000 | 0.0119 | 95.9 | 70-130 | | | |
| Lead, total | 0.0764 | | " | 0.0800000 | 0.0004 | 94.9 | 70-130 | | | |
| Nickel, total | 0.0808 | | " | 0.0800000 | 0.0016 | 98.9 | 70-130 | | | |
| Selenium, total | 0.0698 | | " | 0.0800000 | 0.0017 | 85.1 | 70-130 | | | |
| Silver, total | 0.0780 | | " | 0.0800000 | 0.0009 | 96.4 | 70-130 | | | |
| Zinc, total | 0.0997 | | " | 0.0800000 | 0.0293 | 88.0 | 70-130 | | | |

ND = Non Detect; REC= Recovery; RPD= Relative Percent Difference

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**Work Order: 1GD1085**



## Certified Analyses Included In This Report

| Method/Matrix | Analyte | Certifications |
|---|---|---|
| ***200.7 in Water*** | | |
| | Iron, total | SIA1X,KS-NT |
| ***245.1 in Water*** | | |
| | Mercury, total | SIA1X,KS-NT |
| ***5310B in Drink Wtr*** | | |
| | Total Organic Carbon | SIA1X |
| ***5310B in Water*** | | |
| | Total Organic Carbon | KS-NT,SIA1X |
| ***EPA 200.8 in Water*** | | |
| | Arsenic, total | SIA1X,KS-NT |
| | Barium, total | SIA1X,KS-NT |
| | Cadmium, total | SIA1X,KS-NT |
| | Chromium, total | SIA1X,KS-NT |
| | Copper, total | SIA1X,KS-NT |
| | Lead, total | SIA1X,KS-NT |
| | Nickel, total | SIA1X,KS-NT |
| | Selenium, total | SIA1X,KS-NT |
| | Silver, total | SIA1X,KS-NT |
| | Zinc, total | SIA1X,KS-NT |
| ***EPA 608 in Water*** | | |
| | Gamma-BHC [Lindane] | KS-NT,SIA1X |
| | Beta-BHC | KS-NT,SIA1X |
| | Heptachlor | KS-NT,SIA1X |
| | Delta-BHC | KS-NT,SIA1X |
| | Aldrin | KS-NT,SIA1X |
| | Heptachlor Epoxide | KS-NT,SIA1X |
| | Endosulfan I | KS-NT,SIA1X |
| | 4,4`-DDE | KS-NT,SIA1X |
| | Dieldrin | KS-NT,SIA1X |
| | Endrin | KS-NT,SIA1X |
| | 4,4`-DDD | KS-NT,SIA1X |
| | Endosulfan II | KS-NT,SIA1X |
| | 4,4`-DDT | KS-NT,SIA1X |
| | Endrin Aldehyde | KS-NT,SIA1X |
| | Endosulfan Sulfate | KS-NT,SIA1X |
| | Chlordane | KS-NT,SIA1X |
| | Toxaphene | KS-NT,SIA1X |
| | Arochlor 1016 | KS-NT,SIA1X |
| | Arochlor 1221 | KS-NT,SIA1X |
| | Arochlor 1232 | KS-NT,SIA1X |
| | Arochlor 1242 | KS-NT,SIA1X |
| | Arochlor 1248 | KS-NT,SIA1X |
| | Arochlor 1254 | KS-NT,SIA1X |
| | Arochlor 1260 | KS-NT,SIA1X |
| ***EPA 624 in Water*** | | |
| | Chloromethane | KS-NT,SIA1X |
| | Vinyl Chloride | KS-NT,SIA1X |

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**Work Order: 1GD1085**



| | | |
|---|---|---|
| | Bromomethane | KS-NT,SIA1X |
| | Chloroethane | KS-NT,SIA1X |
| | 1,1-Dichloroethylene | KS-NT,SIA1X |
| | Methylene Chloride | KS-NT,SIA1X |
| | trans-1,2-Dichloroethylene | KS-NT |
| | 1,1-Dichloroethane | KS-NT,SIA1X |
| | cis-1,2-Dichloroethylene | SIA1X |
| | 2-Butanone (MEK) | SIA1X |
| | Chloroform | KS-NT,SIA1X |
| | 1,1,1-Trichloroethane | KS-NT,SIA1X |
| | Carbon Tetrachloride | KS-NT,SIA1X |
| | Benzene | KS-NT,SIA1X |
| | 1,2-Dichloroethane | KS-NT,SIA1X |
| | Trichloroethylene | KS-NT |
| | 1,2-Dichloropropane | KS-NT,SIA1X |
| | Dibromomethane | SIA1X |
| | Bromodichloromethane | KS-NT,SIA1X |
| | 2-Chloroethylvinyl ether | KS-NT,SIA1X |
| | cis-1,3-Dichloropropene | KS-NT,SIA1X |
| | Toluene | KS-NT |
| | trans-1,3-Dichloropropene | KS-NT |
| | 1,1,2-Trichloroethane | KS-NT,SIA1X |
| | Tetrachloroethylene | KS-NT,SIA1X |
| | Dibromochloromethane | KS-NT,SIA1X |
| | Chlorobenzene | KS-NT,SIA1X |
| | Ethylbenzene | KS-NT,SIA1X |
| | Xylenes, total | SIA1X |
| | Bromoform | KS-NT,SIA1X |
| | 1,1,2,2-Tetrachloroethane | KS-NT,SIA1X |
| | 1,3-Dichlorobenzene | KS-NT,SIA1X |
| | 1,4-Dichlorobenzene | KS-NT,SIA1X |
| | 1,2-Dichlorobenzene | KS-NT,SIA1X |
| ***EPA 625 in Water*** | | |
| | Bis(2-Chloroethyl) Ether | KS-NT,SIA1X |
| | 2-Chlorophenol | KS-NT,SIA1X |
| | Bis[2-Chloroisopropyl]ether | SIA1X |
| | n-Nitroso-di-n-propylamine | KS-NT,SIA1X |
| | Hexachloroethane | KS-NT,SIA1X |
| | Nitrobenzene | KS-NT,SIA1X |
| | Isophorone | KS-NT,SIA1X |
| | 2-Nitrophenol | KS-NT,SIA1X |
| | 2,4-Dimethylphenol | KS-NT,SIA1X |
| | Bis (2-Chloroethoxy) Methane | KS-NT,SIA1X |
| | 2,4-Dichlorophenol | KS-NT,SIA1X |
| | 1,2,4-Trichlorobenzene | KS-NT,SIA1X |
| | Naphthalene | KS-NT,SIA1X |
| | Hexachlorobutadiene | KS-NT,SIA1X |
| | 4-Chloro-3-methylphenol | KS-NT,SIA1X |
| | Hexachlorocyclopentadiene | KS-NT,SIA1X |
| | 2,4,6-Trichlorophenol | KS-NT,SIA1X |
| | 2,4,5-Trichlorophenol | SIA1X |

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**Work Order: 1GD1085**



| | | |
|---|---|---|
| | 2-Chloronaphthalene | KS-NT,SIA1X |
| | Dimethylphthalate | KS-NT,SIA1X |
| | Acenaphthylene | KS-NT,SIA1X |
| | 2,6-Dinitrotoluene | KS-NT,SIA1X |
| | Acenaphthene | KS-NT,SIA1X |
| | 2,4-Dinitrophenol | KS-NT,SIA1X |
| | 2,4-Dinitrotoluene | KS-NT,SIA1X |
| | 4-Nitrophenol | KS-NT,SIA1X |
| | Diethyl Phthalate | KS-NT,SIA1X |
| | Fluorene | KS-NT,SIA1X |
| | 4-Chlorophenyl Phenyl Ether | KS-NT,SIA1X |
| | 4,6-Dinitro-2-methylphenol | KS-NT,SIA1X |
| | N-Nitrosodiphenylamine | KS-NT,SIA1X |
| | 4-Bromophenyl Phenyl Ether | KS-NT,SIA1X |
| | Hexachlorobenzene | KS-NT,SIA1X |
| | Pentachlorophenol | KS-NT,SIA1X |
| | Phenanthrene | KS-NT,SIA1X |
| | Anthracene | KS-NT,SIA1X |
| | Di-n-butyl Phthalate | KS-NT,SIA1X |
| | Fluoranthene | KS-NT,SIA1X |
| | Pyrene | KS-NT,SIA1X |
| | Butyl Benzyl Phthalate | KS-NT,SIA1X |
| | Benzo(a)anthracene | KS-NT,SIA1X |
| | Chrysene | KS-NT,SIA1X |
| | Bis(2-Ethylhexyl) Phthalate | KS-NT,SIA1X |
| | Di-n-octyl Phthalate | KS-NT,SIA1X |
| | Indeno(1,2,3-cd)Pyrene | KS-NT,SIA1X |
| | 3,3´-Dichlorobenzidine | SIA1X |
| | Benzo(b)Fluoranthene | KS-NT,SIA1X |
| | Benzo(k)Fluoranthene | KS-NT,SIA1X |
| | Benzo(a)Pyrene | KS-NT,SIA1X |
| | Dibenzo(a,h)anthracene | KS-NT,SIA1X |
| | Benzo(g,h,i)perylene | KS-NT,SIA1X |
| ***SM 4500 H+ B in Water*** | | |
| | pH | KS-NT,SIA1X |
| ***SM 5210 B in Water*** | | |
| | BOD (5 day) | SIA1X,KS-NT |
| ***TIMBERLINE in Water*** | | |
| | Nitrogen, Ammonia | SIA1X,KS-NT |
| ***USGS I-1750-85 in Water*** | | |
| | Solids, total dissolved | KS-NT,SIA1X |
| ***USGS I-3765-85 in Water*** | | |
| | Solids, total suspended | SIA1X,KS-NT |

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**May 04, 2023**
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**Work Order: 1GD1085**

| Code | Description | Number | Expires |
|---|---|---|---|
| KS-KC | Kansas Department of Health and Environment-KC | E-10110 | 04/30/2024 |
| KS-NT | Kansas Department of Health and Environment (NELAP) | E-10287 | 10/31/2023 |
| MO-KC | Missouri Department of Natural Resources (KC) | 140 | 04/30/2023 |
| MO-NT | Missouri Department of Natural Resources (Newton) | 10170 | 04/30/2026 |
| SIA1X | Iowa Dept. of Natural Resources | 95 | 02/01/2024 |

**Notes and Definitions**

| | |
|---|---|
| B-06 | Unseeded Blank equals .3mg/L |
| I-03 | Analyte required to be analyzed within 15 minutes of sampling. Analysis performed upon receipt of sample at laboratory. |
| QB-11 | The analyte was found in the blank at a concentration greater than 2.2 times the MDL. However, the concentration of the analyte in the blank was less than the reporting limit so the data was accepted. |
| QM-05 | The spike recovery and/or RPD was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable. |
| QR-02 | The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data. |
| QR-05 | The reference standard was outside of established control limits. The batch was accepted based on acceptable LCS, MS/MSD and RPD results. |
| QS-03 | The blank spike recovery was below established acceptance limits. |

End of Report

Sue Thompson

Keystone Laboratories

Sue Thompson
Client Services Manager

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# CHAIN OF CU[illegible]

Keystone LABORATORIES, INC.
600 East 17th Street Sou[illegible]
Newton, IA 50208
641-792-8451

1 G D 1 0 8 5

HLW Engineering
PM: Sue Thompson


inted: 3/29/2023 4:12:07AM

www.keystonelabs.cc

**SITE INFORMATION**
Sampler: Dennis K. Bowers
Project: Buchanan Co. Landfill - Leachate
Leachate

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

**INVOICE TO**
Ellen Gaffney
Buchanan SLF Board of Supervisors
2073 118th St
Hazleton, IA 50641-9626

**SPECIAL INSTRUCTIONS**
None

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

**LAB USE ONLY**
Work Order 1GD1085
Temperature 3.9
Turn-Cooler: No

- ☐ Custody Seal
- ☒ ~~Containers Intact~~ ee Lrm
- ☒ COC/Labels Agree
- ☐ Preservation Confirmed
- ☒ Received on Ice

| Number | Sample Identification / Client ID | Matrix | Sample Type | Date | Time | Number of Containers | Analyses | | Lab Sample Number |
|---|---|---|---|---|---|---|---|---|---|
| 01-001 | Buchanan Co. Landfill | Water | GRAB | 4/11/23 | 10:30 AM | 13 | 608-107 | 624@dibromochloromethane | 01 |
| | | | | | | | 624-105 | 625-116 | |
| | | | | | | | ag-i-200.8 | as-i-200.8 | |
| | | | | | | | ba-i-200.8 | bod-5210 | |
| | | | | | | | cd-i-200.8 | cr-i-200.8 | |
| | | | | | | | cu-i-200.8 | fe-i-200.7 | |
| | | | | | | | hg-i-245.1 | nh3-timberline | |
| | | | | | | | ni-i-200.8 | pb-i-200.8 | |
| | | | | | | | ph-4500 | se-i-200.8 | |
| | | | | | | | tds-i-1730-85 | toc-5310b | |
| | | | | | | | tss-i-3765-85 | zn-i-200.8 | |

DK Bowers 4/11/23 10:30 AM
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

John McMurry 4/12/23 10:30
Received for Lab By Date/Time

Original - Lab Copy Yellow - Sampler Copy

Remarks:

*2024*

Microbac Laboratories, Inc., Newton

# CERTIFICATE OF ANALYSIS

1HC1724

Project Description

Leachate

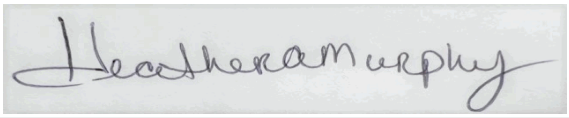
For:

Todd Whipple

**HLW Engineering**

PO Box 314

Story City, IA 50248



Heather Murphy

Customer Relationship Specialist

Thursday, April 18, 2024

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

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

MICROBAC®

Microbac Laboratories, Inc., Newton

CERTIFICATE OF ANALYSIS

1HC1724

**HLW Engineering**

Todd Whipple
PO Box 314
Story City, IA 50248

**Project Name: Leachate**

Project / PO Number: N/A
Received: 03/27/2024
Reported: 04/18/2024

**Sample Summary Report**

| Sample Name | Laboratory ID | Client Matrix | Sample Type | Sample Begin | Sample Taken | Lab Received |
|---|---|---|---|---|---|---|
| Buchanan Co. Land Fill | 1HC1724-01 | Water | GRAB | | 03/26/24 13:00 | 03/27/24 10:30 |

**Analytical Testing Parameters**

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Buchanan Co. Land Fill | | |
| **Sample Matrix:** | Water | **Collected By:** | unknown |
| **Lab Sample ID:** | 1HC1724-01 | **Collection Date:** | 03/26/2024 13:00 |

| Determination of Volatile Organic Compounds | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **EPA 5030B/EPA 624** | | | | | | | | |
| Chloromethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Vinyl Chloride | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Bromomethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Chloroethane | **1.2** | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,1-Dichloroethylene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Methylene Chloride | <5.0 | 5.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| trans-1,2-Dichloroethylene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,1-Dichloroethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| cis-1,2-Dichloroethylene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Chloroform | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,1,1-Trichloroethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Carbon Tetrachloride | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Benzene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,2-Dichloroethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Trichloroethylene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,2-Dichloropropane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Bromodichloromethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 2-Chloroethylvinyl ether | <10.0 | 10.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| cis-1,3-Dichloropropene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Toluene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| trans-1,3-Dichloropropene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,1,2-Trichloroethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Tetrachloroethylene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Dibromochloromethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Chlorobenzene | **2.1** | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Ethylbenzene | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Bromoform | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| 1,1,2,2-Tetrachloroethane | <1.0 | 1.0 | ug/L | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Surrogate: 1,2-Dichloroethane-d4 | 91.4 | Limit: 66-134 | % Rec | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Surrogate: Toluene-d8 | 99.8 | Limit: 91-113 | % Rec | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |
| Surrogate: 4-Bromofluorobenzene | 101 | Limit: 83-112 | % Rec | 1 | | 04/08/24 0000 | 04/08/24 1859 | LJS |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **EPA 625** | | | | | | | | |
| Bis(2-Chloroethyl) Ether | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2-Chlorophenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 1,3-Dichlorobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 1,4-Dichlorobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzyl Alcohol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 1,2-Dichlorobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Buchanan Co. Land Fill | | |
| **Sample Matrix:** | Water | **Collected By:** | unknown |
| **Lab Sample ID:** | 1HC1724-01 | **Collection Date:** | 03/26/2024 13:00 |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Bis[2-Chloroisopropyl]ether | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| n-Nitroso-di-n-propylamine | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Hexachloroethane | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Nitrobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Isophorone | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2-Nitrophenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4-Dimethylphenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Bis (2-Chloroethoxy) Methane | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzoic acid | <50 | 50 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4-Dichlorophenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 1,2,4-Trichlorobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Naphthalene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Hexachlorobutadiene | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 4-Chloro-3-methylphenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Hexachlorocyclopentadiene | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4,6-Trichlorophenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4,5-Trichlorophenol | <50 | 50 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2-Chloronaphthalene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Dimethylphthalate | <15 | 15 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Acenaphthylene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,6-Dinitrotoluene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Acenaphthene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4-Dinitrophenol | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Dibenzofuran | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 2,4-Dinitrotoluene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 4-Nitrophenol | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Diethyl Phthalate | <30 | 30 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Fluorene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 4-Chlorophenyl Phenyl Ether | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 4,6-Dinitro-2-methylphenol | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| N-Nitrosodiphenylamine | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 4-Bromophenyl Phenyl Ether | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Hexachlorobenzene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Pentachlorophenol | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Phenanthrene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Anthracene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Di-n-butyl Phthalate | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Fluoranthene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Pyrene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Butyl Benzyl Phthalate | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzo(a)anthracene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Chrysene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Bis(2-Ethylhexyl) Phthalate | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Buchanan Co. Land Fill | | |
| **Sample Matrix:** | Water | **Collected By:** | unknown |
| **Lab Sample ID:** | 1HC1724-01 | **Collection Date:** | 03/26/2024 13:00 |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| Di-n-octyl Phthalate | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Indeno(1,2,3-cd)Pyrene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| 3,3´-Dichlorobenzidine | <20 | 20 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzo(b)Fluoranthene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzo(k)Fluoranthene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzo(a)Pyrene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Dibenzo(a,h)anthracene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Benzo(g,h,i)perylene | <10 | 10 | ug/L | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: 2-Fluorophenol | 75.1 | Limit: 19-139 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: Phenol-d6 | 70.5 | Limit: 14-154 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: Nitrobenzene-d5 | 76.7 | Limit: 17-146 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: 2-Fluorobiphenyl | 83.5 | Limit: 18-122 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: 2,4,6-Tribromophenol | 99.8 | Limit: 21-151 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |
| Surrogate: Terphenyl-dl4 | 91.0 | Limit: 27-131 | % Rec | 1 | | 04/01/24 1212 | 04/05/24 1532 | EPP |

| Determination of Organochlorine Insecticides & PCBs | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **EPA 608** | | | | | | | | |
| Gamma-BHC [Lindane] | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Beta-BHC | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Heptachlor | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Delta-BHC | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Aldrin | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Heptachlor Epoxide | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Endosulfan I | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| 4,4`-DDE | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Dieldrin | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Endrin | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| 4,4`-DDD | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Endosulfan II | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| 4,4`-DDT | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Endrin Aldehyde | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Endosulfan Sulfate | <0.05 | 0.05 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Chlordane | <0.10 | 0.10 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Toxaphene | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1016 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1221 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1232 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1242 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1248 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1254 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Arochlor 1260 | <0.20 | 0.20 | ug/L | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Surrogate: Decachlorobiphenyl | 85.4 | Limit: 19-120 | % Rec | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |
| Surrogate: Tetrachloro-m-xylene | 102 | Limit: 30-119 | % Rec | 1 | | 03/29/24 1013 | 04/03/24 1443 | EPP |

| | | | |
|---|---|---|---|
| **Client Sample ID:** | Buchanan Co. Land Fill | | |
| **Sample Matrix:** | Water | **Collected By:** | unknown |
| **Lab Sample ID:** | 1HC1724-01 | **Collection Date:** | 03/26/2024 13:00 |

| Determination of Conventional Chemistry Parameters | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **5310B** | | | | | | | | |
| Total Organic Carbon | **40.4** | 5.00 | mg/L | 10 | | 04/11/24 0000 | 04/11/24 1600 | CSM |
| **SM 4500 H+ B** | | | | | | | | |
| pH | **7.4** | 0.5 | pH | 1 | **I-03** | 03/27/24 1617 | 03/27/24 1625 | BSS |
| **SM 5210 B** | | | | | | | | |
| BOD (5 day) | **21** | 6 | mg/L | 3 | | 03/27/24 1150 | 03/27/24 1323 | MND |
| **TIMBERLINE** | | | | | | | | |
| Nitrogen, Ammonia | **63.0** | 1.00 | mg/L | 10 | | 04/03/24 0814 | 04/03/24 1415 | LJS |
| **USGS I-1750-85** | | | | | | | | |
| Total Dissolved Solids (TDS) | **1040** | 5 | mg/L | 1 | | 03/28/24 0959 | 04/01/24 1145 | MEAH |
| **USGS I-3765-85** | | | | | | | | |
| Total Suspended Solids (TSS) | **27** | 1 | mg/L | 1 | | 03/29/24 1503 | 04/01/24 1103 | MEAH |

| Determination of Total Metals | Result | RL | Units | DF | Note | Prepared | Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|
| **200.7** | | | | | | | | |
| Iron, total | **10.0** | 0.100 | mg/L | 1 | | 03/29/24 0715 | 04/01/24 1922 | JAR |
| **245.1** | | | | | | | | |
| Mercury, total | <0.00050 | 0.00050 | mg/L | 1 | | 04/01/24 1539 | 04/02/24 1651 | JAR |
| **EPA 200.8** | | | | | | | | |
| Arsenic, total | **0.0033** | 0.0020 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Barium, total | **0.392** | 0.0020 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Cadmium, total | <0.0002 | 0.0002 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Chromium, total | <0.0020 | 0.0020 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Copper, total | **0.0022** | 0.0020 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Lead, total | <0.0008 | 0.0008 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Nickel, total | **0.0167** | 0.0040 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Selenium, total | <0.0040 | 0.0040 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Silver, total | <0.0020 | 0.0020 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |
| Zinc, total | <0.0200 | 0.0200 | mg/L | 4 | | 04/01/24 0924 | 04/02/24 0241 | RVV |

**Batch Log Summary**

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| SM 5210 B | 1HC1496 | 1HC1496-BLK1 | |
| | | 1HC1496-SRM1 | |
| | | 1HC1496-DUP1 | 1HC1719-01 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| SM 4500 H+ B | 1HC1537 | 1HC1537-DUP1 | 1HC1713-01 |
| | | 1HC1537-SRM1 | |
| | | 1HC1537-SRM2 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| USGS I-1750-85 | 1HC1580 | 1HC1580-BLK1 | |
| | | 1HC1580-BS1 | |
| | | 1HC1580-DUP1 | 1HC1696-01 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| 200.7 | 1HC1623 | 1HC1623-BLK1 | |
| | | 1HC1623-BS1 | |
| | | 1HC1623-MS1 | 1HC1689-01 |
| | | 1HC1623-MSD1 | 1HC1689-01 |
| | | 1HC1623-PS1 | 1HC1689-01 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| EPA 608 | 1HC1636 | 1HC1636-BLK1 | |
| | | 1HC1636-BS1 | |
| | | 1HC1636-BSD1 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| USGS I-3765-85 | 1HC1675 | 1HC1675-BS1 | |
| | | 1HC1675-DUP1 | 1HC1732-01 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| | | 1HC1675-BLK1 | |
| **Method** | **Batch** | **Laboratory ID** | **Client / Source ID** |
| EPA 200.8 | 1HD0021 | 1HD0021-BLK1 | |
| | | 1HD0021-BS1 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |

| | | | |
|---|---|---|---|
| EPA 200.8 | 1HD0021 | 1HD0021-MS1 | 1HC1724-01 |
| | | 1HD0021-MSD1 | 1HC1724-01 |
| | | 1HD0021-PS1 | 1HC1724-01 |

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| EPA 625 | 1HD0034 | 1HD0034-BLK1 | |
| | | 1HD0034-BS1 | |
| | | 1HD0034-BSD1 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| 245.1 | 1HD0077 | 1HD0077-BLK1 | |
| | | 1HD0077-BS1 | |
| | | 1HD0077-MS1 | 1HC1541-01 |
| | | 1HD0077-MSD1 | 1HC1541-01 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| TIMBERLINE | 1HD0195 | 1HD0195-BLK1 | |
| | | 1HD0195-BS1 | |
| | | 1HD0195-MS1 | 1HC1718-03 |
| | | 1HD0195-MSD1 | 1HC1718-03 |
| | | 1HC1724-01 | Buchanan Co. Land Fill |

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| EPA 624 | 1HD0497 | 1HD0497-BS1 | |
| | | 1HD0497-BSD1 | |
| | | 1HD0497-BLK1 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| | | 1HD0497-MS1 | 1HD0545-01 |
| | | 1HD0497-MSD1 | 1HD0545-01 |

| Method | Batch | Laboratory ID | Client / Source ID |
|---|---|---|---|
| 5310B | 1HD0778 | 1HD0778-BS1 | |
| | | 1HD0778-BSD1 | |
| | | 1HD0778-BLK1 | |
| | | 1HC1724-01 | Buchanan Co. Land Fill |
| | | 1HD0778-MS1 | 1HC1724-01 |
| | | 1HD0778-MSD1 | 1HC1724-01 |

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

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |
| **Blank (1HD0497-BLK1)** | | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 10:51 | | | | | | |
| Chloromethane | <1.0 | 1.0 | ug/L | | | | | | | |
| Vinyl Chloride | <1.0 | 1.0 | ug/L | | | | | | | |
| Bromomethane | <1.0 | 1.0 | ug/L | | | | | | | |
| Chloroethane | <1.0 | 1.0 | ug/L | | | | | | | |
| 1,1-Dichloroethylene | <1.0 | 1.0 | ug/L | | | | | | | |
| Methylene Chloride | <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 | | | | | | | |
| cis-1,2-Dichloroethylene | <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 | | | | | | | |
| Bromodichloromethane | <1.0 | 1.0 | ug/L | | | | | | | |
| 2-Chloroethylvinyl ether | <10.0 | 10.0 | ug/L | | | | | | | |
| cis-1,3-Dichloropropene | <1.0 | 1.0 | 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 | | | | | | | |
| Dibromochloromethane | <1.0 | 1.0 | ug/L | | | | | | | |
| Chlorobenzene | <1.0 | 1.0 | ug/L | | | | | | | |
| Ethylbenzene | <1.0 | 1.0 | ug/L | | | | | | | |
| Bromoform | <1.0 | 1.0 | ug/L | | | | | | | |
| 1,1,2,2-Tetrachloroethane | <1.0 | 1.0 | ug/L | | | | | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *47.0* | | ug/L | *50.1* | | *93.8* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *49.7* | | ug/L | *50.4* | | *98.7* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *49.4* | | ug/L | *50.1* | | *98.5* | *83-112* | | | |
| **LCS (1HD0497-BS1)** | | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 09:42 | | | | | | |
| Chloromethane | 34.69 | 1.0 | ug/L | 30.6 | | 113 | 63-145 | | | |
| Vinyl Chloride | 29.37 | 1.0 | ug/L | 30.2 | | 97.2 | 68-145 | | | |
| Bromomethane | 32.46 | 1.0 | ug/L | 28.8 | | 113 | 69-150 | | | |
| Chloroethane | 32.74 | 1.0 | ug/L | 31.6 | | 103 | 74-134 | | | |
| 1,1-Dichloroethylene | 51.00 | 1.0 | ug/L | 50.0 | | 102 | 76-139 | | | |
| Methylene Chloride | 47.24 | 5.0 | ug/L | 50.0 | | 94.5 | 67-141 | | | |
| trans-1,2-Dichloroethylene | 48.53 | 1.0 | ug/L | 50.0 | | 97.1 | 71-137 | | | |
| 1,1-Dichloroethane | 47.18 | 1.0 | ug/L | 50.0 | | 94.4 | 72-130 | | | |
| cis-1,2-Dichloroethylene | 50.22 | 1.0 | ug/L | 49.5 | | 102 | 81-134 | | | |
| 2-Butanone (MEK) | 85.94 | 10.0 | ug/L | 103 | | 83.2 | 44-158 | | | |

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |
| **LCS (1HD0497-BS1)** | | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 09:42 | | | | | | |
| Chloroform | 47.05 | 1.0 | ug/L | 50.0 | | 94.1 | 76-132 | | | |
| 1,1,1-Trichloroethane | 38.71 | 1.0 | ug/L | 50.0 | | 77.5 | 65-122 | | | |
| Carbon Tetrachloride | 42.93 | 1.0 | ug/L | 50.0 | | 85.9 | 66-132 | | | |
| Benzene | 50.82 | 1.0 | ug/L | 50.0 | | 102 | 77-130 | | | |
| 1,2-Dichloroethane | 47.89 | 1.0 | ug/L | 50.0 | | 95.8 | 75-124 | | | |
| Trichloroethylene | 48.66 | 1.0 | ug/L | 50.0 | | 97.3 | 79-126 | | | |
| 1,2-Dichloropropane | 51.46 | 1.0 | ug/L | 50.0 | | 103 | 79-128 | | | |
| Dibromomethane | 52.41 | 1.0 | ug/L | 50.0 | | 105 | 71-139 | | | |
| Bromodichloromethane | 45.31 | 1.0 | ug/L | 50.0 | | 90.6 | 76-122 | | | |
| 2-Chloroethylvinyl ether | 104.8 | 10.0 | ug/L | 103 | | 102 | 50-169 | | | |
| cis-1,3-Dichloropropene | 47.94 | 1.0 | ug/L | 50.3 | | 95.3 | 74-122 | | | |
| Toluene | 49.37 | 1.0 | ug/L | 50.0 | | 98.7 | 76-128 | | | |
| trans-1,3-Dichloropropene | 46.27 | 1.0 | ug/L | 50.4 | | 91.8 | 73-125 | | | |
| 1,1,2-Trichloroethane | 49.67 | 1.0 | ug/L | 50.0 | | 99.3 | 74-126 | | | |
| Tetrachloroethylene | 46.83 | 1.0 | ug/L | 50.0 | | 93.7 | 68-124 | | | |
| Dibromochloromethane | 48.39 | 1.0 | ug/L | 49.5 | | 97.8 | 76-125 | | | |
| Chlorobenzene | 49.74 | 1.0 | ug/L | 50.0 | | 99.5 | 77-120 | | | |
| Ethylbenzene | 47.61 | 1.0 | ug/L | 50.0 | | 95.2 | 76-118 | | | |
| Xylenes, total | 141.7 | 2.0 | ug/L | 150 | | 94.5 | 74-121 | | | |
| Bromoform | 46.60 | 1.0 | ug/L | 50.0 | | 93.2 | 68-128 | | | |
| 1,1,2,2-Tetrachloroethane | 49.08 | 1.0 | ug/L | 49.8 | | 98.5 | 62-128 | | | |
| 1,3-Dichlorobenzene | 46.66 | 1.0 | ug/L | 50.0 | | 93.3 | 72-123 | | | |
| 1,4-Dichlorobenzene | 47.60 | 1.0 | ug/L | 50.0 | | 95.2 | 75-120 | | | |
| 1,2-Dichlorobenzene | 46.66 | 1.0 | ug/L | 50.0 | | 93.3 | 72-121 | | | |
| *Surrogate: Dibromofluoromethane* | *45.9* | | ug/L | *50.2* | | *91.4* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *45.3* | | ug/L | *50.1* | | *90.5* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *50.3* | | ug/L | *50.4* | | *99.9* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *50.1* | | ug/L | *50.1* | | *100* | *83-112* | | | |
| **LCS Dup (1HD0497-BSD1)** | | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 10:05 | | | | | | |
| Chloromethane | 33.11 | 1.0 | ug/L | 30.6 | | 108 | 63-145 | 4.66 | 27 | |
| Vinyl Chloride | 28.07 | 1.0 | ug/L | 30.2 | | 92.9 | 68-145 | 4.53 | 30 | |
| Bromomethane | 31.27 | 1.0 | ug/L | 28.8 | | 109 | 69-150 | 3.73 | 30 | |
| Chloroethane | 31.37 | 1.0 | ug/L | 31.6 | | 99.2 | 74-134 | 4.27 | 29 | |
| 1,1-Dichloroethylene | 49.23 | 1.0 | ug/L | 50.0 | | 98.5 | 76-139 | 3.53 | 30 | |
| Methylene Chloride | 45.38 | 5.0 | ug/L | 50.0 | | 90.8 | 67-141 | 4.02 | 25 | |
| trans-1,2-Dichloroethylene | 46.73 | 1.0 | ug/L | 50.0 | | 93.5 | 71-137 | 3.78 | 29 | |
| 1,1-Dichloroethane | 45.21 | 1.0 | ug/L | 50.0 | | 90.4 | 72-130 | 4.26 | 27 | |
| cis-1,2-Dichloroethylene | 55.79 | 1.0 | ug/L | 49.5 | | 113 | 81-134 | 10.5 | 23 | |
| 2-Butanone (MEK) | 90.02 | 10.0 | ug/L | 103 | | 87.1 | 44-158 | 4.64 | 25 | |
| Chloroform | 45.27 | 1.0 | ug/L | 50.0 | | 90.5 | 76-132 | 3.86 | 26 | |
| 1,1,1-Trichloroethane | 37.61 | 1.0 | ug/L | 50.0 | | 75.3 | 65-122 | 2.88 | 29 | |
| Carbon Tetrachloride | 40.79 | 1.0 | ug/L | 50.0 | | 81.6 | 66-132 | 5.11 | 30 | |

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |
| **LCS Dup (1HD0497-BSD1)** | | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 10:05 | | | | | | |
| Benzene | 48.36 | 1.0 | ug/L | 50.0 | | 96.7 | 77-130 | 4.96 | 27 | |
| 1,2-Dichloroethane | 46.10 | 1.0 | ug/L | 50.0 | | 92.2 | 75-124 | 3.81 | 25 | |
| Trichloroethylene | 46.58 | 1.0 | ug/L | 50.0 | | 93.2 | 79-126 | 4.37 | 28 | |
| 1,2-Dichloropropane | 49.16 | 1.0 | ug/L | 50.0 | | 98.3 | 79-128 | 4.57 | 26 | |
| Dibromomethane | 50.58 | 1.0 | ug/L | 50.0 | | 101 | 71-139 | 3.55 | 27 | |
| Bromodichloromethane | 43.29 | 1.0 | ug/L | 50.0 | | 86.6 | 76-122 | 4.56 | 24 | |
| 2-Chloroethylvinyl ether | 100.6 | 10.0 | ug/L | 103 | | 98.0 | 50-169 | 4.12 | 28 | |
| cis-1,3-Dichloropropene | 45.55 | 1.0 | ug/L | 50.3 | | 90.5 | 74-122 | 5.11 | 27 | |
| Toluene | 46.79 | 1.0 | ug/L | 50.0 | | 93.6 | 76-128 | 5.37 | 28 | |
| trans-1,3-Dichloropropene | 43.96 | 1.0 | ug/L | 50.4 | | 87.2 | 73-125 | 5.12 | 27 | |
| 1,1,2-Trichloroethane | 47.74 | 1.0 | ug/L | 50.0 | | 95.5 | 74-126 | 3.96 | 26 | |
| Tetrachloroethylene | 45.03 | 1.0 | ug/L | 50.0 | | 90.1 | 68-124 | 3.92 | 28 | |
| Dibromochloromethane | 46.51 | 1.0 | ug/L | 49.5 | | 94.0 | 76-125 | 3.96 | 23 | |
| Chlorobenzene | 47.82 | 1.0 | ug/L | 50.0 | | 95.6 | 77-120 | 3.94 | 27 | |
| Ethylbenzene | 45.84 | 1.0 | ug/L | 50.0 | | 91.7 | 76-118 | 3.79 | 27 | |
| Xylenes, total | 136.4 | 2.0 | ug/L | 150 | | 90.9 | 74-121 | 3.81 | 27 | |
| Bromoform | 45.87 | 1.0 | ug/L | 50.0 | | 91.7 | 68-128 | 1.58 | 25 | |
| 1,1,2,2-Tetrachloroethane | 48.32 | 1.0 | ug/L | 49.8 | | 96.9 | 62-128 | 1.56 | 28 | |
| 1,3-Dichlorobenzene | 45.12 | 1.0 | ug/L | 50.0 | | 90.2 | 72-123 | 3.36 | 29 | |
| 1,4-Dichlorobenzene | 46.36 | 1.0 | ug/L | 50.0 | | 92.7 | 75-120 | 2.64 | 26 | |
| 1,2-Dichlorobenzene | 45.58 | 1.0 | ug/L | 50.0 | | 91.2 | 72-121 | 2.34 | 30 | |
| *Surrogate: Dibromofluoromethane* | *45.4* | | ug/L | *50.2* | | *90.5* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *45.3* | | ug/L | *50.1* | | *90.5* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *49.5* | | ug/L | *50.4* | | *98.2* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *50.6* | | ug/L | *50.1* | | *101* | *83-112* | | | |
| **Matrix Spike (1HD0497-MS1)** | **Source: 1HD0545-01** | | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 20:31 | | | | | | |
| Chloromethane | 308.3 | 10.0 | ug/L | 306 | ND | 101 | 50-155 | | | |
| Vinyl Chloride | 260.6 | 10.0 | ug/L | 302 | ND | 86.2 | 64-148 | | | |
| Bromomethane | 277.1 | 10.0 | ug/L | 288 | ND | 96.2 | 50-159 | | | |
| Chloroethane | 292.5 | 10.0 | ug/L | 316 | ND | 92.5 | 65-144 | | | |
| 1,1-Dichloroethylene | 454.8 | 10.0 | ug/L | 500 | ND | 91.0 | 78-139 | | | |
| Methylene Chloride | 423.4 | 50.0 | ug/L | 500 | ND | 84.7 | 65-144 | | | |
| trans-1,2-Dichloroethylene | 427.5 | 10.0 | ug/L | 500 | ND | 85.5 | 67-142 | | | |
| 1,1-Dichloroethane | 418.0 | 10.0 | ug/L | 500 | ND | 83.6 | 71-133 | | | |
| cis-1,2-Dichloroethylene | 498.2 | 10.0 | ug/L | 495 | ND | 101 | 76-142 | | | |
| 2-Butanone (MEK) | 800.1 | 100 | ug/L | 1030 | ND | 77.5 | 48-169 | | | |
| Chloroform | 416.8 | 10.0 | ug/L | 500 | ND | 83.4 | 75-133 | | | |
| 1,1,1-Trichloroethane | 346.8 | 10.0 | ug/L | 500 | ND | 69.4 | 66-120 | | | |
| Carbon Tetrachloride | 373.5 | 10.0 | ug/L | 500 | ND | 74.7 | 67-132 | | | |
| Benzene | 480.3 | 10.0 | ug/L | 500 | ND | 96.1 | 79-128 | | | |
| 1,2-Dichloroethane | 449.6 | 10.0 | ug/L | 500 | ND | 89.9 | 74-124 | | | |
| Trichloroethylene | 452.9 | 10.0 | ug/L | 500 | ND | 90.6 | 82-122 | | | |

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |
| **Matrix Spike (1HD0497-MS1)** | **Source: 1HD0545-01** | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 20:31 | | | | | | | |
| 1,2-Dichloropropane | 483.7 | 10.0 | ug/L | 500 | ND | 96.7 | 80-126 | | | |
| Dibromomethane | 497.1 | 10.0 | ug/L | 500 | ND | 99.4 | 62-141 | | | |
| Bromodichloromethane | 421.6 | 10.0 | ug/L | 500 | ND | 84.3 | 77-119 | | | |
| 2-Chloroethylvinyl ether | 962.5 | 100 | ug/L | 1030 | ND | 93.8 | 10-157 | | | |
| cis-1,3-Dichloropropene | 431.9 | 10.0 | ug/L | 503 | ND | 85.8 | 69-120 | | | |
| Toluene | 466.4 | 10.0 | ug/L | 500 | ND | 93.3 | 80-125 | | | |
| trans-1,3-Dichloropropene | 407.3 | 10.0 | ug/L | 504 | ND | 80.8 | 70-122 | | | |
| 1,1,2-Trichloroethane | 470.1 | 10.0 | ug/L | 500 | ND | 94.0 | 73-127 | | | |
| Tetrachloroethylene | 480.5 | 10.0 | ug/L | 500 | ND | 96.1 | 70-122 | | | |
| Dibromochloromethane | 482.3 | 10.0 | ug/L | 495 | ND | 97.4 | 75-122 | | | |
| Chlorobenzene | 508.3 | 10.0 | ug/L | 500 | ND | 102 | 81-114 | | | |
| Ethylbenzene | 490.1 | 10.0 | ug/L | 500 | ND | 98.0 | 79-113 | | | |
| Xylenes, total | 1455 | 20.0 | ug/L | 1500 | ND | 97.0 | 79-114 | | | |
| Bromoform | 465.7 | 10.0 | ug/L | 500 | ND | 93.1 | 66-126 | | | |
| 1,1,2,2-Tetrachloroethane | 515.1 | 10.0 | ug/L | 498 | ND | 103 | 56-132 | | | |
| 1,3-Dichlorobenzene | 485.8 | 10.0 | ug/L | 500 | ND | 97.2 | 69-125 | | | |
| 1,4-Dichlorobenzene | 495.1 | 10.0 | ug/L | 500 | ND | 99.0 | 73-119 | | | |
| 1,2-Dichlorobenzene | 489.2 | 10.0 | ug/L | 500 | ND | 97.8 | 71-117 | | | |
| *Surrogate: Dibromofluoromethane* | *432* | | ug/L | *502* | | *86.0* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *443* | | ug/L | *501* | | *88.4* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *509* | | ug/L | *504* | | *101* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *521* | | ug/L | *501* | | *104* | *83-112* | | | |
| **Matrix Spike Dup (1HD0497-MSD1)** | **Source: 1HD0545-01** | | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 20:54 | | | | | | | |
| Chloromethane | 303.1 | 10.0 | ug/L | 306 | ND | 98.9 | 50-155 | 1.70 | 19 | |
| Vinyl Chloride | 253.3 | 10.0 | ug/L | 302 | ND | 83.8 | 64-148 | 2.84 | 24 | |
| Bromomethane | 259.1 | 10.0 | ug/L | 288 | ND | 90.0 | 50-159 | 6.71 | 17 | |
| Chloroethane | 281.5 | 10.0 | ug/L | 316 | ND | 89.0 | 65-144 | 3.83 | 28 | |
| 1,1-Dichloroethylene | 436.2 | 10.0 | ug/L | 500 | ND | 87.2 | 78-139 | 4.18 | 20 | |
| Methylene Chloride | 413.0 | 50.0 | ug/L | 500 | ND | 82.6 | 65-144 | 2.49 | 16 | |
| trans-1,2-Dichloroethylene | 413.4 | 10.0 | ug/L | 500 | ND | 82.7 | 67-142 | 3.35 | 18 | |
| 1,1-Dichloroethane | 400.9 | 10.0 | ug/L | 500 | ND | 80.2 | 71-133 | 4.18 | 16 | |
| cis-1,2-Dichloroethylene | 415.5 | 10.0 | ug/L | 495 | ND | 84.0 | 76-142 | 18.1 | 17 | QM-05 |
| 2-Butanone (MEK) | 830.4 | 100 | ug/L | 1030 | ND | 80.4 | 48-169 | 3.72 | 17 | |
| Chloroform | 402.1 | 10.0 | ug/L | 500 | ND | 80.4 | 75-133 | 3.59 | 16 | |
| 1,1,1-Trichloroethane | 331.8 | 10.0 | ug/L | 500 | ND | 66.4 | 66-120 | 4.42 | 15 | |
| Carbon Tetrachloride | 358.6 | 10.0 | ug/L | 500 | ND | 71.7 | 67-132 | 4.07 | 15 | |
| Benzene | 462.0 | 10.0 | ug/L | 500 | ND | 92.4 | 79-128 | 3.88 | 12 | |
| 1,2-Dichloroethane | 448.6 | 10.0 | ug/L | 500 | ND | 89.7 | 74-124 | 0.223 | 12 | |
| Trichloroethylene | 435.3 | 10.0 | ug/L | 500 | ND | 87.1 | 82-122 | 3.96 | 13 | |
| 1,2-Dichloropropane | 469.5 | 10.0 | ug/L | 500 | ND | 93.9 | 80-126 | 2.98 | 10 | |
| Dibromomethane | 493.2 | 10.0 | ug/L | 500 | ND | 98.6 | 62-141 | 0.788 | 11 | |
| Bromodichloromethane | 414.5 | 10.0 | ug/L | 500 | ND | 82.9 | 77-119 | 1.70 | 10 | |

| Determination of Volatile Organic Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0497 - EPA 5030B - EPA 624** | | | | | | | | | | |
| **Matrix Spike Dup (1HD0497-MSD1)** | **Source: 1HD0545-01** | Prepared: 04/08/24 00:00 Analyzed: 04/08/24 20:54 | | | | | | | | |
| 2-Chloroethylvinyl ether | 964.7 | 100 | ug/L | 1030 | ND | 94.0 | 10-157 | 0.228 | 30 | |
| cis-1,3-Dichloropropene | 421.4 | 10.0 | ug/L | 503 | ND | 83.7 | 69-120 | 2.46 | 10 | |
| Toluene | 445.4 | 10.0 | ug/L | 500 | ND | 89.1 | 80-125 | 4.61 | 12 | |
| trans-1,3-Dichloropropene | 404.5 | 10.0 | ug/L | 504 | ND | 80.2 | 70-122 | 0.690 | 10 | |
| 1,1,2-Trichloroethane | 462.9 | 10.0 | ug/L | 500 | ND | 92.6 | 73-127 | 1.54 | 10 | |
| Tetrachloroethylene | 458.9 | 10.0 | ug/L | 500 | ND | 91.8 | 70-122 | 4.60 | 15 | |
| Dibromochloromethane | 480.8 | 10.0 | ug/L | 495 | ND | 97.1 | 75-122 | 0.311 | 12 | |
| Chlorobenzene | 489.7 | 10.0 | ug/L | 500 | ND | 97.9 | 81-114 | 3.73 | 12 | |
| Ethylbenzene | 468.3 | 10.0 | ug/L | 500 | ND | 93.7 | 79-113 | 4.55 | 13 | |
| Xylenes, total | 1387 | 20.0 | ug/L | 1500 | ND | 92.5 | 79-114 | 4.78 | 12 | |
| Bromoform | 456.3 | 10.0 | ug/L | 500 | ND | 91.3 | 66-126 | 2.04 | 16 | |
| 1,1,2,2-Tetrachloroethane | 510.9 | 10.0 | ug/L | 498 | ND | 102 | 56-132 | 0.819 | 29 | |
| 1,3-Dichlorobenzene | 469.5 | 10.0 | ug/L | 500 | ND | 93.9 | 69-125 | 3.41 | 18 | |
| 1,4-Dichlorobenzene | 481.5 | 10.0 | ug/L | 500 | ND | 96.3 | 73-119 | 2.79 | 21 | |
| 1,2-Dichlorobenzene | 477.2 | 10.0 | ug/L | 500 | ND | 95.4 | 71-117 | 2.48 | 23 | |
| *Surrogate: Dibromofluoromethane* | *442* | | ug/L | *502* | | *88.0* | *79-129* | | | |
| *Surrogate: 1,2-Dichloroethane-d4* | *448* | | ug/L | *501* | | *89.5* | *66-134* | | | |
| *Surrogate: Toluene-d8* | *515* | | ug/L | *504* | | *102* | *91-113* | | | |
| *Surrogate: 4-Bromofluorobenzene* | *525* | | ug/L | *501* | | *105* | *83-112* | | | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **Blank (1HD0034-BLK1)** | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 12:22 | | | | | | | | | |
| Bis(2-Chloroethyl) Ether | <10 | 10 | ug/L | | | | | | | |
| 2-Chlorophenol | <10 | 10 | ug/L | | | | | | | |
| 1,3-Dichlorobenzene | <10 | 10 | ug/L | | | | | | | |
| 1,4-Dichlorobenzene | <10 | 10 | ug/L | | | | | | | |
| Benzyl Alcohol | <10 | 10 | ug/L | | | | | | | |
| 1,2-Dichlorobenzene | <10 | 10 | ug/L | | | | | | | |
| Bis[2-Chloroisopropyl]ether | <10 | 10 | ug/L | | | | | | | |
| n-Nitroso-di-n-propylamine | <10 | 10 | ug/L | | | | | | | |
| Hexachloroethane | <10 | 10 | ug/L | | | | | | | |
| Nitrobenzene | <10 | 10 | ug/L | | | | | | | |
| Isophorone | <10 | 10 | ug/L | | | | | | | |
| 2-Nitrophenol | <10 | 10 | ug/L | | | | | | | |
| 2,4-Dimethylphenol | <10 | 10 | ug/L | | | | | | | |
| Bis (2-Chloroethoxy) Methane | <10 | 10 | ug/L | | | | | | | |
| Benzoic acid | <50 | 50 | ug/L | | | | | | | |
| 2,4-Dichlorophenol | <10 | 10 | ug/L | | | | | | | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **Blank (1HD0034-BLK1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 12:22 | | | | | | |
| 1,2,4-Trichlorobenzene | <10 | 10 | ug/L | | | | | | | |
| Naphthalene | <10 | 10 | ug/L | | | | | | | |
| Hexachlorobutadiene | <20 | 20 | ug/L | | | | | | | |
| 4-Chloro-3-methylphenol | <10 | 10 | ug/L | | | | | | | |
| Hexachlorocyclopentadiene | <20 | 20 | ug/L | | | | | | | |
| 2,4,6-Trichlorophenol | <10 | 10 | ug/L | | | | | | | |
| 2,4,5-Trichlorophenol | <50 | 50 | ug/L | | | | | | | |
| 2-Chloronaphthalene | <10 | 10 | ug/L | | | | | | | |
| Dimethylphthalate | <15 | 15 | ug/L | | | | | | | |
| Acenaphthylene | <10 | 10 | ug/L | | | | | | | |
| 2,6-Dinitrotoluene | <10 | 10 | ug/L | | | | | | | |
| Acenaphthene | <10 | 10 | ug/L | | | | | | | |
| 2,4-Dinitrophenol | <20 | 20 | ug/L | | | | | | | |
| Dibenzofuran | <10 | 10 | ug/L | | | | | | | |
| 2,4-Dinitrotoluene | <10 | 10 | ug/L | | | | | | | |
| 4-Nitrophenol | <10 | 10 | ug/L | | | | | | | |
| Diethyl Phthalate | <30 | 30 | ug/L | | | | | | | |
| Fluorene | <10 | 10 | ug/L | | | | | | | |
| 4-Chlorophenyl Phenyl Ether | <10 | 10 | ug/L | | | | | | | |
| 4,6-Dinitro-2-methylphenol | <20 | 20 | ug/L | | | | | | | |
| N-Nitrosodiphenylamine | <10 | 10 | ug/L | | | | | | | |
| 4-Bromophenyl Phenyl Ether | <10 | 10 | ug/L | | | | | | | |
| Hexachlorobenzene | <10 | 10 | ug/L | | | | | | | |
| Pentachlorophenol | <20 | 20 | ug/L | | | | | | | |
| Phenanthrene | <10 | 10 | ug/L | | | | | | | |
| Anthracene | <10 | 10 | ug/L | | | | | | | |
| Di-n-butyl Phthalate | <10 | 10 | ug/L | | | | | | | |
| Fluoranthene | <10 | 10 | ug/L | | | | | | | |
| Pyrene | <10 | 10 | ug/L | | | | | | | |
| Butyl Benzyl Phthalate | <10 | 10 | ug/L | | | | | | | |
| Benzo(a)anthracene | <10 | 10 | ug/L | | | | | | | |
| Chrysene | <10 | 10 | ug/L | | | | | | | |
| Bis(2-Ethylhexyl) Phthalate | <10 | 10 | ug/L | | | | | | | |
| Di-n-octyl Phthalate | <10 | 10 | ug/L | | | | | | | |
| Indeno(1,2,3-cd)Pyrene | <10 | 10 | ug/L | | | | | | | |
| 3,3´-Dichlorobenzidine | <20 | 20 | ug/L | | | | | | | |
| Benzo(b)Fluoranthene | <10 | 10 | ug/L | | | | | | | |
| Benzo(k)Fluoranthene | <10 | 10 | ug/L | | | | | | | |
| Benzo(a)Pyrene | <10 | 10 | ug/L | | | | | | | |
| Dibenzo(a,h)anthracene | <10 | 10 | ug/L | | | | | | | |
| Benzo(g,h,i)perylene | <10 | 10 | ug/L | | | | | | | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **Blank (1HD0034-BLK1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 12:22 | | | | | | |
| *Surrogate: 2-Fluorophenol* | *23.2* | | ug/L | *29.6* | | *78.4* | *19-139* | | | |
| *Surrogate: Phenol-d6* | *23.5* | | ug/L | *30.5* | | *77.2* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *22.7* | | ug/L | *30.0* | | *75.6* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *19.7* | | ug/L | *28.8* | | *68.5* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *26.4* | | ug/L | *29.7* | | *88.6* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *20.8* | | ug/L | *28.8* | | *72.3* | *27-131* | | | |
| **LCS (1HD0034-BS1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 12:46 | | | | | | |
| Bis(2-Chloroethyl) Ether | 23.6 | 10 | ug/L | 21.4 | | 110 | 35-150 | | | |
| 2-Chlorophenol | 18.2 | 10 | ug/L | 21.4 | | 85.2 | 51-117 | | | |
| 1,3-Dichlorobenzene | 15.9 | 10 | ug/L | 21.4 | | 74.3 | 27-91.3 | | | |
| 1,4-Dichlorobenzene | 16.4 | 10 | ug/L | 21.4 | | 76.5 | 28-92.6 | | | |
| Benzyl Alcohol | 17.8 | 10 | ug/L | 21.4 | | 83.1 | 22-147 | | | |
| 1,2-Dichlorobenzene | 16.8 | 10 | ug/L | 21.4 | | 78.3 | 32-94.8 | | | |
| Bis[2-Chloroisopropyl]ether | 17.8 | 10 | ug/L | 21.4 | | 83.0 | 40-125 | | | |
| n-Nitroso-di-n-propylamine | 16.3 | 10 | ug/L | 21.4 | | 76.2 | 47-136 | | | |
| Hexachloroethane | 15.6 | 10 | ug/L | 21.4 | | 73.1 | 13-110 | | | |
| Nitrobenzene | 17.5 | 10 | ug/L | 21.4 | | 81.7 | 46-133 | | | |
| Isophorone | 15.5 | 10 | ug/L | 21.4 | | 72.5 | 48-130 | | | |
| 2-Nitrophenol | 18.0 | 10 | ug/L | 21.4 | | 84.4 | 54-116 | | | |
| 2,4-Dimethylphenol | 18.6 | 10 | ug/L | 21.4 | | 86.9 | 47-121 | | | |
| Bis (2-Chloroethoxy) Methane | 14.1 | 10 | ug/L | 21.4 | | 65.9 | 25-110 | | | |
| 2,4-Dichlorophenol | 19.0 | 10 | ug/L | 21.4 | | 88.7 | 50-118 | | | |
| 1,2,4-Trichlorobenzene | 16.5 | 10 | ug/L | 21.4 | | 77.2 | 27-95.5 | | | |
| Naphthalene | 16.2 | 10 | ug/L | 21.4 | | 75.7 | 42-107 | | | |
| Hexachlorobutadiene | <20 | 20 | ug/L | 21.4 | | 73.2 | 10-110 | | | |
| 4-Chloro-3-methylphenol | 20.3 | 10 | ug/L | 21.4 | | 94.9 | 54-138 | | | |
| Hexachlorocyclopentadiene | <20 | 20 | ug/L | 21.4 | | 52.1 | 10-110 | | | |
| 2,4,6-Trichlorophenol | 21.3 | 10 | ug/L | 21.4 | | 99.7 | 46-127 | | | |
| 2,4,5-Trichlorophenol | <50 | 50 | ug/L | 21.4 | | 107 | 62-119 | | | |
| 2-Chloronaphthalene | 23.5 | 10 | ug/L | 21.4 | | 110 | 38-118 | | | |
| Dimethylphthalate | 21.1 | 15 | ug/L | 21.4 | | 98.5 | 58-125 | | | |
| Acenaphthylene | 18.0 | 10 | ug/L | 21.4 | | 84.2 | 41-116 | | | |
| 2,6-Dinitrotoluene | 20.8 | 10 | ug/L | 21.4 | | 97.0 | 58-126 | | | |
| Acenaphthene | 18.6 | 10 | ug/L | 21.4 | | 86.9 | 45-117 | | | |
| 2,4-Dinitrophenol | 20.4 | 20 | ug/L | 21.4 | | 95.6 | 21-138 | | | |
| Dibenzofuran | 18.9 | 10 | ug/L | 21.4 | | 88.2 | 51-126 | | | |
| 2,4-Dinitrotoluene | 20.2 | 10 | ug/L | 21.4 | | 94.6 | 52-134 | | | |
| 4-Nitrophenol | 31.2 | 10 | ug/L | 21.4 | | 146 | 41-149 | | | |
| Diethyl Phthalate | <30 | 30 | ug/L | 21.4 | | 106 | 53-132 | | | |
| Fluorene | 20.4 | 10 | ug/L | 21.4 | | 95.2 | 47-126 | | | |
| 4-Chlorophenyl Phenyl Ether | 19.9 | 10 | ug/L | 21.4 | | 93.1 | 47-124 | | | |
| 4,6-Dinitro-2-methylphenol | 22.3 | 20 | ug/L | 21.4 | | 104 | 50-139 | | | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **LCS (1HD0034-BS1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 12:46 | | | | | | |
| N-Nitrosodiphenylamine | 19.6 | 10 | ug/L | 21.4 | | 91.8 | 29-129 | | | |
| 4-Bromophenyl Phenyl Ether | 20.9 | 10 | ug/L | 21.4 | | 97.6 | 48-125 | | | |
| Hexachlorobenzene | 21.2 | 10 | ug/L | 21.4 | | 99.3 | 29-137 | | | |
| Pentachlorophenol | 20.5 | 20 | ug/L | 21.4 | | 95.7 | 15-154 | | | |
| Phenanthrene | 19.8 | 10 | ug/L | 21.4 | | 92.4 | 45-136 | | | |
| Anthracene | 19.8 | 10 | ug/L | 21.4 | | 92.5 | 43-135 | | | |
| Di-n-butyl Phthalate | 22.2 | 10 | ug/L | 21.4 | | 104 | 42-153 | | | |
| Fluoranthene | 21.9 | 10 | ug/L | 21.4 | | 102 | 42-143 | | | |
| Pyrene | 19.3 | 10 | ug/L | 21.4 | | 90.1 | 40-146 | | | |
| Butyl Benzyl Phthalate | 20.6 | 10 | ug/L | 21.4 | | 96.2 | 40-151 | | | |
| Benzo(a)anthracene | 20.0 | 10 | ug/L | 21.4 | | 93.2 | 48-136 | | | |
| Chrysene | 20.0 | 10 | ug/L | 21.4 | | 93.5 | 50-136 | | | |
| Bis(2-Ethylhexyl) Phthalate | 22.3 | 10 | ug/L | 21.4 | | 104 | 34-180 | | | |
| Di-n-octyl Phthalate | 21.6 | 10 | ug/L | 21.4 | | 101 | 40-165 | | | |
| Indeno(1,2,3-cd)Pyrene | 20.8 | 10 | ug/L | 21.4 | | 97.4 | 39-152 | | | |
| Benzo(b)Fluoranthene | 21.5 | 10 | ug/L | 21.4 | | 100 | 52-140 | | | |
| Benzo(k)Fluoranthene | 20.5 | 10 | ug/L | 21.4 | | 95.6 | 47-147 | | | |
| Benzo(a)Pyrene | 20.4 | 10 | ug/L | 21.4 | | 95.5 | 38-142 | | | |
| Dibenzo(a,h)anthracene | 21.2 | 10 | ug/L | 21.4 | | 99.1 | 37-153 | | | |
| Benzo(g,h,i)perylene | 20.9 | 10 | ug/L | 21.4 | | 97.7 | 39-157 | | | |
| *Surrogate: 2-Fluorophenol* | *20.2* | | ug/L | *29.6* | | *68.4* | *19-139* | | | |
| *Surrogate: Phenol-d6* | *19.1* | | ug/L | *30.5* | | *62.7* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *20.2* | | ug/L | *30.0* | | *67.2* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *22.6* | | ug/L | *28.8* | | *78.3* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *28.8* | | ug/L | *29.7* | | *96.8* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *24.2* | | ug/L | *28.8* | | *84.1* | *27-131* | | | |
| **LCS Dup (1HD0034-BSD1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 13:11 | | | | | | |
| Bis(2-Chloroethyl) Ether | 13.1 | 10 | ug/L | 21.4 | | 61.2 | 35-150 | 57.3 | 30 | QR-02 |
| 2-Chlorophenol | 19.0 | 10 | ug/L | 21.4 | | 88.8 | 51-117 | 4.14 | 27 | |
| 1,3-Dichlorobenzene | 17.2 | 10 | ug/L | 21.4 | | 80.4 | 27-91.3 | 7.98 | 30 | |
| 1,4-Dichlorobenzene | 17.7 | 10 | ug/L | 21.4 | | 82.5 | 28-92.6 | 7.64 | 30 | |
| Benzyl Alcohol | 19.7 | 10 | ug/L | 21.4 | | 92.2 | 22-147 | 10.4 | 30 | |
| 1,2-Dichlorobenzene | 17.9 | 10 | ug/L | 21.4 | | 83.8 | 32-94.8 | 6.69 | 30 | |
| Bis[2-Chloroisopropyl]ether | 18.8 | 10 | ug/L | 21.4 | | 87.9 | 40-125 | 5.80 | 26 | |
| n-Nitroso-di-n-propylamine | 17.2 | 10 | ug/L | 21.4 | | 80.3 | 47-136 | 5.20 | 29 | |
| Hexachloroethane | 17.5 | 10 | ug/L | 21.4 | | 81.7 | 13-110 | 11.1 | 30 | |
| Nitrobenzene | 19.1 | 10 | ug/L | 21.4 | | 89.3 | 46-133 | 8.85 | 19 | |
| Isophorone | 16.9 | 10 | ug/L | 21.4 | | 78.8 | 48-130 | 8.34 | 23 | |
| 2-Nitrophenol | 19.9 | 10 | ug/L | 21.4 | | 93.1 | 54-116 | 9.85 | 25 | |
| 2,4-Dimethylphenol | 19.6 | 10 | ug/L | 21.4 | | 91.5 | 47-121 | 5.19 | 29 | |
| Bis (2-Chloroethoxy) Methane | 15.4 | 10 | ug/L | 21.4 | | 71.8 | 25-110 | 8.62 | 30 | |
| 2,4-Dichlorophenol | 19.9 | 10 | ug/L | 21.4 | | 92.8 | 50-118 | 4.53 | 21 | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **LCS Dup (1HD0034-BSD1)** | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 13:11 | | | | | | | |
| 1,2,4-Trichlorobenzene | 18.4 | 10 | ug/L | 21.4 | | 85.9 | 27-95.5 | 10.7 | 30 | |
| Naphthalene | 17.6 | 10 | ug/L | 21.4 | | 82.2 | 42-107 | 8.23 | 26 | |
| Hexachlorobutadiene | <20 | 20 | ug/L | 21.4 | | 80.8 | 10-110 | 9.84 | 30 | |
| 4-Chloro-3-methylphenol | 21.3 | 10 | ug/L | 21.4 | | 99.6 | 54-138 | 4.76 | 12 | |
| Hexachlorocyclopentadiene | <20 | 20 | ug/L | 21.4 | | 58.8 | 10-110 | 12.1 | 30 | |
| 2,4,6-Trichlorophenol | 23.6 | 10 | ug/L | 21.4 | | 110 | 46-127 | 10.1 | 21 | |
| 2,4,5-Trichlorophenol | <50 | 50 | ug/L | 21.4 | | 116 | 62-119 | 8.11 | 15 | |
| 2-Chloronaphthalene | 25.8 | 10 | ug/L | 21.4 | | 121 | 38-118 | 9.32 | 24 | QS-02 |
| Dimethylphthalate | 22.3 | 15 | ug/L | 21.4 | | 104 | 58-125 | 5.63 | 20 | |
| Acenaphthylene | 19.5 | 10 | ug/L | 21.4 | | 91.3 | 41-116 | 8.15 | 30 | |
| 2,6-Dinitrotoluene | 22.0 | 10 | ug/L | 21.4 | | 103 | 58-126 | 5.80 | 20 | |
| Acenaphthene | 20.1 | 10 | ug/L | 21.4 | | 94.0 | 45-117 | 7.90 | 27 | |
| 2,4-Dinitrophenol | 22.7 | 20 | ug/L | 21.4 | | 106 | 21-138 | 10.4 | 22 | |
| Dibenzofuran | 20.2 | 10 | ug/L | 21.4 | | 94.5 | 51-126 | 6.85 | 15 | |
| 2,4-Dinitrotoluene | 21.6 | 10 | ug/L | 21.4 | | 101 | 52-134 | 6.78 | 22 | |
| 4-Nitrophenol | 30.8 | 10 | ug/L | 21.4 | | 144 | 41-149 | 1.35 | 28 | |
| Diethyl Phthalate | <30 | 30 | ug/L | 21.4 | | 112 | 53-132 | 5.11 | 22 | |
| Fluorene | 21.5 | 10 | ug/L | 21.4 | | 100 | 47-126 | 5.45 | 27 | |
| 4-Chlorophenyl Phenyl Ether | 20.9 | 10 | ug/L | 21.4 | | 97.8 | 47-124 | 4.90 | 20 | |
| 4,6-Dinitro-2-methylphenol | 25.0 | 20 | ug/L | 21.4 | | 117 | 50-139 | 11.4 | 25 | |
| N-Nitrosodiphenylamine | 21.9 | 10 | ug/L | 21.4 | | 102 | 29-129 | 10.7 | 30 | |
| 4-Bromophenyl Phenyl Ether | 22.8 | 10 | ug/L | 21.4 | | 107 | 48-125 | 8.70 | 18 | |
| Hexachlorobenzene | 23.4 | 10 | ug/L | 21.4 | | 110 | 29-137 | 9.89 | 30 | |
| Pentachlorophenol | 22.4 | 20 | ug/L | 21.4 | | 105 | 15-154 | 8.96 | 29 | |
| Phenanthrene | 21.6 | 10 | ug/L | 21.4 | | 101 | 45-136 | 9.13 | 27 | |
| Anthracene | 21.4 | 10 | ug/L | 21.4 | | 99.8 | 43-135 | 7.58 | 28 | |
| Di-n-butyl Phthalate | 24.1 | 10 | ug/L | 21.4 | | 113 | 42-153 | 8.51 | 29 | |
| Fluoranthene | 23.0 | 10 | ug/L | 21.4 | | 107 | 42-143 | 5.04 | 30 | |
| Pyrene | 21.6 | 10 | ug/L | 21.4 | | 101 | 40-146 | 11.1 | 25 | |
| Butyl Benzyl Phthalate | 22.4 | 10 | ug/L | 21.4 | | 105 | 40-151 | 8.38 | 29 | |
| Benzo(a)anthracene | 20.8 | 10 | ug/L | 21.4 | | 97.3 | 48-136 | 4.22 | 30 | |
| Chrysene | 21.2 | 10 | ug/L | 21.4 | | 99.3 | 50-136 | 6.01 | 30 | |
| Bis(2-Ethylhexyl) Phthalate | 24.1 | 10 | ug/L | 21.4 | | 113 | 34-180 | 7.63 | 30 | |
| Di-n-octyl Phthalate | 23.9 | 10 | ug/L | 21.4 | | 112 | 40-165 | 10.4 | 30 | |
| Indeno(1,2,3-cd)Pyrene | 22.7 | 10 | ug/L | 21.4 | | 106 | 39-152 | 8.68 | 30 | |
| Benzo(b)Fluoranthene | 22.6 | 10 | ug/L | 21.4 | | 106 | 52-140 | 5.21 | 30 | |
| Benzo(k)Fluoranthene | 22.3 | 10 | ug/L | 21.4 | | 104 | 47-147 | 8.56 | 30 | |
| Benzo(a)Pyrene | 22.0 | 10 | ug/L | 21.4 | | 103 | 38-142 | 7.63 | 30 | |
| Dibenzo(a,h)anthracene | 23.0 | 10 | ug/L | 21.4 | | 108 | 37-153 | 8.23 | 30 | |
| Benzo(g,h,i)perylene | 22.6 | 10 | ug/L | 21.4 | | 106 | 39-157 | 7.73 | 30 | |
| *Surrogate: 2-Fluorophenol* | *21.6* | | ug/L | *29.6* | | *73.2* | *19-139* | | | |

| Determination of Base/Neutral/Acid Extractable Compounds | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0034 - EPA 625 BNA - EPA 625** | | | | | | | | | | |
| **LCS Dup (1HD0034-BSD1)** | | | | Prepared: 04/01/24 12:12 Analyzed: 04/05/24 13:11 | | | | | | |
| *Surrogate: Phenol-d6* | *20.0* | | ug/L | *30.5* | | *65.6* | *14-154* | | | |
| *Surrogate: Nitrobenzene-d5* | *22.2* | | ug/L | *30.0* | | *74.0* | *17-146* | | | |
| *Surrogate: 2-Fluorobiphenyl* | *24.7* | | ug/L | *28.8* | | *85.7* | *18-122* | | | |
| *Surrogate: 2,4,6-Tribromophenol* | *30.3* | | ug/L | *29.7* | | *102* | *21-151* | | | |
| *Surrogate: Terphenyl-dl4* | *27.2* | | ug/L | *28.8* | | *94.5* | *27-131* | | | |

| Determination of Organochlorine Insecticides & PCBs | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HC1636 - EPA 608 OC/PCB - EPA 608** | | | | | | | | | | |
| **Blank (1HC1636-BLK1)** | | | | Prepared: 03/29/24 10:13 Analyzed: 04/03/24 13:00 | | | | | | |
| Gamma-BHC [Lindane] | <0.05 | 0.05 | ug/L | | | | | | | |
| Beta-BHC | <0.05 | 0.05 | ug/L | | | | | | | |
| Heptachlor | <0.05 | 0.05 | ug/L | | | | | | | |
| Delta-BHC | <0.05 | 0.05 | ug/L | | | | | | | |
| Aldrin | <0.05 | 0.05 | ug/L | | | | | | | |
| Heptachlor Epoxide | <0.05 | 0.05 | ug/L | | | | | | | |
| Endosulfan I | <0.05 | 0.05 | ug/L | | | | | | | |
| 4,4`-DDE | <0.05 | 0.05 | ug/L | | | | | | | |
| Dieldrin | <0.05 | 0.05 | ug/L | | | | | | | |
| Endrin | <0.05 | 0.05 | ug/L | | | | | | | |
| 4,4`-DDD | <0.05 | 0.05 | ug/L | | | | | | | |
| Endosulfan II | <0.05 | 0.05 | ug/L | | | | | | | |
| 4,4`-DDT | <0.05 | 0.05 | ug/L | | | | | | | |
| Endrin Aldehyde | <0.05 | 0.05 | ug/L | | | | | | | |
| Endosulfan Sulfate | <0.05 | 0.05 | ug/L | | | | | | | |
| Chlordane | <0.10 | 0.10 | ug/L | | | | | | | |
| Toxaphene | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1016 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1221 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1232 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1242 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1248 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1254 | <0.20 | 0.20 | ug/L | | | | | | | |
| Arochlor 1260 | <0.20 | 0.20 | ug/L | | | | | | | |
| *Surrogate: Decachlorobiphenyl* | *0.600* | | ug/L | *0.600* | | *100* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.538* | | ug/L | *0.600* | | *89.6* | *30-119* | | | |
| **LCS (1HC1636-BS1)** | | | | Prepared: 03/29/24 10:13 Analyzed: 04/03/24 13:15 | | | | | | |
| Gamma-BHC [Lindane] | 0.230 | 0.05 | ug/L | 0.250 | | 91.9 | 37-127 | | | |
| Beta-BHC | 0.221 | 0.05 | ug/L | 0.250 | | 88.5 | 36-131 | | | |

| Determination of Organochlorine Insecticides & PCBs | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HC1636 - EPA 608 OC/PCB - EPA 608** | | | | | | | | | | |
| **LCS (1HC1636-BS1)** | | | | Prepared: 03/29/24 10:13 Analyzed: 04/03/24 13:15 | | | | | | |
| Heptachlor | 0.241 | 0.05 | ug/L | 0.250 | | 96.3 | 36-128 | | | |
| Delta-BHC | 0.268 | 0.05 | ug/L | 0.250 | | 107 | 29-147 | | | |
| Aldrin | 0.207 | 0.05 | ug/L | 0.250 | | 83.0 | 41-120 | | | |
| Heptachlor Epoxide | 0.224 | 0.05 | ug/L | 0.250 | | 89.7 | 50-132 | | | |
| Endosulfan I | 0.241 | 0.05 | ug/L | 0.250 | | 96.3 | 50-133 | | | |
| 4,4`-DDE | 0.243 | 0.05 | ug/L | 0.250 | | 97.1 | 46-140 | | | |
| Dieldrin | 0.219 | 0.05 | ug/L | 0.250 | | 87.7 | 41-138 | | | |
| Endrin | 0.319 | 0.05 | ug/L | 0.250 | | 127 | 32-152 | | | |
| 4,4`-DDD | 0.225 | 0.05 | ug/L | 0.250 | | 90.2 | 44-150 | | | |
| Endosulfan II | 0.237 | 0.05 | ug/L | 0.250 | | 94.8 | 45-141 | | | |
| 4,4`-DDT | 0.281 | 0.05 | ug/L | 0.250 | | 112 | 46-145 | | | |
| Endrin Aldehyde | 0.219 | 0.05 | ug/L | 0.250 | | 87.6 | 33-145 | | | |
| Endosulfan Sulfate | 0.240 | 0.05 | ug/L | 0.250 | | 96.1 | 52-133 | | | |
| *Surrogate: Decachlorobiphenyl* | *0.479* | | ug/L | *0.600* | | *79.8* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.513* | | ug/L | *0.600* | | *85.5* | *30-119* | | | |
| **LCS Dup (1HC1636-BSD1)** | | | | Prepared: 03/29/24 10:13 Analyzed: 04/03/24 13:30 | | | | | | |
| Gamma-BHC [Lindane] | 0.249 | 0.05 | ug/L | 0.250 | | 99.5 | 37-127 | 7.95 | 30 | |
| Beta-BHC | 0.236 | 0.05 | ug/L | 0.250 | | 94.3 | 36-131 | 6.26 | 30 | |
| Heptachlor | 0.258 | 0.05 | ug/L | 0.250 | | 103 | 36-128 | 6.98 | 30 | |
| Delta-BHC | 0.286 | 0.05 | ug/L | 0.250 | | 114 | 29-147 | 6.28 | 30 | |
| Aldrin | 0.222 | 0.05 | ug/L | 0.250 | | 88.7 | 41-120 | 6.64 | 30 | |
| Heptachlor Epoxide | 0.237 | 0.05 | ug/L | 0.250 | | 94.6 | 50-132 | 5.32 | 30 | |
| Endosulfan I | 0.257 | 0.05 | ug/L | 0.250 | | 103 | 50-133 | 6.32 | 30 | |
| 4,4`-DDE | 0.260 | 0.05 | ug/L | 0.250 | | 104 | 46-140 | 6.76 | 30 | |
| Dieldrin | 0.231 | 0.05 | ug/L | 0.250 | | 92.2 | 41-138 | 5.03 | 30 | |
| Endrin | 0.332 | 0.05 | ug/L | 0.250 | | 133 | 32-152 | 4.04 | 30 | |
| 4,4`-DDD | 0.237 | 0.05 | ug/L | 0.250 | | 94.7 | 44-150 | 4.95 | 30 | |
| Endosulfan II | 0.248 | 0.05 | ug/L | 0.250 | | 99.2 | 45-141 | 4.53 | 30 | |
| 4,4`-DDT | 0.298 | 0.05 | ug/L | 0.250 | | 119 | 46-145 | 5.95 | 30 | |
| Endrin Aldehyde | 0.239 | 0.05 | ug/L | 0.250 | | 95.6 | 33-145 | 8.72 | 30 | |
| Endosulfan Sulfate | 0.254 | 0.05 | ug/L | 0.250 | | 102 | 52-133 | 5.68 | 30 | |
| *Surrogate: Decachlorobiphenyl* | *0.534* | | ug/L | *0.600* | | *88.9* | *19-120* | | | |
| *Surrogate: Tetrachloro-m-xylene* | *0.516* | | ug/L | *0.600* | | *86.1* | *30-119* | | | |

| Determination of Conventional Chemistry Parameters | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HC1496 - General Prep Micro - SM 5210 B** | | | | | | | | | | |
| **Blank (1HC1496-BLK1)** | | | | Prepared: 03/27/24 11:50 Analyzed: 03/27/24 12:39 | | | | | | |

| Determination of Conventional Chemistry Parameters | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HC1496 - General Prep Micro - SM 5210 B** | | | | | | | | | | |
| **Blank (1HC1496-BLK1)** | | | Prepared: 03/27/24 11:50 Analyzed: 03/27/24 12:39 | | | | | | | |
| BOD (5 day) | <2 | 2 | mg/L | | | | | | | |
| **Duplicate (1HC1496-DUP1)** | **Source: 1HC1719-01** | | Prepared: 03/27/24 11:50 Analyzed: 03/27/24 13:10 | | | | | | | |
| BOD (5 day) | 148 | 60 | mg/L | | 162 | | | 9.28 | 29 | |
| **Reference (1HC1496-SRM1)** | | | Prepared: 03/27/24 11:50 Analyzed: 03/27/24 12:45 | | | | | | | |
| BOD (5 day) | 181 | 100 | mg/L | 198 | | 91.2 | 84.6-115.4 | | | |
| **Batch 1HC1537 - Wet Chem Preparation - SM 4500 H+ B** | | | | | | | | | | |
| **Duplicate (1HC1537-DUP1)** | **Source: 1HC1713-01** | | Prepared: 03/27/24 16:17 Analyzed: 03/27/24 16:25 | | | | | | | |
| pH | 7.1 | 0.5 | pH | | 7.1 | | | 0.0565 | 10 | |
| **Reference (1HC1537-SRM1)** | | | Prepared: 03/27/24 16:17 Analyzed: 03/27/24 16:25 | | | | | | | |
| pH | 7.0 | 0.5 | pH | 7.00 | | 100 | 90-110 | | | |
| **Reference (1HC1537-SRM2)** | | | Prepared: 03/27/24 16:17 Analyzed: 03/27/24 16:25 | | | | | | | |
| pH | 7.1 | 0.5 | pH | 7.00 | | 101 | 90-110 | | | |
| **Batch 1HC1580 - Wet Chem Preparation - USGS I-1750-85** | | | | | | | | | | |
| **Blank (1HC1580-BLK1)** | | | Prepared: 03/28/24 09:59 Analyzed: 04/01/24 11:45 | | | | | | | |
| Total Dissolved Solids (TDS) | <5 | 5 | mg/L | | | | | | | |
| **LCS (1HC1580-BS1)** | | | Prepared: 03/28/24 09:59 Analyzed: 04/01/24 11:45 | | | | | | | |
| Total Dissolved Solids (TDS) | 94 | 5 | mg/L | 100 | | 94.5 | 71-114 | | | |
| **Duplicate (1HC1580-DUP1)** | **Source: 1HC1696-01** | | Prepared: 03/28/24 09:59 Analyzed: 04/01/24 11:45 | | | | | | | |
| Total Dissolved Solids (TDS) | 1050 | 5 | mg/L | | 1060 | | | 0.631 | 30 | |
| **Batch 1HC1675 - Wet Chem Preparation - USGS I-3765-85** | | | | | | | | | | |
| **Blank (1HC1675-BLK1)** | | | Prepared: 03/29/24 15:03 Analyzed: 04/01/24 11:03 | | | | | | | |
| Total Suspended Solids (TSS) | <1 | 1 | mg/L | | | | | | | |
| **LCS (1HC1675-BS1)** | | | Prepared: 03/29/24 15:03 Analyzed: 04/01/24 11:03 | | | | | | | |
| Total Suspended Solids (TSS) | 13.1 | 1 | mg/L | 15.0 | | 87.3 | 74-114 | | | |
| **Duplicate (1HC1675-DUP1)** | **Source: 1HC1732-01** | | Prepared: 03/29/24 15:03 Analyzed: 04/01/24 11:03 | | | | | | | |
| Total Suspended Solids (TSS) | 49.5 | 1 | mg/L | | 48.0 | | | 3.08 | 30 | |
| **Batch 1HD0195 - General Prep HPLC/IC - TIMBERLINE** | | | | | | | | | | |
| **Blank (1HD0195-BLK1)** | | | Prepared: 04/03/24 08:14 Analyzed: 04/03/24 11:39 | | | | | | | |
| Nitrogen, Ammonia | <0.10 | 0.10 | mg/L | | | | | | | |
| **LCS (1HD0195-BS1)** | | | Prepared: 04/03/24 08:14 Analyzed: 04/03/24 11:41 | | | | | | | |
| Nitrogen, Ammonia | 5.12 | 0.10 | mg/L | 5.00 | | 102 | 90-114 | | | |
| **Matrix Spike (1HD0195-MS1)** | **Source: 1HC1718-03** | | Prepared: 04/03/24 08:14 Analyzed: 04/03/24 11:42 | | | | | | | |
| Nitrogen, Ammonia | 5.26 | 0.10 | mg/L | 5.00 | 0.470 | 95.8 | 84-115 | | | |

| Determination of Conventional Chemistry Parameters | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0195 - General Prep HPLC/IC - TIMBERLINE** | | | | | | | | | | |
| **Matrix Spike Dup (1HD0195-MSD1)** | | **Source: 1HC1718-03** | Prepared: 04/03/24 08:14 Analyzed: 04/03/24 11:43 | | | | | | | |
| Nitrogen, Ammonia | 5.40 | 0.10 | mg/L | 5.00 | 0.470 | 98.5 | 84-115 | 2.58 | 20 | |
| **Batch 1HD0778 - TOC/DOC - 5310B** | | | | | | | | | | |
| **Blank (1HD0778-BLK1)** | | | Prepared: 04/11/24 00:00 Analyzed: 04/11/24 12:50 | | | | | | | |
| Total Organic Carbon | <0.50 | 0.50 | mg/L | | | | | | | |
| **LCS (1HD0778-BS1)** | | | Prepared: 04/11/24 00:00 Analyzed: 04/11/24 12:19 | | | | | | | |
| Total Organic Carbon | 5.27 | 0.50 | mg/L | 5.00 | | 105 | 86-120 | | | |
| **LCS Dup (1HD0778-BSD1)** | | | Prepared: 04/11/24 00:00 Analyzed: 04/11/24 12:35 | | | | | | | |
| Total Organic Carbon | 5.16 | 0.50 | mg/L | 5.00 | | 103 | 86-120 | 2.13 | 10 | |
| **Matrix Spike (1HD0778-MS1)** | | **Source: 1HC1724-01** | Prepared: 04/11/24 00:00 Analyzed: 04/11/24 16:46 | | | | | | | |
| Total Organic Carbon | 91.02 | 5.00 | mg/L | 50.0 | 40.44 | 101 | 81-128 | | | |
| **Matrix Spike Dup (1HD0778-MSD1)** | | **Source: 1HC1724-01** | Prepared: 04/11/24 00:00 Analyzed: 04/11/24 17:01 | | | | | | | |
| Total Organic Carbon | 91.24 | 5.00 | mg/L | 50.0 | 40.44 | 102 | 81-128 | 0.241 | 10 | |

| Determination of Total Metals | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HC1623 - EPA 200.2 Total ICP-OES (200.7) - 200.7** | | | | | | | | | | |
| **Blank (1HC1623-BLK1)** | | | Prepared: 03/29/24 07:15 Analyzed: 04/01/24 18:02 | | | | | | | |
| Iron, total | <0.100 | 0.100 | mg/L | | | | | | | |
| **LCS (1HC1623-BS1)** | | | Prepared: 03/29/24 07:15 Analyzed: 04/01/24 18:08 | | | | | | | |
| Iron, total | 2.39 | 0.100 | mg/L | 2.20 | | 109 | 85-115 | | | |
| **Matrix Spike (1HC1623-MS1)** | | **Source: 1HC1689-01** | Prepared: 03/29/24 07:15 Analyzed: 04/01/24 18:33 | | | | | | | |
| Iron, total | 2.30 | 0.100 | mg/L | 2.20 | ND | 105 | 70-130 | | | |
| **Matrix Spike Dup (1HC1623-MSD1)** | | **Source: 1HC1689-01** | Prepared: 03/29/24 07:15 Analyzed: 04/01/24 18:38 | | | | | | | |
| Iron, total | 2.26 | 0.100 | mg/L | 2.20 | ND | 103 | 70-130 | 1.64 | 20 | |
| **Post Spike (1HC1623-PS1)** | | **Source: 1HC1689-01** | Prepared: 03/29/24 07:15 Analyzed: 04/01/24 18:44 | | | | | | | |
| Iron, total | 9.22 | | mg/L | 8.80 | 0.038 | 104 | 85-115 | | | |
| **Batch 1HD0021 - EPA 200.2 Total ICP-MS - EPA 200.8** | | | | | | | | | | |
| **Blank (1HD0021-BLK1)** | | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 02:04 | | | | | | | |
| Arsenic, total | <0.0020 | 0.0020 | mg/L | | | | | | | |
| Barium, total | <0.0020 | 0.0020 | mg/L | | | | | | | |
| Cadmium, total | <0.0002 | 0.0002 | mg/L | | | | | | | |
| Chromium, total | <0.0020 | 0.0020 | mg/L | | | | | | | |
| Copper, total | <0.0020 | 0.0020 | mg/L | | | | | | | |
| Lead, total | <0.0008 | 0.0008 | mg/L | | | | | | | |
| Nickel, total | <0.0040 | 0.0040 | mg/L | | | | | | | |
| Selenium, total | <0.0040 | 0.0040 | mg/L | | | | | | | |

| Determination of Total Metals | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0021 - EPA 200.2 Total ICP-MS - EPA 200.8** | | | | | | | | | | |
| **Blank (1HD0021-BLK1)** | | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 02:04 | | | | | | | |
| Silver, total | <0.0020 | 0.0020 | mg/L | | | | | | | |
| Zinc, total | <0.0200 | 0.0200 | mg/L | | | | | | | |
| **LCS (1HD0021-BS1)** | | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 02:10 | | | | | | | |
| Arsenic, total | 0.0956 | 0.0020 | mg/L | 0.100 | | 95.6 | 85-115 | | | |
| Barium, total | 0.104 | 0.0020 | mg/L | 0.100 | | 104 | 85-115 | | | |
| Cadmium, total | 0.0973 | 0.0002 | mg/L | 0.100 | | 97.3 | 85-115 | | | |
| Chromium, total | 0.0970 | 0.0020 | mg/L | 0.100 | | 97.0 | 85-115 | | | |
| Copper, total | 0.0989 | 0.0020 | mg/L | 0.100 | | 98.9 | 85-115 | | | |
| Lead, total | 0.100 | 0.0008 | mg/L | 0.100 | | 100 | 85-115 | | | |
| Nickel, total | 0.0972 | 0.0040 | mg/L | 0.100 | | 97.2 | 85-115 | | | |
| Selenium, total | 0.0920 | 0.0040 | mg/L | 0.100 | | 92.0 | 85-115 | | | |
| Silver, total | 0.104 | 0.0020 | mg/L | 0.100 | | 104 | 85-115 | | | |
| Zinc, total | 0.0976 | 0.0200 | mg/L | 0.100 | | 97.6 | 85-115 | | | |
| **Matrix Spike (1HD0021-MS1)** | **Source: 1HC1724-01** | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 02:47 | | | | | | | |
| Arsenic, total | 0.0955 | 0.0020 | mg/L | 0.100 | 0.0033 | 92.2 | 70-130 | | | |
| Barium, total | 0.489 | 0.0020 | mg/L | 0.100 | 0.392 | 96.9 | 70-130 | | | |
| Cadmium, total | 0.0884 | 0.0002 | mg/L | 0.100 | ND | 88.4 | 70-130 | | | |
| Chromium, total | 0.0914 | 0.0020 | mg/L | 0.100 | 0.0014 | 89.9 | 70-130 | | | |
| Copper, total | 0.0872 | 0.0020 | mg/L | 0.100 | 0.0022 | 84.9 | 70-130 | | | |
| Lead, total | 0.0882 | 0.0008 | mg/L | 0.100 | 0.0007 | 87.6 | 70-130 | | | |
| Nickel, total | 0.105 | 0.0040 | mg/L | 0.100 | 0.0167 | 88.5 | 70-130 | | | |
| Selenium, total | 0.0869 | 0.0040 | mg/L | 0.100 | ND | 86.9 | 70-130 | | | |
| Silver, total | 0.0947 | 0.0020 | mg/L | 0.100 | ND | 94.7 | 70-130 | | | |
| Zinc, total | 0.0936 | 0.0200 | mg/L | 0.100 | ND | 93.6 | 70-130 | | | |
| **Matrix Spike Dup (1HD0021-MSD1)** | **Source: 1HC1724-01** | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 02:53 | | | | | | | |
| Arsenic, total | 0.0984 | 0.0020 | mg/L | 0.100 | 0.0033 | 95.2 | 70-130 | 3.06 | 20 | |
| Barium, total | 0.508 | 0.0020 | mg/L | 0.100 | 0.392 | 115 | 70-130 | 3.74 | 20 | |
| Cadmium, total | 0.0923 | 0.0002 | mg/L | 0.100 | ND | 92.3 | 70-130 | 4.39 | 20 | |
| Chromium, total | 0.0951 | 0.0020 | mg/L | 0.100 | 0.0014 | 93.7 | 70-130 | 4.00 | 20 | |
| Copper, total | 0.0905 | 0.0020 | mg/L | 0.100 | 0.0022 | 88.3 | 70-130 | 3.75 | 20 | |
| Lead, total | 0.0915 | 0.0008 | mg/L | 0.100 | 0.0007 | 90.8 | 70-130 | 3.61 | 20 | |
| Nickel, total | 0.109 | 0.0040 | mg/L | 0.100 | 0.0167 | 92.7 | 70-130 | 3.97 | 20 | |
| Selenium, total | 0.0912 | 0.0040 | mg/L | 0.100 | ND | 91.2 | 70-130 | 4.83 | 20 | |
| Silver, total | 0.0989 | 0.0020 | mg/L | 0.100 | ND | 98.9 | 70-130 | 4.32 | 20 | |
| Zinc, total | 0.0978 | 0.0200 | mg/L | 0.100 | ND | 97.8 | 70-130 | 4.45 | 20 | |
| **Post Spike (1HD0021-PS1)** | **Source: 1HC1724-01** | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 03:11 | | | | | | | |
| Arsenic, total | 0.0823 | | mg/L | 0.0800 | 0.0032 | 98.8 | 70-130 | | | |
| Barium, total | 0.465 | | mg/L | 0.0800 | 0.384 | 100 | 70-130 | | | |
| Cadmium, total | 0.0749 | | mg/L | 0.0800 | -0.00001 | 93.6 | 70-130 | | | |
| Chromium, total | 0.0778 | | mg/L | 0.0800 | 0.0014 | 95.5 | 70-130 | | | |
| Copper, total | 0.0762 | | mg/L | 0.0800 | 0.0022 | 92.5 | 70-130 | | | |
| Lead, total | 0.0750 | | mg/L | 0.0800 | 0.0007 | 92.9 | 70-130 | | | |
| Nickel, total | 0.0940 | | mg/L | 0.0800 | 0.0164 | 96.9 | 70-130 | | | |

| Determination of Total Metals | Result | RL | Units | Spike Level | Source Result | %REC | %REC Limits | RPD | RPD Limit | Notes |
|---|---|---|---|---|---|---|---|---|---|---|
| **Batch 1HD0021 - EPA 200.2 Total ICP-MS - EPA 200.8** | | | | | | | | | | |
| **Post Spike (1HD0021-PS1)** | **Source: 1HC1724-01** | | Prepared: 04/01/24 09:24 Analyzed: 04/02/24 03:11 | | | | | | | |
| Selenium, total | 0.0750 | | mg/L | 0.0800 | 0.0004 | 93.3 | 70-130 | | | |
| Silver, total | 0.0808 | | mg/L | 0.0800 | -0.0012 | 101 | 70-130 | | | |
| Zinc, total | 0.0806 | | mg/L | 0.0800 | 0.0074 | 91.6 | 70-130 | | | |
| **Batch 1HD0077 - EPA 7470A Hg Water - 245.1** | | | | | | | | | | |
| **Blank (1HD0077-BLK1)** | | | Prepared: 04/01/24 15:39 Analyzed: 04/02/24 16:17 | | | | | | | |
| Mercury, total | <0.00050 | 0.00050 | mg/L | | | | | | | |
| **LCS (1HD0077-BS1)** | | | Prepared: 04/01/24 15:39 Analyzed: 04/02/24 16:19 | | | | | | | |
| Mercury, total | 0.00249 | 0.00050 | mg/L | 0.00250 | | 99.7 | 85-115 | | | |
| **Matrix Spike (1HD0077-MS1)** | **Source: 1HC1541-01** | | Prepared: 04/01/24 15:39 Analyzed: 04/02/24 16:24 | | | | | | | |
| Mercury, total | 0.00261 | 0.00050 | mg/L | 0.00250 | ND | 105 | 70-130 | | | |
| **Matrix Spike Dup (1HD0077-MSD1)** | **Source: 1HC1541-01** | | Prepared: 04/01/24 15:39 Analyzed: 04/02/24 16:26 | | | | | | | |
| Mercury, total | 0.00253 | 0.00050 | mg/L | 0.00250 | ND | 101 | 70-130 | 3.45 | 10 | |

### Definitions

**I-03:** Analyte required to be analyzed within 15 minutes of sampling. Analysis performed upon receipt of sample at laboratory.

**QM-05:** The spike recovery and/or RPD was outside acceptance limits for the MS and/or MSD due to matrix interference. The LCS and/or LCSD were within acceptance limits showing that the laboratory is in control and the data is acceptable.

**QR-02:** The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

**QS-02:** The spike recovery for this QC sample exceeded established acceptance limits. However, all samples were below the reporting and/or regulatory limit so the data is acceptable.

**RL:** Reporting Limit

**RPD:** Relative Percent Difference

### Cooler Receipt Log

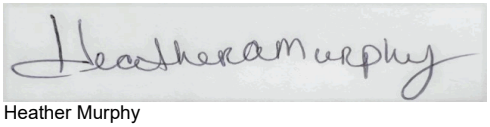
**Cooler ID:** Default Cooler Temp: 0.7°C

### 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
04/18/24 11:35

# CHAIN OF CUSTODY RECORD

Keystone LABORATORIES
A Microbac Company

600 East 17th Street
Newton, IA 50208
641-792-9451

1 H C 1 7 2 4

HLW Engineering
PM: Heather Murphy



## SITE INFORMATION

Sampler: R.K. Bowers

Project: Buchanan Co. Landfill - Leachate
Leachate

## REPORT

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

## INVOICE TO

Ellen Gaffney
Buchanan Sl F Board of Supervisors
2079 11th St
Hazleton, IA 50641-9626

## SPECIAL INSTRUCTIONS

None

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

## LAB USE ONLY

Work Order

Temperature 0.7

Turn-Cooler: No

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

| Number | Sample Identification / Client ID | Matrix | Sample Type | Date | Time | Number of Containers | Analyses | Lab Sample Number |
|---|---|---|---|---|---|---|---|---|
| -001 | Buchanan Co. LAND FILL | Water | GRAB | 3/26/24 | 1:00 PM | 13 | 608-107<br>624@dibromochloromethane<br>624-105<br>625-116<br>ag-t-200.8<br>as-t-200.8<br>ba-t-200.8<br>bod-5210<br>cd-t-200.8<br>cr-t-200.8<br>cu-t-200.8<br>fe-t-200.7<br>hg-t-245.1<br>nh3-timberline<br>ni-t-200.8<br>pb-t-200.8<br>ph-4500<br>se-t-200.8<br>tds-i-1750-85<br>toc-5310b<br>tss-i-3765-85<br>zn-t-200.8 | |

R.K. Bowers 3-26-24 1:00 PM
Relinquished By Date/Time

Received By Date/Time

Relinquished By Date/Time

Debra McMurry 3/27/24 1030
Received for Lab By Date/Time

Remarks:

Original - Lab Copy Yellow - Sampler Copy

# Attachment F

# Testing Results - Leachate Grab Samples

*2023*

## LEACHATE GRAB SAMPLE RESULTS - 2023

**2023-2024 Leachate Control System Performance Evaluation**

**Buchanan County Sanitary Landfill**

| Date | Flow MGD | pH | BOD mg/l | TSS mg/l | Ammonia mg/l |
|---|---|---|---|---|---|
| 4/5/23 | 0.0130 | 6.92 | 16.4 | 50 | 58.8 |
| 4/12/23 | 0.0065 | 6.87 | 16.5 | 32.5 | 67 |
| 4/26/23 | 0.0065 | 6.74 | 14.5 | 41.5 | 62.4 |
| 7/17/23 | 0.0065 | 6.86 | 14.4 | 67.8 | 71.7 |
| 7/18/23 | 0.0065 | 6.99 | 12.6 | 50.9 | 66.4 |

NT = Not tested

*2024*

## LEACHATE GRAB SAMPLE RESULTS - 2024

**2023-2024 Leachate Control System Performance Evaluation**

**Buchanan County Sanitary Landfill**

| Date | Flow MGD | pH | BOD mg/l | TSS mg/l | Ammonia mg/l |
|---|---|---|---|---|---|
| 2/12/24 | 0.0130 | 6.77 | 39.7 | 55.2 | 68.3 |
| 4/4/24 | 0.0130 | 6.77 | 26 | 34.8 | 46.5 |
| 4/8/24 | 0.0130 | 7.04 | 8.7 | 25.5 | 76 |
| 5/2/24 | 0.0130 | 6.91 | 29 | 48 | 66.6 |
| 5/15/24 | 0.0130 | 6.7 | 18.4 | 47.6 | 56 |
| 5/21/24 | 0.0130 | 6.78 | 15.5 | 39.6 | 33.3 |
| 5/28/24 | 0.0130 | 6.82 | 17 | 50.4 | 56 |
| 6/17/24 | 0.0130 | 6.98 | 7.3 | 23.4 | 65 |
| 11/7/24 | 0.00975 | 7.09 | 20.5 | 38.3 | 110 |
| 11/14/24 | 0.00975 | 7.2 | 20.6 | 30 | 89.6 |