



Hakes C&D Disposal, Inc.

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## **2022 – ANNUAL OPERATIONS REPORT**

### **HAKES C&D DISPOSAL**

**4376 Manning Ridge Road  
Painted Post, New York 14870**

**Prepared for:**

**Hakes C&D Disposal, Inc.  
4376 Manning Ridge Road  
Painted Post, New York 14870**

**Prepared by:**

**McMahon & Mann Consulting Engineering and Geology, P.C.  
2495 Main Street  
Suite 432  
Buffalo, New York 14214**

**Permit Number: 8-4630-00010/00001-0  
Facility Number SW # 51D03**

**FEBRUARY 2023**



# ACTIVE CONSTRUCTION AND DEMOLITION (C&D) DEBRIS LANDFILL ANNUAL/QUARTERLY REPORT

**Submit the Annual Report no later than March 1, 2023**

- A.  This annual report is for the year of operation from January 01, 2022 to December 31, 2022
- B. Quarterly Report for:  Quarter 1  Quarter 2  Quarter 3  Quarter 4

## SECTION 1 – FACILITY INFORMATION

FACILITY INFORMATION			
FACILITY NAME: Hakes C&D Landfill			
FACILITY LOCATION ADDRESS: 4376 Manning Ridge Road	FACILITY CITY: Painted Post	STATE: NY	ZIP CODE: 14870
FACILITY TOWN: Campbell	FACILITY COUNTY: Steuben	FACILITY PHONE NUMBER: 1-607-937-6044	
FACILITY NYS PLANNING UNIT: (A list of NYS Planning Units can be found at the end of this report). Steuben County			NYSDEC REGION #: 8
360 PERMIT #: 8-4630-00010/00001-0	DATE ISSUED: Nov. 11, 2013	DATE EXPIRES: Nov. 10, 2023	NYS DEC ACTIVITY CODE OR REGISTRATION NUMBER: 51D03
FACILITY CONTACT: Charles Plank	<input type="checkbox"/> public <input checked="" type="checkbox"/> private	CONTACT PHONE NUMBER: 1-607-937-6044	CONTACT FAX NUMBER:
CONTACT EMAIL ADDRESS: charles.plank@casella.com			
OWNER INFORMATION			
OWNER NAME: Hakes C&D Disposal, Inc.	OWNER PHONE NUMBER: 1-607-937-6044	OWNER FAX NUMBER:	
OWNER ADDRESS: 4376 Manning Ridge Road	OWNER CITY: Painted Post	STATE: NY	ZIP CODE: 14870
OWNER CONTACT: Charles Plank	OWNER CONTACT EMAIL ADDRESS: charles.plank@casella.com		
OPERATOR INFORMATION			
OPERATOR NAME:	<input checked="" type="checkbox"/> same as owner	<input type="checkbox"/> public <input checked="" type="checkbox"/> private	
PREFERENCES			
Preferred address to receive correspondence: <input checked="" type="checkbox"/> Facility location address <input type="checkbox"/> Owner address <input type="checkbox"/> Other (provide):			
Preferred email address: <input checked="" type="checkbox"/> Facility Contact <input type="checkbox"/> Owner Contact <input type="checkbox"/> Other (provide):			
Preferred individual to receive correspondence: <input checked="" type="checkbox"/> Facility Contact <input type="checkbox"/> Owner Contact <input type="checkbox"/> Other (provide):			

Did you operate in 2022?  Yes; Complete this form.

No; Complete and submit Sections 1 and 19. If you no longer plan to operate and wish to relinquish your permit/registration associated with this solid waste management activity, also complete the "Inactive Solid Waste Management Facility or Activity Notification Form" located at: <http://www.dec.ny.gov/chemical/52706.html> .

## SECTION 2 - SITE LIFE

1. Landfill Capacity Utilized Last Year (reporting year).

- a. What is the estimated landfill capacity that was utilized during the reporting year?

344,500 Cubic Yards of Airspace

- b. What is the estimated in-situ waste density for the reporting year?

0.72 Tons/Cubic Yard

Please do not report units as pounds per cubic yard.

2. Remaining Constructed Capacity

- a. What is the remaining capacity of the landfill that is already constructed?

1,303,400 Cubic Yards of Airspace

- b. What is the estimated remaining life of the constructed capacity?

2 Years 0 Months

at 466,000 Tons/Year.\*

\* Please note that this tonnage rate must include all materials placed in the landfill, i.e., waste, soil, cover, alternative daily covers, etc.

- c. The tonnage rate reported under 2.b. is based on (select one):

The amount of materials placed in the landfill in the reporting year

Estimated future disposal

Permit limit

Other (explain): \_\_\_\_\_

3. Permitted Capacity Still to be Constructed

- a. What is the remaining but not yet constructed landfill capacity that is authorized by a Part 360 permit?

883,500 Cubic Yards of Airspace

- b. What is the projected life of capacity reported in 3a.?

1 Years 4 Months

at 466,000 Tons/Year.\*

\* Please note that this tonnage rate must include all materials disposed in the landfill, i.e., waste, and soil and alternative daily covers.

- c. The tonnage rate reported under 3.b. is based on (select one):

The amount of materials placed in the landfill in the reporting year

Estimated future disposal

Permit limit

Other (explain): \_\_\_\_\_

4. Capacity Proposed in a Part 360 Permit Application

What is the capacity of any expansion proposed in a Part 360 permit application that has been submitted to the Department but not authorized by a permit as of the end of the reporting period?

5,858,400 Cubic Yards of Airspace

5. Estimated Potential Future Capacity Not Permitted or in an Application (optional)

What is the estimated capacity of any potential future expansion at the facility that is not yet authorized by a permit or proposed in a Part 360 permit application that has been submitted to the Department?

0 Cubic Yards of Airspace

### SECTION 3 - PRIMARY LEACHATE

Name of off-site leachate treatment facility(s) utilized: Steuben County WWTP, Ithaca WWTP

Does the landfill have a constructed liner and a leachate collection system?  Yes  No

Enter the quantity of primary leachate that was collected, removed for on-site and off-site treatment, and recirculated each month, and the corresponding **Acreage, by Cell**:  
(Note: For double-lined landfills this should not include the volume of leachate collected from secondary leachate collection and removal systems.)

For **each cell**, please report the **acreage** and the **primary leachate** amount.

	PRIMARY LEACHATE COLLECTED (GALLONS)						PRIMARY LEACHATE TREATED OFF SITE (GALLONS)					
	Cells 1-9						Cells 1-9					
January	264,507.93						248,961.61					
February	573,815.33						461,774.61					
March	533,227.69						658,134.33					
April	339,270.11						302,280.59					
May	192,247.91						229,237.43					
June	144,745.79						132,952.03					
July	158,170.93						160,851.33					
August	225,789.17						248,304.53					
September	332,743.86						324,702.66					
October	293,494.02						293,494.02					
November	211,741.66						214,422.06					
December	405,332.26						363,518.02					
<b>ANNUAL</b>	3,675,086.66						3,638,633.22					

	PRIMARY LEACHATE RECIRCULATED (GALLONS)						PRIMARY LEACHATE TREATED ON SITE (GALLONS)					
	Leachate Was Not Recirculated						Leachate Was Not Recirculated					
January												
February												
March												
April												
May												
June												
July												
August												
September												
October												
November												
December												
<b>ANNUAL</b>												

Submit (attached to this form) a copy of the maintenance logs which document compliance with the Operation and Maintenance Manual's schedule for the routine annual flushing and inspection of the primary leachate collection and removal system. List required submissions that have been attached to this form or the reason for not attaching a required piece of information:

**DEKRA Inspections (formerly Jamko Technical Solutions, Inc.) cleaned the leachate collection system in October and November of 2022. This includes the leachate collection pipes, leachate transfer pipes, leachate sumps, leachate tanks, and condensate tanks. McMahon & Mann Consulting Engineering and Geology, P.C. provided the leachate collection system cleaning documentation in a letter to the NYSDEC dated December 7, 2022. A copy of the letter is provided in Attachment 1.**

Submit (attached to this form) a tabulated compilation of the semi-annual primary leachate quality data collected throughout the year including a summary comparing this year's data with the previous year's data and a summary discussion of results. This list should identify sample location(s) and method of analysis. List required submissions that have been attached to this form or the reason for not attaching a required piece of information:

**On-Site Geological Services (On-Site) provided a tabulated compilation of the semi-annual primary leachate quality data and other monitoring data required in Sections 12 through 16. This information is included in Attachment 2.**

Please report total cost for the year, not cost/gal.

Leachate Cost: (including transportation if appropriate) during the calendar year for leachate treatment: \$

Total quantity treated: 3,638,633.22 gal

**Proprietary  
Information**

## SECTION 4 – BENEFICIAL USE DETERMINATION MATERIALS AND ALTERNATIVE OPERATING COVER MATERIALS

For each type of waste material that the Department has approved for use as alternative operating cover (AOC), intermediate cover, or other landfill material, provide the annual weight in tons, use (i.e., operating cover, intermediate cover, etc.), and source of material. (If material is from a solid waste facility also provide facility name, address, NYS Planning Unit, County/ Province, and State/Country.) Refer to the list of NYS Planning Units that can be found at the end of this report.

Type of Solid Waste	Weight (tons/year)	Use	NYS Planning Unit (See Attached List of NYS Planning Units)	County or Province	State or Country	Source (Facility and Address)
Aggregate/Concrete						
Processed C&D						
Contaminated Soil						
Other (specify)						
<b>Total AOC</b>	0					
<b>Total Beneficial Use Determination Materials</b>	0					

### Percent Alternative Operating Cover (AOC) Calculation

AOC Calculations: Total Tons AOC/Total Tons Waste Disposed x 100 = 0

Please note the calculation **is**: Tons AOC (from table above)/Tons Solid Waste (from table in Section 6) x 100 and **Not**: Tons AOC / (Tons Solid Waste + AOC) x 100





## SECTION 6 – SERVICE AREA OF C&D DEBRIS RECEIVED

**Please identify where the waste is coming from.** The total tons received reported below should equal the total tons received in Section 5 (Construction & Demolition (CD) Debris Disposed). **DO NOT REPORT IN CUBIC YARDS!**

- If the waste **WAS** received from another solid waste management facility, please write in the name *and address* of the facility along with the appropriate state, county and planning unit/municipality.
- If the waste **WAS NOT** received from another solid waste management facility, please write in “**Direct Haul**” along with the appropriate state, county and planning unit/municipality where the waste was generated.

Specify transport method and percentages of total waste transported by each:

100 % Road                      \_\_\_\_\_ % Rail  
 \_\_\_\_\_ % Water                      \_\_\_\_\_ % Other (specify: 607 )

Explain which waste types and service areas below are included in these transport methods \_\_\_\_\_

SERVICE AREA OF SOLID WASTE RECEIVED					
TYPE OF SOLID WASTE	SOLID WASTE MANAGEMENT FACILITY FROM WHICH IT WAS RECEIVED (Name & Address) OR “Direct Haul”	SERVICE AREA STATE OR COUNTRY	SERVICE AREA COUNTY OR PROVINCE	SERVICE AREA NYS PLANNING UNIT (See Attached List of NYS Planning Units)	TONS RECEIVED
<b>Construction and Demolition Debris (mixed)</b>	<b>See Attachment 3 - Waste Origin</b>				
<b>Other (specify)</b>					
<b>TOTAL RECEIVED (tons):</b> _____					

### SECTION 7 – UNAUTHORIZED SOLID WASTE

Has unauthorized solid waste been received at the facility during the reporting period?

Yes     No    If yes, give information below for each incident (attach additional sheets if necessary):

Date Received	Type Received	Date Disposed	Disposal Method & Location

### SECTION 8 - LANDFILL GAS

Does the landfill have a landfill gas collection & control system?

Yes  No

If Yes: Active  Passive

Number of gas wells: 34 including horizontal collectors

Total landfill footprint acreage 72.4

Total landfill acreage from which gas is collected 65.2

Landfill sections from which gas is collected Cells 1 through 9A

Landfill acreage from which gas is collected for energy recovery 0

Measured Methane Generation Rate\*, k 0.075

Measured Potential Methane Generation Capacity\*, L<sub>o</sub> 11 m<sup>3</sup>/Mg

NMOC Concentration\* 595 ppmv as hexane **(Note this is a default value applicable to MSW landfills)**

Does the landfill require a Title V Permit? Yes  No

Name of Landfill Gas Recovery (gas to energy or other use) Facility: Hakes Landfill does not own a Landfill Gas Recovery Facility (not applicable)

\* Note: If Concentration NMOC, L<sub>o</sub> and k are not known or included, default values will be used to calculate the NMOCs emissions from the Landfill.

Flare

**Open and Enclosed Flares located at the Landfill and the Landfill Gas Recovery Facility:**

Number of Flares: 1

Type of Flare: Opened Flare X Enclosed Flare \_\_\_\_\_

Please report units in cubic feet

Quantity of Gas Collected and Flared Annually 166,354,332 cubic feet

Flare Hours of Operation per Year 8,648 hours/year

Methane Percentage in Landfill Gas before flaring 31.0 %

Methane Destruction efficiency 98.0 %

**Candlestick Flares:**

Number of Candlestick Flares 0

Estimate of Gas Flared Candlestick Flare \_\_\_\_\_ cubic feet

**Hakes Landfill does not own a Gas to Energy Facility (not applicable)**

Gas To Energy

Number of Internal Combustion Engines: 0

Please report units in cubic feet

Quantity of Gas collected for Internal Combustion Engine Annually \_\_\_\_\_ cubic feet

Methane Destruction efficiency \_\_\_\_\_ %

Methane Percentage in Landfill Gas before combustion \_\_\_\_\_ %

Utility Company Receiving Electricity \_\_\_\_\_

**Hakes Landfill does not process gas for other uses (not applicable)**

Gas Processed for Use (Other than gas to electricity)

Quantity of Gas Collected for Processing 0 cubic feet

Methane Percentage in Landfill Gas before processing \_\_\_\_\_ %

On-site or Off-site User of Gas \_\_\_\_\_

**Hakes Landfill does not own a Landfill Gas Recovery Facility (not applicable)**

Landfill Gas Recovery Facility/Landfill Data

Facility Contact N/A Phone # (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Contact e-mail address \_\_\_\_\_ Fax # (\_\_\_\_) \_\_\_\_ - \_\_\_\_\_

Operation and maintenance cost for calendar year: \$ \_\_\_\_\_

Does the LGRF experience shut downs: \_\_\_\_\_ Yes \_\_\_\_\_ No

If yes, indicate reasons for shut downs. List required submissions that have been attached to this form or the reasons for not attaching a required piece of information:

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Year landfill opened: \_\_\_\_\_ Anticipated landfill closure date: \_\_\_\_\_

**Results of Condensate Sampling**

Submit (attached to this form) condensate quality monitoring results accomplished in accordance with condensate sampling. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**Condensate sampling and testing is not required per the NYSDEC - approved Hakes Landfill Environmental Monitoring Plan (November 2018)**

**Landfill Gas Utilized For Energy Recovery** ← **Hakes Landfill does not own a Landfill Gas Recovery Facility (not applicable)**

Provide the following information for the landfill gas recovered for energy. **DO NOT INCLUDE THE GAS FLARED!**

	Landfill Gas Collected for Energy Recovery (Cubic Feet)	Steam* Generated (Cubic Feet)	Total Electricity* Generated for onsite and offsite use (K.W.H.)	Total Gas Processed for use other than electricity generation (Cubic Feet)	Condensate Generated (Gallons)	Facility Operation (Hours)
January						
February						
March						
April						
May						
June						
July						
August						
September						
October						
November						
December						
ANNUAL TOTAL						

\* Provide where applicable.

Normal Weekdays of Operation \_\_\_\_\_ Normal Hours of Operation \_\_\_\_\_

Electricity Generated and used/marketed offsite \_\_\_\_\_ KWH

Electricity Generated and used onsite \_\_\_\_\_ KWH

Gas Processed and used/marketed offsite \_\_\_\_\_ cubic feet

Gas Processed and used onsite \_\_\_\_\_ cubic feet

Describe the collection, storage, treatment and disposal techniques used in managing the condensate:

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## SECTION 9 - COST ESTIMATES AND FINANCIAL ASSURANCE DOCUMENTS

Are there required cost estimates and financial assurance documents for closure and post-closure care?

- Yes    No   If yes, attach additional sheets reflecting annual adjustments for inflation and any changes to the Closure Plan? **(The current approved closure/post-closure/custodial care cost estimates are provided in Attachment 4)**

## SECTION 10 – PROBLEMS

Were any problems encountered during the reporting period (e.g., specific occurrences which have led to changes in facility procedures)?

- Yes    No   If yes, attach additional sheets identifying each problem and the methods for resolution of the problem.

## SECTION 11 – CHANGES

Were there any changes from approved reports, plans, specifications, and permit conditions?

- Yes    No   If yes, attach additional sheets identifying changes with a justification for each change.

## SECTION 12 – LANDFILL OPERATOR TRAINING

Name of trained landfill operator: Charles Plank & Larry Shilling

Name and location of training course: Landfill Operator Certification, Niagara Falls, NY

Date completed: 3/18/2018

## SECTION 13 - ANALYTICAL RESULTS

Submit (attached to this form) tables showing the sample collection date, the analytical results [including all peaks even if below the Method Detection Limits (MDL)], designation of upgradient wells and location number for each environmental monitoring point sampled, applicable water quality standards, and groundwater protection standards if established, MDL's, and Chemical Abstracts Service (CAS) numbers on all parameters. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**On-Site provided a tabulated compilation of the monitoring data required in Sections 13 through 17. This information is included in Attachment 2.**

## SECTION 14 - COMPARING DATA

Submit (attached to this form) tables or graphical representations comparing current water quality with existing water quality and with upgradient water quality. These comparisons may include Piper diagrams, Stiff diagrams, tables, or other analyses. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**On-Site provided a tabulated compilation of the monitoring data required in Sections 13 through 17. This information is included in Attachment 2.**

## SECTION 15 - DISCUSSION OF RESULTS

Submit (attached to this form) a summary of any contraventions of State water quality standards, significant increases in concentrations above existing water quality, any exceedances of groundwater protection standards, and discussion of results, and any proposed modifications to the sampling and analysis schedule necessary to meet the Existing, Operational and Contingency water quality monitoring requirements. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**On-Site provided a tabulated compilation of the monitoring data required in Sections 13 through 17. This information is included in Attachment 2.**

## SECTION 16 - DATA QUALITY ASSESSMENT

Submit (attached to this form) any required data quality assessment reports. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**On-Site provided a tabulated compilation of the monitoring data required in Sections 13 through 17. This information is included in Attachment 2.**

## SECTION 17 - SUMMARIES OF MONITORING DATA

Submit (attached to this form) a summary of the water quality information presented in Sections 13 and 14 for the year of operation for which the Annual Report is made, noting any changes in water quality which have occurred throughout the year. List submissions (required by this section) that have been attached to this form or the reasons for not attaching a required piece of information:

**On-Site provided a tabulated compilation of the monitoring data required in Sections 13 through 17. This information is included in Attachment 2.**

## SECTION 18 - SURFACE IMPOUNDMENTS

Does this landfill have a surface impoundment?

Yes  No If yes, repeat Sections 12 through 15 above for Quarterly Reports and Section 16 above for Annual report. Attach additional submissions required by this section.

**SECTION 19 - PERMIT/CONSENT ORDER REPORTING REQUIREMENTS**

Are there any additional permit/consent order reporting requirements not covered by the previous sections of this form?

Yes  No If yes, attach additional sheets identifying the reporting requirements with their respective responses. (See Attachment 5 for additional permit/consent order requirements)

**SECTION 20 - SIGNATURE AND DATE BY OWNER OR OPERATOR**

Owner or Operator must sign, date and submit one completed form to the appropriate Regional Office (See attachment for Regional Office addresses, email addresses and Materials Management Contacts).

The Owner or Operator must also submit one copy by email, fax or mail to:

**New York State Department of Environmental Conservation  
Division of Materials Management  
Bureau of Solid Waste Management  
625 Broadway  
Albany, New York 12233-7260  
Fax 518-402-9041  
Email address: SWMFannualreport@dec.ny.gov**

I certify, under penalty of law, that the data and other information identified in this report have been prepared under my direction and supervision in compliance with a system designed to ensure that qualified personnel properly and accurately gather and evaluate this information. I am aware that any false statement I make in such report is punishable pursuant to section 71-2703(2) of the Environmental Conservation Law and section 210.45 of the Penal Law.

  
Signature

2/17/23  
Date

Charles Plank

Division Manager

Name (Print or Type)

Title (Print or Type)

charles.plank@casella.com

Email (Print or Type)

4376 Manning Ridge Road

Painted Post

Address

City

New York

(607) 937-6044

State and Zip

Phone Number

ATTACHMENTS:  YES  NO

**ATTACHMENT 1 – LEACHATE LINE CLEANING DOCUMENTATION**





Donald R. McMahon, P.E.  
Michael J. Mann, P.E.  
Kenneth L. Fishman, Ph.D., P.E.  
Shawn W. Logan, P.E.  
Andrew J. Nichols, P.E.  
Todd Swackhamer, P.E.  
James J. Janora, P.G.  
Susanne J.M. George, P.E.  
Andrew J. Klettke, P.E.  
Kaitlyn M. Murray, P.E.  
J. Bradley Armstrong, P.E.

December 7, 2022  
File: 98-047  
Sent Via E-mail

Attn: Mr. Mark Amann, P.E.  
NYSDEC Division of Materials Management  
6274 East Avon – Lima Road  
Avon, NY 14414

RE: Leachate System Cleaning and Video Inspection  
DEC Permit No. 8-4630-00010  
Hakes C&D Landfill  
Town of Campbell, Steuben County, New York

Dear Mr. Amann:

This letter documents the annual cleaning and biennial video inspection of the primary leachate collection and removal system at the Hakes C&D Landfill. In addition, the newly constructed Cell 9B leachate collection pipes were video inspected to verify that the system was free of obstructions and construction related debris.

### **Leachate System Cleaning**

6 NYCRR Part 363-7.1(g)(1) requires that the primary leachate collection and removal system be cleaned annually and maintained in good operating condition.

DEKRA cleaned the leachate collection system in October and November 2022. This includes the leachate collection system piping, leachate transfer lines, leachate sumps, leachate tanks, condensate tanks, and the leachate load out pad. The leachate collection system continues to function as designed and no issues were noted. A log of the cleaning activities is included in Attachment 1.

### **Video Inspection**

6 NYCRR Part 363-7.1(g)(2) requires a biennial video inspection of the primary leachate collection system. In addition, 6 NYCRR Part 363-6.11(d) requires that all newly constructed leachate collection pipes be cleaned, debanded and inspected upon completion of construction using video inspection to verify the system is free of obstructions and construction related debris.

DEKRA completed video inspections of the existing leachate collection piping (Cells 1A through 9A) and newly constructed leachate collection piping in Cell 9B. A log of the video inspections is included in Attachment 1.

Observations made regarding the operation of the leachate collection system of Cells 1 through 9A show that the leachate collection pipes are functioning properly and show little or no build-up of sediment or precipitates in the pipes. The pipes appear to be round and in good condition.

Observations made regarding the newly constructed leachate collection system of Cell 9B show that the pipes are clean, debedded and free of obstructions and constructed related debris with the following exception:

- A small accumulation of silt and a strip of HDPE pipe from the debedding activities was observed in the pipe (see photographs in Attachment 2). This section of pipe is located between the stormwater diversion flaps (as shown on Sheet 12 of 22 of the Cell 9B record plans) and will not be in operation during the initial filling of Cell 9B. Hakes will flush this section of pipe with water and complete a follow-up video inspection when this pipe is put into service.

The video inspection is available upon request.

Sincerely yours,

**McMAHON & MANN CONSULTING ENGINEERING AND GEOLOGY, P.C.**



Shawn W. Logan, P.E.

Attachments:

Attachment 1 – DEKRA – Cleaning and Video Inspection Logs

Attachment 2 – Video Inspection Photographs

CC:

Charles Plank – Hakes C&D Landfill

Zachery Hall – Hakes C&D Landfill

Larry Shilling – Hakes C&D Landfill

Brian Zielinski – NYSDEC

Greg MacLean - NYSDEC



**ATTACHMENT 1 –  
DEKRA Cleaning and Video  
Inspection Logs**



Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Leachate Collection Lines	Technician(s)	EB, Carter
Cell 1A CO into Hill	539LF	Total Cleaned:	539'	Passes: 1 2	Comments/Date 10/26/2022
Cell 1 CO into Hill	649LF	Total Cleaned:	649'	Passes: 1 2	Comments/Date 10/26/2022
Cell 2 CO into Hill	680LF	Total Cleaned:	680'	Passes: 1 2	Comments/Date 10/26/2022
Cell 3 CO to Cell 8A	1396LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/26/22
Cell 4 CO to Cell 7	1397LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/26/22
Cell 5 East CO to Cell 5 West	1349LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/26/22
Cell 5 West CO to Cell 5 East	1349LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/25/22
Cell 6 East CO to Cell 6 West	1492LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/26/22



Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Leachate Collection Lines	Technician(s)	EB, Carter
Cell 6 West CO to Cell 6 East	1492	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/25/22
Cell 7 CO to Cell 4	1397LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/25/22
Cell 8A CO to Cell 3	1396LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/25/22
Cell 8C CO to 8B Riser	1190LF	Total Cleaned:	750'	Passes: 1 2	Comments/Date go 750LF 10/25/22
Cell 8 D CO to 8B Riser	904LF	Total Cleaned:	725'	Passes: 1 2	Comments/Date 10/25/2022
Cell 9A East to West CO	1155LF	Total Cleaned:	600'	Passes: 1 2	Comments/Date go 600LF 10/25/22
Cell 9A West to East CO	1155LF	Total Cleaned:	600'	Passes: 1 2	Comments/Date go 600LF 10/25/22
		Total Cleaned:		Passes: 1 2	Comments/Date



Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Header Lines	Technician(s)	EB, Carter
Cell 5 Header CO to Cell 6 Header CO	760LF	Total Cleaned:	760'	Passes: 1 2	Comments/Date use smallest nozzle 10/27/22
Cell 3 Header CO to Cell 5 Header CO	438LF	Total Cleaned:	438'	Passes: 1 2	Comments/Date use smallest nozzle 10/27/22
Cell 1 Header CO to Cell 3 Header CO	523LF	Total Cleaned:	523'	Passes: 1 2	Comments/Date use smallest nozzle 10/27/22
Ccell 8B Header Line 1	200LF	Total Cleaned:	200'	Passes: 1 2	Comments/Date use smallest nozzle 10/27/22
Cell 8B Header Line 2	200LF	Total Cleaned:	200'	Passes: 1 2	Comments/Date use smallest nozzle 10/27/22
		Total Cleaned:		Passes: 1 2	Comments/Date
		Total Cleaned:		Passes: 1 2	Comments/Date
		Total Cleaned:		Passes: 1 2	Comments/Date



Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Sumps	Technician(s)	EB, Carter, Guck, Karl	
Cell 1 Sump 1	65LF	Total Cleaned:	65'	Passes: 1 2	Comments/Date	11/1/2022
Cell 1 Sump 2	65LF	Total Cleaned:	65'	Passes: 1 2	Comments/Date	11/1/2022
Cell 1A Sump 1	63LF	Total Cleaned:	63'	Passes: 1 2	Comments/Date	11/1/2022
Cell 1A Sump 2	63LF	Total Cleaned:	63'	Passes: 1 2	Comments/Date	11/1/2022
Cell 2 Sump 1	48LF	Total Cleaned:	48'	Passes: 1 2	Comments/Date	10/31/2022
Cell 2 Sump 2	48LF	Total Cleaned:	48'	Passes: 1 2	Comments/Date	10/31/2022
Cell 3 Sump 1	96LF	Total Cleaned:	96'	Passes: 1 2	Comments/Date	10/31/2022
Cell 3 Sump 2	96LF	Total Cleaned:	96'	Passes: 1 2	Comments/Date	10/31/2022



Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Sumps	Technician(s)	EB, Carter, Guck, Karl	
Cell 4 Sump 1	85LF	Total Cleaned:	85'	Passes: 1 2	Comments/Date	10/31/2022
Cell 4 Sump 2	85LF	Total Cleaned:	85'	Passes: 1 2	Comments/Date	10/31/2022
Cell 5 Sump 1	103LF	Total Cleaned:	103'	Passes: 1 2	Comments/Date	10/31/2022
Cell 5 Sump 2	103LF	Total Cleaned:	103'	Passes: 1 2	Comments/Date	10/31/2022
Cell 6 Sump 1	95LF	Total Cleaned:	95'	Passes: 1 2	Comments/Date	10/28/2022
Cell 6 Sump 2	95LF	Total Cleaned:	95'	Passes: 1 2	Comments/Date	10/28/2022
Cell 8B Sump 1	93LF	Total Cleaned:	93'	Passes: 1 2	Comments/Date	11/1/2022
Cell 8B Sump 2	93LF	Total Cleaned:	93'	Passes: 1 2	Comments/Date	11/1/2022







Casella Hakes C&D Landfill

Line Cleaning Record

Project No.:	480022100	Site Location:	Tanks and MH's	Technician(s)	EB, Karl
Storage Tank 1	Loads:	6	Comments/Date	11/2/2022	
Storage Tank 2	Loads:	5.5	Comments/Date	11/3/2022	
Load Off Pad	Cleaned:	cleaned	Comments/Date	11/3/2022	
Condensate Tank 1	Cleaned:	cleaned	Passes: 1 2	Comments/Date 11/2/2022	
Condensate Tank 2	Cleaned:	cleaned	Passes: 1 2	Comments/Date 11/3/2022	
Storage Tank MH	Cleaned:	cleaned	Passes: 1 2	Comments/Date 11/1/2022	
Cell 1A MH	Cleaned:	cleaned	Passes: 1 2	Comments/Date 11/1/2022	
Total Cleaned:		Passes: 1 2	Comments/Date		





## Casella Hakes C&D Landfill

### CCTV Inspection Log

Project No.:	480022100	Site Location:	Laechate Collection Lines	Technician(s)	EB, Carter
Cell 1A CO into Hill	539LF	Total CCTV:	539'	Comments/Date	10/27/2022
Cell 1 CO into Hill	649LF	Total CCTV:	606'	Comments/Date	10/27/2022
Cell 2 CO into Hill	680LF	Total CCTV:	601'	Comments/Date	10/27/2022
Cell 3 CO to Cell 8A	1396LF	Total CCTV:	525'	Comments/Date	10/27/2022
Cell 4 CO to Cell 7	1397LF	Total CCTV:	604'	Comments/Date	10/27/2022
Cell 5 East CO to Cell 5 West	1349LF	Total CCTV:	479'	Comments/Date	10/27/2022
Cell 5 West CO to Cell 5 East	1349LF	Total CCTV:	505'	Comments/Date	10/25/2022
Cell 6 East CO to Cell 6 West	1492LF	Total CCTV:	512'	Comments/Date	10/27/2022



**Casella Hakes C&D Landfill**

**CCTV Inspection Log**

Project No.:	480022100	Site Location:	Leachate Collection Lines	Technician(s)	EB, Carter
Cell 6 West CO to Cell 6 East	1492	Total CCTV:	733'	Comments/Date	10/25/2022
Cell 7 CO to Cell 4	1397LF	Total CCTV:	511'	Comments/Date	10/25/2022
Cell 8A CO to Cell 3	1396LF	Total CCTV:	651'	Comments/Date	10/25/2022
Cell 8C CO to 8B Riser	1190LF	Total CCTV:	750'	Comments/Date	10/25/2022
Cell 8 D CO to 8B Riser	904LF	Total CCTV:	740'	Comments/Date	10/25/2022
Cell 9A East to West CO	1155LF	Total CCTV:	430'	Comments/Date	10/26/2022
Cell 9AB east to West		Total CCTV:	725'	Comments/Date	10/26/2022
Cell 9A west to east		Total CCTV:	748'	Comments/Date	10/26/2022



Casella Hakes C&D Landfill

CCTV Inspection Log

Project No.: 480022100 Site Location: Leachate Collection Lines Technician(s) EB, Carter

Cell 8B to 8C	Total CCTV:	481'	Comments/Date	10/27/2022
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Cell 8B to 8D	Total CCTV:	212'	Comments/Date	10/27/2022
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Cell 9B West to East	Total CCTV:	154'	Passes: 1 2	Comments/Date	10/26/2022
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Cell 9B between rain flaps	Total CCTV:	295'	Passes: 1 2	Comments/Date	11/7/2022
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Cell 9B East to West	Total CCTV:	725'	Passes: 1 2	Comments/Date	10/26/2022
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			Passes: 1 2	Comments/Date	
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			Passes: 1 2	Comments/Date	
--	--	--	-------------	---------------	--

			Passes: 1 2	Comments/Date	
--	--	--	-------------	---------------	--

**ATTACHMENT 2 –  
Video Inspection Photographs**



Photo showing minor accumulated sediment



Photo showing strip of HDPE from debeading activities



**ATTACHMENT 2 – ANNUAL ENVIRONMENTAL MONITORING REPORT**



# HAKES C&D DISPOSAL

## 4th QUARTER / ANNUAL 2022 ENVIRONMENTAL MONITORING REPORT

NYSDEC Permit No.: 8-4630-00010/00001-2

February 2023

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## Overview

This report summarizes calendar year 2022 and details fourth quarter 2022 operational water quality monitoring activities completed at the Hakes C & D Landfill, located in the Town of Campbell, New York. Environmental monitoring is conducted in accordance with *Hakes Construction and Demolition Debris Landfill Expansion Project, 6 NYCRR Part 360 Permit Modification Application, Appendix C – Environmental Monitoring Plan, dated September 2019* (EMP). Sampling and reporting activities were performed by On-Site Geological Services, D.P.C. (On-Site) of Wellsville, New York. Sample analysis was performed by ALS Environmental (ALS), located in Rochester, New York.

This report addresses the environmental monitoring elements of Sections 1, 3, and 12 through 19 of the New York State Department of Environmental Conservation (NYSDEC) annual report form and includes the following:

- Tables;
- Figures;
- Appendix A – Field Sampling Forms;
- Appendix B – Laboratory Analytical Reports;
- Appendix C – Historic Groundwater Monitoring Statistics; and
- Appendix D – Groundwater Time-Trend Graphs.

## Section 1 – Owner/Facility Information

Facility Name: Hakes C&D Landfill Town: Campbell County: Steuben NYSDEC Region #: 8

Facility Location: 4376 Manning Ridge Road, Campbell State: NY Zip: 14870

Facility Contact: Charles Plank Phone #: (607) 937-6044 Fax #: (607) 937-6089

363 Permit #: 8-4630-00010/00001-0 Issued: 11/11/2013 Expires: 11/10/2023

Owner Name: Hakes C&D Disposal, Inc. Phone #: (607) 937-6044

Mailing Address: Same as above

## Section 3 – Primary Leachate (Analytical Results Only)

2022 semi-annual primary leachate sampling was conducted during the second and fourth quarterly monitoring events. Semi-annual leachate samples were collected on May 17 and November 29, 2022 and analyzed for parameters included in 6 NYCRR Part 363 Expanded Parameter List (expanded parameters). The samples were collected from a leachate tank and show analytical results typical of historic Site leachate. Site leachate generally exhibits significantly lower contaminant concentrations compared to a typical municipal solid waste landfill. Analytical results for the last five leachate samples are presented in Table 1. Primary leachate organic detections for 2022 are shown in the table below.

Location	Parameter	5/17/2022	11/29/2022
LCS	Endosulfan I	0.0005	0.00032
LCS	6:2 Fluorotelomer sulfonate (FtS 6:2)	0.00045	0.00027 *
LCS	8:2 Fluorotelomer sulfonic acid (FtS 8:2)	0.000019 J	0.000011 J,*
LCS	N-ethylperfluoro-1-octanesulfonamidoacetic acid	0.000022 J	0.000019
LCS	N-methylperfluoro-1-octanesulfonamidoacetic acid	0.00011	0.000061
LCS	Perfluorobutanesulfonic Acid (PFBS)	0.00068	0.00043
LCS	Perfluorobutanoic Acid (PFBA)	0.0027	0.00081 *
LCS	Perfluorodecanoic Acid (PFDA)	0.000042 J	0.000033
LCS	Perfluorododecanoic Acid (PFDoA)		0.0000045
LCS	Perfluoroheptane sulfonate (PFHpS)	0.000027 J	
LCS	Perfluoroheptanoic Acid (PFHpA)	0.0012	0.00075
LCS	Perfluorohexanesulfonic Acid (PFHxS)	0.00029	0.00022
LCS	Perfluorohexanoic Acid (PFHxA)	0.0041	0.0026 *
LCS	Perfluorononanoic Acid (PFNA)	0.000068	0.000046
LCS	Perfluorooctanesulfonic Acid (PFOS)	0.00017	0.00014
LCS	Perfluorooctanoic Acid (PFOA)	0.0017	0.0012
LCS	Perfluoropentanoic Acid (PFPeA)	0.004	0.0029 *
LCS	Perfluoroundecanoic Acid (PFUnA)		0.0000071
LCS	1,4-Dioxane	0.076	0.091 *
LCS	3/4-Methylphenol		0.058 J
LCS	Acenaphthene	0.0039 J	
LCS	Dibenzofuran	0.0022 J	
LCS	Naphthalene		0.049 J
LCS	2-Butanone (MEK)	0.18 J	0.65
LCS	2-Hexanone		0.011 J
LCS	4-Methyl-2-pentanone	0.014 J	0.061 J
LCS	Acetone	0.51	1.4
LCS	m&p-Xylene		0.0068 J
LCS	Phenol		0.019 J
LCS	Toluene		0.0075 J

J – Estimated Value \* - Performed out of hold time

A leachate tank sediment sample was collected on November 4, 2022 and analyzed for radionuclides. The laboratory analytical report for this sample is included in Appendix B.

### Section 12 – Analytical Results

The fourth quarter 2022 quarterly sampling event was primarily conducted between November 21 and 29, 2022. A leachate sediment sample for radionuclide analysis was collected on November 4, 2022. Tables presenting the fourth quarter 2022 field parameters and analytical results are included with the appropriate NYSDEC water quality standards as follows:

- Table 2 – Fourth Quarter 2022 Groundwater Analytical Results;

- Table 3 – Fourth Quarter 2022 Surface Water Analytical Results; and
- Table 4 – Fourth Quarter 2022 Groundwater Suppression Systems Analytical Results.

Tables 5 through 7 provide historical data for the last five quarters. A narrative of comparing data to standards is provided in Section 13 and a discussion of results is presented in Section 14. A data quality assessment is provided in Section 15 and a summary of data is referenced in Section 16.

### **Section 13 – Comparing Data**

Site specific Existing Water Quality Values (EWQVs) and trigger values have been established for the facility since 2000 with periodic revisions associated with landfill expansions. The currently approved EWQVs were submitted to NYSDEC on July 13, 2020 in preparation of Cell 9 operations and are presented in Table 5A. As presented in Table 5A, there are separate EWQVs and trigger values for wells associated with different sections of the landfill. Therefore Table 5A is divided into four parts as follows.

1. Table 5A – Part 1 are routine parameter EWQVs and trigger values that apply to monitoring wells associated with landfill cells 1 through 8 which includes: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H MW-J, MW-O, MW-P and MW-QR. Table 5A – Part 1 EWQVs and trigger values were submitted to the NYSDEC on May 28, 2008 and developed in accordance with 6 NYCRR Part 360-2.11 (c) (5) (i), which is the applicable regulation at that time.
2. Table 5A – Part 2 includes additional parameters that are on the 6 NYCRR Part 363 expanded parameter list but not routine parameter list. These EWQVs are required by the Hakes solid waste permit special condition 59 and apply to landfill cells 1 through 8 monitoring wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H MW-J, MW-O, MW-P and MW-QR. Table 5A – Part 2 EWQVs and trigger values were established in accordance with 6 NYCRR 363-4.6(f)(9)(i) (b)(4)(ii).
3. Table 5A – Part 3 EWQVs and trigger values are inter-well expanded parameter list EWQVs that apply to Cell 9 monitoring wells MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) and MW-V(BR). Table 5A – Part 3 EWQVs and trigger values were established in accordance with 6 NYCRR 363-4.6(f)(9)(i) (b)(4)(ii).
4. Table 5A – Part 4 provides Intra-well EWQVs and trigger values for cell 9 monitoring well MW-V. As the pre-operational geochemistry of this well does not compare adequately with the other Cell 9 wells, a standalone intra-well comparison is most applicable for this well. Table 5A – Part 4 EWQVs and trigger values were established in accordance with 6 NYCRR 363-4.6(f)(9)(i)(b)(4)(ii).

Trigger value exceedances are intended to provide an indication that a sample result may represent a statistically significant increase over existing water quality. However, it is likely that

some operational groundwater monitoring results will exceed trigger value as a result of natural conditions, normal variations in ambient groundwater chemistry, or sampling analysis anomalies. As these natural variations or analysis anomalies occur, the resulting trigger value exceedance will require proper clarification in accordance with the regulations and Site Environmental Monitoring Plan, and not be categorized as a statistically significant increase over existing water quality. A discussion of results is provided in Section 14 below.

**Section 14 – Discussion of Results**

This section includes a narrative pertaining to results greater than Trigger Values and/or Class GA Standards, significant changes in water quality and a general discussion of results.

Operational water quality monitoring has been ongoing at the site since December 1999. The fourth quarter 2022 quarterly operational water quality event is a NYSDEC 6 NYCRR Part 363 Routine Parameter List (routine parameters) event. Representatives of On-Site conducted this monitoring event with scheduled sampling of groundwater, surface water, groundwater suppression systems and leachate. Please see Figure 1 for sampling locations. Non-dedicated bladder pumps were utilized following low-flow purging techniques for monitoring well purging and sampling with the following exceptions. Low yielding monitoring wells MW-D, MW-GR, MW-N, MW-OBR and MW-QR were each purged dry with a dedicated bailer and allowed time to recover prior to sampling with a dedicated bailer. Field sampling forms are included in Appendix A. The table below provides the locations and dates sampled for the fourth quarter 2022 sampling event.

<b>Hakes C&amp;D Landfill Fourth Quarter 2022 Sample Summary</b>		
<b>Location</b>	<b>Description</b>	<b>Sample Date</b>
<b>Upgradient Monitoring Wells</b>		
MW-H	Upgradient well	11/22/2022
MW-QR	Upgradient well	11/21-11/22/22
MW-R(BR)R	Upgradient well	11/29/2022
MW-S(BR)	Upgradient well	11/22/22
<b>Downgradient Monitoring Wells</b>		
MW-CR	Downgradient well	11/22/2022
MW-D	Downgradient well	11/21-11/22/2022
MW-E	Downgradient well	11/29/2022
MW-F	Downgradient well	11/29/2022
MW-GR	Downgradient well	11/21-11/22/2022
MW-J	Downgradient well	11/29/2022

<b>Hakes C&amp;D Landfill Fourth Quarter 2022 Sample Summary</b>		
<b>Location</b>	<b>Description</b>	<b>Sample Date</b>
<b>Downgradient Monitoring Wells</b>		
MW-N	Downgradient well	11/21-11/22/2022
MW-O	Downgradient well	11/22/2022
MW-O(BR)	Downgradient well	11/21-11/22/2022
MW-P	Downgradient well	11/29/2022
MW-T(BR)	Downgradient well	11/22/2022
MW-U(BR)	Downgradient well	11/22/2022
MW-V	Downgradient well	11/22/2022
MW-V(BR)	Downgradient well	11/29/2022
<b>Surface Water</b>		
SW-1A	Tributary 4 upstream of landfill at property line	11/22/2022
SW-2	Tributary 4 downgradient	11/22/2022
SW-2A	Erwin Hollow Creek down-stream convergence with Tributary 4	11/22/2022
SW-3A <sup>1</sup>	Pond 5 discharge	11/22/2022
SW-4 <sup>2</sup>	Pond 1 discharge	11/22/2022
SW-4A <sup>2</sup>	Pond 1 discharge to sand filter	11/22/2022
SW-5A <sup>2</sup>	Pond 3 discharge	11/22/2022
SW-6 <sup>2</sup>	Pond 4 discharge	11/22/2022
SW-7	Erwin Hollow Creek upstream Convergence with Tributary 4	11/22/2022
SW-7A	Erwin Hollow Creek adjacent to borrow area	11/22/2022
SW-8 <sup>1</sup>	Tributary 4 North Ditch convergence	11/22/2022
SW-9	East pond discharge	11/22/2022
<b>Groundwater Suppression System</b>		
GSS-1 <sup>1</sup>	Gravity pipe to Pond 1	11/22/2022
GSS-1A	Sampled from hose at riser pipe	11/22/2022
GSS-2 <sup>1</sup>	Gravity pipe to Tributary 4	11/22/2022
GSS-3 <sup>1</sup>	Gravity pipe to Tributary 4	11/22/2022
GSS-4 <sup>1</sup>	Gravity pipe to Tributary 4	11/22/2022
GSS-5 <sup>1</sup>	Gravity pipe to Tributary 4	11/22/2022
GSS-6	Discharge pipe while pumping	11/22/2022
GSS-8	Discharge pipe while pumping	11/22/2022
GSS-9	Discharge pipe while pumping	11/22/2022

<sup>1</sup> Dry or insufficient water volume. No sample collected.

<sup>2</sup> No flow at pond discharge location as flow is diverted to next pond. No sample collected.



Tables 2, 3 and 4 provide analytical results for the fourth quarter 2022 sampling event. Analytical results for the last five quarters are presented in Tables 5 through 7. Analytical results from the fourth quarter 2022 sampling event appear generally consistent with historic results. Some sampling locations, including upgradient monitoring wells, continue to exhibit concentrations above trigger values and/or NYSDEC Standards. These exceedances do not appear to be a result of site operations but rather a factor of ambient water quality.

### ***Discussion of Groundwater Monitoring Results***

Fourth quarter 2022 groundwater samples were scheduled to be collected and analyzed for routine parameters at 18 operational wells. These samples were collected between November 21 and November 29, 2022. Fourth quarter monitoring groundwater results are consistent with historic data and ambient groundwater quality. A discussion of results is provided below.

#### ***Upgradient Monitoring Wells***

Upgradient monitoring well MW-H fourth quarter 2022 results show Field pH (6.43 std. units), Sodium (67.8 mg/L) and Total Dissolved Solids (TDS) (561 mg/L), each exceeding the Class GA Standards. Chloride (144 mg/L) exceeds the trigger value but remains below the Class GA Standard.

Fourth quarter 2022 upgradient monitoring well MW-QR results are consistent with previous analytical results. Chloride (150 mg/L) exceeds the trigger value but remains below the Class GA Standard while Sodium (92.1 mg/L) exceeds the Class GA Standard and trigger value.

Upgradient monitoring well MW-R(BR)R fourth quarter 2022 results show Iron (0.66 mg/L) exceeding the Class GA Standard. Chloride (9.7 mg/L) and Nitrate Nitrogen (2.4 mg/L) exceed trigger values but remain below Class GA Standards. Turbidity at 19.2 NTU remains outside the Class GA Standard and trigger value. The remaining analytical results are within trigger values and Class GA Standards.

Fourth quarter 2022 upgradient monitoring well MW-S(BR) results are comparable with previous analytical results and with the exception of Manganese (0.553 mg/l) are within Class GA Standard. Ammonia Nitrogen (0.035 J mg/L) exceeds the trigger value while remaining below the Class GA Standard.

#### ***Downgradient Monitoring Wells***

Downgradient monitoring well MW-CR fourth quarter 2022 results are consistent with historic analytical results, remaining below trigger values and Class GA Standards.

Fourth quarter 2022 downgradient well MW-D results are consistent with previous results and are generally within trigger values and Class GA Standards. Field Turbidity (11.2 NTU) and Iron (0.53 mg/L) exceed Class GA Standards.

Downgradient well MW-E fourth quarter analytical results are comparable to previous samplings and remain within trigger values and generally within Class GA Standards. Field Turbidity (39.4 NTU), Iron (1.99 mg/L) and Manganese (0.561 mg/L) exceed Class GA Standards.

Fourth quarter 2022 analytical results from downgradient well MW-F are consistent with historic results and are within trigger values and generally within Class GA Standards. However, Field pH (6.26 Std. units) and Turbidity (7.58 NTU) are not within Class GA Standards as typical.

Downgradient well MW-GR fourth quarter analytical results are comparable to previous samplings and remain within trigger values and within Class GA Standards.

Fourth quarter 2022 downgradient well MW-J results are consistent with historic data and show Chloride (122 mg/L) exceeding the trigger value but remaining below the Class GA Standard. Sodium (91.6 mg/L) exceeds both the Class GA Standard and trigger value. Additionally Field Turbidity (24.8 NTU), Iron (1.83 mg/L), Manganese (0.509 mg/L), and TDS (640 mg/L) exceed Class GA Standards. The remaining results are within trigger values and Class GA Standards.

Downgradient monitoring well MW-N fourth quarter results are consistent with previous samplings. Field Turbidity (12.2 NTU), Iron (0.38 mg/L), Manganese (1.64 mg/L) and Sodium (28.4 mg/L) exceed Class GA Standards. The remaining results are within trigger values and Class GA Standards.

Fourth quarter monitoring well MW-O results are comparable with historic data and are within trigger values and Class GA Standards.

Downgradient well MW-O(BR) was sampled during the fourth quarter 2022 results are consistent with previous samplings and are generally within trigger values and Class GA Standards. Field Turbidity (6.4 NTU) exceeds the Class GA Standard.

Fourth quarter 2022 analytical results from downgradient well MW-P, show results are consistent with historic data and generally within trigger values and Class GA Standards. Field Turbidity (19.3 NTU), Iron (0.66 mg/L), Manganese (1.18 mg/L) and Sodium (23.6 mg/L) exceed Class GA Standards.

During the fourth quarter 2022, downgradient monitoring well MW-T(BR) results remain consistent with historic data. Sampling results remain within the trigger values and with the exception of Turbidity (10.3 NTU), Iron (0.35 mg/L) and Manganese at 0.573 mg/L, are within in Class GA Standards.

Downgradient monitoring well MW-U(BR) fourth quarter results are consistent with previous samplings, remaining generally below trigger values and Class GA Standards. Turbidity (23.1 NTU), Iron (0.76 mg/L) and Manganese (0.592 mg/L) exceed Class GA Standards. Total Organic Carbon (TOC) (2.4 mg/L) exceeds the trigger value while remaining below the Class GA Standard. Field turbidity (23.1 NTU) exceeds both the trigger value and Class GA Standard.

Fourth quarter analytical results from downgradient well MW-V remain consistent with historic results. Results are within trigger values. Turbidity (7.23 NTU), Sodium (70 mg/L) and TDS (677 mg/L) exceed Class GA Standards.

Downgradient well MW-V(BR) fourth quarter analytical results are comparable to previous samplings. Ammonia Nitrogen (0.034 J mg/L) is not within the trigger value but does remain below the Class GA Standard. Manganese (0.741 mg/L) and Sodium (23.1 mg/L) exceed Class GA Standards. The remaining results are within Class GA Standards and trigger values.

#### ***Discussion of Surface Water Monitoring Results***

Surface water locations SW-1A, SW-2, SW-2A, SW-7, SW-7A and SW-8 are stream sampling locations, while SW-3A, SW-4, SW-4A, SW-5A, SW-6 and SW-9 are pond discharge locations (please see Figure 1). In fourth quarter 2022, surface water locations were tested and analyzed for field parameters, air temperature and routine parameters. No flow condition was observed at one stream location (SW-8) and therefore was not sampled. Five pond discharge locations (SW-3A, SW-4, SW-4A, SW-5A and SW-6) were not sampled due to a no flow condition attributed to either no pond discharge (SW-3A) or the pond discharge being diverted to the inlet of the next pond. Therefore the locations sampled in the fourth quarter 2022 are SW-1A, SW-2, SW-2A, SW-7, SW-7A and SW-9.

Surface water discharge locations were monitored for visual contrast between the discharge water and water in the stream. There was no evidence of visual contrast between the discharge water and the stream. Fourth quarter 2022 surface water results are within Class C Surface Water Standards with the exception of Field pH (8.59 std. units) at upgradient location SW-1A. Fourth quarter 2022 surface water analytical results are presented in Table 3; while current plus historic results are provided in Table 6.

### ***Discussion of Groundwater Suppression System Monitoring Results***

As part of the fourth quarter 2022 sampling event, water samples were scheduled to be collected from groundwater suppression systems GSS-1, GSS-1A, GSS-2, GSS-3, GSS-4, GSS-5, GSS-6, GSS-8 and GSS-9 for routine parameters. The gravity drain pipes from GSS-1, GSS-2, GSS-3, GSS-4 and GSS-5 were dry and therefore not sampled. The remainders of the groundwater suppression system samples were collected as scheduled. Fourth quarter 2022 groundwater suppression system analytical results are consistent with historic results. With the exceptions listed below, fourth quarter 2022 groundwater suppression system results are within Class GA Standards.

- GSS-1A Turbidity (6.74 NTU) and Iron (1.36 mg/L)
- GSS-6 Sodium (34.9 mg/L) and TDS (986 mg/L)
- GSS-8 Turbidity (5.12 NTU), Sodium (49.4 mg/L) and TDS (585 mg/L)
- GSS-9 Total Phenolics (0.0032 BJ mg/L)

### **Section 15 – Data Quality Assessment**

The fourth quarter 2022 sampling event is a routine parameter list event; therefore third party data validation is not required. The laboratory performed internal validation in accordance with NELAC Standards. Laboratory quality control standards were met and no significant analyses anomalies reported. Please see the laboratory analytical reports in Appendix B for additional details.

The laboratory results were reviewed for compliance with the sampling program including laboratory sample receipt, holding times, matrix spike results and duplicate sample results. Data presented in this report should be considered technically correct and usable. A discussion of field duplicate and field equipment blank sampling is provided below.

#### **Field Duplicate Sample**

Two field duplicate samples were collected in the fourth quarter 2022 from monitoring wells MW-T(BR) labeled DUP1-1122 and MW-CR labeled DUP2-1122. Routine parameter results from MW-T(BR), MW-CR and the associated duplicate samples compare favorably, indicating good sampling and analysis precision. Field duplicate sample comparisons are provided in Table 8.

#### **Field Equipment Blank Sample**

One field equipment blank sample was collected to confirm proper cleaning of the bladder pump and tubing used to purge and sample monitoring wells MW-D, MW-GR, MW-N, MW-O(BR) and MW-QR. The equipment blank sample was collected by pumping laboratory provided deionized water through the pump and tubing into laboratory provided sample containers. The fourth quarter 2022 equipment blank results are non-detect. Results are presented in Table 9.

## **Section 16 – Summaries of Monitoring Data**

A summary of monitoring results for the most recent five quarterly monitoring events of groundwater, surface water and groundwater suppression systems are included as Tables 5, 6 and 7, respectively.

In accordance with 6 NYCRR 363-4.6(f)(10)(vii) through 6 NYCRR 363-4.6(f)(10)(ix), annual monitoring reports are to include the following.

- Historical water quality monitoring table for each parameter that has been detected. These tables are presented in Appendix C.
- A graph showing time versus concentration for each parameter that has exceeded Class GA Standard or trigger value. These time-trend graph are included in Appendix D.
- Static groundwater levels are measured quarterly prior to conducting monitoring well sampling and the 2022 quarterly groundwater elevations are presented in Table 10. Groundwater contour maps are presented for May 10, 2022 and November 21, 2022 as Figures 2 and 3, respectively. May 10, 2022 generally represents the quarterly monitoring event conducted during high water table seasonal level, while November 21, 2022 is a lower seasonal level. Both Figures 2 and 3 illustrate very similar groundwater contours with minimal seasonal change and the direction of groundwater flow towards the east-southeast. The groundwater contours and flow direction generally mimic topography with groundwater flow from higher to lower ground elevation, as expected, and the landfill operations do not appear to significantly impact groundwater elevations or flow patterns.

Quarterly monitoring was conducted as required in 2022 in accordance with the September 2019 EMP. First, third and fourth quarter 2022 sampling events were conducted for routine parameter analysis, while the second quarter 2022 event was a baseline parameter monitoring event. Please refer to Tables 5 through 7 for water quality results from the last five monitoring events. Each quarterly monitoring event is summarized separately below.

### *First Quarter 2022*

First quarter 2022 routine sampling of groundwater, groundwater suppression system and surface water sampling was completed as required. Groundwater was sampled at Cells 1 through 9 monitoring wells. Surface water locations SW-4, SW-4A and SW-6 were not sampled due to water being diverted to a downstream retention pond. Location SW-8 was not sampled due to insufficient water flow. Groundwater suppression system sampling locations GSS-1 and GSS-2 were not sampled due to insufficient water. First quarter results are consistent with historic results and ambient water quality.

#### *Second Quarter 2022*

Second quarter 2022 baseline sampling of groundwater, groundwater suppression system and surface water was completed as required. VOCs were not detected in second quarter baseline samples. Additionally, sampling and analysis of leachate for expanded parameters was completed. Groundwater was sampled at Cells 1 through 9 monitoring wells. Surface water sampling locations SW-4, SW-4A, SW-6, and SW-8 were not sampled in May 2022 due to dry conditions or water being diverted to a downstream retention pond. No sampling of GSS-1, GSS-2 and GSS-3 due to insufficient flow from these gravity drains. Second quarter 2022 results are consistent with historic data.

#### *Third Quarter 2022*

Third quarter 2022 routine monitoring was completed as required. Groundwater was sampled at Cells 1 through 9 monitoring wells. Surface water sampling locations SW-3A, SW-4, SW-4A, SW-5A, SW-6, SW-7, SW-8 and SW-9 were not sampled in August 2022 due to dry conditions or water being diverted to a downstream retention pond. Also GSS-1, GSS-2 and GSS-5 were dry therefore not sampled. Third quarter 2022 monitoring results are generally historically consistent.

#### *Fourth Quarter 2022*

Fourth Quarter 2022 routine parameter sampling and analysis of groundwater, surface water and groundwater suppression systems was completed as required and included sampling of Cells 1 through 9 wells. Additionally, sampling and analysis of leachate for expanded parameters was completed. Surface water sampling locations SW-3A, SW-4, SW-4A, SW-5A, SW-6 and SW-8 were not sampled in November 2022 due to either dry conditions or pond flow diverted to a downstream retention pond. Also GSS-1, GSS-2, GSS-3, GSS-4 and GSS-5 were dry and therefore not sampled. Fourth quarter 2022 monitoring results are historically consistent.

#### **Section 17 – Surface Impoundments**

This landfill does not have leachate surface impoundments.

#### **Section 18 – Permit/Consent Order Reporting Requirements**

Hakes has an Air State Facility Permit (permit # 8-4630-00010/00011) issued December 19, 2019 which has separate monitoring and reporting requirements. Compliance with air state facility permit requirements are reported separately through the Division of Air Resources.

**Section 19 – Signature and Date by Owner or Operator**

I hereby affirm under penalty of perjury that information provided on this form and attached statement and exhibits was prepared by me or under my supervision and direction and is true to the best of my knowledge and belief, and that I have the authority to sign this report form pursuant of 6 NYCRR Part 363. I am aware that any false statement made herein is punishable as a Class A misdemeanor pursuant to Section 210.45 of the Penal Law.

Kim Crosby  
Signature

Kimberly Crosby  
Name

4376 Manning Ridge Road  
Address

New York 14870  
State and Zip

02/23/2023  
Date

Director of Environmental Compliance  
Title

Campbell  
City

(802) 224-0105  
Phone Number

# Tables



Table 1

**Current and Historic Leachate Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
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**Field Parameters**

Field pH (std. units)	7.74	7	7.3	7.26	7.19
ORP (mV)	247.8	70	-182.3	112.9	233
Specific Conductivity (us/cm)	4681	6900	4303	10269	7085
Temperature (deg. C)	16.7	13.1	13.5	17.6	8.1
Turbidity (NTU)	17	35.2	44.2	25.2	84.6

**Inorganic Compounds**

Aluminum	0.315	1.01	0.373	0.163	0.2
Antimony	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
Arsenic	0.0212	0.0573	0.084	0.0761	0.044
Barium	0.665	0.352	0.936	1.72	1.28
Beryllium	0.003 U	0.003 U	0.003 U	0.003 U	0.003 U
Boron	9.39	9.99	17.7	22.5	11.8
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	189	300	419	323	339
Chromium	0.0358	0.0538	0.08	0.105	0.053
Chromium, hexavalent	0.05 U	0.1 U,*	0.2 U,*	0.2 U	0.1 U
Cobalt	0.0015 J	0.0029 J	0.0031 J	0.0022 J	0.001 J
Copper	0.02 U	0.004 J	0.0231	0.02 U	0.02 U
Iron	2.08	2.2	1.94	0.974	2.42
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	131	217	278	294	195
Manganese	3.48	5.38	5.26	3.16	8.6
Mercury	0.0002 U	0.0002 U	0.0002 U	0.001 U	0.0002 U
Nickel	0.0099 J	0.0121 J	0.0058 J	0.0143 J	0.014 J
Potassium	81.9	138	187	248	131
Selenium	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Silver	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Sodium	575	829	1070	1490	839
Thallium	0.01 U	0.01 U	0.0171	0.0076 J	0.01 U
Tin	0.5 U	0.5 U	0.5 U		0.5 U
Vanadium	0.0138 J	0.0215 J	0.0267 J	0.0346 J	0.021 J
Zinc	0.0205	0.0286	0.0475	0.0153 J	0.065

**PCB's**

Aroclor-1016	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U
Aroclor-1221	0.0018 U	0.0018 U,*	0.002 U	0.0019 U	0.002 U
Aroclor-1232	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U
Aroclor-1242	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U
Aroclor-1248	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U
Aroclor-1254	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U
Aroclor-1260	0.00091 U	0.00091 U,*	0.001 U	0.00093 U	0.001 U

**Pesticides & Herbicides**

4,4'-DDD	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
4,4'-DDE	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
4,4'-DDT	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Aldrin	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
alpha-BHC	0.000045 U	0.000053	0.00005 U	0.000046 U	0.00005 U

Table 1

**Current and Historic Leachate Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
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**Pesticides & Herbicides (con't)**

alpha-Chlordane	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
beta-BHC	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Chlorobenzilate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
delta-BHC	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Dieldrin	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Dinoseb	0.00045 U	0.00045 U	0.0005 U	0.00046 U	0.00046 U
Endosulfan I	0.000045 U	0.00029	0.00025	0.0005	0.00032
Endosulfan II	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Endosulfan sulfate	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Endrin	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Endrin aldehyde	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
gamma-BHC (Lindane)	0.000087 *	0.000066	0.00005 U	0.000046 U	0.00005 U
gamma-Chlordane	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Heptachlor	0.000045 U	0.000027 J	0.00005 U	0.000046 U	0.00005 U
Heptachlor epoxide	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Methoxychlor	0.000045 U	0.00005 U	0.00005 U	0.000046 U	0.00005 U
Methyl parathion	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Parathion	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Toxaphene	0.00046 U	0.0005 U	0.0005 U	0.0005 U	0.0005 U
2,4,5-T	0.00045 U	0.00045 U	0.0005 U	0.00046 U	0.00046 U
2,4,5-TP	0.00045 U	0.00045 U	0.0005 U	0.00046 U	0.00046 U
2,4-D	0.00045 U	0.00045 U	0.0005 U	0.00046 U	0.00046 U

**Per- and Polyfluoralkyl Substances (PFAS)**

6:2 Fluorotelomer sulfonate (FtS 6:2)	0.00026	0.000074	0.00037	0.00045	0.00027 *
8:2 Fluorotelomer sulfonic acid (FtS 8:2)	0.000014	0.0000038 J	0.000017 J	0.000019 J	0.000011 J,*
N-ethylperfluoro-1-octanesulfonamidoacetic acid	0.000027	0.0000077	0.00002 J	0.000022 J	0.000019
N-methylperfluoro-1-octanesulfonamidoacetic acid	0.000064	0.000016	0.000068	0.00011	0.000061
Perfluorobutanesulfonic Acid (PFBS)	0.00045	0.00013	0.00047	0.00068	0.00043
Perfluorobutanoic Acid (PFBA)	0.0017 X	0.00058	0.0019	0.0027	0.00081 *
Perfluorodecane Sulfonate (PFDS)	0.0000071 J	0.0000033 J	0.000026 U	0.00005 U	0.0000043 U
Perfluorodecanoic Acid (PFDA)	0.000056	0.000014	0.000033	0.000042 J	0.000033
Perfluorododecanoic Acid (PFDoA)	0.0000029 J	0.0000045 U	0.000026 U	0.00005 U	0.0000045
Perfluoroheptane sulfonate (PFHpS)	0.000011	0.0000022 J	0.000026 U	0.000027 J	0.0000043 U
Perfluoroheptanoic Acid (PFHpA)	0.00082	0.00027	0.00097	0.0012	0.00075
Perfluorohexanesulfonic Acid (PFHxS)	0.00027	0.000094	0.00024	0.00029	0.00022
Perfluorohexanoic Acid (PFHxA)	0.0039 X	0.0011	0.0026	0.0041	0.0026 *
Perfluorononanoic Acid (PFNA)	0.000076	0.000025	0.000058	0.000068	0.000046
Perfluorooctanesulfonamide (PFOSA)	0.0000027 J	0.0000009 J	0.000026 U	0.00005 U	0.0000043 U
Perfluorooctanesulfonic Acid (PFOS)	0.00019	0.000054	0.00018	0.00017	0.00014
Perfluorooctanoic Acid (PFOA)	0.0012	0.00045	0.0016	0.0017	0.0012
Perfluoropentanoic Acid (PFPeA)	0.0035 X	0.0014	0.0027	0.004	0.0029 *
Perfluorotetradecanoic acid (PFTeDA)	0.0000043 U	0.0000045 U	0.000026 U	0.00005 U	0.0000043 U
Perfluorotridecanoic acid (PFTrDA)	0.0000043 U	0.0000045 U	0.000026 U	0.00005 U	0.0000043 U
Perfluoroundecanoic Acid (PFUnA)	0.0000061	0.0000017 J	0.0000056 J	0.00005 U	0.0000071

**Radionuclide Act + Unc (MDC) pCi/L**

Radium-226, Dissolved (EPA 903.1)	0.75 ± 0.43 (0.5)	0.45 ± 0.27 (0.29)	0.65 ± 0.39 (0.46)	1.45 ± 0.76 (0.78)	1.85 ± 0.609 (0.592)
Radium-226, Total (EPA 903.1)	1.02 ± 0.48 (0.49)	0.45 ± 0.26 (0.23)	0.37 ± 0.23 (0.23)	1.99 ± 0.88 (0.61)	1.04 ± 0.527 (0.637)
Radium-228, Dissolved (EPA 904.0)	0.81 ± 0.43 (0.76)	0.75 ± 0.46 (0.86)	2.08 ± 0.68 (0.86)	2.53 ± 0.77 (0.85)	0.909 ± 0.985 (1.64)
Radium-228, Total (EPA 904.0)	1.54 ± 0.55 (0.77)	0.31 ± 0.47 (1.01)	1.58 ± 0.58 (0.84)	2.79 ± 0.82 (0.85)	1.63 ± 1.11 (1.73)
Total Uranium, Dissolved (EPA 908.0)	0.71 ± 0.19 (0.07)	1.05 ± 0.25 (0.12)	0.78 ± 0.2 (0.1)	0.65 ± 0.18 (0.11)	0.000983 ± 0.652 (0.658)
Total Uranium, Total (EPA 908.0)	0.68 ± 0.19 (0.11)	1.12 ± 0.25 (0.09)	0.51 ± 0.16 (0.1)	0.78 ± 0.22 (0.1)	0.000983 ± 0.667 (0.682)

Table 1

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**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
<b>Semi Volatile Organic Compounds</b>					
1,2,4,5-Tetrachlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
1,3,5-Trinitrobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
1,3-Dinitrobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
1,4-Dioxane	0.11	0.045 *	0.053 *	0.076	0.091 *
1,4-Naphthoquinone	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
1,4-Phenylenediamine	0.045 U	0.045 UX	0.05 UX	0.046 U	0.5 U
1-Naphthylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,3,4,6-Tetrachlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,4,5-Trichlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,4,6-Trichlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,4-Dichlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,4-Dimethylphenol	0.0017 J	0.0016 J	0.003 J	0.0093 U	0.1 U
2,4-Dinitrophenol	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
2,4-Dinitrotoluene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,6-Dichlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,6-Dinitrotoluene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Acetylaminofluorene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Chloronaphthalene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Chlorophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Methyl-5-nitroaniline	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Methylnaphthalene	0.0091 U	0.0091 U	0.0092 J	0.0093 U	0.1 U
2-Methylphenol	0.0091 U	0.0091 U	0.0025 J	0.0093 U	0.1 U
2-Naphthylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Nitroaniline	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2-Nitrophenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
3,3-Dichlorobenzidine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
3,3-Dimethylbenzidine	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
3/4-Methylphenol	0.0091 U	0.0015 J	0.053	0.0093 U	0.058 J
3-Methylcholanthrene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
3-Nitroaniline	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4,6-Dinitro-2-methylphenol	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
4-Aminobiphenyl	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Bromophenyl-phenylether	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Chloro-3-methylphenol	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Chloroaniline	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Chlorophenyl-phenylether	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Dimethylaminoazobenzene			0.01 U		
4-Nitroaniline	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
4-Nitrophenol	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
7,12-Dimethylbenz(a)anthracene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.5 U
Acenaphthene	0.0091 U	0.0016 J	0.01	0.0039 J	0.1 U
Acenaphthylene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Acetophenone	0.006 J	0.0023 J	0.0034 J	0.0093 U	0.1 U
Anthracene	0.0091 U	0.0091 U	0.0016 J	0.0093 U	0.1 U
Benzo(a)anthracene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Benzo(a)pyrene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Benzo(b)fluoranthene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Benzo(g,h,i)perylene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Benzo(k)fluoranthene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Benzyl alcohol	0.0091 U	0.0091 U	0.0018 J	0.0093 U	0.1 U

Table 1

**Current and Historic Leachate Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
<b>Semi Volatile Organic Compounds (con't)</b>					
Bis(1-chloroisopropyl) Ether	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
bis(2-Chloroethoxy) methane	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
bis(2-Chloroethyl) ether	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
bis(2-Ethylhexyl) phthalate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Butylbenzylphthalate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Chrysene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Diallate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Dibenzo(a,h)anthracene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Dibenzofuran	0.0091 U	0.0091 U	0.0053 J	0.0022 J	0.1 U
Diethylphthalate	0.0013 J	0.0091 U	0.01 U	0.0093 U	0.1 U
Dimethoate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Dimethylphthalate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Di-n-butylphthalate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Di-n-octylphthalate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Diphenylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Disulfoton	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Ethyl methanesulfonate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Famphur	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Fluoranthene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Fluorene	0.0091 U	0.0091 U	0.004 J	0.0093 U	0.1 U
Hexachlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Hexachlorocyclopentadiene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Hexachloroethane	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Hexachloropropene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Indeno(1,2,3-cd)pyrene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Isodrin	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Isophorone	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Isosafrole	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Kepone	0.0091 U	0.0091 U	0.01 U	0.0097 U	0.5 U
Methapyrilene	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
Methyl methanesulfonate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Nitrobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosodibutylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosodiethylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosodimethylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosodi-n-propylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosodiphenylamine/Diphenylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosomethylethylamine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosopiperidine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
N-Nitrosopyrrolidine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
o,o,o-Triethyl phosphorothioate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
o-Toluidine	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
p-(Dimethylamino)azobenzene	0.0091 U	0.0091 U		0.0093 U	0.1 U
Pentachlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Pentachloronitrobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Pentachlorophenol	0.045 U	0.045 U	0.05 U	0.046 U	0.5 U
Phenacetin	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Phenanthrene	0.0091 U	0.0091 U	0.0017 J	0.0093 U	0.1 U
Phorate	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Pronamide	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Pyrene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Safrole	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Thionazin	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U

Table 1

**Current and Historic Leachate Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
<b>Volatile Organic Compounds</b>					
1,1,1,2-Tetrachloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1,1-Trichloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1,2,2-Tetrachloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1,2-Trichloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1-Dichloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1-Dichloroethene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,1-Dichloropropene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2,3-Trichloropropane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-Dibromo-3-chloropropane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-Dibromoethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-Dichlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
1,2-Dichloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2-Dichloropropane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,3-Dichlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
1,3-Dichloropropane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,4-Dichlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
2,2-Dichloropropane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
2-Butanone (MEK)	0.068 J	0.08 J	0.13 J	0.18 J	0.65
2-Chloro-1,3-butadiene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
2-Hexanone	0.2 U	0.25 U	0.25 U	0.25 U	0.011 J
4-Methyl-2-pentanone	0.018 J	0.0061 J	0.015 J	0.014 J	0.061 J
Acetone	0.3	0.27	0.26	0.51	1.4
Acetonitrile	2 U	2.5 U	2.5 U	2.5 U	2.5 U
Acrolein	2 U	2.5 U	2.5 U	2.5 U	2.5 U
Acrylonitrile	2 U	2.5 U	2.5 U	2.5 U	2.5 U
Allyl chloride	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Benzene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Bromochloromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Bromodichloromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Bromoform	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Bromomethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Carbon disulfide	0.2 U	0.25 U	0.044 J	0.25 U	0.25 U
Carbon tetrachloride	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Chlorobenzene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Chloroethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Chloroform	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Chloromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
cis-1,2-Dichloroethene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
cis-1,3-Dichloropropene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Dibromochloromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Dibromomethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Dichlorodifluoromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Dichloromethane (Methylene chloride)	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Ethyl benzene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Ethyl methacrylate	0.2 U	0.25 U	0.25 U	0.25 U	0.25 U
Iodomethane	0.2 U	0.25 U	0.25 U	0.25 U	0.25 U
Isobutyl alcohol	2 U	2.5 U	2.5 U	2.5 U	2.5 U
m&p-Xylene	0.1 U	0.13 U	0.0054 J	0.13 U	0.0068 J
Methacrylonitrile	0.4 U	0.5 U	0.5 U	0.5 U	0.5 U
Methyl methacrylate	0.2 U	0.25 U	0.25 U	0.25 U	0.25 U

Table 1

**Current and Historic Leachate Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	LCS 11/10/2020	LCS 5/12/2021	LCS 11/11/2021	LCS 5/17/2022	LCS 11/29/2022
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**Volatile Organic Compounds (con't)**

o-Xylene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Phenol	0.0091 U	0.0091 U	0.0077 J	0.0093 U	0.019 J
Propionitrile	2 U	2.5 U	2.5 U	2.5 U	2.5 U
Styrene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Tetrachloroethene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Toluene	0.1 U	0.13 U	0.13 U	0.13 U	0.0075 J
trans-1,2-Dichloroethene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
trans-1,3-Dichloropropene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
trans-1,4-Dichloro-2-butene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Trichloroethene	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Trichlorofluoromethane	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
Vinyl acetate	0.2 U	0.25 U	0.25 U	0.25 U	0.25 U
Vinyl chloride	0.1 U	0.13 U	0.13 U	0.13 U	0.13 U
1,2,4-Trichlorobenzene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Hexachlorobutadiene	0.0091 U	0.0091 U	0.01 U	0.0093 U	0.1 U
Naphthalene	0.0091 U	0.0091 U	0.028	0.0093 U	0.049 J

**General Chemistry**

Alkalinity	1190	1380	2260	2550	1760
Ammonia Nitrogen	84.8	118	253	233	159
Biochemical Oxygen Demand	21.1	68.7	110	42.6	73.5
Bromide	4.9	6.2	7.3	10	5.7
Chemical Oxygen Demand	575	696	1210	1210	823
Chloride	878	1570	1830	3180	1550
Color (True) (C.U.)	700	1000	600	440	375
Cyanide	0.022	0.011	0.299	0.047 J	0.0191
Hardness	1010	1640	2190	2020	1650
Nitrate Nitrogen	1 U	1 U	1 U	1 U	1 U
pH of Color Analysis	7.76 *	7.84 *	7.19	7.6	7.51
Sulfate	251	853	646	369	523
Total Dissolved Solids	2830	4730	6050	6920	4780
Total Kjeldahl Nitrogen	109	139	216	262	163
Total Organic Carbon (TOC)	202	204	443	425	1060
Total Phenolics	0.0082	0.046	0.075	0.044	0.112

**Notes:**

**U** - Concentration not detected at specified detection limit

**J** - Estimated value

**X/UX** - Refer to laboratory analytical report for details

**\*** - Analysis was performed out of hold time.

Table 2

Fourth Quarter 2022 Groundwater Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	Upgradient Wells				Downgradient Wells														Class GA Standard
	MW-H 11/22/2022	MW-QR 11/22/2022	MW-R(BR) 11/29/2022	MW-S(BR) 11/22/2022	MW-CR 11/22/2022	MW-D 11/22/2022	MW-E 11/29/2022	MW-F 11/29/2022	MW-GR 11/22/2022	MW-J 11/29/2022	MW-N 11/22/2022	MW-O 11/22/2022	MW-O(BR) 11/22/2022	MW-P 11/29/2022	MW-T(BR) 11/22/2022	MW-U(BR) 11/22/2022	MW-V 11/22/2022	MW-V(BR) 11/29/2022	
<b>Field Parameters</b>																			
Depth to Groundwater (ft)	5.37	8.28	15.61	4.67	11.82	27.7	19.9	26.94	39.57	16.6	22.11	22.73	55.52	21.19	6.05	38.58	16.49	28.37	
Dissolved Oxygen	2.73		3.63	0.53	2.99		4.43	2.82		9.44		1.38		3.18	2.67	0.62	3.94	0.45	
Field pH (std. units)	<b>6.43</b>	6.78	6.72	7.77	7.06	7.36	6.81	<b>6.26</b>	6.93	7.12	7.07	7.78	8.17	7.42	7.74	7.73	7.47	7.44	6.5 - 8.5
ORP (mV)	127.1	122.8	105.8	-26.9	97.9	105.2	144.4	126.2	115.3	143.5	112.6	73.9	71.5	71	83.6	153	158.7	-67.3	
Specific Conductivity (us/cm)	889	721	277.8	327.2	628.1	487.7	712.8	621.8	652.9	1034	724	352.3	335.7	468	306.2	266.7	959	598.6	
Temperature (deg. C)	7.4	11.6	3.9	7.5	9.8	12.4	8.6	8.8	12.3	8.4	12.8	9.2	11.3	7	10.8	10.1	9.8	8.8	
Turbidity (NTU)	0.02	3.83	<b>19.2</b>	1.73	1.54	<b>11.2</b>	<b>39.4</b>	<b>7.58</b>	3.81	<b>24.8</b>	<b>12.2</b>	0.02	<b>6.4</b>	<b>19.3</b>	<b>10.3</b>	<b>23.1</b>	<b>7.23</b>	4.45	5
<b>Inorganic Compounds</b>																			
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.025
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0004 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005
Calcium	66.4	31.4	28.1	46.7	87.9	73.5	121	87.6	112	108	104	41.5	37.8	65.7	44.6	39.1	81.6	78.8	
Iron	0.1 U	0.17	<b>0.66</b>	0.1 U	0.1 U	<b>0.53</b>	<b>1.99</b>	0.17	0.11	<b>1.83</b>	<b>0.38</b>	0.1 U	0.1 J	<b>0.66</b>	<b>0.35</b>	<b>0.76</b>	0.1 U	0.27	0.3
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025
Magnesium	28.8	11.5	5.3	12	27.2	16.5	32.4	23.4	19.9	32.6	22.7	13	11.7	18.8	10.6	9.5	43.3	24.8	
Manganese	0.018	0.063	0.026	<b>0.553</b>	0.01	0.01	<b>0.561</b>	0.03	0.01 U	<b>0.509</b>	<b>1.64</b>	0.075	0.036	<b>1.18</b>	<b>0.573</b>	<b>0.592</b>	0.179	<b>0.859</b>	0.3
Potassium	1 J	2.2	1.7 J	1.8 J	2.3	1.9 J	2	1.8 J	1.2 J	4.6	5.1	2.1	3.2	2.2	1.6 J	1.7 J	35.2	2.2	
Sodium	<b>67.8</b>	<b>92.1</b>	4.1	10.7	13.4	10.7	15.3	14.9	9.7	<b>91.6</b>	<b>28.4</b>	17.4	17.7	<b>23.6</b>	10.7	9.8	<b>70</b>	<b>24.4</b>	20
<b>General Chemistry</b>																			
Alkalinity	125	95	50.7	168	347	263	382	278	382	364	423	194	176	234	166	149	446	270	
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.035 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.127	0.05 U	0.05 U	0.039 J	0.05 U	0.03 J	0.028 J	0.039 J	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	5 U	4.5 J	5 U	5 U	5 U	5 U	4.2 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	144	150	9.7	0.8 J	13.7	11.6	7.3	28.3	6.5	122	2.3	1.9 J	1.5 J	6.6	1.3 J	1.2 J	1.6 J	1.1 J	250
Hardness	284	126	91.9	166	332	251	437	315	363	405	352	157	143	241	155	137	382	299	
Nitrate Nitrogen	0.7 J	0.5 J	2.4	1 U	0.3 J	0.5 J	0.4 J	0.2 J	0.4 J	1 U	0.3 J	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	10
Sulfate	101	43.7	20.9	37.3	28.9	18.1	65.8	56.5	25.3	58.1	39.8	19.9	23.3	48.4	25.2	16	163	98	250
Total Dissolved Solids	<b>561</b>	438	107	228	392	303	474	407	426	<b>640</b>	484	222	212	309	208	178	<b>677</b>	408	500
Total Kjeldahl Nitrogen	0.2 U	0.26	0.17 J	0.2 U	0.2 U	0.2 U	0.27	0.2 U	0.2 U	0.15 J	0.35	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Total Organic Carbon (TOC)	0.9 J	3.7	0.7 J	1 U	0.9 J	1 U	2.2	1.7	1 U	0.9 J	1.6	1 U	1 U	1 U	1 U	2.4	0.6 J	1 U	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001

Notes:

Class GA Standard - NYSDEC Class GA Groundwater Standard  
 Concentrations in **bold** exceed Class GA Standards

U - Concentration not detected at specified detection limit  
 J - Estimated value

Table 3

**Fouth Quarter 2022 Surface Water Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	SW-1A 11/22/2022	SW-2 11/22/2022	SW-2A 11/22/2022	SW-7 11/22/2022	SW-7A 11/22/2022	SW-9 11/22/2022	Class C Standard
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**Field Parameters**

Dissolved Oxygen	10.31	12.51	12.59	11.85	12.04		Not < 5
Field pH (std. units)	<b>8.59</b>	6.97	7.32	6.72	7.43	7.27	6.5 - 8.5
ORP (mV)	73.2	120.4	117.2	109.1	123	126.2	
Specific Conductivity (us/cm)	100.1	174.9	132	99.3	104.8	247.3	
Temperature (deg. C)	2.3	3.1	3.7	3.6	1.1	5	
Turbidity (NTU)	2.99	18.6	6.68	2.43	2.84	68.8	

**Inorganic Compounds**

Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Calcium	6.5	19.5	12.9	8.1	8.9	33	
Iron	1.02	0.57	0.25	0.1 U	0.1 U	1.71	
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.008
Magnesium	2.2	5.2	3.5	2.2	2.3	7.8	
Manganese	0.04	0.015	0.006 J	0.01 U	0.01 U	0.04	
Potassium	1 J	1.7 J	1.1 J	0.7 J	0.8 J	3.8	
Sodium	9.9	7	7.6	7.8	8	3.5	

**General Chemistry**

Alkalinity	19	41.4	30.9	21.5	24.9	40.1	
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.046 J	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	7.7	4.5 J	5 U	5 U	5 U	10.4	
Chloride	15.4	10	12.1	12.6	12.8	4.8	
Hardness	25.4	70.2	46.4	29	31.9	114	
Nitrate Nitrogen	0.3 J	0.4 J	0.4 J	0.4 J	0.4 J	0.8 J	
Sulfate	8.4	33.8	18.5	8.8	8.7	78.3	
Total Dissolved Solids	70	126	92	65	72	194	500
Total Kjeldahl Nitrogen	0.24	0.25	0.19 J	0.16 J	0.2 U	0.6	
Total Organic Carbon (TOC)	4	3	2.4	2.2	2.3	4.7	
Total Phenolics	0.0036 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	

**Notes:**

Class C Standard - NYSDEC Class C Surface Water Standard  
Concentrations within Class C Standards

**U** - Concentration not detected at specified detection limit

**J** - Estimated value



Table 4

**Fourth Quarter 2022 Groundwater Suppression System Analytical Results**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter	GSS-1A 11/22/2022	GSS-6 11/22/2022	GSS-8 11/22/2022	GSS-9 11/22/2022	Class GA Standard
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**Field Parameter**

Field pH (std. units)	6.51	6.93	6.82	6.92	6.5 - 8.5
ORP (mV)	50.9	84.6	149.3	104.3	
Specific Conductivity (us/cm)	339.1	1204	892	236.2	
Temperature (deg. C)	12.6	17.3	15.2	12.5	
Turbidity (NTU)	<b>6.74</b>	2.08	<b>5.12</b>	1.91	5

**Inorganic Compounds**

Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.025
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005
Calcium	47.4	102	109	57.3	
Iron	<b>0.86</b>	0.1 U	0.13	0.1 U	0.3
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.025
Magnesium	11.7	60.9	23.2	13.8	
Manganese	0.288	0.005 J	0.294	0.01 U	0.3
Potassium	1.6 J	4.3	2.1	2.1	
Sodium	4.1	<b>34.9</b>	<b>49.4</b>	11.2	20

**General Chemistry**

Alkalinity	127	546	287	173	
Ammonia Nitrogen	0.067	0.05 U	0.029 J	0.05 U	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	21.2	5 U	5 U	5 U	
Chloride	1.9 J	20.9	122	15.3	250
Hardness	167	507	369	200	
Nitrate Nitrogen	1.9	0.4 J	0.5 J	1.3	10
Sulfate	48.4	245	65.4	44.8	250
Total Dissolved Solids	225	<b>986</b>	<b>585</b>	282	500
Total Kjeldahl Nitrogen	0.77	0.2 U	0.21	0.2 U	
Total Organic Carbon (TOC)	9.5	1	2.6	0.6 J	
Total Phenolics	0.005 U	0.005 U	0.005 U	<b>0.0032 BJ</b>	0.001

**Notes:**

**Class GA Standard** - NYSDEC Class GA Groundwater Standards  
Concentrations in **bold** exceed Class GA Standards

**U** - Concentration not detected at specified detection limit

**J/BJ** - Estimated value

Table 5  
 Current and Historic Groundwater Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	Upgradient Wells															Downgradient Wells										
	MW-H 11/11/2021	MW-H 2/15/2022	MW-H 5/12/2022	MW-H 8/8/2022	MW-H 11/22/2022	MW-QR 11/11/2021	MW-QR 2/15-16/2022	MW-QR 5/10-11/2022	MW-QR 8/4/2022	MW-QR 11/22/2022	MW-R(BR) 11/11/2021	MW-R(BR) 2/16/2022	MW-R(BR) 5/12/2022	MW-R(BR) 8/8/2022	MW-R(BR) 11/29/2022	MW-S(BR) 11/11/2021	MW-S(BR) 3/17/2022	MW-S(BR) 5/11/2022	MW-S(BR) 8/10/2022	MW-S(BR) 11/22/2022	MW-CR 11/11/2021	MW-CR 2/16/2022	MW-CR 5/12/2022	MW-CR 8/9/2022	MW-CR 11/22/2022	
<b>Field Parameters</b>																										
Depth to Groundwater (ft)	4.77	5.41	4.74	5.14	5.37	5.57	8.94	7.14	10.65	8.28	15.27	18.78	16.72	21.24	15.61	3.4	3.36	2.58	4.83	4.67	10.6	11.31	10.11	10.76	11.82	
Dissolved Oxygen	3.12	5.07	2.22	2.35	2.73						0.82	9.68	6.28	1.88	3.63	1.53	0.76	0.26	0.33	0.53	3.58	0.53	2.45	2.54	2.99	
Field pH (std. units)	6.72	6.69	6.56	6.5	6.43	6.97	6.05	5.75	6.29	6.78	6.94	6.81	5.79	6.78	6.72	7.52	7.83	7.71	7.81	7.77	7.08	7.1	7.05	6.97	7.06	
ORP (mV)	115.4	216.1	114.3	202.1	127.1	72.5	198.1	188.7	203.1	122.8	131.3	147.3	163.9	189.9	105.8	-8	44	-16	133.4	-26.9	92.4	190.2	89.6	207.1	97.9	
Specific Conductivity (us/cm)	472.9	477.5	462.4	603	889	180.7	1327	1045	1025	721	241.7	183.6	96.7	293.9	277.8	353.4	332.2	317.6	347.6	327.2	535.8	619.3	646	672	628.1	
Temperature (deg. C)	10.9	7.6	15	21.9	7.4	13.3	5.1	9.8	17.1	11.6	8.7	5.8	24.3	20.9	3.9	10.6	7.8	10.9	13.8	7.5	12.6	7	19.7	18.9	9.8	
Turbidity (NTU)	3.24	0.54	1.48	0.81	0.02	7.66	14.8	4.57	5.09	3.83	28.1	29.3	35.3	36.6	19.2	0.77	3.73	0.52	0.53	1.73	2.22	3.17	3.04	2.54	1.54	
<b>Inorganic Compounds</b>																										
Aluminum			0.0437 J					0.0376 J					0.997					0.1 U						0.1 U		
Antimony			0.06 U					0.06 UJ					0.06 U					0.06 U						0.06 U		
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium			0.0145 J					0.0823					0.0261					0.0861					0.0641			
Beryllium			0.003 U					0.003 U					0.003 U					0.003 U					0.003 U			
Boron			0.0127 J					0.016 J					0.0169 J					0.0434 J					0.0257 J			
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Calcium	53.3	51.9	48.6	50.5	66.4	12.9	86.6	58	44.6	31.4	39.6	31.6	13.4	48	28.1	48.1	47.6	48.7	48.2	46.7	98.3	105	102	92.2	87.9	
Chromium			0.01 U					0.01 U					0.01 U					0.01 U					0.01 U			
Chromium, hexavalent			0.01 UJ					0.01 U					0.01 UJ					0.01 UJ					0.01 UJ			
Cobalt			0.05 U					0.002 J					0.0017 J					0.05 U					0.05 U			
Copper			0.02 U					0.02 U					0.02 U					0.02 U					0.02 U			
Iron	0.1 J	0.1 U	0.1 U	0.1 U	0.1 U	0.75	1.3	0.144	0.31	0.17	1.82	1.63	0.953	1.86	0.66	0.1 U	0.19	0.1 U	0.1 U	0.1 U	0.1 U	0.07 J	0.1 U	0.1 U	0.1 U	
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Magnesium	22.3	22.5	21.6	21.7	28.8	4.8	31.6	22.9	18.4	11.5	6.3	5.1	3.14	7.7	5.3	12.4	12.2	12.7	12	12	29.1	31.6	31	28.4	27.2	
Manganese	0.072	0.01 U	0.005 J	0.011	0.018	0.076	0.258	0.134	0.228	0.063	0.09	0.06	0.0558	0.092	0.026	0.607	1.06	0.648	0.508	0.553	0.01 J	0.022	0.0124	0.017	0.01	
Mercury			0.0002 U					0.0002 U					0.0002 U					0.0002 U					0.0002 U			
Nickel			0.04 U					0.0057 J					0.04 U					0.04 U					0.04 U			
Potassium	0.8 J	0.8 J	0.608 J	0.6 J	1 J	1.4 J	3	2.31	2.7	2.2	2.4	2 J	1.18 J	2.4	1.7 J	1.6 J	1.8 J	1.67 J	1.7 J	1.8 J	2.8	2.7	2.79	2.9	2.3	
Selenium			0.01 U					0.01 U					0.01 U					0.01 U					0.01 U			
Silver			0.01 U					0.01 U					0.01 U					0.01 U					0.01 U			
Sodium	33.8	31.6	30.2	43.8	67.8	51.8	152	146	123	92.1	3.7	3.7	3.31	3.8	4.1	11.3	11.2	11.6	10.8	10.7	14.5	14.8	15.4	14.3	13.4	
Thallium			0.01 U					0.01 U					0.01 U					0.01 U					0.01 U			
Vanadium			0.05 U					0.05 U					0.0016 J					0.05 U					0.05 U			
Zinc			0.0043 J					0.0125 J					0.0226					0.0027 J					0.0106 J			
<b>Volatile Organic Compounds</b>																										
1,1,1,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,1,1-Trichloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,1,2-Trichloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,1-Dichloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,1-Dichloroethene			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2,3-Trichloropropane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2-Dibromoethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2-Dichlorobenzene			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2-Dichloroethane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,2-Dichloropropane			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
1,4-Dichlorobenzene			0.005 U					0.005 U					0.005 U					0.005 U					0.005 U			
2-Butanone (MEK)			0.01 U					0.01 U					0.01 U					0.01 U					0.01 U			

Table 5

Current and Historic Groundwater Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	Upgradient Wells															Downgradient Wells										
	MW-H 11/11/2021	MW-H 2/15/2022	MW-H 5/12/2022	MW-H 8/8/2022	MW-H 11/22/2022	MW-QR 11/11/2021	MW-QR 2/15-16/2022	MW-QR 5/10-11/2022	MW-QR 8/4/2022	MW-QR 11/22/2022	MW-R(BR) 11/11/2021	MW-R(BR) 2/16/2022	MW-R(BR) 5/12/2022	MW-R(BR) 8/8/2022	MW-R(BR) 11/29/2022	MW-S(BR) 11/11/2021	MW-S(BR) 3/17/2022	MW-S(BR) 5/11/2022	MW-S(BR) 8/10/2022	MW-S(BR) 11/22/2022	MW-CR 11/11/2021	MW-CR 2/16/2022	MW-CR 5/12/2022	MW-CR 8/9/2022	MW-CR 11/22/2022	
<b>Volatiles Organic Compounds (con't)</b>																										
2-Hexanone			0.01 U					0.01 U										0.01 U								0.01 U
4-Methyl-2-pentanone			0.01 U					0.01 U										0.01 U								0.01 U
Acetone			0.01 U					0.01 U										0.01 U								0.01 U
Acrylonitrile			0.1 U					0.1 U										0.1 U								0.1 U
Benzene			0.005 U					0.005 U										0.005 U								0.005 U
Bromochloromethane			0.005 U					0.005 U										0.005 U								0.005 U
Bromodichloromethane			0.005 U					0.005 U										0.005 U								0.005 U
Bromoform			0.005 U					0.005 U										0.005 U								0.005 U
Bromomethane			0.005 U					0.005 U										0.005 U								0.005 U
Carbon disulfide			0.01 U					0.01 U										0.01 U								0.01 U
Carbon tetrachloride			0.005 U					0.005 U										0.005 U								0.005 U
Chlorobenzene			0.00061 J					0.005 U										0.005 U								0.005 U
Chloroethane			0.005 U					0.005 U										0.005 U								0.005 U
Chloroform			0.005 U					0.005 U										0.005 U								0.005 U
Chloromethane			0.005 U					0.005 U										0.005 U								0.005 U
cis-1,2-Dichloroethene			0.005 U					0.005 U										0.005 U								0.005 U
cis-1,3-Dichloropropene			0.005 U					0.005 U										0.005 U								0.005 U
Dibromochloromethane			0.005 U					0.005 U										0.005 U								0.005 U
Dibromomethane			0.005 U					0.005 U										0.005 U								0.005 U
Dichloromethane (Methylene chloride)			0.005 U					0.005 U										0.005 U								0.005 U
Ethyl benzene			0.005 U					0.005 U										0.005 U								0.005 U
Iodomethane			0.01 U					0.01 U										0.01 U								0.01 U
m&p-Xylene			0.005 U					0.005 U										0.005 U								0.005 U
o-Xylene			0.005 U					0.005 U										0.005 U								0.005 U
Styrene			0.005 U					0.005 U										0.005 U								0.005 U
Tetrachloroethene			0.005 U					0.005 U										0.005 U								0.005 U
Toluene			0.005 U					0.005 U										0.005 U								0.005 U
trans-1,2-Dichloroethene			0.005 U					0.005 U										0.005 U								0.005 U
trans-1,3-Dichloropropene			0.005 U					0.005 U										0.005 U								0.005 U
trans-1,4-Dichloro-2-butene			0.005 U					0.005 U										0.005 U								0.005 U
Trichloroethene			0.005 U					0.005 U										0.005 U								0.005 U
Trichlorofluoromethane			0.005 U					0.005 U										0.005 U								0.005 U
Vinyl acetate			0.01 U					0.01 U										0.01 U								0.01 U
Vinyl chloride			0.005 U					0.005 U										0.005 U								0.005 U

<b>General Chemistry</b>																										
	118	110	103	112	125	40.8	30.4	25.8	66.3	95	106	52.2	29.5	94.6	50.7	166	160	160	160	168	353	360	363	344	347	
Alkalinity																										
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.029 J	0.035 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U,*	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	5 U	5 U	5 U	5 U	5 U	4.3 J	5 U	4.6 J	8.7	4.5 J	5 U	5 U	5.3	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	15.4	12.7	10.3	40.9	144	73.4	475	317 J	273	150	1.8 J	2.4	2	2.1	9.7	0.6 J	2 U	1 J	0.8 J	0.8 J	13.6	14.7	14.1	14.4	13.7	
Color (True) (C.U.)			3					4										1								
Cyanide			0.005 U					0.005 U										0.005 U								
Hardness	225	222	210	215	284	51.9	346	239	187	126	125	99.9	46.4	152	91.9	171	169	174	170	166	365	393	382	347	332	
Nitrate Nitrogen	0.4 J	0.3 J	0.5 J	0.5 J	0.7 J	1 U	0.5 J	0.3 J	1 U	0.5 J	1.9	1.6	1.7	1.2	2.4	1 U	1 U	1 U	1 U,*	1 U	1 U	1 U	0.3 J	0.4 J	0.3 J	
pH of Color Analysis			6.76					5.81					6.18					7.69					7.05			
Sulfate	148	146	136	144	101	17.6	25.7	26.9	38.6	43.7	11.9	38.6	13.6	58	20.9	37.3	39.8	41.5	38.9	37.3	27.1	28.7	28.6	29.3	28.9	
Total Dissolved Solids	373	373	350	380	561	194	807	627	556	438	142	138	85	195	107	214	220	234	214	228	391	411	442	395	392	
Total Kjeldahl Nitrogen	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.16 J	0.15 J	0.26	0.2 U	0.33	0.34	0.2 B	0.17 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.32	0.19 J	0.2 U	
Total Organic Carbon (TOC)	0.6 J	0.9 J	1.8	0.8 J	0.9 J	1.7	1.5	0.8 J	3.2	3.7	1.2	1.1	0.7 J	1.1	0.7 J	1 U	0.5 J	1 U	0.6 J	1 U	1 J	1.1	1	1.7	0.9 J	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	

Table 5  
 Current and Historic Groundwater Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	Downgradient Wells																								
	MW-D 11/11/2021	MW-D 2/16/2022	MW-D 5/10-11/2022	MW-D 8/4/2022	MW-D 11/22/2022	MW-E 11/11/2021	MW-E 2/16/2022	MW-E 5/17/2022	MW-E 8/9/2022	MW-E 11/29/2022	MW-F 11/11/2021	MW-F 2/16/2022	MW-F 5/17/2022	MW-F 8/9/2022	MW-F 11/29/2022	MW-GR 11/11/2021	MW-GR 2/16/2022	MW-GR 5/10/2022	MW-GR 8/4/2022	MW-GR 11/22/2022	MW-J 11/11/2021	MW-J 2/17/2022	MW-J 5/17/2022	MW-J 8/8/2022	MW-J 11/29/2022
<b>Field Parameters</b>																									
Depth to Groundwater (ft)	25.32	26.45	25.9	26.1	27.7	17.58	18.18	18.33	20.48	19.9	25	22.58	25.44	26.36	26.94	35.47	36.6	36.18	38.3	39.57	15.19	15.19	14.52	16.08	16.6
Dissolved Oxygen						1.66	1.27	0.95	1.51	4.43	2.98	6.08	0.65	0.96	2.82						1.61	1.99	2.09	0.53	9.44
Field pH (std. units)	7.41	7.36	7.35	7.32	7.36	6.54	6.79	6.78	6.64	6.81	6.28	6.38	6.24	6.11	6.26	6.92	6.79	6.73	6.7	6.93	6.75	6.97	6.99	6.97	7.12
ORP (mV)	116.9	133.4	140.9	186.1	105.2	195.7	177.1	159.1	212.3	144.4	159.8	157.5	153.2	224.7	126.2	118.8	158.5	148	199.3	115.3	134	137.2	266.2	176.9	143.5
Specific Conductivity (us/cm)	249.7	451.2	481	518.6	487.7	726	620.9	673	737	712.8	729	793	714	707	621.8	594.1	563.4	602.9	659	652.9	1098	982	1025	1084	1034
Temperature (deg. C)	12.6	10.8	11.8	14.2	12.4	12.6	7	17.1	21.4	8.6	12.8	5.9	16.3	21.9	8.8	13.1	11.1	13.1	14.5	12.3	11.7	9.2	11.1	25.2	8.4
Turbidity (NTU)	23.6	1.4	2.26	3.56	11.2	12.1	9.32	16.4	3.57	39.4	18.1	8.27	2.81	6.91	7.58	11.1	2.83	4.64	3.85	3.81	7.37	10	27	15.1	24.8
<b>Inorganic Compounds</b>																									
Aluminum			0.0567 J					0.534					0.0655 J					0.0765 J							2.43
Antimony			0.06 U					0.06 U					0.06 U					0.06 U							0.06 U
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium			0.0907					0.0964					0.145					0.135							0.1
Beryllium			0.003 U					0.003 U					0.003 U					0.003 U							0.003 U
Boron			0.019 J					0.0238 J					0.0173 J					0.0187 J							0.0355 J
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0004 J
Calcium	83.8	77.9	80	74.6	73.5	107	113	110	107	121	133	145	115	102	87.6	108	110	112	111	112	95.4	99.8	94.8	98.3	108
Chromium			0.01 U					0.0015 J					0.01 U					0.01 U							0.0038 J
Chromium, hexavalent			0.01 U					0.01 U					0.01 U					0.01 U							0.01 U
Cobalt			0.05 U					0.05 U					0.05 U					0.05 U							0.0015 J
Copper			0.02 U					0.02 U					0.02 U					0.02 U							0.02 U
Iron	1.58	0.1 U	0.0721 J	0.11	0.53	0.54	0.1	0.556	0.1 U	1.99	0.78	0.25	0.0877 J	0.37	0.17	0.1 U	0.1 U	0.108	0.09 J	0.11	0.25	0.42	2.36	0.8	1.83
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	19.6	17	19	16.4	16.5	30.7	30.1	29	30.6	32.4	33.9	35.6	30.6	27.8	23.4	19.1	19.7	19.8	19.8	19.9	24.1	26.7	25.4	26.9	32.6
Manganese	0.05	0.01 U	0.01 U	0.01 U	0.01	0.37	0.348	0.402	0.117	0.561	0.075	0.031	0.0297	0.143	0.03	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.132	0.068	0.18	0.084	0.509
Mercury			0.0002 U					0.0002 U					0.0002 U					0.0002 U							0.0002 U
Nickel			0.04 U					0.04 U					0.04 U					0.04 U							0.04 U
Potassium	2.4	1.8 J	1.71 J	1.6 J	1.9 J	1.4 J	1.1 J	1.35 J	1 J	2	3.2	2.6	2.06	1.8 J	1.8 J	1.2 J	1.2 J	1.3 J	1.1 J	1.2 J	3	3.3	3.9	3.6	4.6
Selenium			0.01 U					0.01 U					0.01 U					0.01 U							0.01 U
Silver			0.01 U					0.01 U					0.01 U					0.01 U							0.01 U
Sodium	12.2	10.7	11.8	10.8	10.7	16.6	13.8	12.1	14.3	15.3	20.3	18.3	17.3	15.9	14.9	10.3	10.1	12.9	9.9	9.7	123	107	114	105	91.6
Thallium			0.01 U					0.01 U					0.01 U					0.01 U							0.01 U
Vanadium			0.05 U					0.0008 J					0.05 U					0.05 U							0.0049 J
Zinc			0.02 U					0.0038 J					0.0381					0.02 U							0.0088 J
<b>Volatile Organic Compounds</b>																									
1,1,1,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,1,1-Trichloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,1,2-Trichloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,1-Dichloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,1-Dichloroethene			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2,3-Trichloropropane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2-Dibromoethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2-Dichlorobenzene			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2-Dichloroethane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,2-Dichloropropane			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
1,4-Dichlorobenzene			0.005 U					0.005 U					0.005 U					0.005 U							0.005 U
2-Butanone (MEK)			0.01 U					0.01 U					0.01 U					0.01 U							0.01 U



Table 5

**Current and Historic Groundwater Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)**

Parameter	Downgradient Wells																									
	MW-N 11/11/2021	MW-N 2/16/2022	MW-N 5/10/2022	MW-N 8/4/2022	MW-N 11/22/2022	MW-O 11/10/2021	MW-O 2/15/2022	MW-O 5/12/2022	MW-O 8/4/2022	MW-O 11/22/2022	MW-O(BR) 11/11/2021	MW-O(BR) 2/16/2022	MW-O(BR) 5/10-11/2022	MW-O(BR) 8/4/2022	MW-O(BR) 11/22/2022	MW-P 11/11/2021	MW-P 2/16/2022	MW-P 5/17/2022	MW-P 8/8/2022	MW-P 11/29/2022	MW-T(BR) 11/11/2021	MW-T(BR) 2/16/2022	MW-T(BR) 5/11/2022	MW-T(BR) 8/4/2022	MW-T(BR) 11/22/2022	
<b>Field Parameters</b>																										
Depth to Groundwater (ft)	19.02	21.14	20.52	21.66	22.11	16.19	21.06	18.25	22.55	22.73	52.38	54.51	54.11	55.52	55.52	18.63	19.86	18.86	22.37	21.19	4.3	4.47	4.05	6.39	6.05	
Dissolved Oxygen						4.07	6.65	3.64	0.8	1.38						1.98	0.33	0.35	0.49	3.18	0.57	0.53	0.22	0.48	2.67	
Field pH (std. units)	7.02	7	6.92	7.07	7.07	8.03	8.54	8.06	7.81	7.78	8.38	9.59	10.32	8.43	8.17	7.24	7.43	7.4	7.34	7.42	7.59	7.73	7.66	7.62	7.74	
ORP (mV)	-27.9	74.4	141.8	197.3	112.6	113.8	222.1	70	157.4	73.9	95.5	56.2	48.9	168.3	71.5	184.3	74.3	156.6	161.5	71	164.9	165.5	57.6	150.8	83.6	
Specific Conductivity (us/cm)	757	726	614.4	789	724	284.7	255.2	344.5	365.6	352.3	181.5	175.8	145.8	314.1	335.7	499.5	465	478.6	511	468	343.4	307.1	298.4	349.8	306.2	
Temperature (deg. C)	13.3	9.8	11.3	13.7	12.8	12.9	8.4	18.9	20.7	9.2	11.7	7.9	12.7	13.2	11.3	11.4	7.5	14.3	24.8	7	12.1	5.4	16.4	23.2	10.8	
Turbidity (NTU)	7.27	68	27.7	15.1	12.2	0.86	0.42	0.48	0.42	0.02	11.3	18.5	8.49	2.53	6.4	18.6	2.24	7.1	10.1	19.3	1.81	5.66	1.11	13.2	10.3	
<b>Inorganic Compounds</b>																										
Aluminum			0.737					0.1 U						0.257											0.0379 J	
Antimony			0.06 U					0.06 U						0.06 U						0.0066 J					0.06 U	
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium			0.0891					0.0717						0.0197 J					0.0343						0.0798	
Beryllium			0.003 U					0.003 U						0.003 U					0.003 U						0.003 U	
Boron			0.0476 J					0.0275 J						0.0268 J					0.0814 J						0.0482 J	
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	125	116	102	108	104	33.1	20.5	43.3	42.8	41.5	28.7	19	11.3	34	37.8	65.3	65.5	65.5	64.2	65.7	49.5	50.3	46	49.8	44.6	
Chromium			0.01 U					0.01 U						0.0018 J					0.01 U						0.01 U	
Chromium, hexavalent			0.01 U					0.01 U						0.01 U					0.01 U						0.01 U	
Cobalt			0.05 U					0.05 U						0.05 U					0.05 U						0.05 U	
Copper			0.02 U					0.02 U						0.02 U					0.02 U						0.02 U	
Iron	1.11	3.82	0.785	0.79	0.38	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.08 J	0.72	0.236	0.1 U	0.1 J	0.79	0.1 U	0.155	0.4	0.66	0.21	0.08 J	0.1 U	0.79	0.35	
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	27.2	24.6	21.6	23.9	22.7	13.2	12.4	14.3	13.9	13	10.3	6.8	4.17	10.4	11.7	18.3	18.5	18.6	18.2	18.8	11.3	11.7	10.8	11.6	10.6	
Manganese	2.75	2.2	0.209	2.1	1.64	0.063	0.006 J	0.0088 J	0.017	0.075	0.007 J	0.015	0.0076 J	0.054	0.036	1.72	0.836	1.22	2.19	1.18	0.461	0.519	0.328	0.877	0.573	
Mercury			0.0002 U					0.0002 U						0.0002 U					0.0002 U						0.0002 U	
Nickel			0.04 U					0.04 U						0.04 U					0.04 U						0.04 U	
Potassium	6.1	6.3	5.24	5.5	5.1	4.7	6.4	3.66	3	2.1	4	3.2	3.2	3	3.2	2.1	1.9 J	2.1	1.8 J	2.2	1.6 J	1.6 J	1.5 J	1.6 J	1.6 J	
Selenium			0.01 U					0.01 U						0.01 U					0.01 U						0.01 U	
Silver			0.01 U					0.01 U						0.01 U					0.01 U						0.01 U	
Sodium	33.3	58.6	24	37.1	28.4	20.5	22.6	19.4	17.5	17.4	20.4	15.5	15.7	18.1	17.7	23.6	22.8	23.5	22.4	23.6	11.7	11.5	11.3	11.3	10.7	
Thallium			0.01 U					0.01 U						0.01 U					0.01 U						0.01 U	
Vanadium			0.0014 J					0.05 U						0.0028 J					0.05 U						0.05 U	
Zinc			0.036					0.02 U						0.02 U					0.02 U						0.02 U	
<b>Volatile Organic Compounds</b>																										
1,1,1,2-Tetrachloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,1,1-Trichloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,1,2-Trichloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,1-Dichloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,1-Dichloroethene			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2,3-Trichloropropane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2-Dibromoethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2-Dichlorobenzene			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2-Dichloroethane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,2-Dichloropropane			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
1,4-Dichlorobenzene			0.005 U					0.005 U						0.005 U					0.005 U						0.005 U	
2-Butanone (MEK)			0.01 U					0.01 U						0.01 U					0.01 U						0.01 U	

Table 5

Current and Historic Groundwater Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	Downgradient Wells																									
	MW-N 11/11/2021	MW-N 2/16/2022	MW-N 5/10/2022	MW-N 8/4/2022	MW-N 11/22/2022	MW-O 11/10/2021	MW-O 2/15/2022	MW-O 5/12/2022	MW-O 8/4/2022	MW-O 11/22/2022	MW-O(BR) 11/11/2021	MW-O(BR) 2/16/2022	MW-O(BR) 5/10-11/2022	MW-O(BR) 8/4/2022	MW-O(BR) 11/22/2022	MW-P 11/11/2021	MW-P 2/16/2022	MW-P 5/17/2022	MW-P 8/8/2022	MW-P 11/29/2022	MW-T(BR) 11/11/2021	MW-T(BR) 2/16/2022	MW-T(BR) 5/11/2022	MW-T(BR) 8/4/2022	MW-T(BR) 11/22/2022	
<b>Volatile Organic Compounds (con't)</b>																										
2-Hexanone			0.01 U					0.01 U					0.01 U					0.01 U						0.01 U		
4-Methyl-2-pentanone			0.01 U					0.01 U					0.01 U					0.01 U						0.01 U		
Acetone			0.01 U					0.01 U					0.01 U					0.01 U						0.01 U		
Acrylonitrile			0.1 U					0.1 U					0.1 U					0.1 U						0.1 U		
Benzene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Bromochloromethane			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Bromodichloromethane			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Bromoform			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Bromomethane			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
Carbon disulfide			0.01 U					0.01 U					0.01 U					0.01 U						0.01 U		
Carbon tetrachloride			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
Chlorobenzene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Chloroethane			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
Chloroform			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Chloromethane			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
cis-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
cis-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Dibromochloromethane			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Dibromomethane			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Dichloromethane (Methylene chloride)			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Ethyl benzene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Iodomethane			0.01 U					0.01 U					0.01 U					0.01 U						0.01 U		
m&p-Xylene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
o-Xylene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Styrene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Tetrachloroethene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Toluene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
trans-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
trans-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
trans-1,4-Dichloro-2-butene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Trichloroethene			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Trichlorofluoromethane			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
Vinyl acetate			0.01 U					0.01 U					0.01 UJ					0.01 U						0.01 UJ		
Vinyl chloride			0.005 UJ					0.005 U					0.005 U					0.005 U						0.005 U		
<b>General Chemistry</b>																										
Alkalinity	469	459	367	432	423	168	142	188	189	194	159	75.3	56.2	146	176	233	228	226	231	234	175	163	157	173	166	
Ammonia Nitrogen	0.132	0.191	0.05 U	0.185	0.127	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.039 J	0.05 U	0.05 U	0.05 U	0.027 J	0.05 U	
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	5.3	4 J	5 U	5.6	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	2.2	2.4	1.8 J	2.3	2.3	1.7 J	1.7 J	1.8 J	1.7 J	1.9 J	1.5 J	2.1	1.7 J	1.5 J	1.5 J	7	7.4	7.2	6.6	6.6	1.1 J	1.1 J	1.3 J	1.1 J	1.3 J	
Color (True) (C.U.)			3					3					2				2						2			
Cyanide			0.005 U					0.005 U					0.005 U					0.005 U						0.005 U		
Hardness	423	390	343	369	352	137	102	167	164	157	114	75.4	45.5	128	143	238	240	240	235	241	170	174	159	172	155	
Nitrate Nitrogen	1 U	1 U	0.3 J	0.3 J	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
pH of Color Analysis			7.09					8.06					9.88					7.57						7.71		
Sulfate	28.4	39.8	26.9	32.9	39.8	18.9	18.6	20.8	21.9	19.9	16.9	16.6	14.2	27.5	23.3	49.6	50.1	50.1	49.9	48.4	25.4	25.3	23.8	26.9	25.2	
Total Dissolved Solids	498	520	465	470	484	195	172	226	191	222	175	122	93	184	212	314	309	314	311	309	209	211	204	204	208	
Total Kjeldahl Nitrogen	0.54	0.71	0.26	0.5	0.35	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	
Total Organic Carbon (TOC)	2.2	2.3	1.4	2.4	1.6	1 U	0.9 J	1 U	1 U	1 U	0.8 J	0.8 J	1 U	0.5 J	1 U	1 U	0.5 J	1 U	0.6 J	1 U	1 U	1 U	1 U	1 U	1 U	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 UJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	

Table 5

Current and Historic Groundwater Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	Downgradient Wells														
	MW-U(BR) 11/11/2021	MW-U(BR) 2/16/2022	MW-U(BR) 5/11/2022	MW-U(BR) 8/4/2022	MW-U(BR) 11/22/2022	MW-V 11/10/2021	MW-V 2/16/2022	MW-V 5/17/2022	MW-V 8/10/2022	MW-V 11/22/2022	MW-V(BR) 11/11/2021	MW-V(BR) 2/16/2022	MW-V(BR) 5/17/2022	MW-V(BR) 11/29/2022	MW-V(BR) 8/9/2022
<b>Field Parameters</b>															
Depth to Groundwater (ft)	12.59	13.14	11.84	38.26	38.58	15.08	16.28	16.89	16.43	16.49	26.24	26.78	26.55	28.37	27.33
Dissolved Oxygen	0.36	0.9	0.39	0.56	0.62	0.65	3.99	1.37	0.47	3.94	0.51	8.39	0.49	0.45	0.72
Field pH (std. units)	7.66	7.86	7.72	7.71	7.73	7.54	7.63	7.42	7.39	7.47	7.59	7.74	7.54	7.44	7.57
ORP (mV)	152.8	109.3	66.9	148.5	153	117.2	109.6	95.1	163.3	158.7	-77.8	-28.9	12.8	-67.3	-130.4
Specific Conductivity (us/cm)	272.3	261.7	262.7	285.6	266.7	895	957	989	1050	959	478.3	523.7	542.2	598.6	526.2
Temperature (deg. C)	9.5	4.4	20.7	22.3	10.1	12.2	5.5	15.3	19.2	9.8	11.5	8.2	13	8.8	19.3
Turbidity (NTU)	1.12	11	2.62	12.3	23.1	4.71	5.38	2.16	3.54	7.23	3.86	2.14	3.72	4.45	1.35
<b>Inorganic Compounds</b>															
Aluminum			0.1 U					0.1 U					0.1 U		
Antimony			0.06 U					0.06 U					0.06 U		
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
Barium			0.133					0.023					0.0436		
Beryllium			0.003 U					0.003 U					0.003 U		
Boron			0.033 J					0.122 J					0.072 J		
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	39.2	41.7	39.8	40.5	39.1	77.9	90.2	94.6	92.4	81.6	73.2	77.5	81.3	78.8	68.7
Chromium			0.01 U					0.01 U					0.01 U		
Chromium, hexavalent			0.01 UJ					0.01 U					0.01 U		
Cobalt			0.05 U					0.05 U					0.05 U		
Copper			0.02 U					0.02 U					0.02 U		
Iron	0.1 U	0.1 U	0.1 U	0.52	0.76	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.22	0.17	0.223	0.27	0.44
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	9.2	10	9.59	9.7	9.5	45.8	48.1	48.8	47.8	43.3	22.7	24.4	24.7	24.8	22.1
Manganese	0.745	0.956	0.691	1.34	0.592	0.245	0.098	0.0524	0.061	0.179	0.792	0.804	0.848	0.859	0.741
Mercury			0.0002 U					0.0002 U					0.0002 U		
Nickel			0.04 U					0.04 U					0.04 U		
Potassium	1.5 J	1.5 J	1.43 J	1.4 J	1.7 J	45.9	43	37.2	37.7	35.2	2.3	2.6	2.5	2.2	2.4
Selenium			0.01 U					0.01 U					0.01 U		
Silver			0.01 U					0.01 U					0.01 U		
Sodium	10.4	10.3	10.4	10.1	9.8	82.8	82.3	75.1	74.9	70	23.6	24.9	24.7	24.4	23.1
Thallium			0.01 U					0.01 U					0.01 U		
Vanadium			0.05 U					0.05 U					0.05 U		
Zinc			0.02 U					0.0057 J					0.02 U		
<b>Volatile Organic Compounds</b>															
1,1,1,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U		
1,1,1-Trichloroethane			0.005 U					0.005 U					0.005 U		
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U		
1,1,2-Trichloroethane			0.005 U					0.005 U					0.005 U		
1,1-Dichloroethane			0.005 U					0.005 U					0.005 U		
1,1-Dichloroethene			0.005 U					0.005 U					0.005 U		
1,2,3-Trichloropropane			0.005 U					0.005 U					0.005 U		
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U					0.005 U		
1,2-Dibromoethane			0.005 U					0.005 U					0.005 U		
1,2-Dichlorobenzene			0.005 U					0.005 U					0.005 U		
1,2-Dichloroethane			0.005 U					0.005 U					0.005 U		
1,2-Dichloropropane			0.005 U					0.005 U					0.005 U		
1,4-Dichlorobenzene			0.005 U					0.005 U					0.005 U		
2-Butanone (MEK)			0.01 U					0.01 U					0.01 U		



Table 5

Current and Historic Groundwater Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	Downgradient Wells														
	MW-U(BR) 11/11/2021	MW-U(BR) 2/16/2022	MW-U(BR) 5/11/2022	MW-U(BR) 8/4/2022	MW-U(BR) 11/22/2022	MW-V 11/10/2021	MW-V 2/16/2022	MW-V 5/17/2022	MW-V 8/10/2022	MW-V 11/22/2022	MW-V(BR) 11/11/2021	MW-V(BR) 2/16/2022	MW-V(BR) 5/17/2022	MW-V(BR) 11/29/2022	MW-V(BR) 8/9/2022
<b>Volatile Organic Compounds (con't)</b>															
2-Hexanone			0.01 U					0.01 U					0.01 U		
4-Methyl-2-pentanone			0.01 U					0.01 U					0.01 U		
Acetone			0.01 U					0.01 U					0.01 U		
Acrylonitrile			0.1 U					0.1 U					0.1 U		
Benzene			0.005 U					0.005 U					0.005 U		
Bromochloromethane			0.005 U					0.005 U					0.005 U		
Bromodichloromethane			0.005 U					0.005 U					0.005 U		
Bromoform			0.005 U					0.005 U					0.005 U		
Bromomethane			0.005 U					0.005 U					0.005 U		
Carbon disulfide			0.01 U					0.01 U					0.01 U		
Carbon tetrachloride			0.005 U					0.005 U					0.005 U		
Chlorobenzene			0.005 U					0.005 U					0.005 U		
Chloroethane			0.005 U					0.005 U					0.005 U		
Chloroform			0.005 U					0.005 U					0.005 U		
Chloromethane			0.005 U					0.005 U					0.005 U		
cis-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U		
cis-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U		
Dibromochloromethane			0.005 U					0.005 U					0.005 U		
Dibromomethane			0.005 U					0.005 U					0.005 U		
Dichloromethane (Methylene chloride)			0.005 U					0.005 U					0.005 U		
Ethyl benzene			0.005 U					0.005 U					0.005 U		
Iodomethane			0.01 U					0.01 U					0.01 U		
m&p-Xylene			0.005 U					0.005 U					0.005 U		
o-Xylene			0.005 U					0.005 U					0.005 U		
Styrene			0.005 U					0.005 U					0.005 U		
Tetrachloroethene			0.005 U					0.005 U					0.005 U		
Toluene			0.005 U					0.005 U					0.005 U		
trans-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U		
trans-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U		
trans-1,4-Dichloro-2-butene			0.005 U					0.005 U					0.005 U		
Trichloroethene			0.005 U					0.005 U					0.005 U		
Trichlorofluoromethane			0.005 U					0.005 U					0.005 U		
Vinyl acetate			0.01 UJ					0.01 U					0.01 U		
Vinyl chloride			0.005 U					0.005 U					0.005 U		

<b>General Chemistry</b>															
Alkalinity	150	144	142	148	149	447	452	443	450	446	253	249	249	270	230
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.026 J	0.03 J	0.05 U	0.05 U	0.05 U	0.05 U	0.028 J	0.034 J	0.039 J	0.05 U	0.039 J	0.034 J
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Chemical Oxygen Demand	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloride	0.9 J	0.9 J	1.1 J	0.9 J	1.2 J	1.5 J	1.5 J	1.5 J	1.7 J	1.6 J	0.8 J	0.8 J	1 J	1.1 J	1.2 J
Color (True) (C.U.)			1					2					3		
Cyanide			0.005 U					0.005 U					0.005 U		
Hardness	136	146	139	141	137	383	423	437	428	382	276	294	305	299	263
Nitrate Nitrogen	1 U	1 U	1 UJ	1 U	1 U	1 U	1 U	1 U	0.3 J	1 U	1 U	1 U	1 U	1 U	1 U
pH of Color Analysis			7.76					7.59					7.57		
Sulfate	14.7	15.2	15.3	15.7	16	179	118	183	185	163	87.5	86.6	85.2	98	94.1
Total Dissolved Solids	165	168	183	153	178	709	706	724	716	677	361	377	391	408	343
Total Kjeldahl Nitrogen	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.18 J	0.2 U	0.2 U	0.19 J	0.2 U	0.2 U	0.2 U
Total Organic Carbon (TOC)	1 U	0.5 J	1 U	1 U	2.4	1.1	1.1	1	2.8	0.6 J	1 U	0.6 J	1 U	1 U	0.7 J
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U

**Notes:**

**B** - Detected in associated method blank

**U** - Concentration not detected at specified detection limit

**J/UJ** - Estimated value

**100** Parameter exceeds Trigger Value but remains below Class GA Standard

**100** Parameter exceeds both the Trigger value and Class GA Standard

**Table 5A - Part 1**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Routine Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter	Number Samples	Number Detects	Minimum	Maximum	Mean	Standard Deviation	Trigger Value	Class GA Standard
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Note: The EWQVs on this table apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Field Parameters**

Field pH (std. units)	36	36	5.94	8.77	7.25	0.62	5.39-9.11	6.5-8.5
ORP (mV)	36	36	-110.2	310	38.3	128.1	422.7	
Specific Conductivity (us/cm)	36	36	178	1800	611	376	1740	
Turbidity (NTU)	35	35	3.8	94	26.7	23	96	5

**Inorganic Compounds**

Aluminum	14	11	0.038	6.8	1.37	2.09	7.66	
Antimony	14	1	0.0005	0.061	0.0063	0.016	0.0544	0.003
Arsenic	14	4	0.0005	0.0193	0.0027	0.005	0.0179	0.025
Barium	14	13	0.008	0.118	0.049	0.026	0.127	1
Beryllium	14	0	0.002	0.003	0.0022	0.0004	0.0035	
Boron	14	2	0.024	0.25	0.084	0.096	0.372	1
Cadmium	34	2	0.0005	0.004	0.0018	0.0011	0.0051	0.005
Calcium	34	34	17.4	196	64	45	199	
Chromium	14	6	0.001	0.012	0.0039	0.004	0.016	0.05
Chromium, hexavalent	13	0	0.01	0.01	0.01	0	0.01	
Cobalt	14	1	0.005	0.013	0.007	0.003	0.015	
Copper	14	2	0.005	0.0148	0.0091	0.0025	0.0166	0.2
Iron	34	34	0.051	3.76	1.38	1.27	5.2	0.3
Lead	34	17	0.0005	0.021	0.0033	0.0048	0.018	0.025
Magnesium	34	34	4.8	75.8	21.2	16.3	70	
Manganese	34	34	0.032	4.69	0.98	1.06	4.15	0.3
Mercury	14	0	0.0002	0.0002	0.0002	0	0.0002	0.0007
Nickel	14	1	0.006	0.015	0.008	0.004	0.02	0.1
Potassium	34	32	0.5	20	8.2	7.3	30.1	
Selenium	14	1	0.0005	0.004	0.0012	0.0012	0.0047	0.01
Silver	14	0	0.001	0.01	0.0032	0.0038	0.0147	0.05
Sodium	34	34	4.45	87.6	25.7	19.2	83.2	20
Thallium	14	0	0.001	0.01	0.0029	0.0038	0.0144	
Vanadium	14	0	0.005	0.03	0.01	0.011	0.042	
Zinc	14	7	0.01	0.052	0.022	0.015	0.067	

**General Chemistry**

Alkalinity	115	115	12.4	520	131	98.3	426	
Ammonia Nitrogen	117	66	0.01	2.61	0.174	0.29	1.04	2
Biochemical Oxygen Demand	51	4	1.5	6	2	1.1	5.3	
Bromide	31	0	0.1	1	0.6	0.3	1.5	
Chemical Oxygen Demand	116	37	5	891	26.6	91.2	300	
Chloride	117	117	0.5	290	21.7	28.3	106	250
Color (True) (C.U.)	32	28	2.5	1250	148	306	1066	15
Cyanide	34	1	0.003	0.006	0.003	0.001	0.006	0.2
Hardness	118	118	35.2	802	206	131	598	
Nitrate Nitrogen	114	63	0.05	1.49	0.191	0.226	0.869	10
Sulfate	117	115	2.5	550	59	69	266	250
Total Dissolved Solids	117	117	60	1220	273	185	828	500
Total Kjeldahl Nitrogen	50	18	0.25	10.2	1.17	1.68	6.22	
Total Organic Carbon (TOC)	118	99	0.4	151	6.7	18.9	63.3	
Total Phenolics	115	28	0.001	0.017	0.003	0.003	0.012	0.001

**Notes:**

- 1) Existing Water Quality Values (EWQVs) Revision: May 28, 2008
- 2) Class GA Standard - Class GA Groundwater Standards from NYSDEC Water Quality Regulations Parts 700-705
- 3) Trigger Value = Mean +3 Standard Deviations

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Inorganic Compounds**

Tin	5	5	100.0%	0.25	0.25	0.25	0.25	0.00	0.00	Yes	No	Type B	0.25	0.25	0.25
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**Polychlorinated Biphenyls (PCBs)**

Aroclor-1016	5	5	100.0%	0.000490	0.000500	0.000497	0.000500	0.000004	0.01	Yes	No	Type B	0.000510	0.000500	0.000500
Aroclor-1221	5	5	100.0%	0.001	0.001	0.001	0.001	0.000	0.00	Yes	No	Type B	0.001	0.001	0.001
Aroclor-1232	5	5	100.0%	0.0005	0.0005	0.0005	0.0005	0.0000	0.01	Yes	No	Type B	0.0005	0.0005	0.0005
Aroclor-1242	5	5	100.0%	0.0005	0.0005	0.0005	0.0005	0.0000	0.01	Yes	No	Type B	0.0005	0.0005	0.0005
Aroclor-1248	5	5	100.0%	0.0005	0.0005	0.0005	0.0005	0.0000	0.01	Yes	No	Type B	0.0005	0.0005	0.0005
Aroclor-1254	5	5	100.0%	0.0005	0.0005	0.0005	0.0005	0.0000	0.01	Yes	No	Type B	0.0005	0.0005	0.0005
Aroclor-1260	5	5	100.0%	0.0005	0.0005	0.0005	0.0005	0.0000	0.01	Yes	No	Type B	0.0005	0.0005	0.0005

**Pesticides**

4,4'-DDD	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
4,4'-DDE	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
4,4'-DDT	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
Aldrin	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
alpha-BHC	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
alpha-Chlordane	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
beta-BHC	5	5	100.0%	0.000025	0.000026	0.000025	0.000026	0.000000	0.02	Yes	No	Type B	0.000027	0.000026	0.000026
Chlorobenzilate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
delta-BHC	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Dieldrin	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Dinoseb	5	5	100.0%	0.000250	0.000260	0.000254	0.000255	0.000004	0.02	Yes	No	Type B	0.000267	0.000258	0.000258
Endosulfan I	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Endosulfan II	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Endosulfan sulfate	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Endrin	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Endrin aldehyde	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
gamma-BHC (Lindane)	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
gamma-Chlordane	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Heptachlor	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Heptachlor epoxide	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Methoxychlor	5	5	100.0%	0.0000245	0.0000255	0.0000252	0.0000255	0.0000004	0.02	Yes	No	Type B	0.0000265	0.0000255	0.0000255
Methyl parathion	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Parathion	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Toxaphene	5	5	100.0%	0.000	0.000	0.000	0.000	0.000	0.01	Yes	No	Type B	0.000	0.000	0.000

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Per- and Polyfluoroalkyl Substances (PFAS)**

6:2 Fluorotelomer sulfonate	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
N-ethylperfluoro-1-octanesulfonamidoacetic acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
N-methylperfluoro-1-octanesulfonamidoacetic acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluorobutanesulfonic Acid	5	2	40.0%	0.0000059	0.00000270	0.00000168	0.00000210	0.00000092	0.55	No	No	Type B	0.00000445	0.00000250	0.00000250
Perfluorobutanoic Acid	5	1	20.0%	0.00000100	0.00001600	0.00000682	0.00000700	0.00000593	0.87	No	No	Type B	0.00002461	0.00001276	0.00001276
Perfluorodecane Sulfonate	5	5	100.0%	0.000002	0.000002	0.000002	0.000002	0.000000	0.03	Yes	No	Type B	0.000002	0.000002	0.000002
Perfluorodecanoic Acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluorododecanoic Acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluoroheptane sulfonate	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluoroheptanoic Acid	5	2	40.0%	0.0000009	0.0000071	0.0000027	0.0000021	0.0000026	0.96	No	No	Type B	0.0000103	0.0000051	0.0000051
Perfluorohexanesulfonic Acid	5	4	80.0%	0.0000013	0.0000023	0.0000020	0.0000022	0.0000004	0.20	Yes	No	Type B	0.0000032	0.0000023	0.0000023
Perfluorohexanoic Acid	5	4	80.0%	0.0000046	0.0000150	0.0000067	0.0000046	0.0000047	0.70	No	No	Type B	0.0000206	0.0000108	0.0000108
Perfluorononanoic Acid	5	4	80.0%	0.0000015	0.0000023	0.0000020	0.0000021	0.0000003	0.15	Yes	No	Type B	0.0000029	0.0000022	0.0000022
Perfluoro-n-tridecanoic acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluorooctanesulfonamide	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluorooctanesulfonic Acid	5	4	80.0%	0.00000085	0.00000110	0.00000092	0.00000090	0.00000010	0.11	Yes	No	Type B	0.00000123	0.00000102	0.00000102
Perfluorooctanoic Acid	5	2	40.0%	0.00000085	0.00001300	0.00000355	0.00000130	0.00000529	1.49	No	No	Type B	0.00001943	0.00000848	0.00000848
Perfluoropentanoic Acid	5	4	80.0%	0.0000021	0.0000150	0.0000047	0.0000022	0.0000057	1.21	No	No	Type B	0.0000220	0.0000099	0.0000099
Perfluorotetradecanoic acid (PFTeDA)	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023
Perfluoroundecanoic Acid	5	5	100.0%	0.0000021	0.0000023	0.0000022	0.0000022	0.0000001	0.03	Yes	No	Type B	0.0000024	0.0000023	0.0000023

**Herbicides**

2,4,5-T	5	5	100.0%	0.000250	0.000260	0.000254	0.000255	0.000004	0.02	Yes	No	Type B	0.000267	0.000258	0.000258
2,4,5-TP	5	5	100.0%	0.000250	0.000260	0.000254	0.000255	0.000004	0.02	Yes	No	Type B	0.000267	0.000258	0.000258
2,4-D	5	5	100.0%	0.000250	0.000260	0.000254	0.000255	0.000004	0.02	Yes	No	Type B	0.000267	0.000258	0.000258

**Radionuclides (pCi/L)**

Radium-226, Dissolved (EPA 903.1) (pCi/L)	5	1	20.0%	-0.090	0.240	0.078	0.060	0.127	1.63	No	No	Type B	0.460	0.208	0.208
Radium-226, Total (EPA 903.1) (pCi/L)	5	1	20.0%	-0.100	0.220	0.090	0.080	0.129	1.44	No	No	Type B	0.478	0.212	0.212
Radium-228, Dissolved (EPA 904.0) (pCi/L)	5	1	20.0%	0.170	0.750	0.464	0.510	0.265	0.57	No	No	Type B	1.260	0.722	0.722
Radium-228, Total (EPA 904.0) (pCi/L)	5	1	20.0%	0.350	0.750	0.590	0.620	0.151	0.26	Yes	No	Type B	1.043	0.718	0.718
Total Uranium, Total (EPA 908.0) (pCi/L)	5	1	20.0%	0.068	4.060	2.240	1.890	1.545	0.69	No	No	Type B	6.876	3.776	3.776

**Semi Volatile Organic Compounds**

1,2,4,5-Tetrachlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
1,3,5-Trinitrobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
1,3-Dinitrobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
1,4-Dioxane	5	2	40.0%	0.000020	0.000730	0.000173	0.000034	0.000312	1.80	No	No	Type B	0.001108	0.000462	0.000462
1,4-Naphthoquinone	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Semi Volatile Organic Compounds (con't)**

1,4-Phenylenediamine	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
1-Naphthylamine	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
2,3,4,6-Tetrachlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,4,5-Trichlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,4,6-Trichlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,4-Dichlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,4-Dimethylphenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,4-Dinitrophenol	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
2,4-Dinitrotoluene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,6-Dichlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,6-Dinitrotoluene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Acetylaminofluorene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Chloronaphthalene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Chlorophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Methyl-5-nitroaniline	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Methylnaphthalene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Methylphenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2-Naphthylamine	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
2-Nitroaniline	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
2-Nitrophenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
3,3-Dichlorobenzidine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
3,3-Dimethylbenzidine	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
3/4-Methylphenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
3-Methylcholanthrene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
3-Nitroaniline	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
4,6-Dinitro-2-methylphenol	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
4-Aminobiphenyl	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
4-Bromophenyl-phenylether	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
4-Chloro-3-methylphenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
4-Chloroaniline	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
4-Chlorophenyl-phenylether	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
4-Nitroaniline	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
4-Nitrophenol	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
7,12-Dimethylbenz(a)anthracene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Acenaphthene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Acenaphthylene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Acetophenone	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Anthracene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Benzo(a)anthracene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Benzo(a)pyrene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Semi Volatile Organic Compounds (con't)**

Benzo(b)fluoranthene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Benzo(g,h,i)perylene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Benzo(k)fluoranthene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Benzyl alcohol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Bis(1-chloroisopropyl) Ether	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
bis(2-Chloroethoxy) methane	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
bis(2-Chloroethyl) ether	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
bis(2-Ethylhexyl) phthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Butylbenzylphthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Chrysene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Diallylate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Dibenzo(a,h)anthracene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Dibenzofuran	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Diethylphthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Dimethoate	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
Dimethylphthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Di-n-butylphthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Di-n-octylphthalate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Diphenylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Disulfoton	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Ethyl methanesulfonate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Famphur	5	5	100.0%	0.00049	0.00050	0.00050	0.00050	0.00000	0.01	Yes	No	Type B	0.00051	0.00050	0.00050
Fluoranthene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Fluorene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Hexachlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Hexachlorocyclopentadiene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Hexachloroethane	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Hexachloropropene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Indeno(1,2,3-cd)pyrene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Isodrin	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Isophorone	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Isosafrole	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Kepone	5	5	100.0%	0.00245	0.00255	0.00252	0.00255	0.00004	0.02	Yes	No	Type B	0.00265	0.00255	0.00255
Methapyrilene	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
Methyl methanesulfonate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Nitrobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodibutylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodiethylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodimethylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Semi Volatile Organic Compounds (con't)**

N-Nitrosodi-n-propylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodiphenylamine/Diphenylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosomethylethylamine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosopiperidine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosopyrrolidine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
o,o,o-Triethyl phosphorothioate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
o-Toluidine	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
p-(Dimethylamino)azobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Pentachlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Pentachloronitrobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Pentachlorophenol	5	5	100.0%	0.0245	0.0255	0.0252	0.0255	0.0004	0.02	Yes	No	Type B	0.0265	0.0255	0.0255
Phenacetin	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Phenanthrene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Phorate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Pronamide	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Pyrene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Safrole	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Thionazin	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005

**Volatile Organic Compounds**

1,1,1,2-Tetrachloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,1-Trichloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2,2-Tetrachloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2-Trichloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloropropene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,3-Trichloropropane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromo-3-chloropropane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromoethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
1,2-Dichloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichloropropane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,3-Dichlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
1,3-Dichloropropane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,4-Dichlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
2,2-Dichloropropane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
2-Butanone (MEK)	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
2-Chloro-1,3-butadiene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025

**Table 5A - Part 2**  
**EWQVs and Trigger Values**  
**Landfill Cells 1 - 8 Additional Parameters**  
**(As required by permit condition 59)**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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**Note:** The EWQVs on this table supplement EWQVs on Table 5A-Part 1 and apply to Cells 1-8 wells: MW-CR, MW-D, MW-E, MW-F, MW-GR, MW-H, MW-J, MW-N, MW-O, MW-P & MW-QR

**Volatile Organic Compounds (con't)**

2-Hexanone	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
4-Methyl-2-pentanone	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Acetone	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Acetonitrile	5	5	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Acrolein	5	5	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Acrylonitrile	5	5	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Allyl chloride	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Benzene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromochloromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromodichloromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromoform	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromomethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Carbon disulfide	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Carbon tetrachloride	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chlorobenzene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroform	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
cis-1,2-Dichloroethene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
cis-1,3-Dichloropropene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromochloromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromomethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichlorodifluoromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichloromethane (Methylene chloride)	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl benzene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl methacrylate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Iodomethane	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Isobutyl alcohol	5	5	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
m&p-Xylene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Methacrylonitrile	5	5	100.0%	0.01	0.01	0.01	0.01	0.00	0.00	Yes	No	Type B	0.01	0.01	0.01
Methyl methacrylate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
o-Xylene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Phenol	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Propionitrile	5	5	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Styrene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Tetrachloroethene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Toluene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,2-Dichloroethene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,3-Dichloropropene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,4-Dichloro-2-butene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichloroethene	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichlorofluoromethane	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Vinyl acetate	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Vinyl chloride	5	5	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,4-Trichlorobenzene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Hexachlorobutadiene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005
Naphthalene	5	5	100.0%	0.005	0.005	0.005	0.005	0.000	0.01	Yes	No	Type B	0.005	0.005	0.005



**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**Field Parameters**

Field pH (std. units)	45	0	0.0%	6.46	9.21	7.61	7.63	0.41	0.05	Yes	Yes	Type A	8.85	7.95	6.37 - 8.85
ORP (mV)	45	0	0.0%	-175.40	217.80	-4.96	-6.20	92.67	-18.70	Yes	Yes	Type A	273.05	112.09	273.05
Specific Conductivity (us/cm)	45	0	0.0%	111.90	589.40	371.11	332.20	116.59	0.31	Yes	Yes	Type A	720.89	554.68	720.89
Temperature (deg. C)	45	0	0.0%	3.10	20.00	9.66	8.45	3.47	0.36	Yes	Yes	Type A	20.07	14.25	20.07
Turbidity (NTU)	45	0	0.0%	0.45	200	14.08	5.31	33.94	2.41	No	Yes	Type B	115.91	17.26	17.26

**Inorganic Compounds**

Aluminum	27	5	18.5%	0.0234	3.88	0.409	0.141	0.80	1.96	No	No	Type B	2.8130	0.7422	0.7422
Antimony	27	27	100.0%	0.03	0.03	0.03	0.03	0.00	0.00	Yes	No	Type B	0.03	0.03	0.03
Arsenic	33	27	81.8%	0.0044	0.0056	0.0050071	0.005	0.00	0.03	Yes	No	Type B	0.006	0.005	0.005
Barium	28	0	0.0%	0.0208	0.1430	0.0721	0.0699	0.04	0.50	Yes	Yes	Type A	0.1794	0.1241	0.1794
Beryllium	27	26	96.3%	0.0002	0.0015	0.0014	0.0015	0.00	0.19	Yes	No	Type B	0.0023	0.0015	0.0015
Boron	27	1	3.7%	0.0124	0.1000	0.0529	0.0470	0.02	0.43	Yes	Yes	Type A	0.1204	0.0856	0.1204
Cadmium	44	44	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Calcium	44	0	0.0%	14.40	82.50	51.58	48.00	14.61	0.28	Yes	Yes	Type A	95.41	71.68	95.41
Chromium	27	18	66.7%	0.000	0.005	0.004	0.005	0.00	0.44	Yes	No	Type B	0.009	0.005	0.005
Chromium, hexavalent	27	23	85.2%	0.003	0.009	0.005	0.005	0.00	0.20	Yes	No	Type B	0.008	0.005	0.005
Cobalt	27	25	92.6%	0.002	0.025	0.024	0.025	0.00	0.20	Yes	No	Type B	0.039	0.025	0.025
Copper	27	23	85.2%	0.001	0.010	0.009	0.010	0.00	0.32	Yes	No	Type B	0.018	0.010	0.010
Iron	44	5	11.4%	0.022	3.530	0.450	0.226	0.68	1.51	No	Yes	Type B	2.490	0.926	0.926
Lead	44	44	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Magnesium	44	0	0.0%	3.8	28.9	14.7	12.3	6.13	0.42	Yes	Yes	Type A	33.1	24.5	33.1
Manganese	44	0	0.0%	0.01	1.10	0.53	0.45	0.26	0.49	Yes	Yes	Type A	1.31	0.87	1.31
Mercury	27	27	100.0%	0.0001	0.0001	0.0001	0.0001	0.00	0.00	Yes	No	Type B	0.0001	0.0001	0.0001
Nickel	27	26	96.3%	0.02	0.02	0.02	0.02	0.00	0.00	Yes	No	Type B	0.02	0.02	0.02
Potassium	44	0	0.0%	1.55	18.8	3.43	2.1	3.54	1.03	No	Yes	Type B	14.04	5.87	5.87
Selenium	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Silver	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Sodium	44	0	0.0%	3.84	30.00	15.73	11.60	7.33	0.47	Yes	Yes	Type A	37.71	26.62	37.71
Thallium	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Tin	7	7	100.0%	0.25	0.25	0.25	0.25	0.00	0.00	Yes	No	Type B	0.25	0.25	0.25
Vanadium	27	18	66.7%	0.0007	0.025	0.0169957	0.025	0.01	0.66	No	No	Type B	0.0507792	0.025	0.025
Zinc	27	21	77.8%	0.0019	0.01	0.0089783	0.01	0.00	0.26	Yes	No	Type B	0.0161069	0.01	0.01

**Polychlorinated Biphenyls (PCBs)**

Aroclor-1016	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005
Aroclor-1221	7	7	100.0%	0.00095	0.001	0.0009833	0.001	0.00	0.03	Yes	No	Type B	0.0010608	0.001	0.001
Aroclor-1232	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005
Aroclor-1242	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005
Aroclor-1248	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005
Aroclor-1254	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005
Aroclor-1260	7	7	100.0%	0.000465	0.0005	0.0004892	0.000495	0.00	0.03	Yes	No	Type B	0.000532	0.0005	0.0005

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

<b>Pesticides</b>															
4,4'-DDD	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
4,4'-DDE	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
4,4'-DDT	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Aldrin	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
alpha-BHC	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
alpha-Chlordane	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
beta-BHC	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Chlorobenzilate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
delta-BHC	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Dieldrin	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Dinoseb	7	7	100.0%	0.00025	0.00026	0.0002517	0.00025	0.00	0.02	Yes	No	Type B	0.00026391	0.000255	0.000255
Endosulfan I	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Endosulfan II	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Endosulfan sulfate	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Endrin	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Endrin aldehyde	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
gamma-BHC (Lindane)	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
gamma-Chlordane	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Heptachlor	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Heptachlor epoxide	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Methoxychlor	7	7	100.0%	0.0000235	0.0000255	0.0000246	0.00002475	0.00	0.03	Yes	No	Type B	0.00002679	0.00002525	0.00002525
Methyl parathion	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Parathion	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Toxaphene	7	7	100.0%	0.00025	0.000255	0.0002508	0.00025	0.00	0.01	Yes	No	Type B	0.000257	0.0002525	0.0002525

<b>Per- and Polyfluoroalkyl Substances (PFAS)</b>															
6:2 Fluorotelomer sulfonate	7	6	85.7%	0.0000006	0.0000022	0.0000019	0.0000021	0.00	0.33	Yes	No	Type B	0.00000367	0.00000215	0.00000215
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
N-ethylperfluoro-1-octanesulfonamidoacetic acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
N-methylperfluoro-1-octanesulfonamidoacetic acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorobutanesulfonic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorobutanoic Acid	7	4	57.1%	0.0000004	0.0000022	0.0000018	0.000002075	0.00	0.39	Yes	No	Type B	0.00000382	0.00000215	0.00000215
Perfluorodecane Sulfonate	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorodecanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorododecanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluoroheptane sulfonate	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluoroheptanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorohexanesulfonic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorohexanoic Acid	7	7	100.0%	0.0000046	0.0000046	0.0000046	0.0000046	0.00	0.00	Yes	No	Type B	0.00000460	0.0000046	0.0000046
Perfluorononanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluoro-n-tridecanoic acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorooctanesulfonamide	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorooctanesulfonic Acid	7	7	100.0%	0.0000008	0.0000009	0.0000008	0.00000085	0.00	0.03	Yes	No	Type B	0.00000091	0.00000085	0.00000085
Perfluorooctanoic Acid	7	4	57.1%	0.0000004	0.0000012	0.0000008	0.00000085	0.00	0.33	Yes	No	Type B	0.00000163	0.00000103	0.00000103
Perfluoropentanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluorotetradecanoic acid (PFTeDA)	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215
Perfluoroundecanoic Acid	7	7	100.0%	0.0000020	0.0000022	0.0000021	0.00000215	0.00	0.03	Yes	No	Type B	0.00000231	0.00000215	0.00000215

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**Herbicides**

2,4,5-T	7	7	100.0%	0.00025	0.00026	0.0002517	0.00025	0.00	0.02	Yes	No	Type B	0.0002639	0.000255	0.000255
2,4,5-TP	7	7	100.0%	0.00025	0.00026	0.0002517	0.00025	0.00	0.02	Yes	No	Type B	0.0002639	0.000255	0.000255
2,4-D	7	7	100.0%	0.00025	0.00026	0.0002517	0.00025	0.00	0.02	Yes	No	Type B	0.0002639	0.000255	0.000255

**Radionuclides (pCi/L) Act ± Unc (MDC)**

Radium-226, Dissolved (EPA 903.1) (pCi/L)	13	0	0.0%	0.08	3.3	0.57	0.22	0.93	1.65	No	Yes	Type B	3.36	0.81	0.81
Radium-226, Total (EPA 903.1) (pCi/L)	13	0	0.0%	-0.07	0.58	0.26	0.24	0.17	0.65	No	Yes	Type B	0.75	0.39	0.39
Radium-228, Dissolved (EPA 904.0) (pCi/L)	13	0	0.0%	-0.4	1.16	0.36	0.42	0.47	1.31	No	Yes	Type B	1.76	0.92	0.92
Radium-228, Total (EPA 904.0) (pCi/L)	13	0	0.0%	-0.26	5	0.84	0.62	1.42	1.70	No	Yes	Type B	5.11	0.76	0.76
Total Uranium, Dissolved (EPA 908.0) (pCi/L)	13	0	0.0%	0.27	2.15	1.14	0.81	0.74	0.65	No	Yes	Type B	3.35	2.12	2.12
Total Uranium, Total (EPA 908.0) (pCi/L)	13	0	0.0%	0.189	2.18	1.12	0.82	0.75	0.67	No	Yes	Type B	3.36	2.15	2.15

**Semi Volatile Organic Compounds**

1,2,4,5-Tetrachlorobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
1,3,5-Trinitrobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
1,3-Dinitrobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
1,4-Dioxane	8	6	75.0%	0.00002	0.00002	0.00002	0.00002	0.00	0.00	Yes	No	Type B	0.00002	0.00002	0.00002
1,4-Naphthoquinone	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
1,4-Phenylenediamine	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
1-Naphthylamine	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
2,3,4,6-Tetrachlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,4,5-Trichlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,4,6-Trichlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,4-Dichlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,4-Dimethylphenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,4-Dinitrophenol	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
2,4-Dinitrotoluene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,6-Dichlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2,6-Dinitrotoluene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Acetylaminofluorene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Chloronaphthalene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Chlorophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Methyl-5-nitroaniline	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Methylnaphthalene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Methylphenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
2-Naphthylamine	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
2-Nitroaniline	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
2-Nitrophenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
3,3-Dichlorobenzidine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
3,3-Dimethylbenzidine	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
3/4-Methylphenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
3-Methylcholanthrene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
3-Nitroaniline	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
4,6-Dinitro-2-methylphenol	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
4-Aminobiphenyl	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
4-Bromophenyl-phenylether	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**Semi Volatile Organic Compounds (con't)**

4-Chloro-3-methylphenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
4-Chloroaniline	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
4-Chlorophenyl-phenylether	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
4-Nitroaniline	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
4-Nitrophenol	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
7,12-Dimethylbenz(a)anthracene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Acenaphthene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Acenaphthylene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Acetophenone	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Anthracene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzo(a)anthracene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzo(a)pyrene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzo(b)fluoranthene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzo(g,h,i)perylene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzo(k)fluoranthene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Benzyl alcohol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Bis(1-chloroisopropyl) Ether	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
bis(2-Chloroethoxy) methane	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
bis(2-Chloroethyl) ether	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
bis(2-Ethylhexyl) phthalate	9	7	77.8%	0.005	0.017	0.007	0.005	0.00	0.69	No	No	Type B	0.020	0.010	0.010
Butylbenzylphthalate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Chrysene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Diallate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Dibenzo(a,h)anthracene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Dibenzofuran	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Diethylphthalate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Dimethoate	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
Dimethylphthalate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Di-n-butylphthalate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Di-n-octylphthalate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Diphenylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Disulfoton	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Ethyl methanesulfonate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Famphur	7	7	100.0%	0.000	0.001	0.000	0.000	0.00	0.03	Yes	No	Type B	0.001	0.0005	0.0005
Fluoranthene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Fluorene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Hexachlorobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Hexachlorocyclopentadiene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Hexachloroethane	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Hexachloropropene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Indeno(1,2,3-cd)pyrene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Isodrin	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Isophorone	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Isosafrole	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Kepone	7	7	100.0%	0.0024	0.0026	0.0025	0.0025	0.00	0.03	Yes	No	Type B	0.0027	0.0025	0.0025

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**Semi Volatile Organic Compounds (con't)**

Methapyrilene	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
Methyl methanesulfonate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Nitrobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodibutylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodiethylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodimethylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodi-n-propylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosodiphenylamine/Diphenylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosomethylethylamine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosopiperidine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
N-Nitrosopyrrolidine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
o,o,o-Triethyl phosphorothioate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
o-Toluidine	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
p-(Dimethylamino)azobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Pentachlorobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Pentachloronitrobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Pentachlorophenol	7	7	100.0%	0.0235	0.0255	0.0241	0.0240	0.00	0.03	Yes	No	Type B	0.0263	0.0248	0.0248
Phenacetin	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Phenanthrene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Phorate	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Pronamide	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Pyrene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Safrole	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Thionazin	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005

**Volatile Organic Compounds**

1,1,1,2-Tetrachloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,1-Trichloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2,2-Tetrachloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2-Trichloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloropropene	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,3-Trichloropropane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromo-3-chloropropane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromoethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichlorobenzene	21	21	100.0%	0.0025	0.005	0.0033	0.0025	0.00	0.34	Yes	No	Type B	0.0066	0.0048	0.0048
1,2-Dichloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichloropropane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,3-Dichlorobenzene	7	7	100.0%	0.00465	0.005	0.004775	0.004775	0.00	0.03	Yes	No	Type B	0.0052	0.0049	0.0049
1,3-Dichloropropane	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,4-Dichlorobenzene	21	21	100.0%	0.0025	0.005	0.0033	0.0025	0.00	0.34	Yes	No	Type B	0.0066	0.0048	0.0048
2,2-Dichloropropane	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
2-Butanone (MEK)	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**Volatil Organic Compounds (con't)**

2-Chloro-1,3-butadiene	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
2-Hexanone	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
4-Methyl-2-pentanone	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Acetone	27	25	92.6%	0.0025	0.005	0.005	0.005	0.00	0.11	Yes	No	Type B	0.006	0.005	0.005
Acetonitrile	13	13	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Acrolein	13	13	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Acrylonitrile	27	27	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Allyl chloride	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Benzene	27	26	96.3%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromochloromethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromodichloromethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromoform	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromomethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Carbon disulfide	27	25	92.6%	0.00072	0.005	0.005	0.005	0.00	0.19	Yes	No	Type B	0.007	0.005	0.005
Carbon tetrachloride	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chlorobenzene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroform	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloromethane	27	23	85.2%	0.00029	0.0025	0.0021	0.0025	0.00	0.40	Yes	No	Type B	0.0047	0.0025	0.0025
cis-1,2-Dichloroethene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
cis-1,3-Dichloropropene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromochloromethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromomethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichlorodifluoromethane	13	13	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichloromethane (Methylene chloride)	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl benzene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl methacrylate	13	13	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Iodomethane	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Isobutyl alcohol	13	13	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
m&p-Xylene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Methacrylonitrile	13	13	100.0%	0.01	0.01	0.01	0.01	0.00	0.00	Yes	No	Type B	0.01	0.01	0.01
Methyl methacrylate	13	13	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
o-Xylene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Phenol	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Propionitrile	13	13	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Styrene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Tetrachloroethene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Toluene	27	26	96.3%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,2-Dichloroethene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,3-Dichloropropene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,4-Dichloro-2-butene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichloroethene	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichlorofluoromethane	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Vinyl acetate	27	27	100.0%	0.005	0.005	0.005	0.005	0.00	0.00	Yes	No	Type B	0.005	0.005	0.005
Vinyl chloride	27	27	100.0%	0.0025	0.0025	0.0025	0.0025	0.00	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,4-Trichlorobenzene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Hexachlorobutadiene	7	7	100.0%	0.005	0.005	0.005	0.005	0.00	0.03	Yes	No	Type B	0.005	0.005	0.005
Naphthalene	8	8	100.0%	0.003	0.005	0.004	0.005	0.00	0.20	Yes	No	Type B	0.007	0.005	0.005

**Table 5A - Part 3**  
**EWQVs and Trigger Values**  
**Landfill Cell 9 Inter-well Expanded Parameter**  
**Hakes C and D Landfill**  
**Campbell New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed of non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90th Percentile	Trigger Value
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Note: The EWQV's on this table apply to Cell 9 wells: MW-O(BR), MW-R(BR), MW-S(BR), MW-T(BR), MW-U(BR) & MW-V(BR)

**General Chemistry**

Alkalinity	44	0	0.0%	46.00	250.00	173	160	44	0.26	Yes	Yes	Type A	305	230	305
Ammonia Nitrogen	44	26	59.1%	0.010	0.060	0.025	0.025	0.01	0.33	Yes	No	Type B	0.050	0.033	0.033
Biochemical Oxygen Demand	45	42	93.3%	1.00	3.00	1.14	1.00	0.50	0.44	Yes	No	Type B	2.65	1.00	1.00
Bromide	44	44	100.0%	0.5	0.5	0.5	0.5	0.00	0.00	Yes	No	Type B	0.5	0.5	0.5
Chemical Oxygen Demand	44	19	43.2%	2.5	23.6	4.88	2.5	3.92	0.80	No	No	Type B	16.65	8.04	8.04
Chloride	44	0	0.0%	0.70	3.10	1.44	1.30	0.49	0.34	Yes	Yes	Type A	2.91	2.00	2.91
Color (True) (C.U.)	27	0	0.0%	4.00	25.00	13.83	15.00	5.97	0.43	Yes	Yes	Type A	31.75	20.00	31.75
Cyanide	27	27	100.0%	0.0025	0.0050	0.0033	0.0025	0.00	0.36	Yes	No	Type B	0.0068	0.0050	0.0050
Hardness	44	0	0.0%	51.80	325.00	189.35	171.00	61.23	0.32	Yes	Yes	Type A	373.04	281.40	373.04
Nitrate Nitrogen	44	39	88.6%	0.50	0.70	0.51	0.50	0.05	0.09	Yes	No	Type B	0.66	0.50	0.50
pH of Color Analysis	27	0	0.0%	7.05	8.26	7.89	7.96	0.24	0.03	Yes	Yes	Type A	8.60	8.03	8.60
Sulfate	44	0	0.0%	9.80	117.00	44.53	37.10	32.98	0.74	No	Yes	Type B	143.48	99.12	99.12
Total Dissolved Solids	44	0	0.0%	93.00	445.00	246.97	218.00	89.45	0.36	Yes	Yes	Type A	515.33	383.20	515.33
Total Kjeldahl Nitrogen	44	25	56.8%	0.10	0.29	0.13	0.10	0.06	0.42	Yes	No	Type B	0.30	0.20	0.20
Total Organic Carbon (TOC)	44	14	31.8%	0.09	1.80	0.54	0.50	0.30	0.55	No	No	Type B	1.42	0.76	0.76
Total Phenolics	44	39	88.6%	0.0025	0.0074	0.0026	0.0025	0.00	0.31	Yes	No	Type B	0.0050	0.0025	0.0025

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

**Field Parameters**

Field pH (std. units)	7	0	0.0%	6.67	7.54	7.21	7.28	0.30	0.04	Yes	Yes	Type A	8.11	7.52	6.31 - 8.11
ORP (mV)	7	0	0.0%	-116.40	239.10	12.66	-8.00	123.04	9.72	No	Yes	Type B	381.77	161.16	161.16
Specific Conductivity (us/cm)	7	0	0.0%	1055	1162	1093	1078	41	0.04	Yes	Yes	Type A	1217	1142	1217
Temperature (deg. C)	7	0	0.0%	6.80	20.10	11.03	9.50	4.75	0.43	Yes	Yes	Type A	25.27	16.44	25.27
Turbidity (NTU)	7	0	0.0%	3.10	147.00	26.17	5.55	53.40	2.04	No	Yes	Type B	186.37	66.96	66.96

**Inorganic Compounds**

Aluminum	4	1	25.0%	0.05	2.68	0.73	0.10	1.30	1.78	No	No	Type B	4.63	1.91	1.91
Antimony	4	4	100.0%	0.03	0.03	0.03	0.03	0.00	0.00	Yes	No	Type B	0.03	0.03	0.03
Arsenic	5	4	80.0%	0.0050	0.0087	0.0057	0.0050	0.0017	0.29	Yes	No	Type B	0.0107	0.0072	0.0072
Barium	4	0	0.0%	0.0221	0.0355	0.0301	0.0313	0.0058	0.19	Yes	Yes	Type A	0.0476	0.0348	0.0476
Beryllium	4	4	100.0%	0.0015	0.0015	0.0015	0.0015	0.0000	0.00	Yes	No	Type B	0.0015	0.0015	0.0015
Boron	4	0	0.0%	0.1250	0.1290	0.1268	0.1265	0.0021	0.02	Yes	Yes	Type A	0.1329	0.1287	0.1329
Cadmium	7	7	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Calcium	7	0	0.0%	99	141	114	112	15	0.13	Yes	Yes	Type A	159	133	159
Chromium	4	1	25.0%	0.0007	0.0054	0.0030	0.0030	0.0025	0.85	No	No	Type B	0.0106	0.0053	0.0053
Chromium, hexavalent	4	4	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Cobalt	4	3	75.0%	0.008	0.025	0.021	0.025	0.009	0.41	Yes	No	Type B	0.046	0.025	0.025
Copper	4	3	75.0%	0.00	0.01	0.01	0.01	0.00	0.37	Yes	No	Type B	0.02	0.01	0.01
Iron	7	0	0.0%	0.09	7.68	2.22	1.16	2.67	1.20	No	Yes	Type B	10.24	5.15	5.15
Lead	7	7	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Magnesium	7	0	0.0%	52.6	59.0	55.7	55.5	2.0	0.04	Yes	Yes	Type A	61.7	57.9	61.7
Manganese	7	0	0.0%	0.730	1.810	1.161	1.220	0.378	0.33	Yes	Yes	Type A	2.296	1.528	2.296
Mercury	4	4	100.0%	0.0001	0.0001	0.0001	0.0001	0.0000	0.00	Yes	No	Type B	0.0001	0.0001	0.0001
Nickel	4	3	75.0%	0.01	0.02	0.02	0.02	0.01	0.44	Yes	No	Type B	0.04	0.02	0.02
Potassium	7	0	0.0%	18.3	48.4	40.3	44.6	10.5	0.26	Yes	Yes	Type A	71.9	47.7	71.9
Selenium	4	4	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Silver	4	4	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Sodium	7	0	0.0%	64.2	84.7	74.0	72.9	6.8	0.09	Yes	Yes	Type A	94.3	82.4	94.3
Thallium	4	4	100.0%	0.005	0.005	0.005	0.005	0.000	0.00	Yes	No	Type B	0.005	0.005	0.005
Tin	1	1	100.0%	0.25	0.25	0.25	0.25	0.00	0.00	Yes	No	Type B	0.25	0.25	0.25
Vanadium	4	3	75.0%	0.005	0.025	0.020	0.025	0.010	0.52	No	No	Type B	0.051	0.025	0.025
Zinc	4	3	75.0%	0.01	0.01	0.01	0.01	0.00	0.14	Yes	No	Type B	0.02	0.01	0.01

**Polychlorinated Biphenyls (PCBs)**

Aroclor-1016	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Aroclor-1221	1	1	100.0%	0.001	0.001	0.001	0.001	0.000	0.00	Yes	No	Type B	0.001	0.001	0.001
Aroclor-1232	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Aroclor-1242	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Aroclor-1248	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Aroclor-1254	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Aroclor-1260	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495



**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

**Pesticides**

4,4'-DDD	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
4,4'-DDE	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
4,4'-DDT	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Aldrin	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
alpha-BHC	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
alpha-Chlordane	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
beta-BHC	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Chlorobenzilate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
delta-BHC	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Dieldrin	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Dinoseb	1	1	100.0%	0.000255	0.000255	0.000255	0.000255	0.000000	0.00	Yes	No	Type B	0.000255	0.000255	0.000255
Endosulfan I	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Endosulfan II	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Endosulfan sulfate	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Endrin	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Endrin aldehyde	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
gamma-BHC (Lindane)	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
gamma-Chlordane	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Heptachlor	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Heptachlor epoxide	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Methoxychlor	1	1	100.0%	0.000025	0.000025	0.000025	0.000025	0.000000	0.00	Yes	No	Type B	0.000025	0.000025	0.000025
Methyl parathion	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Parathion	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Toxaphene	1	1	100.0%	0.00025	0.00025	0.00025	0.00025	0.000000	0.00	Yes	No	Type B	0.00025	0.00025	0.00025

**Per- and Polyfluoroalkyl Substances (PFAS)**

6:2 Fluorotelomer sulfonate	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
8:2 Fluorotelomer sulfonic acid (8:2 FTS)	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
N-ethylperfluoro-1-octanesulfonamidoacetic acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
N-methylperfluoro-1-octanesulfonamidoacetic acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorobutanesulfonic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorobutanoic Acid	1	0	0.0%	0.0000013	0.0000013	0.0000013	0.0000013	0.0000000	0.00	Yes	Yes	Type A	0.0000013	0.0000013	0.0000013
Perfluorodecane Sulfonate	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorodecanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorododecanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluoroheptane sulfonate	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluoroheptanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorohexanesulfonic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.0000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorohexanoic Acid	1	1	100.0%	0.00000465	0.00000465	0.00000465	0.00000465	0.00000000	0.00	Yes	No	Type B	0.00000465	0.00000465	0.00000465
Perfluorononanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluoro-n-tridecanoic acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorooctanesulfonamide	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorooctanesulfonic Acid	1	1	100.0%	0.00000095	0.00000095	0.00000095	0.00000095	0.00000000	0.00	Yes	No	Type B	0.00000095	0.00000095	0.00000095
Perfluorooctanoic Acid	1	0	0.0%	0.00000056	0.00000056	0.00000056	0.00000056	0.00000000	0.00	Yes	Yes	Type A	0.00000056	0.00000056	0.00000056
Perfluoropentanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluorotetradecanoic acid (PFTeDA)	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023
Perfluoroundecanoic Acid	1	1	100.0%	0.0000023	0.0000023	0.0000023	0.0000023	0.00000000	0.00	Yes	No	Type B	0.0000023	0.0000023	0.0000023

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

**Herbicides**

2,4,5-T	1	1	100.0%	0.000255	0.000255	0.000255	0.000255	0.000000	0.00	Yes	No	Type B	0.000255	0.000255	0.000255
2,4,5-TP	1	1	100.0%	0.000255	0.000255	0.000255	0.000255	0.000000	0.00	Yes	No	Type B	0.000255	0.000255	0.000255
2,4-D	1	1	100.0%	0.000255	0.000255	0.000255	0.000255	0.000000	0.00	Yes	No	Type B	0.000255	0.000255	0.000255

**Radionuclides (pCi/L)**

Radium-226, Dissolved (EPA 903.1) (pCi/L)	2	0	0.0%	0.18	0.27	0.23	0.23	0.06	0.28	Yes	Yes	Type A	0.42	0.26	0.42
Radium-226, Total (EPA 903.1) (pCi/L)	2	0	0.0%	-0.030	0.080	0.025	0.025	0.078	3.11	No	Yes	Type B	0.258	0.069	0.069
Radium-228, Dissolved (EPA 904.0) (pCi/L)	2	0	0.0%	0.090	0.440	0.265	0.265	0.247	0.93	No	Yes	Type B	1.007	0.405	0.405
Radium-228, Total (EPA 904.0) (pCi/L)	2	0	0.0%	-0.100	0.240	0.070	0.070	0.240	3.43	No	Yes	Type B	0.791	0.206	0.206
Total Uranium, Dissolved (EPA 908.0) (pCi/L)	2	0	0.0%	8.500	8.600	8.550	8.550	0.071	0.01	Yes	Yes	Type A	8.762	8.590	8.762
Total Uranium, Total (EPA 908.0) (pCi/L)	2	0	0.0%	6.31	9.10	7.71	7.71	1.97	0.26	Yes	Yes	Type A	13.62	8.82	13.62

**Semi Volatile Organic Compounds**

1,2,4,5-Tetrachlorobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
1,3,5-Trinitrobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
1,3-Dinitrobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
1,4-Dioxane	2	0	0.0%	0.00023	0.00028	0.00026	0.00026	0.00004	0.14	Yes	Yes	Type A	0.00036	0.00028	0.00036
1,4-Naphthoquinone	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
1,4-Phenylenediamine	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
1-Naphthylamine	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
2,3,4,6-Tetrachlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,4,5-Trichlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,4,6-Trichlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,4-Dichlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,4-Dimethylphenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,4-Dinitrophenol	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
2,4-Dinitrotoluene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,6-Dichlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2,6-Dinitrotoluene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Acetylaminofluorene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Chloronaphthalene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Chlorophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Methyl-5-nitroaniline	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Methylnaphthalene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Methylphenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
2-Naphthylamine	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
2-Nitroaniline	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
2-Nitrophenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
3,3-Dichlorobenzidine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
3,3-Dimethylbenzidine	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
3/4-Methylphenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
3-Methylcholanthrene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
3-Nitroaniline	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
4,6-Dinitro-2-methylphenol	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
4-Aminobiphenyl	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
4-Bromophenyl-phenylether	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

Semi Volatile Organic Compounds (con't)															
4-Chloro-3-methylphenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
4-Chloroaniline	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
4-Chlorophenyl-phenylether	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
4-Nitroaniline	1	1	100.0%	0.024	0.024	0.024	0.024	0.0000	0.00	Yes	No	Type B	0.024	0.024	0.024
4-Nitrophenol	1	1	100.0%	0.024	0.024	0.024	0.024	0.0000	0.00	Yes	No	Type B	0.024	0.024	0.024
7,12-Dimethylbenz(a)anthracene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Acenaphthene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Acenaphthylene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Acetophenone	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Anthracene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzo(a)anthracene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzo(a)pyrene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzo(b)fluoranthene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzo(g,h,i)perylene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzo(k)fluoranthene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Benzyl alcohol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Bis(1-chloroisopropyl) Ether	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
bis(2-Chloroethoxy) methane	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
bis(2-Chloroethyl) ether	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
bis(2-Ethylhexyl) phthalate	2	1	50.0%	0.00495	0.02000	0.01248	0.01248	0.01064	0.85	No	No	Type B	0.04440	0.01850	0.01850
Butylbenzylphthalate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Chrysene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Diallate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Dibenzo(a,h)anthracene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Dibenzofuran	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Diethylphthalate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Dimethoate	1	1	100.0%	0.024	0.024	0.024	0.024	0.0000	0.00	Yes	No	Type B	0.024	0.024	0.024
Dimethylphthalate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Di-n-butylphthalate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Di-n-octylphthalate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Diphenylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Disulfoton	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Ethyl methanesulfonate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Famphur	1	1	100.0%	0.000495	0.000495	0.000495	0.000495	0.000000	0.00	Yes	No	Type B	0.000495	0.000495	0.000495
Fluoranthene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Fluorene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Hexachlorobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Hexachlorocyclopentadiene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Hexachloroethane	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Hexachloropropene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Indeno(1,2,3-cd)pyrene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Isodrin	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Isophorone	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Isosafrole	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Kepone	1	1	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

**Semi Volatile Organic Compounds (con't)**

Methapyrilene	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
Methyl methanesulfonate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Nitrobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosodibutylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosodiethylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosodimethylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosodi-n-propylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosodiphenylamine/Diphenylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosomethylethylamine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosopiperidine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
N-Nitrosopyrrolidine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
o,o,o-Triethyl phosphorothioate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
o-Toluidine	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
p-(Dimethylamino)azobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Pentachlorobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Pentachloronitrobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Pentachlorophenol	1	1	100.0%	0.024	0.024	0.024	0.024	0.000	0.00	Yes	No	Type B	0.024	0.024	0.024
Phenacetin	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Phenanthrene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Phorate	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Pronamide	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Pyrene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Safrole	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Thionazin	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048

**Volatile Organic Compounds**

1,1,1,2-Tetrachloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,1-Trichloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2,2-Tetrachloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1,2-Trichloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloroethene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,1-Dichloropropene	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,3-Trichloropropane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromo-3-chloropropane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dibromoethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichlorobenzene	3	3	100.0%	0.0025	0.0048	0.0033	0.0025	0.0013	0.41	Yes	No	Type B	0.0073	0.0043	0.0043
1,2-Dichloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2-Dichloropropane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,3-Dichlorobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
1,3-Dichloropropane	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,4-Dichlorobenzene	3	3	100.0%	0.0025	0.0048	0.0033	0.0025	0.0013	0.41	Yes	No	Type B	0.0073	0.0043	0.0043
2,2-Dichloropropane	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
2-Butanone (MEK)	4	4	100.0%	0.0050	0.0050	0.0050	0.0050	0.0000	0.00	Yes	No	Type B	0.0050	0.0050	0.0050

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

<b>Volatile Organic Compounds (con't)</b>															
2-Chloro-1,3-butadiene	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
2-Hexanone	4	4	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
4-Methyl-2-pentanone	4	4	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
Acetone	4	3	75.0%	0.005	0.014	0.007	0.005	0.005	0.62	No	No	Type B	0.021	0.011	0.011
Acetonitrile	2	2	100.0%	0.050	0.050	0.050	0.050	0.0000	0.00	Yes	No	Type B	0.050	0.050	0.050
Acrolein	2	2	100.0%	0.050	0.050	0.050	0.050	0.0000	0.00	Yes	No	Type B	0.050	0.050	0.050
Acrylonitrile	4	4	100.0%	0.050	0.050	0.050	0.050	0.0000	0.00	Yes	No	Type B	0.050	0.050	0.050
Allyl chloride	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Benzene	4	3	75.0%	0.0009	0.0025	0.0021	0.0025	0.0008	0.38	Yes	No	Type B	0.0045	0.0025	0.0025
Bromochloromethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromodichloromethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromoform	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Bromomethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Carbon disulfide	4	3	75.0%	0.003	0.005	0.005	0.005	0.001	0.20	Yes	No	Type B	0.007	0.005	0.005
Carbon tetrachloride	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chlorobenzene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloroform	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Chloromethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
cis-1,2-Dichloroethene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
cis-1,3-Dichloropropene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromochloromethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dibromomethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichlorodifluoromethane	2	2	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Dichloromethane (Methylene chloride)	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl benzene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Ethyl methacrylate	2	2	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
Iodomethane	4	4	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
Isobutyl alcohol	2	2	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
m&p-Xylene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Methacrylonitrile	2	2	100.0%	0.01	0.01	0.01	0.01	0.00	0.00	Yes	No	Type B	0.01	0.01	0.01
Methyl methacrylate	2	2	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
o-Xylene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Phenol	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Propionitrile	2	2	100.0%	0.05	0.05	0.05	0.05	0.00	0.00	Yes	No	Type B	0.05	0.05	0.05
Styrene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Tetrachloroethene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Toluene	4	3	75.0%	0.0003	0.0025	0.0019	0.0025	0.0011	0.58	No	No	Type B	0.0053	0.0025	0.0025
trans-1,2-Dichloroethene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,3-Dichloropropene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
trans-1,4-Dichloro-2-butene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichloroethene	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Trichlorofluoromethane	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
Vinyl acetate	4	4	100.0%	0.005	0.005	0.005	0.005	0.0000	0.00	Yes	No	Type B	0.005	0.005	0.005
Vinyl chloride	4	4	100.0%	0.0025	0.0025	0.0025	0.0025	0.0000	0.00	Yes	No	Type B	0.0025	0.0025	0.0025
1,2,4-Trichlorobenzene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Hexachlorobutadiene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048
Naphthalene	1	1	100.0%	0.0048	0.0048	0.0048	0.0048	0.0000	0.00	Yes	No	Type B	0.0048	0.0048	0.0048

**Table 5A - Part 4**  
**EWQVs and Trigger Values**  
**MW-V Intra-well Analysis**  
**Hakes C and D Landfill**  
**Campbell, New York**  
**(mg/L except where noted)**

Parameter (mg/L except where noted) (one half detection limit listed for non-detects)	Number of Samples	Number of Non-Detects	% Non-Detects	Minimum	Maximum	Mean	Median	Standard Deviation (SD)	Coefficient of Variation (CV) (SD/Mean)	CV 0.5 or Less?	% ND less than 15%?	Data Set Type	Mean + 3 SD	90 <sup>th</sup> Percentile	Trigger Value
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Note: The EWQVs on this table are intra-well and apply only to Cell 9 well MW-V

General Chemistry															
Alkalinity	7	0	0.0%	190	460	396	422	92	0.23	Yes	Yes	Type A	671	444	671
Ammonia Nitrogen	7	3	42.9%	0.025	0.203	0.098	0.082	0.077	0.79	No	No	Type B	0.328	0.183	0.183
Biochemical Oxygen Demand	7	6	85.7%	1.0	8.4	2.3	1.0	2.8	1.18	No	No	Type B	10.7	5.2	5.2
Bromide	7	7	100.0%	0.5	0.5	0.5	0.5	0.0	0.00	Yes	No	Type B	0.5	0.5	0.5
Chemical Oxygen Demand	7	0	0.0%	6.6	44.8	16.0	9.5	13.9	0.87	No	Yes	Type B	57.7	31.7	31.7
Chloride	7	0	0.0%	1.8	5.3	2.5	2.0	1.3	0.50	Yes	Yes	Type A	6.3	3.6	6.3
Color (True) (C.U.)	4	0	0.0%	25	32	28	28	4	0.13	Yes	Yes	Type A	39	31	39
Cyanide	4	4	100.0%	0.0025	0.0050	0.0031	0.0025	0.0013	0.40	Yes	No	Type B	0.0069	0.0043	0.0043
Hardness	7	0	0.0%	477	594	514	507	44	0.09	Yes	Yes	Type A	647	569	647
Nitrate Nitrogen	7	6	85.7%	0.5	0.5	0.5	0.5	0.0	0.00	Yes	No	Type B	0.5	0.5	0.5
pH of Color Analysis	4	0	0.0%	6.92	8.09	7.71	7.92	0.53	0.07	Yes	Yes	Type A	9.32	8.05	9.32
Sulfate	7	0	0.0%	102	530	252	228	131	0.52	No	Yes	Type B	646	354	354
Total Dissolved Solids	7	0	0.0%	748	930	799	779	62	0.08	Yes	Yes	Type A	985	861	985
Total Kjeldahl Nitrogen	7	1	14.3%	0.10	1.28	0.42	0.21	0.41	0.99	No	Yes	Type B	1.66	0.83	0.83
Total Organic Carbon (TOC)	7	0	0.0%	1.7	16.0	5.0	3.1	5.0	1.01	No	Yes	Type B	20.1	9.6	9.6
Total Phenolics	7	3	42.9%	0.0022	0.0141	0.0042	0.0025	0.0044	1.04	No	No	Type B	0.0173	0.0075	0.0075

Table 6

Current and Historic Surface Water Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	SW-1A 11/10/2021	SW-1A 3/17/2022	SW-1A 5/10/2022	SW-1A 8/11/2022	SW-1A 11/22/2022	SW-2 11/10/2021	SW-2 3/17/2022	SW-2 5/10/2022	SW-2 8/11/2022	SW-2 11/22/2022	SW-2A 11/10/2021	SW-2A 3/17/2022	SW-2A 5/10/2022	SW-2A 8/11/2022	SW-2A 11/22/2022	Class C Standard
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Field Parameters

Dissolved Oxygen	10.94	14.71	10.1	5.33	10.31	11.23	14.32	12.25	3.49	12.51	12.9	14.29	11.88	6.53	12.59	Not < 5
Field pH (std. units)	7.25	6.73	7.9	6.78	8.59	7.08	7.22	7.44	7.96	6.97	6.67	7.49	7.47	6.89	7.32	6.5 - 8.5
ORP (mV)	160.3	121.5	144.1	163.8	73.2	202.7	119	110.1	119.8	120.4	232	199.7	202.5	228.7	117.2	
Specific Conductivity (us/cm)	59.7	68.8	86.8	149.1	100.1	83	63.2	109.7	179.2	174.9	72.8	70.9	94.6	181.5	132	
Temperature (deg. C)	8.2	2.5	10.4	16.9	2.3	8.9	1.7	10.2	17.6	3.1	8.1	1.5	9	16.8	3.7	
Turbidity (NTU)	2.5	40.6	2.92	6.61	2.99	7.46	7.37	3.53	12.6	18.6	7.44	6.91	2.83	10.3	6.68	

Inorganic Compounds

Aluminum			0.117					0.124					0.0782 J			
Antimony			0.06 U					0.06 U					0.06 UJ			
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	
Barium			0.0158 J					0.0221					0.0199 J			
Beryllium			0.003 U					0.003 U					0.003 U			
Boron			0.013 J					0.0172 J					0.0168 J			1
Cadmium	0.005 U	0.005 U	0.005 U	0.0004 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0004 BJ	0.005 U	
Calcium	5.1	4.1	5.97	13.7	6.5	8.9	5.6	12.4	20.1	19.5	8.2	5.9	9.05	18.4	12.9	
Chromium			0.01 U					0.01 U					0.01 U			
Chromium, hexavalent			0.01 U					0.01 U					0.01 U			
Cobalt			0.05 U					0.05 U					0.05 U			0.005
Copper			0.02 U					0.02 U					0.02 U			
Iron	0.16	2.61	0.112	0.13	1.02	0.19	0.26	0.117	0.61	0.57	0.17	0.42	0.0818 J	0.43	0.25	
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0021 J	0.005 U	0.005 U	0.005 U	0.005 U	0.0027 J	0.005 U	0.008
Magnesium	1.6	1.7	1.77	3.8	2.2	2.3	1.6	3.34	5.6	5.2	2.1	1.6	2.39	4.9	3.5	
Manganese	0.005 J	0.029	0.01 U	0.01 U	0.04	0.009 J	0.005 J	0.0057 J	0.011	0.015	0.006 J	0.008 J	0.01 U	0.007 J	0.006 J	
Mercury			0.0002 U					0.0002 U					0.0002 U			0.000007
Nickel			0.04 U					0.04 U					0.04 U			0.0082
Potassium	0.6 J	1.3 J	0.635 J	1.2 J	1 J	0.9 J	0.7 J	0.881 J	1.5 J	1.7 J	0.8 J	0.8 J	0.812 J	1.5 J	1.1 J	
Selenium			0.01 U					0.01 U					0.01 U			
Silver			0.01 U					0.01 U					0.01 U			
Sodium	4.7	9.2	10.2	8.9	9.9	3.9	5.7	7.79	9	7	3.4	6.5	7.68	10.1	7.6	
Thallium			0.01 U					0.01 U					0.01 U			0.008
Vanadium			0.05 U					0.05 U					0.05 U			0.014
Zinc			0.02 U					0.02 U					0.02 U			

Volatile Organic Compounds

1,1,1,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U			
1,1,1-Trichloroethane			0.005 UJ					0.005 UJ					0.005 UJ			
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U			
1,1,2-Trichloroethane			0.005 U					0.005 U					0.005 U			
1,1-Dichloroethane			0.005 U					0.005 U					0.005 U			
1,1-Dichloroethene			0.005 U					0.005 U					0.005 U			
1,2,3-Trichloropropane			0.005 U					0.005 U					0.005 U			
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U					0.005 U			
1,2-Dibromoethane			0.005 U					0.005 U					0.005 U			
1,2-Dichlorobenzene			0.005 U					0.005 U					0.005 U			
1,2-Dichloroethane			0.005 U					0.005 U					0.005 U			
1,2-Dichloropropane			0.005 U					0.005 U					0.005 U			
1,4-Dichlorobenzene			0.005 U					0.005 U					0.005 U			
2-Butanone (MEK)			0.01 U					0.01 U					0.01 U			
2-Hexanone			0.01 U					0.01 U					0.01 U			
4-Methyl-2-pentanone			0.01 U					0.01 U					0.01 U			
Acetone			0.01 U					0.01 U					0.01 U			

Table 6

Current and Historic Surface Water Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	SW-1A 11/10/2021	SW-1A 3/17/2022	SW-1A 5/10/2022	SW-1A 8/11/2022	SW-1A 11/22/2022	SW-2 11/10/2021	SW-2 3/17/2022	SW-2 5/10/2022	SW-2 8/11/2022	SW-2 11/22/2022	SW-2A 11/10/2021	SW-2A 3/17/2022	SW-2A 5/10/2022	SW-2A 8/11/2022	SW-2A 11/22/2022	Class C Standard
<b>Volatile Organic Compounds (con't)</b>																
Acrylonitrile			0.1 U					0.1 U					0.1 U			
Benzene			0.005 U					0.005 U					0.005 U			0.01
Bromochloromethane			0.005 U					0.005 U					0.005 U			
Bromodichloromethane			0.005 U					0.005 U					0.005 U			
Bromofrom			0.005 U					0.005 U					0.005 U			
Bromomethane			0.005 UJ					0.005 UJ					0.005 UJ			
Carbon disulfide			0.01 U					0.01 U					0.01 U			
Carbon tetrachloride			0.005 UJ					0.005 UJ					0.005 UJ			
Chlorobenzene			0.005 U					0.005 U					0.005 U			0.005
Chloroethane			0.005 UJ					0.005 UJ					0.005 UJ			
Chloroform			0.005 U					0.005 U					0.005 U			
Chloromethane			0.005 UJ					0.005 UJ					0.005 UJ			
cis-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U			
cis-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U			
Dibromochloromethane			0.005 U					0.005 U					0.005 U			
Dibromomethane			0.005 U					0.005 U					0.005 U			
Dichloromethane (Methylene chloride)			0.005 U					0.005 U					0.005 U			0.2
Ethyl benzene			0.005 U					0.005 U					0.005 U			
Iodomethane			0.01 U					0.01 U					0.01 U			
m&p-Xylene			0.005 U					0.005 U					0.005 U			
o-Xylene			0.005 U					0.005 U					0.005 U			
Styrene			0.005 U					0.005 U					0.005 U			
Tetrachloroethene			0.005 U					0.005 U					0.005 U			
Toluene			0.005 U					0.005 U					0.005 U			6
trans-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U			
trans-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U			
trans-1,4-Dichloro-2-butene			0.005 U					0.005 U					0.005 U			
Trichloroethene			0.005 U					0.005 U					0.005 U			0.04
Trichlorofluoromethane			0.005 UJ					0.005 UJ					0.005 UJ			
Vinyl acetate			0.01 U					0.01 U					0.01 U			
Vinyl chloride			0.005 UJ					0.005 UJ					0.005 UJ			
<b>General Chemistry</b>																
Alkalinity	15.8	7.2	21.1	33.4	19	23.8	10.9	33.4	60.6	41.4	22.8	12.6	26.1	53	30.9	
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	11.7	5.6	8.5	5.2	7.7	8.5	4.3 J	5.3	3.8 J	4.5 J	7.9	5 U	4 J-	5 U	5 U	
Chloride	5.9	15.6	11.6	15.7	15.4	4.9	8.5	9	8.7	10	3.5	10.1	9.8	13.7	12.1	
Color (True) (C.U.)			13					10					7			
Cyanide			0.005 U					0.005 U					0.005 U			9
Hardness	19.5	17.3	22.2	50	25.4	31.9	20.6	44.6	73.2	70.2	29	21.3	32.4	66.4	46.4	
Nitrate Nitrogen	1 U	1 U	0.3 J	0.5 J	0.3 J	1 U	1 U	0.3 J	0.4 J	0.4 J	1 U	1 U	0.3 J	0.5 J	0.4 J	
pH of Color Analysis			7.38					7.31					7.18			
Sulfate	3.8	4.3	5.9	12.6	8.4	9.2	8.1	12.4	18.8	33.8	7.8	6.1	8.1	14.6	18.5	
Total Dissolved Solids	49	60	84	95	70	61	50	94	113	126	53	59	81	113	92	500
Total Kjeldahl Nitrogen	0.25	0.24	0.29	0.2 U	0.24	0.23	0.3	0.22	0.17 J	0.25	0.2	0.26	0.25	0.17 J	0.19 J	
Total Organic Carbon (TOC)	5.1	3.9	3.1	2.3	4	3.7	3.3 B	2.7	2.3	3	3.3	3.1 B	2.1	1.8	2.4	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.0036 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Total Suspended Solids	1.1	61				1.4	2.4				1.7	6.7				



Table 6

Current and Historic Surface Water Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	SW-3A 3/17/2022	SW-3A 5/10/2022	SW-5A 3/17/2022	SW-7 11/10/2021	SW-7 3/17/2022	SW-7 5/10/2022	SW-7 11/22/2022	SW-7A 11/10/2021	SW-7A 3/17/2022	SW-7A 5/10/2022	SW-7A 8/11/2022	SW-7A 11/22/2022	SW-9 11/10/2021	SW-9 3/17/2022	SW-9 5/10/2022	SW-9 11/22/2022	Class C Standard
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Field Parameters

Dissolved Oxygen				10.75	14.74	9.19	11.85	11.82	14.63	13.02	5.45	12.04					Not < 5
Field pH (std. units)	7.45	7.9	8.47	6.51	7.29	7.3	6.72	6.8	7.14	7.57	6.96	7.43	7.62	8.32	8.19	7.27	6.5 - 8.5
ORP (mV)	169.8	135.6	112	223.9	181.8	203.5	109.1	226.2	108.7	215.7	198.3	123	172.2	142.9	122	126.2	
Specific Conductivity (us/cm)	308.2	467.3	214.3	56.9	60	82	99.3	59.6	59.6	84.8	181.8	104.8	170.4	162.1	241.6	247.3	
Temperature (deg. C)	4.4	13.5	5	7.6	1.6	9.2	3.6	8	1.5	8.5	17.5	1.1	8.8	2.2	14.9	5	
Turbidity (NTU)	41.5	3.25	39.2	1.79	6.29	2.07	2.43	2.34	8.28	2.13	3.13	2.84	82.1	37.9	7.56	68.8	

Inorganic Compounds

Aluminum		0.21				0.0666 J				0.0775 J					0.669		
Antimony		0.06 U				0.06 U				0.06 U					0.06 U		
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	
Barium		0.0354				0.0185 J				0.0199 J					0.0476		
Beryllium		0.003 U				0.003 U				0.003 U					0.003 U		
Boron		0.0601 J				0.013 J				0.0139 J					0.025 J		1
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Calcium	40.2	43.4	30.9	6.2	4.5	8.12	8.1	6.6	4.4	7.23	16.4	8.9	24	24.3	35.1	33	
Chromium		0.01 U				0.01 U				0.01 U					0.01 U		
Chromium, hexavalent		0.01 U				0.01 U				0.01 U					0.01 U		
Cobalt		0.05 U				0.05 U				0.05 U					0.05 U		0.005
Copper		0.02 U				0.02 U				0.02 U					0.02 U		
Iron	1.7	0.224	2.4	0.1 J	0.35	0.1 U	0.1 U	0.09 J	0.44	0.0654 J	0.11	0.1 U	3.41	1.92	0.571	1.71	
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.008
Magnesium	8.1	13.3	5.9	1.6	1.2	2.05	2.2	1.6	1.2	1.84	4	2.3	5.4	5.9	8.36	7.8	
Manganese	0.131	0.0517	0.022	0.01 U	0.007 J	0.01 U	0.01 U	0.01 U	0.011	0.01 U	0.006 J	0.01 U	0.056	0.026	0.089	0.04	
Mercury		0.0002 U				0.0002 U				0.0002 U					0.0002 U		0.000007
Nickel		0.04 U				0.04 U				0.04 U					0.04 U		0.0082
Potassium	2.9	1.85 J	2.8	0.7 J	0.7 J	0.671 J	0.7 J	0.7 J	0.7 J	0.78 J	1.4 J	0.8 J	3.6	2.5	1.87 J	3.8	
Selenium		0.01 U				0.01 U				0.01 U					0.01 U		
Silver		0.01 U				0.01 U				0.01 U					0.01 U		
Sodium	14.4	34.6	2.4	3	6.6	7.2	7.8	3.2	6.5	7.67	12.6	8	2.1	2.5	4.83	3.5	
Thallium		0.01 U				0.01 U				0.01 U					0.01 U		0.008
Vanadium		0.05 U				0.05 U				0.05 U					0.0012 J		0.014
Zinc		0.02 U				0.02 U				0.02 U					0.02 U		

Volatile Organic Compounds

1,1,1,2-Tetrachloroethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,1,1-Trichloroethane		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
1,1,2,2-Tetrachloroethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,1,2-Trichloroethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,1-Dichloroethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,1-Dichloroethene		0.005 U				0.005 U				0.005 U					0.005 U		
1,2,3-Trichloropropane		0.005 U				0.005 U				0.005 U					0.005 U		
1,2-Dibromo-3-chloropropane		0.005 U				0.005 U				0.005 U					0.005 U		
1,2-Dibromoethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,2-Dichlorobenzene		0.005 U				0.005 U				0.005 U					0.005 U		
1,2-Dichloroethane		0.005 U				0.005 U				0.005 U					0.005 U		
1,2-Dichloropropane		0.005 U				0.005 U				0.005 U					0.005 U		
1,4-Dichlorobenzene		0.005 U				0.005 U				0.005 U					0.005 U		
2-Butanone (MEK)		0.01 U				0.01 U				0.01 U					0.01 U		
2-Hexanone		0.01 U				0.01 U				0.01 U					0.01 U		
4-Methyl-2-pentanone		0.01 U				0.01 U				0.01 U					0.01 U		
Acetone		0.01 U				0.01 U				0.01 U					0.01 U		

Table 6

Current and Historic Surface Water Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	SW-3A 3/17/2022	SW-3A 5/10/2022	SW-5A 3/17/2022	SW-7 11/10/2021	SW-7 3/17/2022	SW-7 5/10/2022	SW-7 11/22/2022	SW-7A 11/10/2021	SW-7A 3/17/2022	SW-7A 5/10/2022	SW-7A 8/11/2022	SW-7A 11/22/2022	SW-9 11/10/2021	SW-9 3/17/2022	SW-9 5/10/2022	SW-9 11/22/2022	Class C Standard
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Volatile Organic Compounds (con't)

Acrylonitrile		0.1 U				0.1 U				0.1 U					0.1 U		
Benzene		0.005 U				0.005 U				0.005 U					0.005 U		0.01
Bromochloromethane		0.005 U				0.005 U				0.005 U					0.005 U		
Bromodichloromethane		0.005 U				0.005 U				0.005 U					0.005 U		
Bromoform		0.005 U				0.005 U				0.005 U					0.005 U		
Bromomethane		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
Carbon disulfide		0.01 U				0.01 U				0.01 U					0.01 U		
Carbon tetrachloride		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
Chlorobenzene		0.005 U				0.005 U				0.005 U					0.005 U		0.005
Chloroethane		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
Chloroform		0.005 U				0.005 U				0.005 U					0.005 U		
Chloromethane		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
cis-1,2-Dichloroethene		0.005 U				0.005 U				0.005 U					0.005 U		
cis-1,3-Dichloropropene		0.005 U				0.005 U				0.005 U					0.005 U		
Dibromochloromethane		0.005 U				0.005 U				0.005 U					0.005 U		
Dibromomethane		0.005 U				0.005 U				0.005 U					0.005 U		
Dichloromethane (Methylene chloride)		0.005 U				0.005 U				0.005 U					0.005 U		0.2
Ethyl benzene		0.005 U				0.005 U				0.005 U					0.005 U		
Iodomethane		0.01 U				0.01 U				0.01 U					0.01 U		
m&p-Xylene		0.005 U				0.005 U				0.005 U					0.005 U		
o-Xylene		0.005 U				0.005 U				0.005 U					0.005 U		
Styrene		0.005 U				0.005 U				0.005 U					0.005 U		
Tetrachloroethene		0.005 U				0.005 U				0.005 U					0.005 U		
Toluene		0.005 U				0.005 U				0.005 U					0.005 U		6
trans-1,2-Dichloroethene		0.005 U				0.005 U				0.005 U					0.005 U		
trans-1,3-Dichloropropene		0.005 U				0.005 U				0.005 U					0.005 U		
trans-1,4-Dichloro-2-butene		0.005 U				0.005 U				0.005 U					0.005 U		
Trichloroethene		0.005 U				0.005 U				0.005 U					0.005 U		0.04
Trichlorofluoromethane		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		
Vinyl acetate		0.01 U				0.01 U				0.01 U					0.01 U		
Vinyl chloride		0.005 UJ				0.005 UJ				0.005 UJ					0.005 UJ		

General Chemistry

Alkalinity	87.9	76	50.7	18.2	9.6	22.2	21.5	20	9.1	23.2	37.5	24.9	48.3	46.6	74.3	40.1	
Ammonia Nitrogen	0.054	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.038 J	0.029 J	0.055	0.046 J	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	6.3	12	5 J	8.2	4 J	5 U	5 U	8.9	5 U	5 U	4.2 J	5 U	13	6.6	12	10.4	
Chloride	28.1	72.7	2.1	3.2	10.3	9.2	12.6	3.2	10.5	9.6	26.5	12.8	1.1 J	1.7 J	1.8 J	4.8	
Color (True) (C.U.)		9				6				8					9		
Cyanide		0.005 U				0.005 U				0.005 U					0.005 U		9
Hardness	134	163	102	22	16.1	28.7	29	23.2	15.8	25.6	57.5	31.9	82	85.2	122	114	
Nitrate Nitrogen	1 U	1 U	0.3 J	1 U	0.3 J	0.4 J	0.4 J	1 U	0.3 J	0.4 J	0.6 J	0.4 J	1 U	0.3 J	1 U	0.8 J	
pH of Color Analysis		8				6.96				7.35					7.87		
Sulfate	36.7	55.9	49.8	4.7	4.2	5.6	8.8	4.2	4.1	5.7	10.2	8.7	31.5	34.9	52	78.3	
Total Dissolved Solids	207	296	152	44	50	59	65	49	52	69	111	72	136	128	181	194	500
Total Kjeldahl Nitrogen	0.49	0.36	0.4	0.24	0.23	0.16 J	0.16 J	0.21	0.26	0.2	0.18 J	0.2 U	0.6	0.51	0.47	0.6	
Total Organic Carbon (TOC)	4.5	4	2.8	3.2	3.2 B	2.2	2.2	3.7	3 B	2.2	1.8	2.3	4.1	4.1	4.3	4.7	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	
Total Suspended Solids	17.3		4.5	1.1	2.2			1.3	3				7.8	10.8			

Notes:

Class C Standard - NYSDEC Class C Surface Water Standard  
 Concentrations in **bold** exceed Class C Standards

**U** - Concentration not detected at specified detection limit  
**J/UJ** - Estimated value

Table 7

Current and Historic Groundwater Suppression System Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	GSS-1A 11/10/2021	GSS-1A 3/17/2022	GSS-1A 5/10/2022	GSS-1A 8/11/2022	GSS-1A 11/22/2022	GSS-3 3/17/2022	GSS-3 8/11/2022	GSS-4 11/10/2021	GSS-4 3/17/2022	GSS-4 5/10/2022	GSS-4 8/11/2022	GSS-5 11/10/2021	GSS-5 3/17/2022	GSS-5 5/10/2022	Class GA Standard
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Field Parameters

Field pH (std. units)	6.61	6.87	6.47	6.81	6.51	8.31	6.89	7.78	8.36	8.16	5.9	8.29	8.41	8.36	6.5 - 8.5
ORP (mV)	111.6	-149.8	205.2	-65.6	50.9	65.8	184.7	84.2	67.8	135.2	210.8	88.4	82.2	150.3	
Specific Conductivity (us/cm)	553.7	490.4	486.3	537.3	339.1	395.2	544.7	492.8	419	241.4	534	606.8	544.7	609	
Temperature (deg. C)	13.4	8.1	14.8	18.5	12.6	11	18	17.5	14.3	16.1	19.2	13.7	11.3	13	
Turbidity (NTU)	4.08	1.42	13.4	18.4	6.74	23.6	0.86	1.02	0.29	0.67	0.24	0.35	0.38	0.46	5

Inorganic Compounds

Aluminum			0.183							0.1 U				0.1 U	
Antimony			0.06 U							0.06 U				0.06 U	0.003
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.025
Barium			0.06							0.0696				0.0752	1
Beryllium			0.003 U							0.003 U				0.003 U	
Boron			0.0314 J							0.0245 J				0.0348 J	1
Cadmium	0.005 U	0.005 U	0.005 U	0.0005 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.0004 BJ	0.005 U	0.005 U	0.005 U	0.005
Calcium	90.1	89.4	85.4	86.5	47.4	58	79.8	38.2	36.3	36.4	47.1	61.4	61.5	63.9	
Chromium			0.01 U							0.01 U				0.01 U	0.05
Chromium, hexavalent			0.01 U							0.01 U				0.01 U	
Cobalt			0.05 U							0.05 U				0.05 U	
Copper			0.02 U							0.02 U				0.02 U	0.2
Iron	1.36	0.35	0.453	2.33	0.86	1.16	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.3
Lead	0.005 U	0.005 U	0.005 U	0.0025 J	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025
Magnesium	17.7	18.1	18	18.2	11.7	13.7	15.6	12.9	12.5	12.5	15.3	19.2	20.8	20.7	
Manganese	12.6	11	0.216	0.642	0.288	0.061	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.009 J	0.025	0.01 U	0.3
Mercury			0.0002 U							0.0002 U				0.0002 U	0.0007
Nickel			0.04 U							0.04 U				0.04 U	0.1
Potassium	2.2	2.3	1.96 J	2.2	1.6 J	2.3	1.8 J	3	3.1	2.79	2.8	3.1	3.5	3.32	
Selenium			0.01 U							0.01 U				0.01 U	0.01
Silver			0.01 U							0.01 U				0.01 U	0.05
Sodium	5.2	5.3	5.12	4.9	4.1	15.1	14.9	40.8	38.1	37	31.7	32.2	33.9	35.9	20
Thallium			0.01 U							0.01 U				0.01 U	
Vanadium			0.05 U							0.05 U				0.05 U	
Zinc			0.003 J							0.02 U				0.02 U	

Volatile Organic Compounds

1,1,1,2-Tetrachloroethane			0.005 U							0.005 U				0.005 U	0.005
1,1,1-Trichloroethane			0.005 UJ							0.005 U				0.005 UJ	0.005
1,1,2,2-Tetrachloroethane			0.005 U							0.005 U				0.005 U	0.005
1,1,2-Trichloroethane			0.005 U							0.005 U				0.005 U	0.001
1,1-Dichloroethane			0.005 U							0.005 U				0.005 U	0.005
1,1-Dichloroethene			0.005 U							0.005 U				0.005 U	0.005
1,2,3-Trichloropropane			0.005 U							0.005 U				0.005 U	0.00004
1,2-Dibromo-3-chloropropane			0.005 U							0.005 U				0.005 U	0.00004
1,2-Dibromoethane			0.005 U							0.005 U				0.005 U	0.005
1,2-Dichlorobenzene			0.005 U							0.005 U				0.005 U	0.003
1,2-Dichloroethane			0.005 U							0.005 U				0.005 U	0.0006
1,2-Dichloropropane			0.005 U							0.005 U				0.005 U	0.001
1,4-Dichlorobenzene			0.005 U							0.005 U				0.005 U	0.003
2-Butanone (MEK)			0.01 U							0.01 U				0.01 U	0.005
2-Hexanone			0.01 U							0.01 U				0.01 U	0.005
4-Methyl-2-pentanone			0.01 U							0.01 U				0.01 U	0.005

Table 7

Current and Historic Groundwater Suppression System Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	GSS-1A 11/10/2021	GSS-1A 3/17/2022	GSS-1A 5/10/2022	GSS-1A 8/11/2022	GSS-1A 11/22/2022	GSS-3 3/17/2022	GSS-3 8/11/2022	GSS-4 11/10/2021	GSS-4 3/17/2022	GSS-4 5/10/2022	GSS-4 8/11/2022	GSS-5 11/10/2021	GSS-5 3/17/2022	GSS-5 5/10/2022	Class GA Standard
<b>Volatile Organic Compounds (con't)</b>															
Acetone			0.01 U							0.01 U				0.01 U	0.005
Acrylonitrile			0.1 U							0.1 U				0.1 U	0.005
Benzene			0.005 U							0.005 U				0.005 U	0.001
Bromochloromethane			0.005 U							0.005 U				0.005 U	0.005
Bromodichloromethane			0.005 U							0.005 U				0.005 U	0.005
Bromoform			0.005 U							0.005 U				0.005 U	0.005
Bromomethane			0.005 UJ							0.005 U				0.005 UJ	0.005
Carbon disulfide			0.01 U							0.01 U				0.01 U	0.005
Carbon tetrachloride			0.005 UJ							0.005 U				0.005 UJ	0.005
Chlorobenzene			0.005 U							0.005 U				0.005 U	0.005
Chloroethane			0.005 UJ							0.005 U				0.005 UJ	0.005
Chloroform			0.005 U							0.005 U				0.005 U	0.007
Chloromethane			0.005 UJ							0.005 U				0.005 UJ	0.005
cis-1,2-Dichloroethene			0.005 U							0.005 U				0.005 U	0.005
cis-1,3-Dichloropropene			0.005 U							0.005 U				0.005 U	0.0004
Dibromochloromethane			0.005 U							0.005 U				0.005 U	0.005
Dibromomethane			0.005 U							0.005 U				0.005 U	0.005
Dichloromethane (Methylene chloride)			0.005 U							0.005 U				0.005 U	0.005
Ethyl benzene			0.005 U							0.005 U				0.005 U	0.005
Iodomethane			0.01 U							0.01 U				0.01 U	0.005
m&p-Xylene			0.005 U							0.005 U				0.005 U	0.005
o-Xylene			0.005 U							0.005 U				0.005 U	0.005
Styrene			0.005 U							0.005 U				0.005 U	0.005
Tetrachloroethene			0.005 U							0.005 U				0.005 U	0.005
Toluene			0.005 U							0.005 U				0.005 U	0.005
trans-1,2-Dichloroethene			0.005 U							0.005 U				0.005 U	0.005
trans-1,3-Dichloropropene			0.005 U							0.005 U				0.005 U	0.0004
trans-1,4-Dichloro-2-butene			0.005 U							0.005 U				0.005 U	0.005
Trichloroethene			0.005 U							0.005 U				0.005 U	0.005
Trichlorofluoromethane			0.005 UJ							0.005 U				0.005 UJ	0.005
Vinyl acetate			0.01 U							0.01 UJ				0.01 U	0.005
Vinyl chloride			0.005 UJ							0.005 U				0.005 UJ	0.002

<b>General Chemistry</b>															
Alkalinity	289	318	246	277	127	186	243	59	58.8	59.4	105	138	126	125	
Ammonia Nitrogen	0.236	0.272	0.05 U	0.223	0.067	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	2
Biochemical Oxygen Demand	2 U	3	2 U	4.8	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	34.2	35	25.1 J-	37.9	21.2	5 U	5 U	4.6 J	5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	2	1.9 J	1.9 J	2.5	1.9 J	30.1	25.3	105	97.5	94.4	94.7	89.5	98	111	250
Color (True) (C.U.)			10							2				4	15
Cyanide			0.005 U							0.005 U				0.005 U	0.2
Hardness	298	298	287	291	167	201	264	148	142	142	180	232	239	245	
Nitrate Nitrogen	1 U	1 U	0.3 J	1 U	1.9	1 U	1 U	0.3 J	0.4 J	0.6 J	0.4 J	0.2 J	0.3 J	0.4 J	10
pH of Color Analysis			6.44							7.93				8.18	
Sulfate	43.4	6.4	43.9	14.3	48.4	18.9	17.1	26.7	27.1	25	23	43.1	45	40	250
Total Dissolved Solids	374	354	363	322	225	289	309	264	254	270	299	328	352	391	500
Total Kjeldahl Nitrogen	1.04	1.04	0.5	0.75	0.77	0.23	0.2 U	0.2 U	0.18 J	0.2 J	0.2 U	0.2 U	0.2 U	0.15 J	
Total Organic Carbon (TOC)	16.4	16.7	10	15.8	9.5	1.1	1.7	1 J	1.2	0.7 J	2	1	1.3	0.8 J	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.001

Table 7

Current and Historic Groundwater Suppression System Analytical Results  
Hakes C and D Landfill  
Campbell, New York  
(mg/L except where noted)

Parameter	GSS-6 11/10/2021	GSS-6 3/17/2022	GSS-6 5/10/2022	GSS-6 8/11/2022	GSS-6 11/22/2022	GSS-8 11/10/2021	GSS-8 3/17/2022	GSS-8 5/10/2022	GSS-8 8/11/2022	GSS-8 11/22/2022	GSS-9 11/10/2021	GSS-9 3/17/2022	GSS-9 5/10/2022	GSS-9 8/11/2022	GSS-9 11/22/2022	Class GA Standard
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Field Parameters

Field pH (std. units)	6.95	7.46	8.23	7.34	6.93	6.76	7.03	6.71	6.97	6.82	6.25	6.53	6.31	6.41	6.92	6.5 - 8.5
ORP (mV)	107.6	92.9	167.8	197.3	84.6	133.6	54.2	129.7	7.9	149.3	179.4	131.9	280.4	179.9	104.3	
Specific Conductivity (us/cm)	1011	983	880	1280	1204	708	943	838	997	892	447.2	397.2	436.7	447.1	236.2	
Temperature (deg. C)	19.6	10.2	15.8	20.6	17.3	17.5	19	20.6	20.6	15.2	12.9	14.1	14.7	15.05	12.5	
Turbidity (NTU)	3.56	1.46	0.78	11.7	2.08	0.86	0.88	2.4	1.21	5.12	0.69	0.48	0.45	8.92	1.91	5

Inorganic Compounds

Aluminum			0.1 U					0.1 U					0.1 U			
Antimony			0.06 U					0.06 U					0.06 U			0.003
Arsenic	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.01 U	0.025
Barium			0.0916					0.0683					0.101			1
Beryllium			0.003 U					0.003 U					0.003 U			
Boron			0.0811 J					0.0979 J					0.0337 J			1
Cadmium	0.005 U	0.005 U	0.005 U	0.0006 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.0004 BJ	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005
Calcium	145	147	152	196	102	83	99.3	95.2	119	109	52	47.4	60.2	64.5	57.3	
Chromium			0.01 U					0.01 U					0.01 U			0.05
Chromium, hexavalent			0.01 U					0.01 U					0.01 U			
Cobalt			0.05 U					0.05 U					0.05 U			
Copper			0.02 U					0.02 U					0.02 U			0.2
Iron	0.24	0.16	0.119	1.73	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.13	0.1 U	0.1 U	0.1 U	0.24	0.1 U	0.3
Lead	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.025
Magnesium	40.2	38.9	41.6	53.2	60.9	17.9	20.5	20.4	23	23.2	11.8	12.7	15	14.8	13.8	
Manganese	0.01	0.008 J	0.0046 J	0.65	0.005 J	0.54	0.239	0.273	0.476	0.294	0.056	0.077	0.0178	0.013	0.01 U	0.3
Mercury			0.0002 U					0.0002 U					0.0002 U			0.0007
Nickel			0.04 U					0.04 U					0.04 U			0.1
Potassium	4.2	4.3	4.23	4.7	4.3	2.1	2.6	2.25	2.2	2.1	2 J	2.2	2.09	2.4	2.1	
Selenium			0.01 U					0.01 U					0.01 U			0.01
Silver			0.01 U					0.01 U					0.01 U			0.05
Sodium	34.1	34.1	38.1	37.8	34.9	47.2	90.1	64.6	65.9	49.4	25.8	20.5	18.3	9.8	11.2	20
Thallium			0.01 U					0.01 U					0.01 U			
Vanadium			0.05 U					0.05 U					0.05 U			
Zinc			0.02 U					0.0046 J					0.02 U			

Volatile Organic Compounds

1,1,1,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U			0.005
1,1,1-Trichloroethane			0.005 UJ					0.005 UJ					0.005 UJ			0.005
1,1,2,2-Tetrachloroethane			0.005 U					0.005 U					0.005 U			0.005
1,1,2-Trichloroethane			0.005 U					0.005 U					0.005 U			0.001
1,1-Dichloroethane			0.005 U					0.005 U					0.005 U			0.005
1,1-Dichloroethene			0.005 U					0.005 U					0.005 U			0.005
1,2,3-Trichloropropane			0.005 U					0.005 U					0.005 U			0.00004
1,2-Dibromo-3-chloropropane			0.005 U					0.005 U					0.005 U			0.00004
1,2-Dibromoethane			0.005 U					0.005 U					0.005 U			0.005
1,2-Dichlorobenzene			0.005 U					0.005 U					0.005 U			0.003
1,2-Dichloroethane			0.005 U					0.005 U					0.005 U			0.0006
1,2-Dichloropropane			0.005 U					0.005 U					0.005 U			0.001
1,4-Dichlorobenzene			0.005 U					0.005 U					0.005 U			0.003
2-Butanone (MEK)			0.01 U					0.01 U					0.01 U			0.005
2-Hexanone			0.01 U					0.01 U					0.01 U			0.005
4-Methyl-2-pentanone			0.01 U					0.01 U					0.01 U			0.005

Table 7

Current and Historic Groundwater Suppression System Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L except where noted)

Parameter	GSS-6 11/10/2021	GSS-6 3/17/2022	GSS-6 5/10/2022	GSS-6 8/11/2022	GSS-6 11/22/2022	GSS-8 11/10/2021	GSS-8 3/17/2022	GSS-8 5/10/2022	GSS-8 8/11/2022	GSS-8 11/22/2022	GSS-9 11/10/2021	GSS-9 3/17/2022	GSS-9 5/10/2022	GSS-9 8/11/2022	GSS-9 11/22/2022	Class GA Standard
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Volatile Organic Compounds (con't)

Acetone			0.01 U					0.01 U					0.01 U			0.005
Acrylonitrile			0.1 U					0.1 U					0.1 U			0.005
Benzene			0.005 U					0.005 U					0.005 U			0.001
Bromochloromethane			0.005 U					0.005 U					0.005 U			0.005
Bromodichloromethane			0.005 U					0.005 U					0.005 U			0.005
Bromoform			0.005 U					0.005 U					0.005 U			0.005
Bromomethane			0.005 UJ					0.005 UJ					0.005 UJ			0.005
Carbon disulfide			0.01 U					0.01 U					0.01 U			0.005
Carbon tetrachloride			0.005 UJ					0.005 UJ					0.005 UJ			0.005
Chlorobenzene			0.005 U					0.005 U					0.005 U			0.005
Chloroethane			0.005 UJ					0.005 UJ					0.005 UJ			0.005
Chloroform			0.005 U					0.005 U					0.005 U			0.007
Chloromethane			0.005 UJ					0.005 UJ					0.005 UJ			0.005
cis-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U			0.005
cis-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U			0.0004
Dibromochloromethane			0.005 U					0.005 U					0.005 U			0.005
Dibromomethane			0.005 U					0.005 U					0.005 U			0.005
Dichloromethane (Methylene chloride)			0.005 U					0.005 U					0.005 U			0.005
Ethyl benzene			0.005 U					0.005 U					0.005 U			0.005
Iodomethane			0.01 U					0.01 U					0.01 U			0.005
m&p-Xylene			0.005 U					0.005 U					0.005 U			0.005
o-Xylene			0.005 U					0.005 U					0.005 U			0.005
Styrene			0.005 U					0.005 U					0.005 U			0.005
Tetrachloroethene			0.005 U					0.005 U					0.005 U			0.005
Toluene			0.005 U					0.005 U					0.005 U			0.005
trans-1,2-Dichloroethene			0.005 U					0.005 U					0.005 U			0.005
trans-1,3-Dichloropropene			0.005 U					0.005 U					0.005 U			0.0004
trans-1,4-Dichloro-2-butene			0.005 U					0.005 U					0.005 U			0.005
Trichloroethene			0.005 U					0.005 U					0.005 U			0.005
Trichlorofluoromethane			0.005 UJ					0.005 UJ					0.005 UJ			0.005
Vinyl acetate			0.01 U					0.01 U					0.01 U			0.005
Vinyl chloride			0.005 UJ					0.005 UJ					0.005 UJ			0.002

General Chemistry

Alkalinity	393	377	364	511	546	219	194	201	293	287	148	91.8	169	212	173	
Ammonia Nitrogen	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.029 J	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	2
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	
Bromide	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	
Chemical Oxygen Demand	5 U	5 U	5 U	5 U	5 U	7.2	5 U	5.6	8.7	5 U	5 U	5 U	5 U	5 U	5 U	
Chloride	70.4	79.8	99.6	57.8	20.9	84.7	206	151	136	122	47.1	51	33.2	4.7	15.3	250
Color (True) (C.U.)			2					1					2			15
Cyanide			0.005 U					0.005 U					0.005 U			0.2
Hardness	528	526	550	708	507	281	333	322	391	369	179	171	212	222	200	
Nitrate Nitrogen	1 U	1 U	0.3 J	1 U	0.4 J	0.3 J	0.5 J	0.5 J	0.3 J	0.5 J	1 U	0.4 J	0.3 J	0.3 J	1.3	10
pH of Color Analysis			7.03					6.75					6.27			
Sulfate	122	123	117	185	245	44.8	60.1	44.4	54	65.4	26.3	52.4	35.3	28.9	44.8	250
Total Dissolved Solids	<b>694</b>	<b>703</b>	<b>762</b>	<b>865</b>	<b>986</b>	427	<b>604</b>	<b>551</b>	<b>608</b>	<b>585</b>	267	264	302	266	282	500
Total Kjeldahl Nitrogen	0.2 U	0.2 U	0.16 J	0.16 J	0.2 U	0.18 J	0.27	0.29	0.24	0.21	0.2 U	0.17 J	0.2 U	0.2 U	0.2 U	
Total Organic Carbon (TOC)	1.4	1.6	0.6 J	4.1	1	3.1	2.9	2.2	4.7	2.6	1	1.4	0.5 J	0.9 J	0.6 J	
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	<b>0.0032 BJ</b>	0.001

Notes:

Class GA Standard - NYSDEC Class GA Groundwater Standards  
 Concentrations in bold exceed Class GA Standards

U - Concentration not detected at specified detection limit  
 J/UJ/BJ - Estimated value

Table 8

**Fourth Quarter 2022 Field Duplicate Comparison  
Hakes C and D Landfill  
Campbell, New York  
(mg/L)**

Parameter	MWTBR-1122	DUP1-1122	MWCR-1122	DUP2-1122
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**Inorganic Compounds**

Arsenic	0.01 U	0.01 U	0.01 U	0.01 U
Cadmium	0.005 U	0.005 U	0.005 U	0.005 U
Calcium	44.6	44.5	87.9	88.2
Iron	0.35	0.34	0.1 U	0.1 U
Lead	0.005 U	0.005 U	0.005 U	0.005 U
Magnesium	10.6	10.6	27.2	27.3
Manganese	0.573	0.584	0.01	0.011
Potassium	1.6 J	1.6 J	2.3	2.3
Sodium	10.7	10.7	13.4	13.4

**General Chemistry**

Alkalinity	166	164	347	346
Ammonia Nitrogen	0.05 U	0.029 J	0.05 U	0.05 U
Biochemical Oxygen Demand	2 U	2 U	2 U	2 U
Bromide	1 U	1 U	1 U	1 U
Chemical Oxygen Demand	5 U	5 U	5 U	5 U
Chloride	1.3 J	1.3 J	13.7	13.8
Hardness	155	155	332	333
Nitrate Nitrogen	1 U	1 U	0.3 J	0.3 J
Sulfate	25.2	25	28.9	28.9
Total Dissolved Solids	208	207	392	396
Total Kjeldahl Nitrogen	0.2 U	0.2 U	0.2 U	0.2 U
Total Organic Carbon (TOC)	1 U	1 U	0.9 J	0.9 J
Total Phenolics	0.005 U	0.005 U	0.005 U	0.005 U

**Notes:**

**U** - Concentration not detected at specified detection limit

**J** - Estimated value

Table 9

Fourth Quarter 2022 Field Equipment Blank Analytical Results  
 Hakes C and D Landfill  
 Campbell, New York  
 (mg/L)

Parameter	EB1-1122
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**Inorganic Compounds**

Arsenic	0.01 U
Cadmium	0.005 U
Calcium	1 U
Iron	0.1 U
Lead	0.005 U
Magnesium	1 U
Manganese	0.01 U
Potassium	2 U
Sodium	1 U

**General Chemistry**

Alkalinity	2 U
Ammonia Nitrogen	0.05 U
Biochemical Oxygen Demand	2 U
Bromide	1 U
Chemical Oxygen Demand	5 U
Chloride	2 U
Hardness	6.62 U
Nitrate Nitrogen	1 U
Sulfate	2 U
Total Dissolved Solids	10 U
Total Kjeldahl Nitrogen	0.2 U
Total Organic Carbon (TOC)	1 U
Total Phenolics	0.005 U

**Notes:**

**U** - Concentration not detected at specified detection limit.

**J** - Estimated Value



**Table 10**

**2022 Quarterly Groundwater Elevation Measurements  
Hakes C and D Landfill  
Campbell, New York  
(ft amsl)**

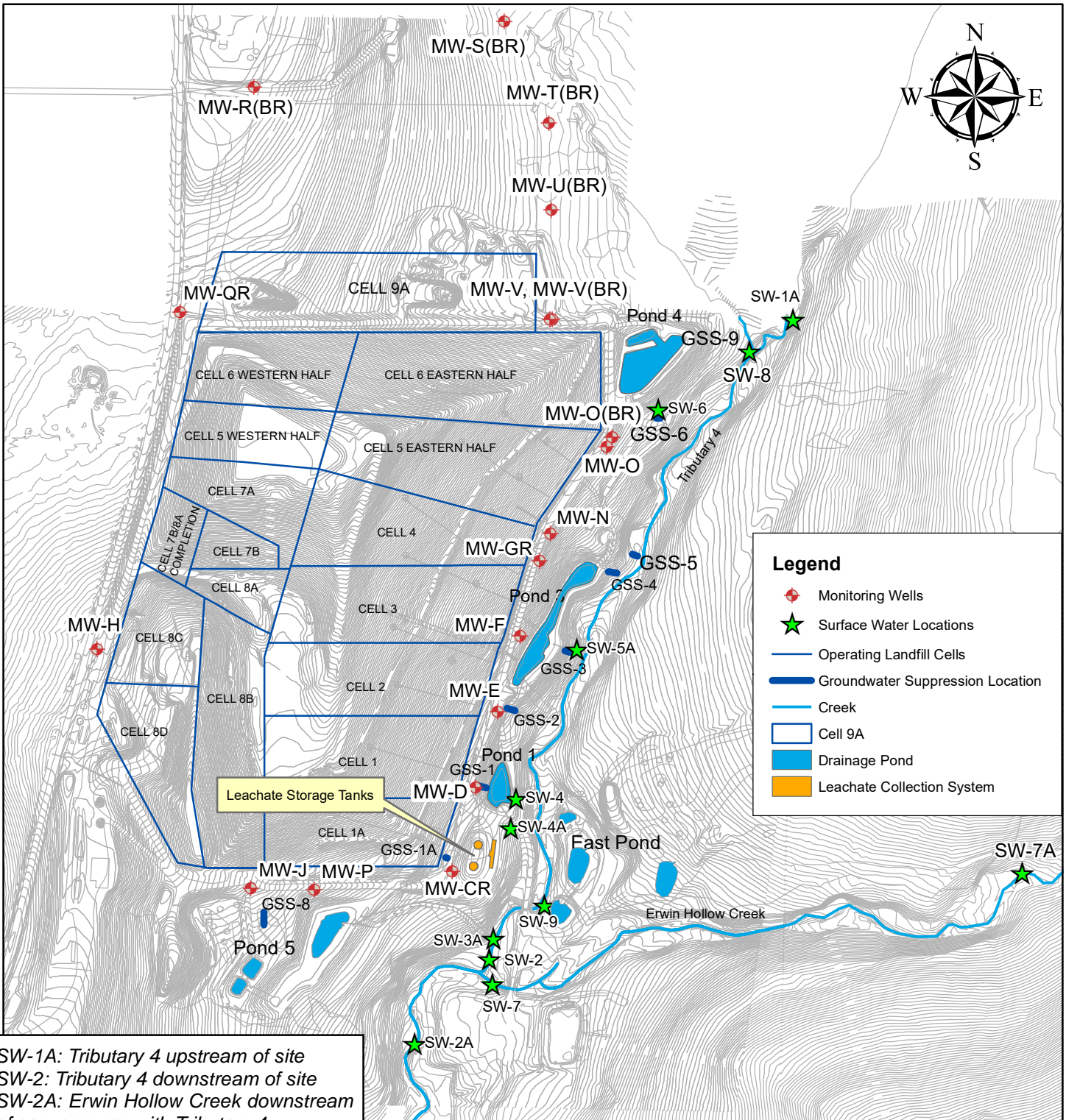
<b>Location</b>	<b>2/11/2022</b>	<b>5/10/2022</b>	<b>8/3/2022</b>	<b>11/21/2022</b>
MW-CR	1512.63	1513.50	1512.21	1511.73
MW-D	1506.46	1506.68	1506.48	1504.88
MW-E	1530.18	1530.25	1527.85	1528.21
MW-F	1538.62	1537.02	1536.10	1535.51
MW-GR	1558.86	1558.91	1556.79	1555.52
MW-H	1682.42	1683.78	1681.78	1683.24
MW-J	1576.54	1577.50	1575.83	1575.62
MW-N	1581.77	1582.22	1581.08	1580.63
MW-O	1594.79	1597.26	1592.76	1593.84
MW-O(BR)	1561.44	1561.61	1560.20	1560.20
MW-P	1547.87	1548.97	1545.31	1546.21
MW-QR	1745.35	1747.95	1744.44	1746.81
MW-R(BR)R	1775.95	1778.24	1773.70	1779.10
MW-S(BR)	1645.74	1645.67	1644.11	1644.57
MW-T(BR)	1636.29	1636.59	1634.39	1634.74
MW-U(BR)	1627.84	1628.32	1628.39	1628.08
MW-V	1634.02	1633.18	1633.61	1633.65
MW-V(BR)	1623.01	1622.28	1622.41	1621.44

Note:

MW-U(BR) 8/2/2022 & 11/21/2022 groundwater elevations estimated as this well was extended in 2022 with survey data pending.

# Figures

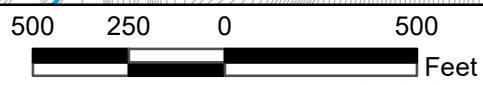
# Sampling Locations



**Legend**

- ◆ Monitoring Wells
- ★ Surface Water Locations
- Operating Landfill Cells
- Groundwater Suppression Location
- Creek
- Cell 9A
- Drainage Pond
- Leachate Collection System

SW-1A: Tributary 4 upstream of site  
 SW-2: Tributary 4 downstream of site  
 SW-2A: Erwin Hollow Creek downstream of convergence with Tributary 4  
 SW-3A: Pond 5 discharge pipe  
 SW-4: Pond 1 discharge pipe  
 SW-4A: Pond 1 Secondary Discharge  
 SW-5A: Pond 3 discharge pipe  
 SW-6: Pond 4 Discharge  
 SW-7: Erwin Hollow Creek upstream of convergence with Tributary 4  
 SW-7A: Erwin Hollow Adjacent Borrow Area  
 SW-8: North Ditch at Tributary 4

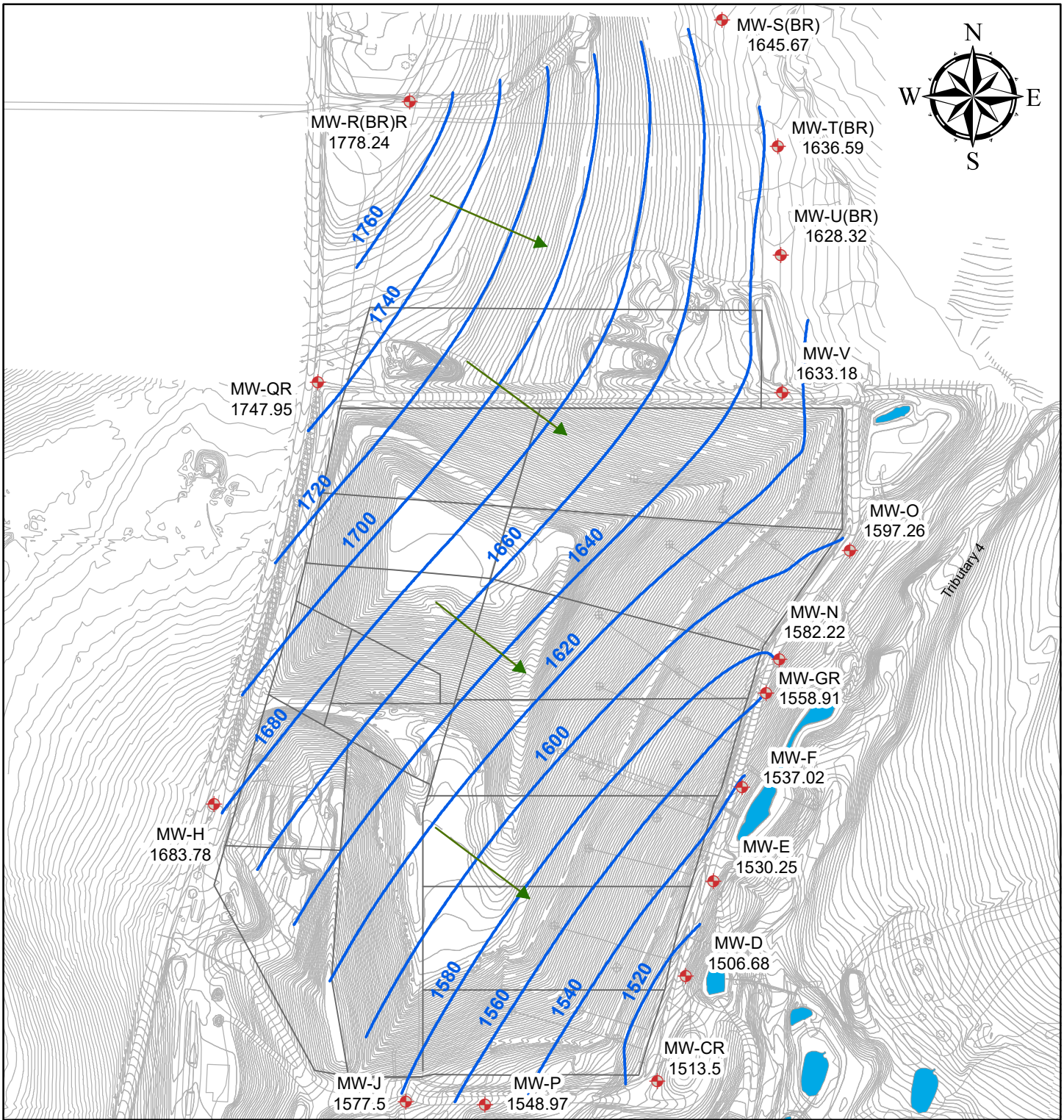


Note: 2018 Topography



<i>On-Site Geological Services</i>	
72 Railroad Ave. Wellsville, New York	
FIGURE:	1
PROJECT:	HAKES
DOCUMENT:	MONITORING REPORT
FILE/DATE:	SAMPLE LOC.MXD/2.10..2022

# May 10, 2022 Potentiometric Map



## Legend

- Monitoring Well With 5/10/2022 Groundwater Elevation (ft amsl)
- 5/10/2022 Groundwater Elevation Contour (ft amsl)
- Operating Landfill Cells
- Direction of Groundwater Flow



*On-Site Geological Services*

72 Railroad Ave. Wellsville, New York

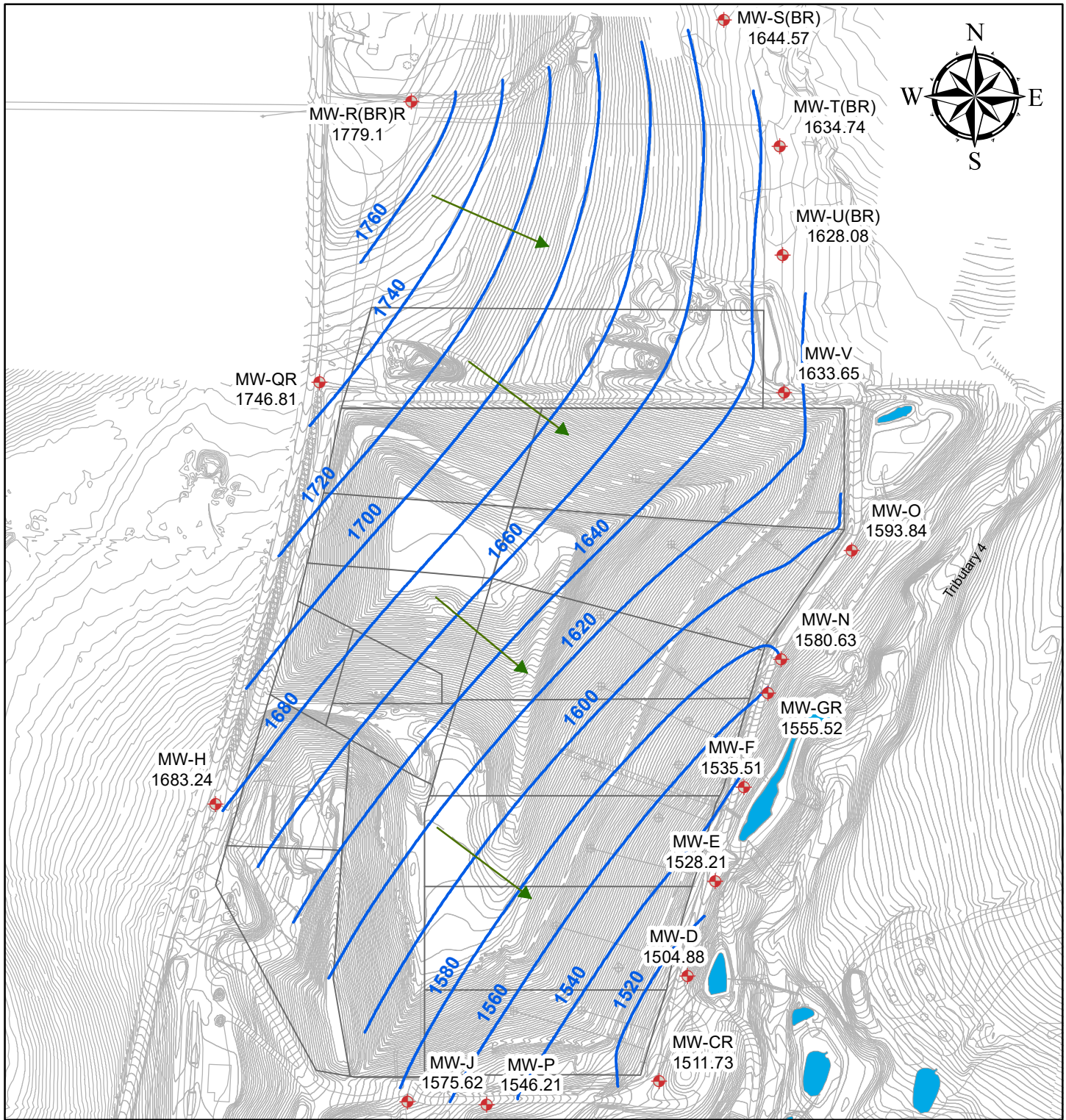
FIGURE: 2

PROJECT: HAKES

DOCUMENT: 2022 ANNUAL REPORT

FILE/DATE: May 2022 Pot Map.MXD/2.21.2023

# November 21, 2022 Potentiometric Map



400 200 0 400 Feet

Note: 2018 Topography

## Legend

- Monitoring Well With 11/21/2022 Groundwater Elevation (ft amsl)
- 11/21/2022 Groundwater Elevation Contour (ft amsl)
- Operating Landfill Cells
- Direction of Groundwater Flow



*On-Site Geological Services*

72 Railroad Ave. Wellsville, New York

FIGURE: 3

PROJECT: HAKES

DOCUMENT: 2022 ANNUAL REPORT

FILE/DATE: Nov 2022 Pot Map.MXD/2.21.2023

# **Appendix A**

## **Field Forms**

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Dup 2  
1535

**Project:** Hakes C&D Landfill, Campbell, New York

**Date:** 11-22-22

**Monitoring Well:** MW-CR **Sample ID:** MWCR-1122 **Arrival Time:** 1414

### Weather Conditions

Temp. 47° F  Sunny ( ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 32.86 ft – SWL: 11.82 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 3.3 gals

Start Purge: 1425 Purging Method: ( ) Bail ( ) Peristaltic  Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 5.0 gpm 92 <sup>sec</sup> Start Sampling: 1525 Purge Duration: 1hr Purge Vol: 3.6 gals.

### Field Parameters

Meters: YSI (sn: 21A102643 ), Hach 2100P (sn: 22074205 ) Measured in:  Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>2.1</u>	<u>1505</u>	<u>7.10</u>	<u>644.8</u>	<u>2.16</u>	<u>2.26</u>	<u>9.9</u>	<u>101.2</u>	<u>17.63</u>
<u>2.5</u>	<u>1510</u>	<u>7.08</u>	<u>640.2</u>	<u>1.92</u>	<u>2.56</u>	<u>9.8</u>	<u>100.3</u>	<u>18.39</u>
<u>2.9</u>	<u>1515</u>	<u>7.08</u>	<u>633.4</u>	<u>1.80</u>	<u>2.70</u>	<u>9.9</u>	<u>99.1</u>	<u>18.74</u>
<u>3.25</u>	<u>1520</u>	<u>7.07</u>	<u>630.2</u>	<u>1.53</u>	<u>2.86</u>	<u>9.8</u>	<u>98.6</u>	<u>19.15</u>
<u>3.6</u>	<u>1525</u>	<u>7.06</u>	<u>628.1</u>	<u>1.54</u>	<u>2.99</u>	<u>9.8</u>	<u>97.9</u>	<u>20.44</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bladder Pump Sample clarity/color: Clear No Color

Sample Odor (Y) or  (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6+Dup 2

Well Sampling Completion: Time 1547 Date 11-22-22 Samplers K DYE

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-21-22

Monitoring Well: MW-D Sample ID: MWD-1122 Arrival Time: 1000

### Weather Conditions

Temp. 23° F ( ) Sunny ( ) Partly Cloudy (  ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light wind

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 35.05 ft - SWL: 27.70 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.1 gals

Start Purge: 1005 Purging Method: (  ) Bail ( ) Peristaltic ( ) Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump

Pumping Rate: NA Start Sampling: 1100 Purge Duration: 11 min Purge Vol: 0.75 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in: ( ) Flow Cell (  ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>0.75</u>	<u>1016</u>	<u>Bailed</u>	<u>to bottom</u>					
<u>11-22-22</u>	<u>1100</u>	<u>7.36</u>	<u>487.7</u>	<u>11.2</u>	<u>NA</u>	<u>12.4</u>	<u>105.2</u>	

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bailer Sample clarity/color: Clear No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1113 Date 11-22-22 Samplers K Dye



# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-29-22

Monitoring Well: MW-E Sample ID: MWE-1122 Arrival Time: 1205

### Weather Conditions

Temp. 35 ° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 30.40 ft – SWL: 19.90 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.7 gals

Start Purge: 1225 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # NA ( ) Grundfos Pump

Pumping Rate: 223 sec/500 ml Start Sampling: 1325 Purge Duration: 1 hr. Purge Vol: 1.8 gals.

### Field Parameters

Meters: YSI (sn: 17D105273), Hach 2100P (sn: C013301) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>.8</u>	<u>1255</u>	<u>6.80</u>	<u>723.5</u>	<u>30.3</u>	<u>8.84</u>	<u>6.6</u>	<u>144.1</u>	<u>20.75</u>
<u>1.0</u>	<u>1305</u>	<u>6.81</u>	<u>720.8</u>	<u>30.1</u>	<u>8.74</u>	<u>6.9</u>	<u>143.7</u>	<u>21.11</u>
<u>1.2</u>	<u>1310</u>	<u>6.81</u>	<u>718.1</u>	<u>26.8</u>	<u>8.13</u>	<u>8.3</u>	<u>143.4</u>	<u>21.83</u>
<u>1.4</u>	<u>1315</u>	<u>6.82</u>	<u>712.4</u>	<u>24.9</u>	<u>7.00</u>	<u>9.4</u>	<u>143.1</u>	<u>22.40</u>
<u>1.6</u>	<u>1320</u>	<u>6.81</u>	<u>713.1</u>	<u>29.1</u>	<u>5.13</u>	<u>8.6</u>	<u>144.1</u>	<u>22.86</u>
<u>1.8</u>	<u>1325</u>	<u>6.81</u>	<u>712.8</u>	<u>39.4</u>	<u>4.43</u>	<u>8.6</u>	<u>144.4</u>	<u>23.10</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: bladder pump Sample clarity/color: clear/colorless

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

10/45

Analysis Requested: 363 Routine Number of Containers: 6

Well Sampling Completion: Time 1350 Date 11-29-22 Samplers S. Watson

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-29-22

Monitoring Well: MW-F Sample ID: MWF-1127 Arrival Time: 1242

### Weather Conditions

Temp. 43 ° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 38.80 ft – SWL: 26.94 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.8 gals

Start Purge: 1250 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500ml/285<sup>sec</sup> Start Sampling: 1345 Purge Duration: 55min Purge Vol: 2.25 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.25</u>	<u>1325</u>	<u>6.27</u>	<u>625.9</u>	<u>8.06</u>	<u>2.70</u>	<u>8.6</u>	<u>125.7</u>	<u>30.81</u>
<u>1.5</u>	<u>1330</u>	<u>6.27</u>	<u>625.0</u>	<u>6.91</u>	<u>2.76</u>	<u>8.4</u>	<u>126.2</u>	<u>30.00</u>
<u>1.75</u>	<u>1335</u>	<u>6.26</u>	<u>623.8</u>	<u>7.05</u>	<u>2.65</u>	<u>8.5</u>	<u>126.3</u>	<u>30.24</u>
<u>2.0</u>	<u>1340</u>	<u>6.26</u>	<u>622.0</u>	<u>7.08</u>	<u>2.58</u>	<u>8.7</u>	<u>126.3</u>	<u>30.43</u>
<u>2.25</u>	<u>1345</u>	<u>6.26</u>	<u>621.8</u>	<u>7.58</u>	<u>2.82</u>	<u>8.8</u>	<u>126.2</u>	<u>30.73</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bladder Pump Sample clarity/color: Clear No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1419 Date 11-29-22 Samplers K.D.E

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-21-22

Monitoring Well: MW-GR Sample ID: MWGR-1122 Arrival Time: 1036

### Weather Conditions

Temp. 23° F ( ) Sunny ( ) Partly Cloudy  Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light wind

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 46.92 ft - SWL: 39.57 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.1 gals

Start Purge: 1045 Purging Method:  Bail ( ) Peristaltic ( ) Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump

Pumping Rate: NA Start Sampling: 1125 Purge Duration: 9 min Purge Vol: 0.6 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in: ( ) Flow Cell  Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>0.6</u>	<u>1054</u>	<u>Bailed to Bottom</u>						
<u>11-22-22</u>	<u>1125</u>	<u>6.93</u>	<u>652.9</u>	<u>3.81</u>	<u>NA</u>	<u>12.3</u>	<u>115.3</u>	

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bailer Sample clarity/color: Clear No Color

Sample Odor (Y) or  (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1147 Date 11-22-22 Samplers K Oye

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

MS/MSD

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Monitoring Well: MW-H Sample ID: MWH-1122 Arrival Time: 0901

### Weather Conditions

Temp. 34 ° F  Sunny ( ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 20.28 ft – SWL: 5.37 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.3 gals

Start Purge: 0910 Purging Method: ( ) Bail ( ) Peristaltic  Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500 | 87 <sup>sc</sup> Start Sampling: 1010 Purge Duration: 1 hr Purge Vol: 3.4 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in:  Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>2.25</u>	<u>0950</u>	<u>6.43</u>	<u>913</u>	<u>0.35</u>	<u>2.79</u>	<u>7.6</u>	<u>127.6</u>	<u>6.48</u>
<u>2.5</u>	<u>0955</u>	<u>6.43</u>	<u>907</u>	<u>0.08</u>	<u>2.65</u>	<u>7.5</u>	<u>128.9</u>	<u>6.32</u>
<u>2.8</u>	<u>1000</u>	<u>6.43</u>	<u>901</u>	<u>0.09</u>	<u>2.50</u>	<u>7.7</u>	<u>128.2</u>	<u>6.40</u>
<u>3.1</u>	<u>1005</u>	<u>6.43</u>	<u>896</u>	<u>0.05</u>	<u>2.66</u>	<u>7.6</u>	<u>127.7</u>	<u>6.46</u>
<u>3.4</u>	<u>1010</u>	<u>6.43</u>	<u>889</u>	<u>0.02</u>	<u>2.73</u>	<u>7.4</u>	<u>127.1</u>	<u>6.50</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bladder Pump Sample clarity/color: Clear No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 12

Well Sampling Completion: Time 1039 Date 11-22-22 Samplers K Aye

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-29-22

Monitoring Well: MW-5 Sample ID: MWJ-1122 Arrival Time: 0825

### Weather Conditions

Temp. 33 ° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Well Condition Checklist

Bump posts: OK Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 29.52 ft – SWL: 16.60 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.1 gals

Start Purge: 0845 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # NA ( ) Grundfos Pump

Pumping Rate: 136 sec / 500 ml Start Sampling: 0950 Purge Duration: 1 hr. 5 min. Purge Vol: 2.5 gals.

### Field Parameters

Meters: YSI (sn: 17D108273), Hach 2100P (sn: C013309) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.1</u>	<u>0915</u>	<u>7.04</u>	<u>1014</u>	<u>8.19</u>	<u>9.06</u>	<u>6.7</u>	<u>139.2</u>	<u>19.60</u>
<u>1.5</u>	<u>0925</u>	<u>6.98</u>	<u>1019</u>	<u>22.1</u>	<u>6.63</u>	<u>9.6</u>	<u>139.3</u>	<u>20.50</u>
<u>1.7</u>	<u>0930</u>	<u>7.08</u>	<u>1028</u>	<u>20.8</u>	<u>7.98</u>	<u>8.8</u>	<u>140.8</u>	<u>21.33</u>
<u>1.9</u>	<u>0935</u>	<u>7.10</u>	<u>1034</u>	<u>26.8</u>	<u>8.14</u>	<u>8.6</u>	<u>141.4</u>	<u>21.79</u>
<u>2.1</u>	<u>0940</u>	<u>7.11</u>	<u>1036</u>	<u>13.8</u>	<u>8.87</u>	<u>8.5</u>	<u>143.7</u>	<u>22.45</u>
<u>2.3</u>	<u>0945</u>	<u>7.12</u>	<u>1032</u>	<u>19.70</u>	<u>9.22</u>	<u>8.5</u>	<u>143.6</u>	<u>22.89</u>
<u>2.5</u>	<u>0950</u>	<u>7.12</u>	<u>1034</u>	<u>24.80</u>	<u>9.44</u>	<u>8.4</u>	<u>143.5</u>	<u>23.29</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: bladder pump Sample clarity/color: Clear/Colorless

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

10/40

Analysis Requested: 363 Routine Number of Containers: 6

Well Sampling Completion: Time 1030 Date 11-29-22 Samplers S. WATSON

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-21-22

Monitoring Well: MW-N Sample ID: MWN-1122 Arrival Time: 1100

### Weather Conditions

Temp. 26° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light wind

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 34.70 ft - SWL: 22.11 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.1 gals

Start Purge: 1110 Purging Method: (X) Bail ( ) Peristaltic ( ) Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump

Pumping Rate: NA Start Sampling: 1205 Purge Duration: 13 min Purge Vol: 1.8 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in: ( ) Flow Cell (X) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.8</u>	<u>1123</u>	<u>Bailed to Bottom</u>	<u>Bailed to Bottom</u>					
<u>11-22-22</u>	<u>1205</u>	<u>7.07</u>	<u>724</u>	<u>12.2</u>	<u>NA</u>	<u>12.8</u>	<u>112.6</u>	

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bailer Sample clarity/color: Clear No Color -> Slightly Cloudy

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: light yellow tint

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1219 Date 11-22-22 Samplers RDE

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Monitoring Well: MW-0 Sample ID: MW0-1122 Arrival Time: 1225

### Weather Conditions

Temp. 39 ° F  Sunny ( ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 41.22 ft - SWL: 22.73 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.9 gals

Start Purge: 1230 Purging Method: ( ) Bail ( ) Peristaltic  <sup>Pencil</sup> Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump

Pumping Rate: 500m/440 <sup>sec</sup> Start Sampling: 1335 Purge Duration: 1hr.5min Purge Vol: 1.1 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in:  Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>0.75</u>	<u>1315</u>	<u>7.78</u>	<u>352.7</u>	<u>0.02</u>	<u>1.63</u>	<u>9.2</u>	<u>78.0</u>	<u>25.88</u>
<u>0.8</u>	<u>1320</u>	<u>7.79</u>	<u>352.3</u>	<u>0.02</u>	<u>1.49</u>	<u>9.2</u>	<u>76.3</u>	<u>25.15</u>
<u>0.9</u>	<u>1325</u>	<u>7.79</u>	<u>352.4</u>	<u>0.02</u>	<u>1.40</u>	<u>9.2</u>	<u>75.4</u>	<u>25.38</u>
<u>1.0</u>	<u>1330</u>	<u>7.78</u>	<u>352.2</u>	<u>0.02</u>	<u>1.35</u>	<u>9.2</u>	<u>74.7</u>	<u>25.60</u>
<u>1.1</u>	<u>1335</u>	<u>7.78</u>	<u>352.3</u>	<u>0.02</u>	<u>1.38</u>	<u>9.2</u>	<u>73.9</u>	<u>25.89</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Pencil Bladder Sample clarity/color: Clear No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1410 Date 11-22-22 Samplers K Duff

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York Date: 11-21-22  
 Monitoring Well: MW-QBR Sample ID: MWOBR-1122 Arrival Time: 1130

### Weather Conditions

Temp. 28° F ( ) Sunny ( ) Partly Cloudy  Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow  
 Wind Conditions: light wind

### Well Condition Checklist

Bump posts: N/A Pro. casing/lock: OK Surface pad: OK  
 Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 62.43 ft - SWL: 55.52 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.1 gals  
 Start Purge: 1140 Purging Method:  Bail ( ) Peristaltic ( ) Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump  
 Pumping Rate: NA Start Sampling: 1240 Purge Duration: 8 min Purge Vol: 0.6 gals.

### Field Parameters

Meters: YSI (sn: 21A102643 ), Hach 2100P (sn: 22074205 ) Measured in: ( ) Flow Cell  Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>0.6</u>	<u>1148</u>	<u>Bailed to bottom</u>						
<u>11-22-22</u>	<u>1240</u>	<u>8.17</u>	<u>335.7</u>	<u>6.40</u>	<u>NA</u>	<u>11.3</u>	<u>71.5</u>	

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Routine <sup>100% Bail</sup> Sample clarity/color: Clear No Color

Sample Odor (Y) or  (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1254 Date 11-22-22 Samplers K Dye



# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York Date: 11-29-22

Monitoring Well: MW-P Sample ID: MWP-1122 Arrival Time: 1033

### Weather Conditions

Temp. 35 ° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: OK Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 34.54 ft – SWL: 21.19 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.1 gals

Start Purge: 1040 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # ATA ( ) Grundfos Pump

Pumping Rate: 139 SEC / 500 ML Start Sampling: 1140 Purge Duration: 191 Purge Vol: 2.3 gals.

### Field Parameters

Meters: YSI (sn: 17D10#273), Hach 2100P (sn: 0013309) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.1</u>	<u>1110</u>	<u>7.41</u>	<u>469.4</u>	<u>22.3</u>	<u>3.55</u>	<u>6.7</u>	<u>98.6</u>	<u>22.40</u>
<u>1.5</u>	<u>1120</u>	<u>7.41</u>	<u>469.3</u>	<u>22.9</u>	<u>3.01</u>	<u>6.4</u>	<u>89.1</u>	<u>22.48</u>
<u>1.7</u>	<u>1125</u>	<u>7.41</u>	<u>469.2</u>	<u>18.1</u>	<u>2.44</u>	<u>6.2</u>	<u>85.8</u>	<u>22.58</u>
<u>1.9</u>	<u>1130</u>	<u>7.42</u>	<u>468.8</u>	<u>17.8</u>	<u>3.33</u>	<u>6.4</u>	<u>78.6</u>	<u>22.64</u>
<u>2.1</u>	<u>1135</u>	<u>7.43</u>	<u>468.1</u>	<u>19.7</u>	<u>4.19</u>	<u>7.0</u>	<u>71.5</u>	<u>22.73</u>
<u>2.3</u>	<u>1140</u>	<u>7.42</u>	<u>468.0</u>	<u>19.3</u>	<u>3.18</u>	<u>7.0</u>	<u>71.0</u>	<u>22.82</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: bladder pump Sample clarity/color: Clear/Colorless

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Well Sampling Completion: Time 1200 Date 11-29-22 Samplers S. Watson

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-21-22

Monitoring Well: MW-QR Sample ID: MWQR-1122 Arrival Time: 1230

### Weather Conditions

Temp. 33 ° F ( ) Sunny ( ) Partly Cloudy  Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 12.50 ft - SWL: 8.28 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 0.6 gals

Start Purge: 1235 Purging Method:  Bail ( ) Peristaltic ( ) Bladder Pump # \_\_\_\_\_ ( ) Grundfos Pump

Pumping Rate: NA Start Sampling: \_\_\_\_\_ Purge Duration: 7 min Purge Vol: 1.0 gals.

### Field Parameters

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 22074205) Measured in: ( ) Flow Cell  Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.0</u>	<u>1237</u>	<u>Bailed to bottom</u>	<u>to bottom</u>					
<u>11.22</u>	<u>0835</u>	<u>6.78</u>	<u>721.0</u>	<u>3.83</u>	<u>NA</u>	<u>11.6</u>	<u>122.8</u>	<u>8.43</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bailer Sample clarity/color: Clear No Color

Sample Odor (Y) or  (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 0856 Date 11-22-22 Samplers R/D/E

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-29-22

Monitoring Well: MW-R(BR) Sample ID: MWRBR-1122 Arrival Time: 0831

### Weather Conditions

Temp. 35 ° F ( ) Sunny ( ) Partly Cloudy  Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 30.56 ft - SWL: 15.61 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.3 gals

Start Purge: 0850 Purging Method: ( ) Bail ( ) Peristaltic  Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500 ml / 10<sup>sec</sup> Start Sampling: 0945 Purge Duration: 55 min Purge Vol: 2.0 gals.

### Field Parameters

Meters: YSI (sn: 31A112643 ), Hach 2100P (sn: 22074205 ) Measured in:  Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.0</u>	<u>0925</u>	<u>6.86</u>	<u>276.6</u>	<u>19.4</u>	<u>3.09</u>	<u>3.6</u>	<u>100.3</u>	<u>17.54</u>
<u>1.25</u>	<u>0930</u>	<u>6.84</u>	<u>273.0</u>	<u>18.1</u>	<u>3.10</u>	<u>3.8</u>	<u>101.2</u>	<u>17.92</u>
<u>1.5</u>	<u>0935</u>	<u>6.81</u>	<u>238.4</u>	<u>16.6</u>	<u>3.35</u>	<u>3.9</u>	<u>102.9</u>	<u>18.22</u>
<u>1.8</u>	<u>0940</u>	<u>6.79</u>	<u>282.3</u>	<u>17.3</u>	<u>3.49</u>	<u>3.9</u>	<u>104.4</u>	<u>18.68</u>
<u>2.0</u>	<u>0945</u>	<u>6.72</u>	<u>277.8</u>	<u>19.2</u>	<u>3.63</u>	<u>3.9</u>	<u>105.8</u>	<u>19.69</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bladder Pump Sample clarity/color: Clear No Color

Sample Odor (Y) or (N)  Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1008 Date 11-29-22 Samplers K D/E

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11/22/22

Monitoring Well: MW-5(BE) Sample ID: MWSR-1122 Arrival Time: 0850

### Weather Conditions

Temp. 29 ° F (x) Sunny ( ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): Fresh Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 26.09 ft - SWL: 4.67 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 3.43 gals

Start Purge: 0900 Purging Method: ( ) Bail ( ) Peristaltic (x) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500 ml / 43 sec Start Sampling: 1000 Purge Duration: 1 hr Purge Vol: 4.5 gals.

### Field Parameters

Meters: YSI (sn: 201101689), <sup>Geotech</sup> Hach 2100P (sn: 21073392) Measured in: (x) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>2.0</u>	<u>0920</u>	<u>Switch to Cell</u>	<u>328.0</u>	<u>2.98</u>	<u>0.61</u>	<u>7.6</u>	<u>79.2</u>	<u>6.32</u>
<u>2.6</u>	<u>0930</u>	<u>7.40</u>	<u>327.0</u>	<u>2.33</u>	<u>0.53</u>	<u>7.5</u>	<u>-16.9</u>	<u>6.44</u>
<u>3.2</u>	<u>0940</u>	<u>7.77</u>	<u>327.3</u>	<u>1.85</u>	<u>0.56</u>	<u>7.5</u>	<u>-19.8</u>	<u>6.70</u>
<u>3.7</u>	<u>0950</u>	<u>7.77</u>	<u>326.9</u>	<u>1.45</u>	<u>0.56</u>	<u>7.6</u>	<u>-22.8</u>	<u>6.71</u>
<u>4.1</u>	<u>0955</u>	<u>7.77</u>	<u>327.2</u>	<u>1.73</u>	<u>0.53</u>	<u>7.5</u>	<u>-26.9</u>	<u>6.75</u>
<u>4.5</u>	<u>1000</u>	<u>7.77</u>						

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Pump Sample clarity/color: clear, No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1012 Date 11/22/22 Samplers J. Brando

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

DUP 1

Project: Hakes C&D Landfill, Campbell, New York

Date: 11/22/22

Monitoring Well: MWT(BE) Sample ID: MWTBE-1122 Arrival Time: 1050  
DUP1-1122

### Weather Conditions

Temp. 32 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): Fresh Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 22.50 ft – SWL: 6.05 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 2.63 gals

Start Purge: 1055 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500ml / 97s Start Sampling: 1155 Purge Duration: 1 hr Purge Vol: 4.4 gals.  
DUP 1 = 1210

### Field Parameters

Meters: YSI (sn: 204101689), Hach 2100P (sn: 21073392) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>1.6</u>	<u>1115</u>	<u>Switch to cell</u>		<u>23.8</u>				<u>8.99</u>
<u>2.1</u>	<u>1125</u>	<u>7.88</u>	<u>307.5</u>	<u>15.6</u>	<u>2.00</u>	<u>10.5</u>	<u>117.0</u>	<u>9.13</u>
<u>2.9</u>	<u>1135</u>	<u>7.82</u>	<u>306.6</u>	<u>14.5</u>	<u>2.93</u>	<u>10.5</u>	<u>105.7</u>	<u>9.20</u>
<u>3.6</u>	<u>1145</u>	<u>7.76</u>	<u>306.5</u>	<u>13.1</u>	<u>6.06</u>	<u>10.6</u>	<u>91.6</u>	<u>9.40</u>
<u>4.1</u>	<u>1150</u>	<u>7.75</u>	<u>306.3</u>	<u>11.2</u>	<u>2.67</u>	<u>10.6</u>	<u>88.0</u>	<u>9.50</u>
<u>4.4</u>	<u>1155</u>	<u>7.74</u>	<u>306.2</u>	<u>10.3</u>	<u>2.67</u>	<u>10.8</u>	<u>83.6</u>	<u>9.57</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Pump Sample clarity/color: clear, No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Dark green water @ start of purge

Analysis Requested: Routine Number of Containers: 6/6

Well Sampling Completion: Time 1215 Date 11/22/22 Samplers J. Bruders

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11/22/22

Monitoring Well: MW-4(BR) Sample ID: MW4BR-1122 Arrival Time: 1240

### Weather Conditions

Temp. 33 ° F ( ) Sunny (x) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light - moderate

### Well Condition Checklist

Bump posts: Yes - Good Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): Fresh Well Label: Add

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 48.60 ft - SWL: 38.58 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 1.60 gals

Start Purge: 1245 Purging Method: ( ) Bail ( ) Peristaltic (x) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500 ml / 110 sec Start Sampling: 1405 Purge Duration: 80 min Purge Vol: 4.2 gals.

### Field Parameters

Meters: YSI (sn: 201101689), <sup>break</sup> Hach 2100P (sn: 21073392) Measured in: (x) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>2.0</u>	<u>1320</u>	<u>Switch to (pH)</u>		<u>67.2</u>				<u>40.20</u>
<u>2.3</u>	<u>1330</u>	<u>7.88</u>	<u>266.7</u>	<u>62.0</u>	<u>0.33</u>	<u>10.4</u>	<u>175.6</u>	<u>40.25</u>
<u>3.1</u>	<u>1340</u>	<u>7.77</u>	<u>266.3</u>	<u>50.2</u>	<u>0.26</u>	<u>10.7</u>	<u>166.4</u>	<u>40.32</u>
<u>3.4</u>	<u>1350</u>	<u>7.75</u>	<u>266.5</u>	<u>38.1</u>	<u>0.22</u>	<u>10.4</u>	<u>160.7</u>	<u>40.40</u>
<u>3.6</u>	<u>1355</u>	<u>7.74</u>	<u>266.6</u>	<u>33.1</u>	<u>0.22</u>	<u>10.2</u>	<u>158.1</u>	<u>40.45</u>
<u>3.9</u>	<u>1400</u>	<u>7.73</u>	<u>266.4</u>	<u>29.5</u>	<u>0.24</u>	<u>10.3</u>	<u>154.9</u>	<u>40.40</u>
<u>4.2</u>	<u>1405</u>	<u>7.73</u>	<u>266.7</u>	<u>20.7</u>	<u>0.62</u>	<u>10.1</u>	<u>153.1</u>	<u>40.36</u>
				<u>23.1 = Final (metals)</u>				

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Pump Sample clarity/color: clear no color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Slightly turbid (7100 NTU) pump to start

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1421 Date 11/22/22 Samplers J. Broder

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11/22/22

Monitoring Well: MW-V Sample ID: MWV-1122 Arrival Time: 1445

### Weather Conditions

Temp 50 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: light - moderate

### Well Condition Checklist

Bump posts: Concrete Blocks Pro. casing/lock: OK Surface pad: OK

Well Visibility (paint): Fresh Well Label: re-label

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 41.70 ft - SWL: 16.49 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 4.03 gals

Start Purge: 1450 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500 m<sup>3</sup> / 118 Sec Start Sampling: 1540 Purge Duration: 50 min Purge Vol: 2.3 gals.

### Field Parameters

Meters: YSI (sn: 2014101659), <sup>Geotech</sup> Hach ZT00P (sn: 21073392) Measured in: ( ) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>0.5</u>	<u>1500</u>	<u>Switch to cell</u>	<u>995</u>	<u>Clear</u>				<u>19.70</u>
<u>1.0</u>	<u>1510</u>	<u>8.30</u>	<u>995</u>	<u>7.13</u>	<u>3.13</u>	<u>10.8</u>	<u>127.7</u>	<u>22.40</u>
<u>1.3</u>	<u>1520</u>	<u>7.75</u>	<u>961</u>	<u>4.04</u>	<u>1.78</u>	<u>9.7</u>	<u>151.9</u>	<u>24.35</u>
<u>1.5</u>	<u>1530</u>	<u>7.54</u>	<u>961</u>	<u>3.50</u>	<u>1.37</u>	<u>9.7</u>	<u>156.6</u>	<u>26.45</u>
<u>1.9</u>	<u>1535</u>	<u>7.50</u>	<u>960</u>	<u>5.79</u>	<u>4.27</u>	<u>9.7</u>	<u>158.1</u>	<u>27.65</u>
<u>2.3</u>	<u>1540</u>	<u>7.47</u>	<u>959</u>	<u>7.23</u>	<u>3.94</u>	<u>9.8</u>	<u>158.7</u>	<u>28.45</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: pump Sample clarity/color: clear, no color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1555 Date 11/22/22 Samplers J. Brindley

# Groundwater Purging and Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-27-22

Monitoring Well: MW-VBR Sample ID: MWVBR-1122 Arrival Time: 1022

### Weather Conditions

Temp. 38 ° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Well Condition Checklist

Bump posts: NA Pro. casing/lock: OK Surface pad: OK  
 Well Visibility (paint): OK Well Label: OK

Comment: \_\_\_\_\_

### Depth & Purging Information

TD: 61.42 ft - SWL: 28.37 ft x 0.16 if 2" or 0.65 if 4" = 1 Well Volume: 5.2 gals

Start Purge: 1035 Purging Method: ( ) Bail ( ) Peristaltic (X) Bladder Pump # 3 ( ) Grundfos Pump

Pumping Rate: 500ml/112 sec Start Sampling: 1150 Purge Duration: 1hr 15min Purge Vol: 3.9 gals.

### Field Parameters <sup>22074205</sup>

Meters: YSI (sn: 21A102643), Hach 2100P (sn: 0264) Measured in: (X) Flow Cell ( ) Cup

Purge (gal)	Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)	DTW (ft)
<u>2.3</u>	<u>1125</u>	<u>7.47</u>	<u>581.3</u>	<u>11.0</u>	<u>0.51</u>	<u>8.9</u>	<u>-72.7</u>	<u>31.85</u>
<u>2.6</u>	<u>1130</u>	<u>7.45</u>	<u>589.6</u>	<u>10.2</u>	<u>0.47</u>	<u>9.0</u>	<u>-65.8</u>	<u>32.16</u>
<u>2.9</u>	<u>1135</u>	<u>7.45</u>	<u>593.5</u>	<u>8.97</u>	<u>0.49</u>	<u>9.0</u>	<u>-65.8</u>	<u>32.31</u>
<u>3.25</u>	<u>1140</u>	<u>7.45</u>	<u>597.5</u>	<u>10.1</u>	<u>0.48</u>	<u>8.7</u>	<u>-60.1</u>	<u>32.40</u>
<u>3.6</u>	<u>1145</u>	<u>7.44</u>	<u>602.2</u>	<u>12.1</u>	<u>0.46</u>	<u>8.7</u>	<u>-68.7</u>	<u>32.77</u>
<u>3.9</u>	<u>1150</u>	<u>7.44</u>	<u>598.6</u>	<u>4.45</u>	<u>0.45</u>	<u>8.8</u>	<u>-67.3</u>	<u>33.43</u>

Stabilization Criteria: 1) field parameters ± 0.1 pH, ±3% conductivity, ±10 mv ORP, ±10% DO, ±10% Turbidity; 2) 3 well volumes or dry

Sample Collection Method: Bladder Pump Sample clarity/color: Clear No Color

Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: Routine Number of Containers: 6

Well Sampling Completion: Time 1217 Date 11-27-22 Samplers R Dye



# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-1A Sample ID: SW1A-1122 Arrival Time: 1335

### Weather Conditions

Measured Ambient Temp. 35° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Depth and Flow Information

Sample Location Water Depth: 4" Flow: 15 gpm Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes ( ) No (X) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 17D105273) Turbidity Meter: Hach 2100P (sn: C013369)

Field Parameters tested in: (X) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1337</u>	<u>8.59</u>	<u>100.1</u>	<u>2.99</u>	<u>10.31</u>	<u>2.3</u>	<u>73.2</u>

### Sample Information

Sample Location: ( ) Pond Discharge Pipe (X) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 1340

Visual Contrast Entering Stream: (X) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 303 Routine Number of Containers: 6

Sampling Completion: Time 1345 Date 11-22-22 Samplers S. Watson

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-2 Sample ID: SW2-1122 Arrival Time: 0955

### Weather Conditions

Measured Ambient Temp. 31 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-Smph

### Depth and Flow Information

Sample Location Water Depth: 3" Flow: 25 gpm Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes ( ) No (X) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 17D108273) Turbidity Meter: Hach 2100P (sn: C013369)

Field Parameters tested in: (X) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1008</u>	<u>6.97</u>	<u>174.9</u>	<u>18.6</u>	<u>12.51</u>	<u>3.1</u>	<u>120.4</u>

### Sample Information

Sample Location: ( ) Pond Discharge Pipe (X) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 1005

Visual Contrast Entering Stream: (X) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time 1015 Date 11-22-22 Samplers S. W. [unclear]

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-2A Sample ID: SW2A-1122 Arrival Time: 0855

### Weather Conditions

Measured Ambient Temp. 28.6° F ( ) Sunny (  ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Depth and Flow Information

Sample Location Water Depth: 4" Flow: 50 gpm Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes ( ) No (  ) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 172108273) Turbidity Meter: Hach 2100P (sn: 2013209)

Field Parameters tested in: (  ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>0924</u>	<u>7.32</u>	<u>132.0</u>	<u>6.68</u>	<u>12.59</u>	<u>3.7</u>	<u>117.2</u>

### Sample Information

Sample Location: ( ) Pond Discharge Pipe (  ) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 0920

Visual Contrast Entering Stream: (  ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear/Clearless Sample Odor (Y) or (  ) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time 0930 Date 11-22-22 Samplers S. WATSON

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-3A Sample ID: NO SAMPLE Arrival Time: 1015

### Weather Conditions

Measured Ambient Temp. 31 ° F ( ) Sunny (  ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Depth and Flow Information

Sample Location Water Depth: NA Flow: dripping Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes (  ) No ( ) NA **If Yes collect sample**

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: ( ) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: \_\_\_\_\_

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Insufficient water flow to sample

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1025 Date 11-22-22 Samplers S. Waters

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-4 Sample ID: NO SAMPLE Arrival Time: 1124

### Weather Conditions

Measured Ambient Temp. 32 ° F ( ) Sunny (  ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph  
Directed to East Pond

### Depth and Flow Information

Sample Location Water Depth: NA Flow: NO FLOW Flow Measurement Method: \_\_\_\_\_

Is pond discharging to stream ( ) Yes (  ) No ( ) NA **If Yes collect sample**

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: ( ) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: NA Sample Time: NA

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1126 Date 11-22-22 Samplers S. Watson

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-4A Sample ID: NO SAMPLE Arrival Time: 1123

### Weather Conditions

Measured Ambient Temp. 32 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Depth and Flow Information

Sample Location Water Depth: NA Flow: NO FLOW Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes (X) No ( ) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: ( ) Pond Discharge Pipe ( ) Stream (X) Sand Filter

Grab Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: NA

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: \_\_\_\_\_

Analysis Requested: \_\_\_\_\_ Number of Containers: 0

Sampling Completion: Time 1125 Date 11-22-22 Samplers S. WATSON

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-5A

Sample ID: NO SAMPLE SW5A-H22

Arrival Time: 1245

### Weather Conditions

Measured Ambient Temp. 37 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Depth and Flow Information

Sample Location Water Depth: NA Flow: NA FLOW Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes (X) No ( ) NA **If Yes collect sample**

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: (X) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: NA

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers 1

Sampling Completion: Time 1247 Date 11-22-22 Samplers S. Watson

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-6 Sample ID: NO SAMPLE Arrival Time: 1305

### Weather Conditions

Measured Ambient Temp. 37 ° F ( ) Sunny (  ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0 - S mph

*Pond directed to next pond*

### Depth and Flow Information

Sample Location Water Depth: NA Flow: NO FLOW Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes (  ) No ( ) NA **If Yes collect sample**

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: ( ) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: NA Sample Time: NA

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1307 Date 11-22-22 Samplers S. Waters



# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: MW-7 Sample ID: MW7-1122 Arrival Time: 0932

### Weather Conditions

Measured Ambient Temp. 31.0° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0 - 5 mph

### Depth and Flow Information

Sample Location Water Depth: 3" Flow: 25 gpm Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes ( ) No (X) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 170108273) Turbidity Meter: Hach 2100P (sn: C013309)

Field Parameters tested in: (X) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>0950</u>	<u>6.72</u>	<u>99.3</u>	<u>2.43</u>	<u>11.85</u>	<u>3.6</u>	<u>169.1</u>

### Sample Information

Sample Location: ( ) Pond Discharge Pipe (X) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 0940

Visual Contrast Entering Stream: (X) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear/colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time 0955 Date 11-22-22 Samplers J. W. A. 22

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-27-22

Sampling Location: SW-7A Sample ID: SW7A-1122 Arrival Time: 1045

### Weather Conditions

Measured Ambient Temp. 30 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: None

### Depth and Flow Information

Sample Location Water Depth: 4" Flow: 1.5 gpm Flow Measurement Method: eye

Is pond discharging to stream ( ) Yes ( ) No (X) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 17D168273) Turbidity Meter: Hach 2100P (sn: CO13309)

Field Parameters tested in: (X) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1055</u>	<u>7.43</u>	<u>104.8</u>	<u>2.84</u>	<u>12.04</u>	<u>1.1</u>	<u>123.0</u>

### Sample Information

Sample Location: ( ) Pond Discharge Pipe (X) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 1050

Visual Contrast Entering Stream: (X) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 263 Rustine Number of Containers: 6

Sampling Completion: Time 1103 Date 11-22-22 Samplers S. Watson

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-8 Sample ID: NO SAMPLE Arrival Time: 1350

### Weather Conditions

Measured Ambient Temp. 37° F ( ) Sunny (x) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0.5 mph

### Depth and Flow Information

Sample Location Water Depth: NA Flow: NA Flow Measurement Method: NA eye

Is pond discharging to stream ( ) Yes ( ) No (x) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: \_\_\_\_\_) Turbidity Meter: Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Directly Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Location: ( ) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: NA Sample Time: NA

Visual Contrast Entering Stream: ( ) NA ( ) Yes ( ) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other

Observations/Comments: Minimal flow from GSS-9

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1353 Date 11-22-22 Samplers S. Waters

# Surface Water Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill- Campbell, New York

Date: 11-22-22

Sampling Location: SW-9 Sample ID: SW9-1122 Arrival Time: 1105

### Weather Conditions

Measured Ambient Temp. 32° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Depth and Flow Information

Sample Location Water Depth: NA Flow: 5 gpm Flow Measurement Method: eye

Is pond discharging to stream (X) Yes ( ) No ( ) NA If Yes collect sample

### Field Parameters

Multi Meter: YSI (sn: 175108273) Turbidity Meter: Hach 2100P (sn: C013309)

Field Parameters tested in: ( ) Directly Submerged Probe (X) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1115</u>	<u>7.27</u>	<u>247.3</u>	<u>68.8</u>	<u>NA</u>	<u>3.0</u>	<u>126.2</u>

### Sample Information

Sample Location: (X) Pond Discharge Pipe ( ) Stream

Grab Sample Collection Equipment/Method: dipper Sample Time: 1110

Visual Contrast Entering Stream: ( ) NA ( ) Yes (X) No; If yes, **notify project manager**, explain below and take photograph

Sample Description (clarity/color): Clear / Slight tanish color Sample Odor (Y) or (N) Explain: \_\_\_\_\_ Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time 1120 Date 11-22-22 Samplers S. Watson

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: GSS-1 Sample ID: NO SAMPLE Arrival Time: 1128

### Weather Conditions:

Temp. 33 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: NO FLOW

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup  
Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type: ( ) Grab ( ) Composite Sample Location: ( ) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE side hill pond I

Sample Collection Equipment/Method: NA Sample Time: NA

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time \_\_\_\_\_ Date 11-22-22 Samplers S. Warsaw

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: GSS-1A

Sample ID: GSS/A-1122

Arrival Time: 1215

### Weather Conditions:

Temp. 37° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-Smph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: 10 gpm

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: 170108273), Hach 2100P (sn: C013309)

Field Parameters tested in: ( ) Submerged Probe (X) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1229</u>	<u>6.51</u>	<u>339.1</u>	<u>6.74</u>	<u>NA</u>	<u>12.6</u>	<u>50.9</u>

### Sample Information

Sample Type: (X) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: \_\_\_\_\_

Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: 1225

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Restino Number of Containers: 6

Sampling Completion: Time 1235 Date 11-22-22 Samplers J. Watsel

# Groundwater Suppression and Leachate Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 1/22-22

Sampling Location: GSS-2 Sample ID: NO SAMPLE Arrival Time: 1135

### Weather Conditions:

Temp. 31 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: N/A Estimated Flow: NO FLOW

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type: ( ) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE Pipe

Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: NA

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: NO FLOW

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time \_\_\_\_\_ Date 1139 Samplers S. WATSON

# Groundwater Suppression and Leachate Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: GSS-3 Sample ID: NO SAMPLE Arrival Time: 1240

### Weather Conditions:

Temp. 37 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: NO FLOW

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type: ( ) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 6" HDPE

Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: NA

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1243 Date 11-22-22 Samplers S. Watson



# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: G55-4 Sample ID: NO SAMPLE Arrival Time: 1250

### Weather Conditions:

Temp. 37 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: NO FLOW -deeps

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type: ( ) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE pipe

Sample Collection Equipment/Method: \_\_\_\_\_ Sample Time: NA

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1255 Date 11-22-22 Samplers J. Watson

# Groundwater Suppression and Leachate Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: G55-5 Sample ID: NO SAMPLE Arrival Time: 1258

### Weather Conditions:

Temp. 37 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: NO FLOW - drips

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
_____	_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type: ( ) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: \_\_\_\_\_

Sample Collection Equipment/Method: NA Sample Time: NA

Sample Description (clarity/color): \_\_\_\_\_ Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: NA Number of Containers: 0

Sampling Completion: Time 1300 Date 11-22-22 Samplers S. WATSON

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: GSS-6 Sample ID: GSS6-1122 Arrival Time: 1307

### Weather Conditions:

Temp. 37° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: 31.1" Estimated Flow: 5+ gpm

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: 17D108273), Hach 2100P (sn: C013309)

Field Parameters tested in: ( ) Submerged Probe (X) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1318</u>	<u>6.93</u>	<u>1204</u>	<u>2.08</u>	<u>NA</u>	<u>17.3</u>	<u>84.6</u>

### Sample Information

Sample Type: (X) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE

Sample Collection Equipment/Method: dipper Sample Time: 1315

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time 1325 Date 11-22-22 Samplers J. Watson

# Groundwater Suppression and Leachate Sampling Field Form

## On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: G55-8 Sample ID: G558-1122 Arrival Time: 1145

### Weather Conditions:

Temp. 33 ° F ( ) Sunny (X) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

(X) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: 10 gpm

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: 170108273 ), Hach 2100P (sn: 6013209 )

Field Parameters tested in: ( ) Submerged Probe (X) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1159</u>	<u>6.82</u>	<u>892</u>	<u>5.12</u>	<u>NA</u>	<u>15.2</u>	<u>149.3</u>

### Sample Information

Sample Type: (X) Grab ( ) Composite Sample Location: (X) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE Pipe

Sample Collection Equipment/Method: dipper Sample Time: 1150

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (N) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 360 Routine Number of Containers: 6

Sampling Completion: Time 1210 Date 11-22-22 Samplers J. Watts

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-22-22

Sampling Location: G559 Sample ID: G559-1122 Arrival Time: 1355

### Weather Conditions:

Temp. 39 ° F ( ) Sunny (  ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5 mph

### Location Type

(  ) Groundwater Suppression ( ) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: 3 gpm

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: 17D108273 ), Hach 2100P (sn: C013309 )

Field Parameters tested in: ( ) Submerged Probe (  ) Cup

Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1357</u>	<u>6.92</u>	<u>236.2</u>	<u>1.91</u>	<u>NA</u>	<u>12.5</u>	<u>104.3</u>

### Sample Information

Sample Type: (  ) Grab ( ) Composite Sample Location: (  ) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: 4" HDPE Pipe

Sample Collection Equipment/Method: digger Sample Time: 1400

Sample Description (clarity/color): Clear/Colorless Sample Odor (Y) or (  ) Explain: \_\_\_\_\_

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Routine Number of Containers: 6

Sampling Completion: Time \_\_\_\_\_ Date 11-22-22 Samplers S. Waters

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-29-22

Sampling Location: LCS Sample ID: LCS-1122 Arrival Time: 1405

### Weather Conditions:

Temp. 37° F ( ) Sunny ( ) Partly Cloudy (X) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: 0-5mph

### Location Type

( ) Groundwater Suppression (X) Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: NA Estimated Flow: NA

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: 170108273), Hach 2100P (sn: CO18309)

Field Parameters tested in: ( ) Submerged Probe (X) Cup  
Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1418</u>	<u>7.19</u>	<u>7085</u>	<u>84.6</u>	<u>NA</u>	<u>8.1</u>	<u>233.0</u>

### Sample Information

Sample Type: (X) Grab ( ) Composite Sample Location: ( ) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: \_\_\_\_\_

Sample Collection Equipment/Method: 5 gal. bucket Sample Time: 1420

Sample Description (clarity/color): Slightly cloudy / medium amber Sample Odor (Y) or (N) Explain: Earthy odor

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: 363 Expanded Number of Containers: 28

Sampling Completion: Time 1445 Date 11-29-22 Samplers S. Watson K. Dye

# Groundwater Suppression and Leachate Sampling Field Form On-Site Geological Services, D.P.C.

Project: Hakes C&D Landfill, Campbell, New York

Date: 11-4-22

Sampling Location: LCS

Sample ID: LCSSSED-1127

Arrival Time: 1042

### Weather Conditions:

Temp. 56° F  Sunny ( ) Partly Cloudy ( ) Cloudy ( ) Light Rain ( ) Hvy. Rain ( ) Snow

Wind Conditions: Steady Wind

### Location Type

( ) Groundwater Suppression  Leachate ( ) Secondary Leachate ( ) Surface Water/Sediment ( ) Res. Water  
( ) Other \_\_\_\_\_

### Flow and Depth Information (as appropriate)

Depth: \_\_\_\_\_ Estimated Flow: NA

Comments: \_\_\_\_\_

### Field Parameters (as appropriate)

Meter: YSI (sn: \_\_\_\_\_), Hach 2100P (sn: \_\_\_\_\_)

Field Parameters tested in: ( ) Submerged Probe ( ) Cup  
Note: Turbidity measured from a vial grab sample

Time	pH	Conductivity (us/cm)	Turbidity (ntu)	D.O. (mg/L)	Temp. (°C)	ORP (mV)
<u>1100</u>	_____	_____	_____	_____	_____	_____

### Sample Information

Sample Type:  Grab ( ) Composite Sample Location: ( ) Discharge Pipe ( ) Pond ( ) Ditch

Location Description/Condition: Leachate Tank

Sample Collection Equipment/Method: SS spoon from 5gal Bucket Sample Time: 1100

Sample Description (clarity/color): Black Shiny Sample Odor (Y) or (N) Explain: leachate odor  
gritty sample

Other Observations/Comments: \_\_\_\_\_

Analysis Requested: RAD SED Number of Containers: 2

Sampling Completion: Time 1136 Date 11-4-22 Samplers K Dye

# **Appendix B**

## **Laboratory Analytical Reports**





December 14, 2022

Service Request No:R2211305

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D - 363 Routine Parameters**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 23, 2022  
For your reference, these analyses have been assigned our service request number **R2211305**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

ADDRESS 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
PHONE +1 585 288 5380 | FAX +1 585 288 8475  
ALS Group USA, Corp.  
dba ALS Environmental



# Narrative Documents

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Received:** 11/23/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

**Sample Receipt:**

Ten water samples were received for analysis at ALS Environmental on 11/23/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

A handwritten signature in black ink, appearing to read "Samantha", is written over a horizontal line.

Approved by \_\_\_\_\_

Date 12/13/2022



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: SW2A-1122</b>	<b>Lab ID: R2211305-001</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	30.9		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	12900		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.4		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	12.1		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	46.4			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	250		70	100	ug/L	6010C
Magnesium, Total	3500		30	1000	ug/L	6010C
Manganese, Total	6	J	4	10	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.19	J	0.15	0.20	mg/L	351.2
Potassium, Total	1100	J	400	2000	ug/L	6010C
Sodium, Total	7600		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	92		9	10	mg/L	SM 2540 C-2015
Sulfate	18.5		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MW7-1122</b>	<b>Lab ID: R2211305-002</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	21.5		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	8100		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.2		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	12.6		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	29.0			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	2200		30	1000	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.16	J	0.15	0.20	mg/L	351.2
Potassium, Total	700	J	400	2000	ug/L	6010C
Sodium, Total	7800		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	65		9	10	mg/L	SM 2540 C-2015
Sulfate	8.8		0.4	2.0	mg/L	9056A

<b>CLIENT ID: SW2-1122</b>	<b>Lab ID: R2211305-003</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	41.4		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	19500		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	3.0		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	4.5	J	3.8	5.0	mg/L	410.4
Chloride	10.0		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	70.2			6.62	mg/L	SM 2340 B-1997 (2011)



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: SW2-1122</b>	<b>Lab ID: R2211305-003</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Iron, Total	570		70	100	ug/L	6010C
Magnesium, Total	5200		30	1000	ug/L	6010C
Manganese, Total	15		4	10	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.25		0.15	0.20	mg/L	351.2
Potassium, Total	1700	J	400	2000	ug/L	6010C
Sodium, Total	7000		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	126		9	10	mg/L	SM 2540 C-2015
Sulfate	33.8		0.4	2.0	mg/L	9056A

<b>CLIENT ID: SW7A-1122</b>	<b>Lab ID: R2211305-004</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	24.9		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	8900		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.3		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	12.8		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	31.9			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	2300		30	1000	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Potassium, Total	800	J	400	2000	ug/L	6010C
Sodium, Total	8000		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	72		9	10	mg/L	SM 2540 C-2015
Sulfate	8.7		0.4	2.0	mg/L	9056A

<b>CLIENT ID: SW9-1122</b>	<b>Lab ID: R2211305-005</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	40.1		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.046	J	0.026	0.050	mg/L	350.1
Calcium, Total	33000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	4.7		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	10.4		3.8	5.0	mg/L	410.4
Chloride	4.8		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	114			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	1710		70	100	ug/L	6010C
Magnesium, Total	7800		30	1000	ug/L	6010C
Manganese, Total	40		4	10	ug/L	6010C
Nitrate as Nitrogen	0.8	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.60		0.15	0.20	mg/L	351.2
Potassium, Total	3800		400	2000	ug/L	6010C



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: SW9-1122</b>	<b>Lab ID: R2211305-005</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Sodium, Total	3500		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	194		10	11	mg/L	SM 2540 C-2015
Sulfate	78.3		0.4	2.0	mg/L	9056A

<b>CLIENT ID: GSS8-1122</b>	<b>Lab ID: R2211305-006</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	287		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.029	J	0.026	0.050	mg/L	350.1
Calcium, Total	109000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.6		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	122		0.9	4.0	mg/L	9056A
Hardness, Total as CaCO3	369			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	130		70	100	ug/L	6010C
Magnesium, Total	23200		30	1000	ug/L	6010C
Manganese, Total	294		4	10	ug/L	6010C
Nitrate as Nitrogen	0.5	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.21		0.15	0.20	mg/L	351.2
Potassium, Total	2100		400	2000	ug/L	6010C
Sodium, Total	49400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	585		9	10	mg/L	SM 2540 C-2015
Sulfate	65.4		0.4	2.0	mg/L	9056A

<b>CLIENT ID: GSS1A-1122</b>	<b>Lab ID: R2211305-007</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	127		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.067		0.026	0.050	mg/L	350.1
Calcium, Total	47400		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	9.5		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	21.2		3.8	5.0	mg/L	410.4
Chloride	1.9	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	167			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	860		70	100	ug/L	6010C
Magnesium, Total	11700		30	1000	ug/L	6010C
Manganese, Total	288		4	10	ug/L	6010C
Nitrate as Nitrogen	1.9		0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.77		0.15	0.20	mg/L	351.2
Potassium, Total	1600	J	400	2000	ug/L	6010C
Sodium, Total	4100		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	225		9	10	mg/L	SM 2540 C-2015



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: GSS1A-1122</b>	<b>Lab ID: R2211305-007</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Sulfate	48.4		0.4	2.0	mg/L	9056A

<b>CLIENT ID: GSS6-1122</b>	<b>Lab ID: R2211305-008</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	546		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	102000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	1.0		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	20.9		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	507			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	60900		30	1000	ug/L	6010C
Manganese, Total	5	J	4	10	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Potassium, Total	4300		400	2000	ug/L	6010C
Sodium, Total	34900		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	986		9	10	mg/L	SM 2540 C-2015
Sulfate	245		2	10	mg/L	9056A

<b>CLIENT ID: SW1A-1122</b>	<b>Lab ID: R2211305-009</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	19.0		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	6500		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	4.0		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	7.7		3.8	5.0	mg/L	410.4
Chloride	15.4		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	25.4			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	1020		70	100	ug/L	6010C
Magnesium, Total	2200		30	1000	ug/L	6010C
Manganese, Total	40		4	10	ug/L	6010C
Nitrate as Nitrogen	0.3	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.24		0.15	0.20	mg/L	351.2
Phenolics, Total Recoverable	0.0036	BJ	0.0029	0.0050	mg/L	9066
Potassium, Total	1000	J	400	2000	ug/L	6010C
Sodium, Total	9900		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	70		9	10	mg/L	SM 2540 C-2015
Sulfate	8.4		0.4	2.0	mg/L	9056A

<b>CLIENT ID: GSS9-1122</b>	<b>Lab ID: R2211305-010</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	173		1.8	2.0	mg/L	SM 2320 B-1997 (2011)



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: GSS9-1122		Lab ID: R2211305-010				
Analyte	Results	Flag	MDL	MRL	Units	Method
Calcium, Total	57300		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.6	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	15.3		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO <sub>3</sub>	200			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	13800		30	1000	ug/L	6010C
Nitrate as Nitrogen	1.3		0.2	1.0	mg/L	9056A
Phenolics, Total Recoverable	0.0032	BJ	0.0029	0.0050	mg/L	9066
Potassium, Total	2100		400	2000	ug/L	6010C
Sodium, Total	11200		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	282		9	10	mg/L	SM 2540 C-2015
Sulfate	44.8		0.4	2.0	mg/L	9056A





## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters

**Service Request:**R2211305

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2211305-001	SW2A-1122	11/22/2022	0920
R2211305-002	MW7-1122	11/22/2022	0940
R2211305-003	SW2-1122	11/22/2022	1005
R2211305-004	SW7A-1122	11/22/2022	1050
R2211305-005	SW9-1122	11/22/2022	1110
R2211305-006	GSS8-1122	11/22/2022	1150
R2211305-007	GSS1A-1122	11/22/2022	1225
R2211305-008	GSS6-1122	11/22/2022	1315
R2211305-009	SW1A-1122	11/22/2022	1340
R2211305-010	GSS9-1122	11/22/2022	1400



ALS-Environmental  
1565 Jefferson Rd, Bldg 300, Suite 360  
Rochester, NY 14623  
585.288.5380

Client: <b>Casella/On-Site</b> 4376 Manning Ridge Road Campbell, NY 14870	<b>CHAIN of CUSTODY</b>	Page <u>1</u> of <u>1</u>
Project Manager: <b>Zachary Hall/Jon Brandes</b>	Project: <b>Hakes C&amp;D - 363 Routine Parameters</b>	Method of Shipment: <b>On-Site</b>
	Telephone No.: 585-593-1824	Email: jonb@on-sitchs.com

Special Detection Limit/Reporting

PDF to Zach and On-Site,  
and EDD to On-Site.  
PO: C6702

Sample I.D.	Lab Sample No.	No. of Containers	Matrix				Prsv.		Sampling Date	Sampling Time	BOD (NP)	Phenols & TOC (H2SO4)	Alkalinity (NP)	NH3, TKN, COD (H2SO4)	T-Metals, Hard. (Routine + As) (HNO3)	TDS, NO3, Br, Cl, SO4 (NP)																							
			Soil	Water	Air	Other	Yes	No																															
SW2A-1122		6	X				X	X	11-22-22	0920	X	X	X	X	X	X																							
MW7-1122		6	X				X	X	11-22-22	0940	X	X	X	X	X	X																							
SW2-1122		6	X				X	X	11-22-22	1005	X	X	X	X	X	X																							
SW7A-1122		6	X				X	X	11-22-22	1050	X	X	X	X	X	X																							
SW9-1122		6	X				X	X	11-22-22	1110	X	X	X	X	X	X																							
G558-1122		6	X				X	X	11-22-22	1150	X	X	X	X	X	X																							
G551A-1122		6	X				X	X	11-22-22	1225	X	X	X	X	X	X																							
G556-1122		6	X				X	X	11-22-22	1315	X	X	X	X	X	X																							
SW1A-1122		6	X				X	X	11-22-22	1346	X	X	X	X	X	X																							
G559-1122		6	X				X	X	11-22-22	1400	X	X	X	X	X	X																							


R E M A R K S

Sample Received Intact: Yes No Temperature received: Ice No ice

Relinq. by sampler (Sign & Print Name): <i>Scott R. Warsaw</i>	Date: 11-23-22 Time: 1010	Received by (Sign & Print Name): <i>Bachy</i>	Date: 11/23/22 Time: 1010
Relinquished by:	Date: Time:	Received by:	
Relinquished by:	Date: Time:	Received by:	
Relinquished by:	Date: Time:	Received by laboratory:	Date: Time:

Lab Work No.

**R2211305** 5  
Casella Waste Systems  
Hakes C&D - 363 Routine Parameters



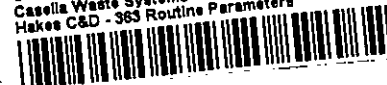


# Cooler Receipt and Preservation Check Form

R2211305

5

Caseella Waste Systems  
Hakes C&D - 363 Routine Parameters



Project/Client On-Site Folder Number \_\_\_\_\_

Cooler received on 11/23/22 by: Q

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
2	Custody papers properly completed (ink, signed)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
3	Did all bottles arrive in good condition (unbroken)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>

5a	Perchlorate samples have required headspace?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA <input type="checkbox"/>
5b	Did VOA vials, <u>ALK</u> or Sulfide have sig* bubbles?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/> NA <input type="checkbox"/>
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as: Bulk Encore 5035set	<u>NA</u>

8. Temperature Readings Date: 11/23/22 Time: 1015 ID: IR#7 IR#11 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>1.4</u>	<u>1.4</u>	<u>1.2</u>	<u>1.5</u>	<u>3.0</u>		
Within 0-6°C?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Y <input type="checkbox"/> N <input type="checkbox"/>	Y <input type="checkbox"/> N <input type="checkbox"/>
If <0°C, were samples frozen?	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>	Y <input type="checkbox"/> N <input checked="" type="checkbox"/>

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: R-002 by Q on 11/23/22 at 1024  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y  N

Cooler Breakdown/Preservation Check\*\*: Date: 11/29/22 Time: 910 by: Q

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
2		HNO <sub>3</sub>	✓		<u>2022021457</u>					
2		H <sub>2</sub> SO <sub>4</sub>	✓		<u>22250059, 420-10</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522	✓		If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 090822-EKLP, 22-05-07, 22-09-15, 080822

Explain all Discrepancies/ Other Comments: \_\_\_\_\_

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: \_\_\_\_\_

PC Secondary Review: JMS 12/14/22

\*significant air bubbles: VOA > 5-6 min : WC > 1 in. diameter



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

<p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p>	<p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211305

**Sample Name:** SW2A-1122  
**Lab Code:** R2211305-001  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MW7-1122  
**Lab Code:** R2211305-002  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211305

**Sample Name:** SW2-1122  
**Lab Code:** R2211305-003  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** SW7A-1122  
**Lab Code:** R2211305-004  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211305

**Sample Name:** SW9-1122  
**Lab Code:** R2211305-005  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** GSS8-1122  
**Lab Code:** R2211305-006  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211305

**Sample Name:** GSS1A-1122  
**Lab Code:** R2211305-007  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** GSS6-1122  
**Lab Code:** R2211305-008  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211305

**Sample Name:** SW1A-1122  
**Lab Code:** R2211305-009  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** GSS9-1122  
**Lab Code:** R2211305-010  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



# Metals

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW2A-1122  
**Lab Code:** R2211305-001

**Service Request:** R2211305  
**Date Collected:** 11/22/22 09:20  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:21	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:21	12/01/22	
Calcium, Total	6010C	<b>12900</b>	ug/L	1000	300	1	12/03/22 01:21	12/01/22	
Iron, Total	6010C	<b>250</b>	ug/L	100	70	1	12/03/22 01:21	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:21	12/01/22	
Magnesium, Total	6010C	<b>3500</b>	ug/L	1000	30	1	12/03/22 01:21	12/01/22	
Manganese, Total	6010C	<b>6 J</b>	ug/L	10	4	1	12/03/22 01:21	12/01/22	
Potassium, Total	6010C	<b>1100 J</b>	ug/L	2000	400	1	12/03/22 01:21	12/01/22	
Sodium, Total	6010C	<b>7600</b>	ug/L	1000	200	1	12/03/22 01:21	12/01/22	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MW7-1122  
**Lab Code:** R2211305-002

**Service Request:** R2211305  
**Date Collected:** 11/22/22 09:40  
**Date Received:** 11/23/22 10:10

**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:24	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:24	12/01/22	
Calcium, Total	6010C	<b>8100</b>	ug/L	1000	300	1	12/03/22 01:24	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:24	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:24	12/01/22	
Magnesium, Total	6010C	<b>2200</b>	ug/L	1000	30	1	12/03/22 01:24	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/03/22 01:24	12/01/22	
Potassium, Total	6010C	<b>700 J</b>	ug/L	2000	400	1	12/03/22 01:24	12/01/22	
Sodium, Total	6010C	<b>7800</b>	ug/L	1000	200	1	12/03/22 01:24	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW2-1122  
**Lab Code:** R2211305-003

**Service Request:** R2211305  
**Date Collected:** 11/22/22 10:05  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:27	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:27	12/01/22	
Calcium, Total	6010C	<b>19500</b>	ug/L	1000	300	1	12/03/22 01:27	12/01/22	
Iron, Total	6010C	<b>570</b>	ug/L	100	70	1	12/03/22 01:27	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:27	12/01/22	
Magnesium, Total	6010C	<b>5200</b>	ug/L	1000	30	1	12/03/22 01:27	12/01/22	
Manganese, Total	6010C	<b>15</b>	ug/L	10	4	1	12/03/22 01:27	12/01/22	
Potassium, Total	6010C	<b>1700 J</b>	ug/L	2000	400	1	12/03/22 01:27	12/01/22	
Sodium, Total	6010C	<b>7000</b>	ug/L	1000	200	1	12/03/22 01:27	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW7A-1122  
**Lab Code:** R2211305-004

**Service Request:** R2211305  
**Date Collected:** 11/22/22 10:50  
**Date Received:** 11/23/22 10:10

**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:30	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:30	12/01/22	
Calcium, Total	6010C	<b>8900</b>	ug/L	1000	300	1	12/03/22 01:30	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:30	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:30	12/01/22	
Magnesium, Total	6010C	<b>2300</b>	ug/L	1000	30	1	12/03/22 01:30	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/03/22 01:30	12/01/22	
Potassium, Total	6010C	<b>800 J</b>	ug/L	2000	400	1	12/03/22 01:30	12/01/22	
Sodium, Total	6010C	<b>8000</b>	ug/L	1000	200	1	12/03/22 01:30	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Collected:** 11/22/22 11:10  
**Date Received:** 11/23/22 10:10

**Sample Name:** SW9-1122  
**Lab Code:** R2211305-005

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:33	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:33	12/01/22	
Calcium, Total	6010C	<b>33000</b>	ug/L	1000	300	1	12/03/22 01:33	12/01/22	
Iron, Total	6010C	<b>1710</b>	ug/L	100	70	1	12/03/22 01:33	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:33	12/01/22	
Magnesium, Total	6010C	<b>7800</b>	ug/L	1000	30	1	12/03/22 01:33	12/01/22	
Manganese, Total	6010C	<b>40</b>	ug/L	10	4	1	12/03/22 01:33	12/01/22	
Potassium, Total	6010C	<b>3800</b>	ug/L	2000	400	1	12/03/22 01:33	12/01/22	
Sodium, Total	6010C	<b>3500</b>	ug/L	1000	200	1	12/03/22 01:33	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS8-1122  
**Lab Code:** R2211305-006

**Service Request:** R2211305  
**Date Collected:** 11/22/22 11:50  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:36	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:36	12/01/22	
Calcium, Total	6010C	<b>109000</b>	ug/L	1000	300	1	12/03/22 01:36	12/01/22	
Iron, Total	6010C	<b>130</b>	ug/L	100	70	1	12/03/22 01:36	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:36	12/01/22	
Magnesium, Total	6010C	<b>23200</b>	ug/L	1000	30	1	12/03/22 01:36	12/01/22	
Manganese, Total	6010C	<b>294</b>	ug/L	10	4	1	12/03/22 01:36	12/01/22	
Potassium, Total	6010C	<b>2100</b>	ug/L	2000	400	1	12/03/22 01:36	12/01/22	
Sodium, Total	6010C	<b>49400</b>	ug/L	1000	200	1	12/03/22 01:36	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS1A-1122  
**Lab Code:** R2211305-007

**Service Request:** R2211305  
**Date Collected:** 11/22/22 12:25  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:39	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:39	12/01/22	
Calcium, Total	6010C	<b>47400</b>	ug/L	1000	300	1	12/03/22 01:39	12/01/22	
Iron, Total	6010C	<b>860</b>	ug/L	100	70	1	12/03/22 01:39	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:39	12/01/22	
Magnesium, Total	6010C	<b>11700</b>	ug/L	1000	30	1	12/03/22 01:39	12/01/22	
Manganese, Total	6010C	<b>288</b>	ug/L	10	4	1	12/03/22 01:39	12/01/22	
Potassium, Total	6010C	<b>1600 J</b>	ug/L	2000	400	1	12/03/22 01:39	12/01/22	
Sodium, Total	6010C	<b>4100</b>	ug/L	1000	200	1	12/03/22 01:39	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS6-1122  
**Lab Code:** R2211305-008

**Service Request:** R2211305  
**Date Collected:** 11/22/22 13:15  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:49	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:49	12/01/22	
Calcium, Total	6010C	<b>102000</b>	ug/L	1000	300	1	12/03/22 01:49	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:49	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:49	12/01/22	
Magnesium, Total	6010C	<b>60900</b>	ug/L	1000	30	1	12/03/22 01:49	12/01/22	
Manganese, Total	6010C	<b>5 J</b>	ug/L	10	4	1	12/03/22 01:49	12/01/22	
Potassium, Total	6010C	<b>4300</b>	ug/L	2000	400	1	12/03/22 01:49	12/01/22	
Sodium, Total	6010C	<b>34900</b>	ug/L	1000	200	1	12/03/22 01:49	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW1A-1122  
**Lab Code:** R2211305-009

**Service Request:** R2211305  
**Date Collected:** 11/22/22 13:40  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:52	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:52	12/01/22	
Calcium, Total	6010C	<b>6500</b>	ug/L	1000	300	1	12/03/22 01:52	12/01/22	
Iron, Total	6010C	<b>1020</b>	ug/L	100	70	1	12/03/22 01:52	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:52	12/01/22	
Magnesium, Total	6010C	<b>2200</b>	ug/L	1000	30	1	12/03/22 01:52	12/01/22	
Manganese, Total	6010C	<b>40</b>	ug/L	10	4	1	12/03/22 01:52	12/01/22	
Potassium, Total	6010C	<b>1000 J</b>	ug/L	2000	400	1	12/03/22 01:52	12/01/22	
Sodium, Total	6010C	<b>9900</b>	ug/L	1000	200	1	12/03/22 01:52	12/01/22	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS9-1122  
**Lab Code:** R2211305-010

**Service Request:** R2211305  
**Date Collected:** 11/22/22 14:00  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:55	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:55	12/01/22	
Calcium, Total	6010C	<b>57300</b>	ug/L	1000	300	1	12/03/22 01:55	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:55	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:55	12/01/22	
Magnesium, Total	6010C	<b>13800</b>	ug/L	1000	30	1	12/03/22 01:55	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/03/22 01:55	12/01/22	
Potassium, Total	6010C	<b>2100</b>	ug/L	2000	400	1	12/03/22 01:55	12/01/22	
Sodium, Total	6010C	<b>11200</b>	ug/L	1000	200	1	12/03/22 01:55	12/01/22	



# General Chemistry

**ALS Environmental—Rochester Laboratory**  
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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW2A-1122  
**Lab Code:** R2211305-001

**Service Request:** R2211305  
**Date Collected:** 11/22/22 09:20  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>30.9</b>	mg/L	2.0	1.8	1	12/01/22 20:29	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:47	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 10:56	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 15:57	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.4</b>	mg/L	1.0	0.5	1	12/08/22 00:01	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>12.1</b>	mg/L	2.0	0.5	10	11/23/22 15:57	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>46.4</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4 J</b>	mg/L	1.0	0.2	10	11/23/22 15:57	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.19 J</b>	mg/L	0.20	0.15	1	12/07/22 12:26	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	11/29/22 02:36	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>92</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>18.5</b>	mg/L	2.0	0.4	10	11/23/22 15:57	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MW7-1122  
**Lab Code:** R2211305-002

**Service Request:** R2211305  
**Date Collected:** 11/22/22 09:40  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>21.5</b>	mg/L	2.0	1.8	1	12/01/22 20:37	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:50	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 10:54	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 16:20	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.2</b>	mg/L	1.0	0.5	1	12/08/22 01:07	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>12.6</b>	mg/L	2.0	0.5	10	11/23/22 16:20	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>29.0</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4 J</b>	mg/L	1.0	0.2	10	11/23/22 16:20	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.16 J</b>	mg/L	0.20	0.15	1	12/07/22 12:28	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	11/29/22 02:40	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>65</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>8.8</b>	mg/L	2.0	0.4	10	11/23/22 16:20	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW2-1122  
**Lab Code:** R2211305-003

**Service Request:** R2211305  
**Date Collected:** 11/22/22 10:05  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>41.4</b>	mg/L	2.0	1.8	1	12/05/22 04:50	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:51	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 10:52	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 16:26	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>3.0</b>	mg/L	1.0	0.5	1	12/08/22 01:18	NA	
Chemical Oxygen Demand, Total	410.4	<b>4.5</b>	J mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>10.0</b>	mg/L	2.0	0.5	10	11/23/22 16:26	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>70.2</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4</b>	J mg/L	1.0	0.2	10	11/23/22 16:26	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.25</b>	mg/L	0.20	0.15	1	12/07/22 12:29	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	11/29/22 02:44	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>126</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>33.8</b>	mg/L	2.0	0.4	10	11/23/22 16:26	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW7A-1122  
**Lab Code:** R2211305-004

**Service Request:** R2211305  
**Date Collected:** 11/22/22 10:50  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>24.9</b>	mg/L	2.0	1.8	1	12/05/22 04:58	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:52	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:21	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 16:32	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.3</b>	mg/L	1.0	0.5	1	12/08/22 01:31	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>12.8</b>	mg/L	2.0	0.5	10	11/23/22 16:32	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>31.9</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4 J</b>	mg/L	1.0	0.2	10	11/23/22 16:32	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:30	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	11/29/22 02:48	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>72</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>8.7</b>	mg/L	2.0	0.4	10	11/23/22 16:32	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW9-1122  
**Lab Code:** R2211305-005

**Service Request:** R2211305  
**Date Collected:** 11/22/22 11:10  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>40.1</b>	mg/L	2.0	1.8	1	12/05/22 05:04	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.046 J</b>	mg/L	0.050	0.026	1	12/12/22 14:54	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 10:55	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 16:37	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>4.7</b>	mg/L	1.0	0.5	1	12/08/22 01:42	NA	
Chemical Oxygen Demand, Total	410.4	<b>10.4</b>	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>4.8</b>	mg/L	2.0	0.5	10	11/23/22 16:37	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>114</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.8 J</b>	mg/L	1.0	0.2	10	11/23/22 16:37	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.60</b>	mg/L	0.20	0.15	1	12/07/22 12:31	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	11/29/22 02:52	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>194</b>	mg/L	11	10	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>78.3</b>	mg/L	2.0	0.4	10	11/23/22 16:37	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS8-1122  
**Lab Code:** R2211305-006

**Service Request:** R2211305  
**Date Collected:** 11/22/22 11:50  
**Date Received:** 11/23/22 10:10

**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>287</b>	mg/L	2.0	1.8	1	12/05/22 05:18	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.029 J</b>	mg/L	0.050	0.026	1	12/12/22 14:55	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:26	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 16:43	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.6</b>	mg/L	1.0	0.5	1	12/08/22 01:52	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>122</b>	mg/L	4.0	0.9	20	12/10/22 15:44	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>369</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.5 J</b>	mg/L	1.0	0.2	10	11/23/22 16:43	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.21</b>	mg/L	0.20	0.15	1	12/07/22 12:38	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	11/29/22 03:00	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>585</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>65.4</b>	mg/L	2.0	0.4	10	11/23/22 16:43	NA	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS1A-1122  
**Lab Code:** R2211305-007

**Service Request:** R2211305  
**Date Collected:** 11/22/22 12:25  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>127</b>	mg/L	2.0	1.8	1	12/05/22 05:25	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.067</b>	mg/L	0.050	0.026	1	12/12/22 14:56	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 10:49	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 16:49	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>9.5</b>	mg/L	1.0	0.5	1	12/08/22 02:03	NA	
Chemical Oxygen Demand, Total	410.4	<b>21.2</b>	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>1.9 J</b>	mg/L	2.0	0.5	10	11/23/22 16:49	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>167</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>1.9</b>	mg/L	1.0	0.2	10	11/23/22 16:49	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.77</b>	mg/L	0.20	0.15	1	12/07/22 12:41	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	11/29/22 03:12	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>225</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>48.4</b>	mg/L	2.0	0.4	10	11/23/22 16:49	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS6-1122  
**Lab Code:** R2211305-008

**Service Request:** R2211305  
**Date Collected:** 11/22/22 13:15  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>546</b>	mg/L	2.0	1.8	1	12/05/22 05:44	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:57	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:25	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 16:55	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>1.0</b>	mg/L	1.0	0.5	1	12/08/22 02:13	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>20.9</b>	mg/L	2.0	0.5	10	11/23/22 16:55	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>507</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4 J</b>	mg/L	1.0	0.2	10	11/23/22 16:55	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:41	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	11/29/22 03:32	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>986</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>245</b>	mg/L	10	2	50	12/10/22 15:50	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** SW1A-1122  
**Lab Code:** R2211305-009

**Service Request:** R2211305  
**Date Collected:** 11/22/22 13:40  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>19.0</b>	mg/L	2.0	1.8	1	12/05/22 05:53	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.050 U</b>	mg/L	0.050	0.026	1	12/12/22 15:00	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	<b>2.0 U</b>	mg/L	2.0	-	1	11/23/22 10:51	NA	
Bromide	9056A	<b>1.0 U</b>	mg/L	1.0	0.4	10	11/23/22 17:00	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>4.0</b>	mg/L	1.0	0.5	1	12/08/22 02:24	NA	
Chemical Oxygen Demand, Total	410.4	<b>7.7</b>	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>15.4</b>	mg/L	2.0	0.5	10	11/23/22 17:00	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>25.4</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.3 J</b>	mg/L	1.0	0.2	10	11/23/22 17:00	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.24</b>	mg/L	0.20	0.15	1	12/07/22 12:42	12/06/22	
Phenolics, Total Recoverable	9066	<b>0.0036 BJ</b>	mg/L	0.0050	0.0029	1	11/29/22 03:36	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>70</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>8.4</b>	mg/L	2.0	0.4	10	11/23/22 17:00	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** GSS9-1122  
**Lab Code:** R2211305-010

**Service Request:** R2211305  
**Date Collected:** 11/22/22 14:00  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>173</b>	mg/L	2.0	1.8	1	12/05/22 05:59	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 15:01	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:20	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 17:29	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.6</b>	<b>J</b> mg/L	1.0	0.5	1	12/08/22 02:33	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>15.3</b>	mg/L	2.0	0.5	10	11/23/22 17:29	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>200</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>1.3</b>	mg/L	1.0	0.2	10	11/23/22 17:29	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:43	12/06/22	
Phenolics, Total Recoverable	9066	<b>0.0032</b>	<b>BJ</b> mg/L	0.0050	0.0029	1	11/29/22 03:40	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>282</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>44.8</b>	mg/L	2.0	0.4	10	11/23/22 17:29	NA	



# QC Summary Forms

**ALS Environmental—Rochester Laboratory**  
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# Metals

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dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211305-MB

**Service Request:** R2211305  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:11	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:11	12/01/22	
Calcium, Total	6010C	1000 U	ug/L	1000	300	1	12/03/22 01:11	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:11	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:11	12/01/22	
Magnesium, Total	6010C	1000 U	ug/L	1000	30	1	12/03/22 01:11	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/03/22 01:11	12/01/22	
Potassium, Total	6010C	2000 U	ug/L	2000	400	1	12/03/22 01:11	12/01/22	
Sodium, Total	6010C	1000 U	ug/L	1000	200	1	12/03/22 01:11	12/01/22	

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Analyzed:** 12/03/22

**Duplicate Lab Control Sample Summary**  
**Inorganic Parameters**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
R2211305-LCS

**Duplicate Lab Control Sample**  
R2211305-DLCS

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
Arsenic, Total	6010C	42	40	105	43	40	107	80-120	1	20
Cadmium, Total	6010C	48.9	50.0	98	49.0	50.0	98	80-120	<1	20
Calcium, Total	6010C	1900	2000	93	1900	2000	93	80-120	<1	20
Iron, Total	6010C	920	1000	92	920	1000	92	80-120	<1	20
Lead, Total	6010C	483	500	97	485	500	97	80-120	<1	20
Magnesium, Total	6010C	1900	2000	93	1900	2000	93	80-120	<1	20
Manganese, Total	6010C	469	500	94	469	500	94	80-120	<1	20
Potassium, Total	6010C	17200	20000	86	17200	20000	86	80-120	<1	20
Sodium, Total	6010C	18500	20000	93	18500	20000	93	80-120	<1	20





## General Chemistry

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211305-MB1

**Service Request:** R2211305  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/01/22 16:44	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 14:32	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 19:06	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	11/23/22 13:50	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 22:15	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	11/23/22 13:50	NA	
Nitrate as Nitrogen	9056A	0.10 U	mg/L	0.10	0.02	1	11/23/22 13:50	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:05	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	11/29/22 00:32	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	11/23/22 13:50	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211305-MB2

**Service Request:** R2211305  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/05/22 04:10	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 20:29	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	11/23/22 16:09	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	11/23/22 16:09	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:34	12/06/22	
Phenolics, Total Recoverable	9066	<b>0.0048 J</b>	mg/L	0.0050	0.0029	1	11/29/22 02:24	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	11/23/22 16:09	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211305-MB3

**Service Request:** R2211305  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	12/10/22 14:12	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	12/10/22 14:12	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:**R2211305  
**Date Collected:**11/22/22  
**Date Received:**11/23/22  
**Date Analyzed:**12/07/22 - 12/12/22

**Duplicate Matrix Spike Summary  
General Chemistry Parameters**

**Sample Name:** SW2A-1122  
**Lab Code:** R2211305-001

**Units:**mg/L  
**Basis:**NA

**Matrix Spike**  
R2211305-001MS

**Duplicate Matrix Spike**  
R2211305-001DMS

Analyte Name	Method	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Ammonia as Nitrogen, undistilled	350.1	0.050 U	0.266	0.250	106	0.267	0.250	107	90-110	<1	20
Nitrogen, Total Kjeldahl (TKN)	351.2	0.19 J	2.72	2.50	101	2.80	2.50	105	90-110	3	20
Carbon, Total Organic (TOC)	SM 5310 B-2014	2.4	27.9	25.0	102	28.2	25.0	103	48-135	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 11/29/22 - 12/07/22

**Duplicate Matrix Spike Summary**  
**General Chemistry Parameters**

**Sample Name:** GSS8-1122 **Units:** mg/L  
**Lab Code:** R2211305-006 **Basis:** NA

**Matrix Spike**  
R2211305-006MS

**Duplicate Matrix Spike**  
R2211305-006DMS

Analyte Name	Method	Sample Result	Matrix Spike			Duplicate Matrix Spike			% Rec Limits	RPD	RPD Limit
			Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Chemical Oxygen Demand, Total	410.4	5.0 U	27.1	25.0	108	27.7	25.0	111 *	90-110	2	20
Phenolics, Total Recoverable	9066	0.0050 U	0.0391	0.0400	98	0.0402	0.0400	100	49-137	3	20
Nitrogen, Total Kjeldahl (TKN)	351.2	0.21	2.83	2.50	105	3.09	2.50	115 *	90-110	9	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:**R2211305  
**Date Collected:**11/22/22  
**Date Received:**11/23/22  
**Date Analyzed:**11/23/22

**Duplicate Matrix Spike Summary**  
**General Chemistry Parameters**

**Sample Name:** SW1A-1122 **Units:**mg/L  
**Lab Code:** R2211305-009 **Basis:**NA

**Matrix Spike**  
R2211305-009MS

**Duplicate Matrix Spike**  
R2211305-009DMS

Analyte Name	Method	Sample		Spike		Duplicate Matrix Spike		% Rec	% Rec Limits	RPD	RPD Limit
		Result	Result	Amount	% Rec	Result	Amount				
Bromide	9056A	1.0 U	9.8	10.0	98	9.7	10.0	97	80-120	<1	15
Chloride	9056A	15.4	34.7	20.0	97	34.5	20.0	95	80-120	<1	15
Sulfate	9056A	8.4	27.6	20.0	96	27.5	20.0	96	80-120	<1	15
Nitrate as Nitrogen	9056A	0.3 J	9.7	10.0	95	9.7	10.0	94	80-120	<1	15

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Casella Waste Systems (Hampden ME)  
Project: Hakes C&D - 363 Routine Parameters  
Sample Matrix: Water

Service Request: R2211305  
Date Collected: 11/22/22  
Date Received: 11/23/22  
Date Analyzed: 12/05/22

Replicate Sample Summary  
General Chemistry Parameters

Sample Name: SW9-1122  
Lab Code: R2211305-005

Units: mg/L  
Basis: NA

Analyte Name	Analysis Method	MRL	MDL	Sample Result	Duplicate Sample R2211305-005DUP Result	Average	RPD	RPD Limit
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0	1.8	40.1	40.1	40.1	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Analyzed:** 11/23/22 - 12/12/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211305-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	21.8	20.0	109	80-120
Ammonia as Nitrogen, undistilled	350.1	0.239	0.250	96	90-110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	201	198	101	85-115
Bromide	9056A	0.986	1.00	99	80-120
Carbon, Total Organic (TOC)	SM 5310 B-2014	25.2	25.0	101	80-121
Chemical Oxygen Demand, Total	410.4	50.4	50.0	101	90-110
Chloride	9056A	1.95	2.00	97	80-120
Nitrate as Nitrogen	9056A	0.972	1.00	97	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.65	2.50	106	90-110
Phenolics, Total Recoverable	9066	0.0428	0.0400	107	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	892	914	98	90-110
Sulfate	9056A	1.96	2.00	98	80-120

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Analyzed:** 11/23/22 - 12/07/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211305-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	20.6	20.0	103	80-120
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	203	198	102	85-115
Bromide	9056A	0.991	1.00	99	80-120
Chloride	9056A	1.96	2.00	98	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.66	2.50	106	90-110
Phenolics, Total Recoverable	9066	0.0382	0.0400	96	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	904	914	99	90-110
Sulfate	9056A	1.98	2.00	99	80-120

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211305  
**Date Analyzed:** 12/10/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211305-LCS3

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Chloride	9056A	1.84	2.00	92	80-120
Sulfate	9056A	1.85	2.00	92	80-120



December 14, 2022

Service Request No:R2211403

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D - 363 Routine Parameters**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2022  
For your reference, these analyses have been assigned our service request number **R2211403**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

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# Narrative Documents

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**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Received:** 11/29/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

**Sample Receipt:**

Three water samples were received for analysis at ALS Environmental on 11/29/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

A handwritten signature in black ink, appearing to read 'Samantha', is written over a horizontal line.

Approved by \_\_\_\_\_

Date 12/13/2022



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWRBR-1122</b>	<b>Lab ID: R2211403-001</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	50.7		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	28100		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.7	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	9.7		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	91.9			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	660		70	100	ug/L	6010C
Magnesium, Total	5300		30	1000	ug/L	6010C
Manganese, Total	26		4	10	ug/L	6010C
Nitrate as Nitrogen	2.4		0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.17	J	0.15	0.20	mg/L	351.2
Potassium, Total	1700	J	400	2000	ug/L	6010C
Sodium, Total	4100		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	107		9	10	mg/L	SM 2540 C-2015
Sulfate	20.9		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWVBR-1122</b>	<b>Lab ID: R2211403-002</b>
------------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	270		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.039	J	0.026	0.050	mg/L	350.1
Calcium, Total	78800		300	1000	ug/L	6010C
Chloride	1.1	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	299			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	270		70	100	ug/L	6010C
Magnesium, Total	24800		30	1000	ug/L	6010C
Manganese, Total	859		4	10	ug/L	6010C
Potassium, Total	2200		400	2000	ug/L	6010C
Sodium, Total	24400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	408		9	10	mg/L	SM 2540 C-2015
Sulfate	98.0		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWF-1122</b>	<b>Lab ID: R2211403-003</b>
----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	278		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	87600		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	1.7		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	28.3		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	315			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	170		70	100	ug/L	6010C



**SAMPLE DETECTION SUMMARY**

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWF-1122</b>		<b>Lab ID: R2211403-003</b>				
<b>Analyte</b>	<b>Results</b>	<b>Flag</b>	<b>MDL</b>	<b>MRL</b>	<b>Units</b>	<b>Method</b>
Magnesium, Total	23400		30	1000	ug/L	6010C
Manganese, Total	30		4	10	ug/L	6010C
Nitrate as Nitrogen	0.2	J	0.2	1.0	mg/L	9056A
Potassium, Total	1800	J	400	2000	ug/L	6010C
Sodium, Total	14900		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	407		9	10	mg/L	SM 2540 C-2015
Sulfate	56.5		0.4	2.0	mg/L	9056A





## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters

**Service Request:**R2211403

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2211403-001	MWRBR-1122	11/29/2022	0945
R2211403-002	MWVBR-1122	11/29/2022	1150
R2211403-003	MWF-1122	11/29/2022	1345





# Cooler Receipt and Preservation Check Form

**R2211403** **5**  
 Cassella Waste Systems  
 Hakes C&D - 363 Routine Parameters

Project/Client Cassella Folder Number \_\_\_\_\_

Cooler received on 11/24/22 by: hwr COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N	5a	Perchlorate samples have required headspace?	Y N NA <input checked="" type="checkbox"/>
2	Custody papers properly completed (ink, signed)?	<input checked="" type="checkbox"/> Y N	5b	Did VOA vials <u>AKK</u> or Sulfide have sig* bubbles?	<input checked="" type="checkbox"/> Y N NA
3	Did all bottles arrive in good condition (unbroken)?	<input checked="" type="checkbox"/> Y N	6	Where did the bottles originate?	ALS/ROC CLIENT
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	<input checked="" type="checkbox"/> Y N	7	Soil VOA received as: Bulk Encore 5035set	<input checked="" type="checkbox"/> NA

8. Temperature Readings Date: 11/24 Time: 1700 ID: IR#7 IR#17 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>4.4</u>	<u>5.3</u>	<u>3.1</u>	<u>6.4</u>			
Within 0-6°C?	<input checked="" type="checkbox"/> Y N	<input checked="" type="checkbox"/> Y N	<input checked="" type="checkbox"/> Y N	Y <input checked="" type="checkbox"/> N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
 & Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: hwr by hwr on 11/24 at 1710  
 5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 11/30/22 Time: 1341 by: hwr

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)?  YES NO
- 10. Did all bottle labels and tags agree with custody papers?  YES NO
- 11. Were correct containers used for the tests indicated?  YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y / N with MS Y / N Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
<2	<u>207622</u>	HNO <sub>3</sub>	<input checked="" type="checkbox"/>		<u>202212547</u>					
<2	<u>↓</u>	H <sub>2</sub> SO <sub>4</sub>	<input checked="" type="checkbox"/>		<u>2220059 6120-10</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol 625, 608pest, 522	<input checked="" type="checkbox"/>		If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 090522-1ECP, 22-09-19, 080822-242D, 22-05-77  
 Explain all Discrepancies/ Other Comments:

SB - AKK for LES

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: hwr  
 PC Secondary Review: hwr 12/14/22

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



# Miscellaneous Forms

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1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
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## REPORT QUALIFIERS AND DEFINITIONS

- |   |  |
|---|--|
| <p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p> | <p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ)<br/>The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p> |
|---|--|

### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211403

**Sample Name:** MWRBR-1122  
**Lab Code:** R2211403-001  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWVBR-1122  
**Lab Code:** R2211403-002  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211403

**Sample Name:** MWF-1122  
**Lab Code:** R2211403-003  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

**ALS Environmental—Rochester Laboratory**  
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# Metals

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ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Collected:** 11/29/22 09:45  
**Date Received:** 11/29/22 16:35

**Sample Name:** MWRBR-1122  
**Lab Code:** R2211403-001

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 02:26	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 02:26	12/01/22	
Calcium, Total	6010C	<b>28100</b>	ug/L	1000	300	1	12/03/22 02:26	12/01/22	
Iron, Total	6010C	<b>660</b>	ug/L	100	70	1	12/03/22 02:26	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 02:26	12/01/22	
Magnesium, Total	6010C	<b>5300</b>	ug/L	1000	30	1	12/03/22 02:26	12/01/22	
Manganese, Total	6010C	<b>26</b>	ug/L	10	4	1	12/03/22 02:26	12/01/22	
Potassium, Total	6010C	<b>1700 J</b>	ug/L	2000	400	1	12/03/22 02:26	12/01/22	
Sodium, Total	6010C	<b>4100</b>	ug/L	1000	200	1	12/03/22 02:26	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Collected:** 11/29/22 11:50  
**Date Received:** 11/29/22 16:35

**Sample Name:** MWVBR-1122  
**Lab Code:** R2211403-002

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 02:29	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 02:29	12/01/22	
Calcium, Total	6010C	<b>78800</b>	ug/L	1000	300	1	12/03/22 02:29	12/01/22	
Iron, Total	6010C	<b>270</b>	ug/L	100	70	1	12/03/22 02:29	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 02:29	12/01/22	
Magnesium, Total	6010C	<b>24800</b>	ug/L	1000	30	1	12/03/22 02:29	12/01/22	
Manganese, Total	6010C	<b>859</b>	ug/L	10	4	1	12/03/22 02:29	12/01/22	
Potassium, Total	6010C	<b>2200</b>	ug/L	2000	400	1	12/03/22 02:29	12/01/22	
Sodium, Total	6010C	<b>24400</b>	ug/L	1000	200	1	12/03/22 02:29	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWF-1122  
**Lab Code:** R2211403-003

**Service Request:** R2211403  
**Date Collected:** 11/29/22 13:45  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 02:32	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 02:32	12/01/22	
Calcium, Total	6010C	<b>87600</b>	ug/L	1000	300	1	12/03/22 02:32	12/01/22	
Iron, Total	6010C	<b>170</b>	ug/L	100	70	1	12/03/22 02:32	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 02:32	12/01/22	
Magnesium, Total	6010C	<b>23400</b>	ug/L	1000	30	1	12/03/22 02:32	12/01/22	
Manganese, Total	6010C	<b>30</b>	ug/L	10	4	1	12/03/22 02:32	12/01/22	
Potassium, Total	6010C	<b>1800 J</b>	ug/L	2000	400	1	12/03/22 02:32	12/01/22	
Sodium, Total	6010C	<b>14900</b>	ug/L	1000	200	1	12/03/22 02:32	12/01/22	



## General Chemistry

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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWRBR-1122  
**Lab Code:** R2211403-001

**Service Request:** R2211403  
**Date Collected:** 11/29/22 09:45  
**Date Received:** 11/29/22 16:35  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>50.7</b>	mg/L	2.0	1.8	1	12/05/22 09:27	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 17:33	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/30/22 10:06	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/30/22 12:55	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.7</b>	J mg/L	1.0	0.5	1	12/08/22 15:24	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>9.7</b>	mg/L	2.0	0.5	10	11/30/22 12:55	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>91.9</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>2.4</b>	mg/L	1.0	0.2	10	11/30/22 12:55	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.17</b>	J mg/L	0.20	0.15	1	12/09/22 21:58	12/08/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 21:49	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>107</b>	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	<b>20.9</b>	mg/L	2.0	0.4	10	11/30/22 12:55	NA	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWVBR-1122  
**Lab Code:** R2211403-002

**Service Request:** R2211403  
**Date Collected:** 11/29/22 11:50  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>270</b>	mg/L	2.0	1.8	1	12/05/22 09:34	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.039 J</b>	mg/L	0.050	0.026	1	12/12/22 17:39	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 10:06	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/30/22 13:12	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/08/22 15:36	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>1.1 J</b>	mg/L	2.0	0.5	10	11/30/22 13:12	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>299</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/30/22 13:12	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 22:00	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 21:53	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>408</b>	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	<b>98.0</b>	mg/L	2.0	0.4	10	11/30/22 13:12	NA	

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dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWF-1122  
**Lab Code:** R2211403-003

**Service Request:** R2211403  
**Date Collected:** 11/29/22 13:45  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>278</b>	mg/L	2.0	1.8	1	12/05/22 09:49	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 17:40	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 10:08	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/30/22 13:18	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>1.7</b>	mg/L	1.0	0.5	1	12/08/22 16:24	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>28.3</b>	mg/L	2.0	0.5	10	11/30/22 13:18	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>315</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.2 J</b>	mg/L	1.0	0.2	10	11/30/22 13:18	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 22:01	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:28	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>407</b>	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	<b>56.5</b>	mg/L	2.0	0.4	10	11/30/22 13:18	NA	



## QC Summary Forms

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# Metals

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211403-MB

**Service Request:** R2211403  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 01:11	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 01:11	12/01/22	
Calcium, Total	6010C	1000 U	ug/L	1000	300	1	12/03/22 01:11	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 01:11	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 01:11	12/01/22	
Magnesium, Total	6010C	1000 U	ug/L	1000	30	1	12/03/22 01:11	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/03/22 01:11	12/01/22	
Potassium, Total	6010C	2000 U	ug/L	2000	400	1	12/03/22 01:11	12/01/22	
Sodium, Total	6010C	1000 U	ug/L	1000	200	1	12/03/22 01:11	12/01/22	

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Analyzed:** 12/03/22

**Duplicate Lab Control Sample Summary**  
**Inorganic Parameters**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
R2211403-LCS

**Duplicate Lab Control Sample**  
R2211403-DLCS

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
Arsenic, Total	6010C	42	40	105	43	40	107	80-120	1	20
Cadmium, Total	6010C	48.9	50.0	98	49.0	50.0	98	80-120	<1	20
Calcium, Total	6010C	1900	2000	93	1900	2000	93	80-120	<1	20
Iron, Total	6010C	920	1000	92	920	1000	92	80-120	<1	20
Lead, Total	6010C	483	500	97	485	500	97	80-120	<1	20
Magnesium, Total	6010C	1900	2000	93	1900	2000	93	80-120	<1	20
Manganese, Total	6010C	469	500	94	469	500	94	80-120	<1	20
Potassium, Total	6010C	17200	20000	86	17200	20000	86	80-120	<1	20
Sodium, Total	6010C	18500	20000	93	18500	20000	93	80-120	<1	20



## General Chemistry

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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211403-MB1

**Service Request:** R2211403  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/05/22 07:26	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 17:24	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 13:49	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	11/30/22 11:53	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/08/22 13:40	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	11/30/22 11:53	NA	
Nitrate as Nitrogen	9056A	0.10 U	mg/L	0.10	0.02	1	11/30/22 11:53	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 21:40	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 20:33	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	11/30/22 11:53	NA	

ALS Group USA, Corp.  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211403-MB2

**Service Request:** R2211403  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Q</u>
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:04	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Collected:** 11/29/22  
**Date Received:** 11/29/22  
**Date Analyzed:** 12/12/22

**Duplicate Matrix Spike Summary**  
**Ammonia as Nitrogen, undistilled**

**Sample Name:** MWRBR-1122  
**Lab Code:** R2211403-001  
**Analysis Method:** 350.1

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2211403-001MS			Duplicate Matrix Spike R2211403-001DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Ammonia as Nitrogen, undistilled	0.050 U	0.264	0.250	106	0.264	0.250	106	90-110	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Collected:** 11/29/22  
**Date Received:** 11/29/22  
**Date Analyzed:** 12/5/22

**Duplicate Matrix Spike Summary**  
**Phenolics, Total Recoverable**

**Sample Name:** MWVBR-1122  
**Lab Code:** R2211403-002  
**Analysis Method:** 9066

**Units:** mg/L  
**Basis:** NA

Analyte Name	Matrix Spike R2211403-002MS				Duplicate Matrix Spike R2211403-002DMS				RPD	RPD Limit
	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Phenolics, Total Recoverable	0.0050 U	0.0392	0.0400	98	0.0401	0.0400	100	49-137	2	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Analyzed:** 11/30/22 - 12/12/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211403-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO <sub>3</sub>	SM 2320 B-1997(2011)	21.4	20.0	107	80-120
Ammonia as Nitrogen, undistilled	350.1	0.248	0.250	99	90-110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	192	198	97	85-115
Bromide	9056A	0.94	1.00	94	80-120
Carbon, Total Organic (TOC)	SM 5310 B-2014	25.5	25.0	102	80-121
Chemical Oxygen Demand, Total	410.4	54.0	50.0	108	90-110
Chloride	9056A	1.86	2.00	93	80-120
Nitrate as Nitrogen	9056A	0.93	1.00	93	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.51	2.50	100	90-110
Phenolics, Total Recoverable	9066	0.0398	0.0400	100	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	922	914	101	90-110
Sulfate	9056A	1.86	2.00	93	80-120

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211403  
**Date Analyzed:** 12/06/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211403-LCS2

<u>Analyte Name</u>	<u>Analytical Method</u>	<u>Result</u>	<u>Spike Amount</u>	<u>% Rec</u>	<u>% Rec Limits</u>
Phenolics, Total Recoverable	9066	0.0385	0.0400	96	85-115



December 14, 2022

Service Request No:R2211304

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D - 363 Routine Parameters**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 23, 2022  
For your reference, these analyses have been assigned our service request number **R2211304**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

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# Narrative Documents

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**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Received:** 11/23/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

**Sample Receipt:**

Fourteen water samples were received for analysis at ALS Environmental on 11/23/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

A handwritten signature in black ink, appearing to read "Jamar..." with a stylized flourish at the end.

Approved by \_\_\_\_\_

Date 12/13/2022



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

CLIENT ID: MWQR-1122		Lab ID: R2211304-001				
Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	95.0		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	31400		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	3.7		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	4.5	J	3.8	5.0	mg/L	410.4
Chloride	150		1.3	6.0	mg/L	9056A
Hardness, Total as CaCO3	126			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	170		70	100	ug/L	6010C
Magnesium, Total	11500		30	1000	ug/L	6010C
Manganese, Total	63		4	10	ug/L	6010C
Nitrate as Nitrogen	0.5	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.26		0.15	0.20	mg/L	351.2
Potassium, Total	2200		400	2000	ug/L	6010C
Sodium, Total	92100		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	438		9	10	mg/L	SM 2540 C-2015
Sulfate	43.7		0.4	2.0	mg/L	9056A

CLIENT ID: MWH-1122		Lab ID: R2211304-002				
Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	125		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	66400		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.9	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	144		1.7	8.0	mg/L	9056A
Hardness, Total as CaCO3	284			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	28800		30	1000	ug/L	6010C
Manganese, Total	18		4	10	ug/L	6010C
Nitrate as Nitrogen	0.7	J	0.2	1.0	mg/L	9056A
Potassium, Total	1000	J	400	2000	ug/L	6010C
Sodium, Total	67800		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	561		9	10	mg/L	SM 2540 C-2015
Sulfate	101		1.6	8.0	mg/L	9056A

CLIENT ID: MWD-1122		Lab ID: R2211304-003				
Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	263		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	73500		300	1000	ug/L	6010C
Chloride	11.6		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	251			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	530		70	100	ug/L	6010C



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWD-1122</b>	<b>Lab ID: R2211304-003</b>
----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Magnesium, Total	16500		30	1000	ug/L	6010C
Manganese, Total	10		4	10	ug/L	6010C
Nitrate as Nitrogen	0.5	J	0.2	1.0	mg/L	9056A
Potassium, Total	1900	J	400	2000	ug/L	6010C
Sodium, Total	10700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	303		9	10	mg/L	SM 2540 C-2015
Sulfate	18.1		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWGR-1122</b>	<b>Lab ID: R2211304-004</b>
-----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	382		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	112000		300	1000	ug/L	6010C
Chloride	6.5		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	363			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	110		70	100	ug/L	6010C
Magnesium, Total	19900		30	1000	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Potassium, Total	1200	J	400	2000	ug/L	6010C
Sodium, Total	9700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	426		9	10	mg/L	SM 2540 C-2015
Sulfate	25.3		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWN-1122</b>	<b>Lab ID: R2211304-005</b>
----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	423		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.127		0.026	0.050	mg/L	350.1
Calcium, Total	104000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	1.6		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	2.3		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	352			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	380		70	100	ug/L	6010C
Magnesium, Total	22700		30	1000	ug/L	6010C
Manganese, Total	1640		4	10	ug/L	6010C
Nitrate as Nitrogen	0.3	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.35		0.15	0.20	mg/L	351.2
Potassium, Total	5100		400	2000	ug/L	6010C
Sodium, Total	28400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	484		9	10	mg/L	SM 2540 C-2015
Sulfate	39.8		0.4	2.0	mg/L	9056A



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWN-1122</b>	<b>Lab ID: R2211304-005</b>
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<b>CLIENT ID: MWOB-1122</b>	<b>Lab ID: R2211304-006</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	176		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	37800		300	1000	ug/L	6010C
Chloride	1.5	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	143			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	100	J	70	100	ug/L	6010C
Magnesium, Total	11700		30	1000	ug/L	6010C
Manganese, Total	36		4	10	ug/L	6010C
Nitrate as Nitrogen	0.3	J	0.2	1.0	mg/L	9056A
Potassium, Total	3200		400	2000	ug/L	6010C
Sodium, Total	17700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	212		9	10	mg/L	SM 2540 C-2015
Sulfate	23.3		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWO-1122</b>	<b>Lab ID: R2211304-007</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	194		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	41500		300	1000	ug/L	6010C
Chloride	1.9	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	157			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	13000		30	1000	ug/L	6010C
Manganese, Total	75		4	10	ug/L	6010C
Potassium, Total	2100		400	2000	ug/L	6010C
Sodium, Total	17400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	222		9	10	mg/L	SM 2540 C-2015
Sulfate	19.9		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWCR-1122</b>	<b>Lab ID: R2211304-008</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	347		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	87900		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.9	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	13.7		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	332			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	27200		30	1000	ug/L	6010C
Manganese, Total	10		4	10	ug/L	6010C
Nitrate as Nitrogen	0.3	J	0.2	1.0	mg/L	9056A
Potassium, Total	2300		400	2000	ug/L	6010C



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWCR-1122</b>	<b>Lab ID: R2211304-008</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Sodium, Total	13400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	392		9	10	mg/L	SM 2540 C-2015
Sulfate	28.9		0.4	2.0	mg/L	9056A

<b>CLIENT ID: DUP2-1122</b>	<b>Lab ID: R2211304-009</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	346		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	88200		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.9	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	13.8		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	333			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	27300		30	1000	ug/L	6010C
Manganese, Total	11		4	10	ug/L	6010C
Nitrate as Nitrogen	0.3	J	0.2	1.0	mg/L	9056A
Potassium, Total	2300		400	2000	ug/L	6010C
Sodium, Total	13400		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	396		9	10	mg/L	SM 2540 C-2015
Sulfate	28.9		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWSBR-1122</b>	<b>Lab ID: R2211304-010</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	168		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.035	J	0.026	0.050	mg/L	350.1
Calcium, Total	46700		300	1000	ug/L	6010C
Chloride	0.8	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	166			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	12000		30	1000	ug/L	6010C
Manganese, Total	553		4	10	ug/L	6010C
Potassium, Total	1800	J	400	2000	ug/L	6010C
Sodium, Total	10700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	228		9	10	mg/L	SM 2540 C-2015
Sulfate	37.3		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWTBR-1122</b>	<b>Lab ID: R2211304-011</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	166		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	44600		300	1000	ug/L	6010C
Chloride	1.3	J	0.5	2.0	mg/L	9056A



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWTBR-1122</b>	<b>Lab ID: R2211304-011</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Hardness, Total as CaCO3	155			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	350		70	100	ug/L	6010C
Magnesium, Total	10600		30	1000	ug/L	6010C
Manganese, Total	573		4	10	ug/L	6010C
Potassium, Total	1600	J	400	2000	ug/L	6010C
Sodium, Total	10700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	208		9	10	mg/L	SM 2540 C-2015
Sulfate	25.2		0.4	2.0	mg/L	9056A

<b>CLIENT ID: DUP1-1122</b>	<b>Lab ID: R2211304-012</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	164		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.029	J	0.026	0.050	mg/L	350.1
Calcium, Total	44500		300	1000	ug/L	6010C
Chloride	1.3	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	155			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	340		70	100	ug/L	6010C
Magnesium, Total	10600		30	1000	ug/L	6010C
Manganese, Total	584		4	10	ug/L	6010C
Potassium, Total	1600	J	400	2000	ug/L	6010C
Sodium, Total	10700		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	207		9	10	mg/L	SM 2540 C-2015
Sulfate	25.0		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWUBR-1122</b>	<b>Lab ID: R2211304-013</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	149		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.030	J	0.026	0.050	mg/L	350.1
Calcium, Total	39100		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.4		0.5	1.0	mg/L	SM 5310 B-2014
Chloride	1.2	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	137			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	760		70	100	ug/L	6010C
Magnesium, Total	9500		30	1000	ug/L	6010C
Manganese, Total	592		4	10	ug/L	6010C
Potassium, Total	1700	J	400	2000	ug/L	6010C
Sodium, Total	9800		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	178		9	10	mg/L	SM 2540 C-2015



### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWUBR-1122</b>	<b>Lab ID: R2211304-013</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Sulfate	16.0		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWV-1122</b>	<b>Lab ID: R2211304-014</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	446		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.028	J	0.026	0.050	mg/L	350.1
Calcium, Total	81600		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.6	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	1.6	J	0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	382			6.62	mg/L	SM 2340 B-1997 (2011)
Magnesium, Total	43300		30	1000	ug/L	6010C
Manganese, Total	179		4	10	ug/L	6010C
Potassium, Total	35200		400	2000	ug/L	6010C
Sodium, Total	70000		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	677		9	10	mg/L	SM 2540 C-2015
Sulfate	163		1.2	6.0	mg/L	9056A



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters

**Service Request:**R2211304

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2211304-001	MWQR-1122	11/22/2022	0835
R2211304-002	MWH-1122	11/22/2022	1010
R2211304-003	MWD-1122	11/22/2022	1100
R2211304-004	MWGR-1122	11/22/2022	1125
R2211304-005	MWN-1122	11/22/2022	1205
R2211304-006	MWOBR-1122	11/22/2022	1240
R2211304-007	MWO-1122	11/22/2022	1335
R2211304-008	MWCR-1122	11/22/2022	1525
R2211304-009	DUP2-1122	11/22/2022	1535
R2211304-010	MWSBR-1122	11/22/2022	1000
R2211304-011	MWTBR-1122	11/22/2022	1155
R2211304-012	DUP1-1122	11/22/2022	1210
R2211304-013	MWUBR-1122	11/22/2022	1405
R2211304-014	MWV-1122	11/22/2022	1540





# Cooler Receipt and Preservation Check Form

R2211304

5

Casella Waste Systems  
Hakes C&D - 363 Routine Parameters



Project/Client On-Site Folder Number \_\_\_\_\_

Cooler received on 11/23/22 by: Q COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
2	Custody papers properly completed (ink, signed)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
3	Did all bottles arrive in good condition (unbroken)?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>

5a	Perchlorate samples have required headspace?	Y N <u>NA</u>
5b	Did VOA vials <u>Alk</u> or Sulfide have sig* bubbles?	Y <input checked="" type="checkbox"/> N <input type="checkbox"/> NA
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as: Bulk Encore 5035set	<u>NA</u>

8. Temperature Readings Date: 11/23/22 Time: 11:15 ID: IR#7 IR#11 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>1.4</u>	<u>1.4</u>	<u>1.2</u>	<u>1.5</u>	<u>3.0</u>		
Within 0-6°C?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: R-002 by Q on 11/23/22 at 1024  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 11/29/22 Time: 0910 by: Q

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
<2	<u>201222</u>	HNO <sub>3</sub>	✓		<u>2022-02-14-57</u>					
<2		H <sub>2</sub> SO <sub>4</sub>	✓		<u>22200059 4120-10</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522	✓		If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 090822-1, 22-05-07, 22-09-15, 080822-2A11  
Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: Q  
PC Secondary Review: SMJ 12/14/22

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

<p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p>	<p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWQR-1122  
**Lab Code:** R2211304-001  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWD-1122  
**Lab Code:** R2211304-003  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWGR-1122  
**Lab Code:** R2211304-004  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



ALS Group USA, Corp.  
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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWN-1122  
**Lab Code:** R2211304-005  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWOB-1122  
**Lab Code:** R2211304-006  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWO-1122  
**Lab Code:** R2211304-007  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWCR-1122  
**Lab Code:** R2211304-008  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** DUP2-1122  
**Lab Code:** R2211304-009  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWSBR-1122  
**Lab Code:** R2211304-010  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWTBR-1122  
**Lab Code:** R2211304-011  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** DUP1-1122  
**Lab Code:** R2211304-012  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		SDUBE
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211304

**Sample Name:** MWUBR-1122  
**Lab Code:** R2211304-013  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWV-1122  
**Lab Code:** R2211304-014  
**Sample Matrix:** Water

**Date Collected:** 11/22/22  
**Date Received:** 11/23/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		GNITAJOUPPI
351.2	CCAMPBELL	GNITAJOUPPI
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KWONG
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		CWOODS
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



# Metals

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWQR-1122  
**Lab Code:** R2211304-001

**Service Request:** R2211304  
**Date Collected:** 11/22/22 08:35  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:23	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:23	12/01/22	
Calcium, Total	6010C	<b>31400</b>	ug/L	1000	300	1	12/02/22 23:23	12/01/22	
Iron, Total	6010C	<b>170</b>	ug/L	100	70	1	12/02/22 23:23	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:23	12/01/22	
Magnesium, Total	6010C	<b>11500</b>	ug/L	1000	30	1	12/02/22 23:23	12/01/22	
Manganese, Total	6010C	<b>63</b>	ug/L	10	4	1	12/02/22 23:23	12/01/22	
Potassium, Total	6010C	<b>2200</b>	ug/L	2000	400	1	12/02/22 23:23	12/01/22	
Sodium, Total	6010C	<b>92100</b>	ug/L	1000	200	1	12/02/22 23:23	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002

**Service Request:** R2211304  
**Date Collected:** 11/22/22 10:10  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:26	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:26	12/01/22	
Calcium, Total	6010C	<b>66400</b>	ug/L	1000	300	1	12/02/22 23:26	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/02/22 23:26	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:26	12/01/22	
Magnesium, Total	6010C	<b>28800</b>	ug/L	1000	30	1	12/02/22 23:26	12/01/22	
Manganese, Total	6010C	<b>18</b>	ug/L	10	4	1	12/02/22 23:26	12/01/22	
Potassium, Total	6010C	<b>1000 J</b>	ug/L	2000	400	1	12/02/22 23:26	12/01/22	
Sodium, Total	6010C	<b>67800</b>	ug/L	1000	200	1	12/02/22 23:26	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWD-1122  
**Lab Code:** R2211304-003

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:00  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:42	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:42	12/01/22	
Calcium, Total	6010C	<b>73500</b>	ug/L	1000	300	1	12/02/22 23:42	12/01/22	
Iron, Total	6010C	<b>530</b>	ug/L	100	70	1	12/02/22 23:42	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:42	12/01/22	
Magnesium, Total	6010C	<b>16500</b>	ug/L	1000	30	1	12/02/22 23:42	12/01/22	
Manganese, Total	6010C	<b>10</b>	ug/L	10	4	1	12/02/22 23:42	12/01/22	
Potassium, Total	6010C	<b>1900 J</b>	ug/L	2000	400	1	12/02/22 23:42	12/01/22	
Sodium, Total	6010C	<b>10700</b>	ug/L	1000	200	1	12/02/22 23:42	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWGR-1122  
**Lab Code:** R2211304-004

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:25  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:45	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:45	12/01/22	
Calcium, Total	6010C	<b>112000</b>	ug/L	1000	300	1	12/02/22 23:45	12/01/22	
Iron, Total	6010C	<b>110</b>	ug/L	100	70	1	12/02/22 23:45	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:45	12/01/22	
Magnesium, Total	6010C	<b>19900</b>	ug/L	1000	30	1	12/02/22 23:45	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/02/22 23:45	12/01/22	
Potassium, Total	6010C	<b>1200 J</b>	ug/L	2000	400	1	12/02/22 23:45	12/01/22	
Sodium, Total	6010C	<b>9700</b>	ug/L	1000	200	1	12/02/22 23:45	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWN-1122  
**Lab Code:** R2211304-005

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:05  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:54	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:54	12/01/22	
Calcium, Total	6010C	<b>104000</b>	ug/L	1000	300	1	12/02/22 23:54	12/01/22	
Iron, Total	6010C	<b>380</b>	ug/L	100	70	1	12/02/22 23:54	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:54	12/01/22	
Magnesium, Total	6010C	<b>22700</b>	ug/L	1000	30	1	12/02/22 23:54	12/01/22	
Manganese, Total	6010C	<b>1640</b>	ug/L	10	4	1	12/02/22 23:54	12/01/22	
Potassium, Total	6010C	<b>5100</b>	ug/L	2000	400	1	12/02/22 23:54	12/01/22	
Sodium, Total	6010C	<b>28400</b>	ug/L	1000	200	1	12/02/22 23:54	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWOB-1122  
**Lab Code:** R2211304-006

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:40  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:57	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:57	12/01/22	
Calcium, Total	6010C	<b>37800</b>	ug/L	1000	300	1	12/02/22 23:57	12/01/22	
Iron, Total	6010C	<b>100 J</b>	ug/L	100	70	1	12/02/22 23:57	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:57	12/01/22	
Magnesium, Total	6010C	<b>11700</b>	ug/L	1000	30	1	12/02/22 23:57	12/01/22	
Manganese, Total	6010C	<b>36</b>	ug/L	10	4	1	12/02/22 23:57	12/01/22	
Potassium, Total	6010C	<b>3200</b>	ug/L	2000	400	1	12/02/22 23:57	12/01/22	
Sodium, Total	6010C	<b>17700</b>	ug/L	1000	200	1	12/02/22 23:57	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWO-1122  
**Lab Code:** R2211304-007

**Service Request:** R2211304  
**Date Collected:** 11/22/22 13:35  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:00	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:00	12/01/22	
Calcium, Total	6010C	<b>41500</b>	ug/L	1000	300	1	12/03/22 00:00	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 00:00	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:00	12/01/22	
Magnesium, Total	6010C	<b>13000</b>	ug/L	1000	30	1	12/03/22 00:00	12/01/22	
Manganese, Total	6010C	<b>75</b>	ug/L	10	4	1	12/03/22 00:00	12/01/22	
Potassium, Total	6010C	<b>2100</b>	ug/L	2000	400	1	12/03/22 00:00	12/01/22	
Sodium, Total	6010C	<b>17400</b>	ug/L	1000	200	1	12/03/22 00:00	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:25  
**Date Received:** 11/23/22 10:10

**Sample Name:** MWCR-1122  
**Lab Code:** R2211304-008

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:03	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:03	12/01/22	
Calcium, Total	6010C	<b>87900</b>	ug/L	1000	300	1	12/03/22 00:03	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 00:03	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:03	12/01/22	
Magnesium, Total	6010C	<b>27200</b>	ug/L	1000	30	1	12/03/22 00:03	12/01/22	
Manganese, Total	6010C	<b>10</b>	ug/L	10	4	1	12/03/22 00:03	12/01/22	
Potassium, Total	6010C	<b>2300</b>	ug/L	2000	400	1	12/03/22 00:03	12/01/22	
Sodium, Total	6010C	<b>13400</b>	ug/L	1000	200	1	12/03/22 00:03	12/01/22	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** DUP2-1122  
**Lab Code:** R2211304-009

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:35  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:06	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:06	12/01/22	
Calcium, Total	6010C	<b>88200</b>	ug/L	1000	300	1	12/03/22 00:06	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 00:06	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:06	12/01/22	
Magnesium, Total	6010C	<b>27300</b>	ug/L	1000	30	1	12/03/22 00:06	12/01/22	
Manganese, Total	6010C	<b>11</b>	ug/L	10	4	1	12/03/22 00:06	12/01/22	
Potassium, Total	6010C	<b>2300</b>	ug/L	2000	400	1	12/03/22 00:06	12/01/22	
Sodium, Total	6010C	<b>13400</b>	ug/L	1000	200	1	12/03/22 00:06	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22 10:00  
**Date Received:** 11/23/22 10:10

**Sample Name:** MWSBR-1122  
**Lab Code:** R2211304-010

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:09	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:09	12/01/22	
Calcium, Total	6010C	<b>46700</b>	ug/L	1000	300	1	12/03/22 00:09	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 00:09	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:09	12/01/22	
Magnesium, Total	6010C	<b>12000</b>	ug/L	1000	30	1	12/03/22 00:09	12/01/22	
Manganese, Total	6010C	<b>553</b>	ug/L	10	4	1	12/03/22 00:09	12/01/22	
Potassium, Total	6010C	<b>1800 J</b>	ug/L	2000	400	1	12/03/22 00:09	12/01/22	
Sodium, Total	6010C	<b>10700</b>	ug/L	1000	200	1	12/03/22 00:09	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:55  
**Date Received:** 11/23/22 10:10

**Sample Name:** MWTBR-1122  
**Lab Code:** R2211304-011

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:13	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:13	12/01/22	
Calcium, Total	6010C	<b>44600</b>	ug/L	1000	300	1	12/03/22 00:13	12/01/22	
Iron, Total	6010C	<b>350</b>	ug/L	100	70	1	12/03/22 00:13	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:13	12/01/22	
Magnesium, Total	6010C	<b>10600</b>	ug/L	1000	30	1	12/03/22 00:13	12/01/22	
Manganese, Total	6010C	<b>573</b>	ug/L	10	4	1	12/03/22 00:13	12/01/22	
Potassium, Total	6010C	<b>1600 J</b>	ug/L	2000	400	1	12/03/22 00:13	12/01/22	
Sodium, Total	6010C	<b>10700</b>	ug/L	1000	200	1	12/03/22 00:13	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** DUP1-1122  
**Lab Code:** R2211304-012

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:10  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:16	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:16	12/01/22	
Calcium, Total	6010C	<b>44500</b>	ug/L	1000	300	1	12/03/22 00:16	12/01/22	
Iron, Total	6010C	<b>340</b>	ug/L	100	70	1	12/03/22 00:16	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:16	12/01/22	
Magnesium, Total	6010C	<b>10600</b>	ug/L	1000	30	1	12/03/22 00:16	12/01/22	
Manganese, Total	6010C	<b>584</b>	ug/L	10	4	1	12/03/22 00:16	12/01/22	
Potassium, Total	6010C	<b>1600 J</b>	ug/L	2000	400	1	12/03/22 00:16	12/01/22	
Sodium, Total	6010C	<b>10700</b>	ug/L	1000	200	1	12/03/22 00:16	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22 14:05  
**Date Received:** 11/23/22 10:10

**Sample Name:** MWUBR-1122  
**Lab Code:** R2211304-013

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:19	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:19	12/01/22	
Calcium, Total	6010C	<b>39100</b>	ug/L	1000	300	1	12/03/22 00:19	12/01/22	
Iron, Total	6010C	<b>760</b>	ug/L	100	70	1	12/03/22 00:19	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:19	12/01/22	
Magnesium, Total	6010C	<b>9500</b>	ug/L	1000	30	1	12/03/22 00:19	12/01/22	
Manganese, Total	6010C	<b>592</b>	ug/L	10	4	1	12/03/22 00:19	12/01/22	
Potassium, Total	6010C	<b>1700 J</b>	ug/L	2000	400	1	12/03/22 00:19	12/01/22	
Sodium, Total	6010C	<b>9800</b>	ug/L	1000	200	1	12/03/22 00:19	12/01/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWV-1122  
**Lab Code:** R2211304-014

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:40  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/03/22 00:22	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/03/22 00:22	12/01/22	
Calcium, Total	6010C	<b>81600</b>	ug/L	1000	300	1	12/03/22 00:22	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/03/22 00:22	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/03/22 00:22	12/01/22	
Magnesium, Total	6010C	<b>43300</b>	ug/L	1000	30	1	12/03/22 00:22	12/01/22	
Manganese, Total	6010C	<b>179</b>	ug/L	10	4	1	12/03/22 00:22	12/01/22	
Potassium, Total	6010C	<b>35200</b>	ug/L	2000	400	1	12/03/22 00:22	12/01/22	
Sodium, Total	6010C	<b>70000</b>	ug/L	1000	200	1	12/03/22 00:22	12/01/22	



# General Chemistry

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWQR-1122  
**Lab Code:** R2211304-001

**Service Request:** R2211304  
**Date Collected:** 11/22/22 08:35  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>95.0</b>	mg/L	2.0	1.8	1	12/01/22 18:26	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:21	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 12:00	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 14:02	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>3.7</b>	mg/L	1.0	0.5	1	12/07/22 19:08	NA	
Chemical Oxygen Demand, Total	410.4	<b>4.5</b>	J mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>150</b>	mg/L	6.0	1.3	30	12/10/22 14:46	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>126</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.5</b>	J mg/L	1.0	0.2	10	11/23/22 14:02	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.26</b>	mg/L	0.20	0.15	1	12/07/22 12:09	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 16:37	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>438</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>43.7</b>	mg/L	2.0	0.4	10	11/23/22 14:02	NA	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002

**Service Request:** R2211304  
**Date Collected:** 11/22/22 10:10  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>125</b>	mg/L	2.0	1.8	1	12/01/22 18:33	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:22	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 12:05	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 14:07	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.9</b>	J mg/L	1.0	0.5	1	12/07/22 20:22	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>144</b>	mg/L	8.0	1.7	40	12/10/22 14:52	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>284</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.7</b>	J mg/L	1.0	0.2	10	11/23/22 14:07	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:10	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 16:41	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>561</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>101</b>	mg/L	8.0	1.6	40	12/10/22 14:52	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWD-1122  
**Lab Code:** R2211304-003

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:00  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>263</b>	mg/L	2.0	1.8	1	12/01/22 18:47	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 14:26	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:49	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 14:25	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 21:03	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>11.6</b>	mg/L	2.0	0.5	10	11/23/22 14:25	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>251</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.5 J</b>	mg/L	1.0	0.2	10	11/23/22 14:25	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:12	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 16:53	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>303</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>18.1</b>	mg/L	2.0	0.4	10	11/23/22 14:25	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWGR-1122  
**Lab Code:** R2211304-004

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:25  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>382</b>	mg/L	2.0	1.8	1	12/01/22 18:55	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 14:27	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:24	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 14:30	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 21:14	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>6.5</b>	mg/L	2.0	0.5	10	11/23/22 14:30	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>363</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4 J</b>	mg/L	1.0	0.2	10	11/23/22 14:30	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:13	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 16:57	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>426</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>25.3</b>	mg/L	2.0	0.4	10	11/23/22 14:30	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWN-1122  
**Lab Code:** R2211304-005

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:05  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>423</b>	mg/L	2.0	1.8	1	12/01/22 19:03	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.127</b>	mg/L	0.050	0.026	1	12/12/22 14:28	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:45	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 14:36	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>1.6</b>	mg/L	1.0	0.5	1	12/07/22 21:24	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>2.3</b>	mg/L	2.0	0.5	10	11/23/22 14:36	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>352</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.3 J</b>	mg/L	1.0	0.2	10	11/23/22 14:36	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.35</b>	mg/L	0.20	0.15	1	12/07/22 12:16	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:01	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>484</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>39.8</b>	mg/L	2.0	0.4	10	11/23/22 14:36	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWOBR-1122  
**Lab Code:** R2211304-006

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:40  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>176</b>	mg/L	2.0	1.8	1	12/01/22 19:09	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:29	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:22	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 14:42	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0	U mg/L	1.0	0.5	1	12/07/22 21:34	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>1.5</b>	J mg/L	2.0	0.5	10	11/23/22 14:42	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>143</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.3</b>	J mg/L	1.0	0.2	10	11/23/22 14:42	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:16	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 17:21	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>212</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>23.3</b>	mg/L	2.0	0.4	10	11/23/22 14:42	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWO-1122  
**Lab Code:** R2211304-007

**Service Request:** R2211304  
**Date Collected:** 11/22/22 13:35  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>194</b>	mg/L	2.0	1.8	1	12/01/22 19:16	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 14:30	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:47	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 14:48	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 21:44	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>1.9 J</b>	mg/L	2.0	0.5	10	11/23/22 14:48	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>157</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/23/22 14:48	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:17	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:25	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>222</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>19.9</b>	mg/L	2.0	0.4	10	11/23/22 14:48	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWCR-1122  
**Lab Code:** R2211304-008

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:25  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>347</b>	mg/L	2.0	1.8	1	12/01/22 19:23	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:35	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:37	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 15:05	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.9</b>	J mg/L	1.0	0.5	1	12/07/22 22:32	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>13.7</b>	mg/L	2.0	0.5	10	11/23/22 15:05	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>332</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.3</b>	J mg/L	1.0	0.2	10	11/23/22 15:05	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:18	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 17:29	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>392</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>28.9</b>	mg/L	2.0	0.4	10	11/23/22 15:05	NA	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** DUP2-1122  
**Lab Code:** R2211304-009

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:35  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>346</b>	mg/L	2.0	1.8	1	12/01/22 19:44	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:38	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 12:06	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 15:11	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.9</b>	J mg/L	1.0	0.5	1	12/07/22 22:41	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>13.8</b>	mg/L	2.0	0.5	10	11/23/22 15:11	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>333</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.3</b>	J mg/L	1.0	0.2	10	11/23/22 15:11	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:19	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 17:33	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>396</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>28.9</b>	mg/L	2.0	0.4	10	11/23/22 15:11	NA	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWSBR-1122  
**Lab Code:** R2211304-010

**Service Request:** R2211304  
**Date Collected:** 11/22/22 10:00  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>168</b>	mg/L	2.0	1.8	1	12/01/22 19:50	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.035 J</b>	mg/L	0.050	0.026	1	12/12/22 14:39	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:27	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 15:17	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 22:51	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>0.8 J</b>	mg/L	2.0	0.5	10	11/23/22 15:17	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>166</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/23/22 15:17	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:20	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:37	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>228</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>37.3</b>	mg/L	2.0	0.4	10	11/23/22 15:17	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWTBR-1122  
**Lab Code:** R2211304-011

**Service Request:** R2211304  
**Date Collected:** 11/22/22 11:55  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>166</b>	mg/L	2.0	1.8	1	12/01/22 19:56	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 14:40	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/23/22 11:38	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/23/22 15:22	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0	U mg/L	1.0	0.5	1	12/07/22 23:00	NA	
Chemical Oxygen Demand, Total	410.4	5.0	U mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>1.3</b>	J mg/L	2.0	0.5	10	11/23/22 15:22	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>155</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0	U mg/L	1.0	0.2	10	11/23/22 15:22	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20	U mg/L	0.20	0.15	1	12/07/22 12:21	12/06/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/05/22 17:41	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>208</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>25.2</b>	mg/L	2.0	0.4	10	11/23/22 15:22	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** DUP1-1122  
**Lab Code:** R2211304-012

**Service Request:** R2211304  
**Date Collected:** 11/22/22 12:10  
**Date Received:** 11/23/22 10:10  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>164</b>	mg/L	2.0	1.8	1	12/01/22 20:09	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.029 J</b>	mg/L	0.050	0.026	1	12/12/22 14:41	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:29	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 15:28	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 23:12	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	<b>1.3 J</b>	mg/L	2.0	0.5	10	11/23/22 15:28	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>155</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/23/22 15:28	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:22	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:45	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>207</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>25.0</b>	mg/L	2.0	0.4	10	11/23/22 15:28	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWUBR-1122  
**Lab Code:** R2211304-013

**Service Request:** R2211304  
**Date Collected:** 11/22/22 14:05  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>149</b>	mg/L	2.0	1.8	1	12/01/22 20:15	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.030 J</b>	mg/L	0.050	0.026	1	12/12/22 14:42	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:51	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 15:34	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.4</b>	mg/L	1.0	0.5	1	12/07/22 23:41	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>1.2 J</b>	mg/L	2.0	0.5	10	11/23/22 15:34	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>137</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/23/22 15:34	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:22	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:49	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>178</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>16.0</b>	mg/L	2.0	0.4	10	11/23/22 15:34	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWV-1122  
**Lab Code:** R2211304-014

**Service Request:** R2211304  
**Date Collected:** 11/22/22 15:40  
**Date Received:** 11/23/22 10:10

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>446</b>	mg/L	2.0	1.8	1	12/01/22 20:23	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.028 J</b>	mg/L	0.050	0.026	1	12/12/22 14:43	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 11:28	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/23/22 15:40	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.6 J</b>	mg/L	1.0	0.5	1	12/07/22 23:51	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/06/22 22:00	NA	
Chloride	9056A	<b>1.6 J</b>	mg/L	2.0	0.5	10	11/23/22 15:40	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>382</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/23/22 15:40	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:23	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 17:53	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>677</b>	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	<b>163</b>	mg/L	6.0	1.2	30	12/10/22 15:09	NA	



# QC Summary Forms

**ALS Environmental—Rochester Laboratory**  
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# Metals

**ALS Environmental—Rochester Laboratory**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211304-MB

**Service Request:** R2211304  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/02/22 23:17	12/01/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/02/22 23:17	12/01/22	
Calcium, Total	6010C	1000 U	ug/L	1000	300	1	12/02/22 23:17	12/01/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/02/22 23:17	12/01/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/02/22 23:17	12/01/22	
Magnesium, Total	6010C	1000 U	ug/L	1000	30	1	12/02/22 23:17	12/01/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/02/22 23:17	12/01/22	
Potassium, Total	6010C	2000 U	ug/L	2000	400	1	12/02/22 23:17	12/01/22	
Sodium, Total	6010C	1000 U	ug/L	1000	200	1	12/02/22 23:17	12/01/22	



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 12/2/22

**Duplicate Matrix Spike Summary**  
**Inorganic Parameters**

**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002

**Units:** ug/L  
**Basis:** NA

Analyte Name	Method	Sample Result	Result	Matrix Spike R2211304-002MS		Duplicate Matrix Spike R2211304-002DMS		% Rec	Limits	RPD	RPD Limit
				Spike Amount	% Rec	Result	Spike Amount				
Arsenic, Total	6010C	10 U	41	40	102	40	40	101	75-125	2	20
Cadmium, Total	6010C	5.0 U	47.9	50.0	96	48.0	50.0	96	75-125	<1	20
Calcium, Total	6010C	66400	68300	2000	94 #	68100	2000	87 #	75-125	<1	20
Iron, Total	6010C	100 U	940	1000	94	950	1000	95	75-125	<1	20
Lead, Total	6010C	5.0 U	473	500	95	477	500	95	75-125	<1	20
Magnesium, Total	6010C	28800	30800	2000	100 #	30700	2000	96 #	75-125	<1	20
Manganese, Total	6010C	18	491	500	95	494	500	95	75-125	<1	20
Potassium, Total	6010C	1000 J	19100	20000	90	19200	20000	91	75-125	<1	20
Sodium, Total	6010C	67800	84700	20000	84	84700	20000	84	75-125	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Analyzed:** 12/02/22

**Lab Control Sample Summary**  
**Inorganic Parameters**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
R2211304-LCS

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Arsenic, Total	6010C	38	40	94	80-120
Cadmium, Total	6010C	49.4	50.0	99	80-120
Calcium, Total	6010C	1900	2000	94	80-120
Iron, Total	6010C	930	1000	93	80-120
Lead, Total	6010C	491	500	98	80-120
Magnesium, Total	6010C	1900	2000	94	80-120
Manganese, Total	6010C	476	500	95	80-120
Potassium, Total	6010C	17400	20000	87	80-120
Sodium, Total	6010C	18700	20000	94	80-120



## General Chemistry

**ALS Environmental—Rochester Laboratory**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211304-MB1

**Service Request:** R2211304  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date</u> <u>Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/01/22 16:44	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 13:52	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/23/22 19:06	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	11/23/22 13:50	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 17:05	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/02/22 16:24	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	11/23/22 13:50	NA	
Nitrate as Nitrogen	9056A	0.10 U	mg/L	0.10	0.02	1	11/23/22 13:50	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/07/22 12:05	12/06/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/05/22 15:17	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	11/29/22 11:40	NA	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	11/23/22 13:50	NA	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211304-MB2

**Service Request:** R2211304  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Q</b>
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 14:32	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/07/22 22:15	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/06/22 22:00	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	12/10/22 14:12	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	12/10/22 14:12	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 12/7/22

**Duplicate Matrix Spike Summary**  
**Carbon, Total Organic (TOC)**

**Sample Name:** MWQR-1122  
**Lab Code:** R2211304-001  
**Analysis Method:** SM 5310 B-2014

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2211304-001MS			Duplicate Matrix Spike R2211304-001DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Carbon, Total Organic (TOC)	3.7	28.9	25.0	101	29.2	25.0	102	48-135	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 11/23/22 - 12/12/22

**Duplicate Matrix Spike Summary  
General Chemistry Parameters**

**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002

**Units:** mg/L  
**Basis:** NA

**Matrix Spike**  
R2211304-002MS

**Duplicate Matrix Spike**  
R2211304-002DMS

Analyte Name	Method	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Ammonia as Nitrogen, undistilled	350.1	0.050 U	0.252	0.250	101	0.252	0.250	101	90-110	<1	20
Bromide	9056A	1.0 U	9.5	10.0	95	9.6	10.0	96	80-120	<1	15
Chloride	9056A	144	215	80.0	89	218	80.0	92	80-120	1	15
Chemical Oxygen Demand, Total	410.4	5.0 U	25.3	25.0	101	23.4	25.0	94	90-110	8	20
Phenolics, Total Recoverable	9066	0.0050 U	0.0392	0.0400	98	0.0394	0.0400	98	49-137	<1	20
Sulfate	9056A	101	173	80.0	90	175	80.0	93	80-120	1	15
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	2.66	2.50	106	2.71	2.50	109	90-110	2	20
Carbon, Total Organic (TOC)	SM 5310 B-2014	0.9 J	26.3	25.0	102	26.2	25.0	101	48-135	<1	20
Nitrate as Nitrogen	9056A	0.7 J	9.9	10.0	92	10.0	10.0	93	80-120	<1	15

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 12/12/22

**Duplicate Matrix Spike Summary**  
**Ammonia as Nitrogen, undistilled**

**Sample Name:** MWCR-1122  
**Lab Code:** R2211304-008  
**Analysis Method:** 350.1

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2211304-008MS			Duplicate Matrix Spike R2211304-008DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Ammonia as Nitrogen, undistilled	0.050 U	0.191	0.250	76 *	0.191	0.250	77 *	90-110	<1	20

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:**R2211304  
**Date Collected:**11/22/22  
**Date Received:**11/23/22  
**Date Analyzed:**11/23/22

**Duplicate Matrix Spike Summary**  
**General Chemistry Parameters**

**Sample Name:** MWV-1122 **Units:**mg/L  
**Lab Code:** R2211304-014 **Basis:**NA

Analyte Name	Method	Sample Result	Result	Matrix Spike R2211304-014MS		Duplicate Matrix Spike R2211304-014DMS		% Rec	% Rec Limits	RPD	RPD Limit
				Spike Amount	% Rec	Result	Spike Amount				
Bromide	9056A	1.0 U	9.7	10.0	97	9.8	10.0	98	80-120	1	15
Chloride	9056A	1.6 J	20.4	20.0	94	20.8	20.0	96	80-120	2	15
Nitrate as Nitrogen	9056A	1.0 U	9.6	10.0	96	9.7	10.0	97	80-120	1	15

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Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 11/23/22 - 12/01/22

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** MWH-1122  
**Lab Code:** R2211304-002

**Units:** mg/L  
**Basis:** NA

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>MRL</b>	<b>MDL</b>	<b>Sample Result</b>	<b>Duplicate Sample R2211304-002DUP Result</b>	<b>Average</b>	<b>RPD</b>	<b>RPD Limit</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0	1.8	125	125	125	<1	20
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0		2.0 U	2.0 U	NC	NC	20
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10	9	561	555	558	1	10

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Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Collected:** 11/22/22  
**Date Received:** 11/23/22  
**Date Analyzed:** 12/01/22

**Replicate Sample Summary**  
**General Chemistry Parameters**

**Sample Name:** MWTBR-1122  
**Lab Code:** R2211304-011

**Units:** mg/L  
**Basis:** NA

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>MRL</u>	<u>MDL</u>	<u>Sample Result</u>	<u>Duplicate Sample R2211304-011DUP Result</u>	<u>Average</u>	<u>RPD</u>	<u>RPD Limit</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0	1.8	166	167	166	<1	20

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Analyzed:** 11/23/22 - 12/12/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211304-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	21.8	20.0	109	80-120
Ammonia as Nitrogen, undistilled	350.1	0.246	0.250	98	90-110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	201	198	101	85-115
Bromide	9056A	0.986	1.00	99	80-120
Carbon, Total Organic (TOC)	SM 5310 B-2014	25.4	25.0	102	80-121
Chemical Oxygen Demand, Total	410.4	50.9	50.0	102	90-110
Chloride	9056A	1.95	2.00	97	80-120
Nitrate as Nitrogen	9056A	0.972	1.00	97	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.65	2.50	106	90-110
Phenolics, Total Recoverable	9066	0.0397	0.0400	99	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	892	914	98	90-110
Sulfate	9056A	1.96	2.00	98	80-120

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211304  
**Date Analyzed:** 12/06/22 - 12/12/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211304-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Ammonia as Nitrogen, undistilled	350.1	0.239	0.250	96	90-110
Carbon, Total Organic (TOC)	SM 5310 B-2014	25.2	25.0	101	80-121
Chemical Oxygen Demand, Total	410.4	50.4	50.0	101	90-110
Chloride	9056A	1.84	2.00	92	80-120
Sulfate	9056A	1.85	2.00	92	80-120



December 14, 2022

Service Request No:R2211404

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D - 363 Routine Parameters**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2022  
For your reference, these analyses have been assigned our service request number **R2211404**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

**ADDRESS**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

**PHONE** +1 585 288 5380 | **FAX** +1 585 288 8475

ALS Group USA, Corp.  
dba ALS Environmental



# Narrative Documents

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[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Received:** 11/29/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

**Sample Receipt:**

Four water samples were received for analysis at ALS Environmental on 11/29/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

No significant anomalies were noted with this analysis.

A handwritten signature in black ink, appearing to read "Samantha", is written over a horizontal line.

Approved by \_\_\_\_\_

Date 12/13/2022





### SAMPLE DETECTION SUMMARY

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

<b>CLIENT ID: MWJ-1122</b>	<b>Lab ID: R2211404-002</b>
----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	364		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Cadmium, Total	0.4	J	0.4	5.0	ug/L	6010C
Calcium, Total	108000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	0.9	J	0.5	1.0	mg/L	SM 5310 B-2014
Chloride	122		0.9	4.0	mg/L	9056A
Hardness, Total as CaCO3	405			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	1830		70	100	ug/L	6010C
Magnesium, Total	32600		30	1000	ug/L	6010C
Manganese, Total	509		4	10	ug/L	6010C
Nitrogen, Total Kjeldahl (TKN)	0.15	J	0.15	0.20	mg/L	351.2
Potassium, Total	4600		400	2000	ug/L	6010C
Sodium, Total	91600		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	640		9	10	mg/L	SM 2540 C-2015
Sulfate	58.1		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWP-1122</b>	<b>Lab ID: R2211404-003</b>
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Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	234		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Ammonia as Nitrogen, undistilled	0.039	J	0.026	0.050	mg/L	350.1
Calcium, Total	65700		300	1000	ug/L	6010C
Chloride	6.6		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	241			6.62	mg/L	SM 2340 B-1997 (2011)
Iron, Total	660		70	100	ug/L	6010C
Magnesium, Total	18800		30	1000	ug/L	6010C
Manganese, Total	1180		4	10	ug/L	6010C
Potassium, Total	2200		400	2000	ug/L	6010C
Sodium, Total	23600		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	309		9	10	mg/L	SM 2540 C-2015
Sulfate	48.4		0.4	2.0	mg/L	9056A

<b>CLIENT ID: MWE-1122</b>	<b>Lab ID: R2211404-004</b>
----------------------------	-----------------------------

Analyte	Results	Flag	MDL	MRL	Units	Method
Alkalinity, Total as CaCO3	382		1.8	2.0	mg/L	SM 2320 B-1997 (2011)
Calcium, Total	121000		300	1000	ug/L	6010C
Carbon, Total Organic (TOC)	2.2		0.5	1.0	mg/L	SM 5310 B-2014
Chemical Oxygen Demand, Total	4.2	J	3.8	5.0	mg/L	410.4
Chloride	7.3		0.5	2.0	mg/L	9056A
Hardness, Total as CaCO3	437			6.62	mg/L	SM 2340 B-1997 (2011)



**SAMPLE DETECTION SUMMARY**

This form includes only detections above the reporting levels. For a full listing of sample results, continue to the Sample Results section of this Report.

**CLIENT ID: MWE-1122** **Lab ID: R2211404-004**

Analyte	Results	Flag	MDL	MRL	Units	Method
Iron, Total	1990		70	100	ug/L	6010C
Magnesium, Total	32400		30	1000	ug/L	6010C
Manganese, Total	561		4	10	ug/L	6010C
Nitrate as Nitrogen	0.4	J	0.2	1.0	mg/L	9056A
Nitrogen, Total Kjeldahl (TKN)	0.27		0.15	0.20	mg/L	351.2
Potassium, Total	2000		400	2000	ug/L	6010C
Sodium, Total	15300		200	1000	ug/L	6010C
Solids, Total Dissolved (TDS)	474		9	10	mg/L	SM 2540 C-2015
Sulfate	65.8		0.4	2.0	mg/L	9056A



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters

**Service Request:**R2211404

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2211404-001	FB1-1122	11/29/2022	0545
R2211404-002	MWJ-1122	11/29/2022	0950
R2211404-003	MWP-1122	11/29/2022	1140
R2211404-004	MWE-1122	11/29/2022	1325



ALS-Environmental  
 1565 Jefferson Rd, Bldg 300, Suite 360  
 Rochester, NY 14623  
 585.288.5380

Client: **Casella/On-Site**  
 4376 Manning Ridge Road  
 Campbell, NY 14870

Project Manager: **Zachary Hall/Jon Brandes**

### CHAIN of CUSTODY

Project: **Hakes C&D - 363 Routine Parameters**

Telephone No. 585-593-1824 | Email: jonb@on-sitehs.com

Page 1 of 1

Method of Shipment  
*On-site*

Special Detection Limit/Reporting  
  
 PDF to Zach and On-Site, and EDD to On-Site.  
 PO: C6702

Sample I.D.	Lab Sample No.	No. of Containers	Matrix				Prsv.		Sampling Date	Sampling Time	BOD (NP)	Phenols & TOC (H2SO4)	Alkalinity (NP)	NH3, TKN, COD (H2SO4)	T-Metals, Hard. (Routine + As) (HNO3)	TDS, NO3, Br, Cl, SO4 (NP)																											
			Soil	Water	Air	Other	Yes	No																																			
<i>FBI-1122</i>		<i>6</i>	<i>X</i>				<i>X</i>	<i>X</i>	<i>11-29-22 0545</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>																												
<i>MWJ-1122</i>		<i>6</i>	<i>X</i>				<i>X</i>	<i>X</i>	<i>11-29-22 0950</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>																												
<i>MWP-1122</i>		<i>6</i>	<i>X</i>				<i>X</i>	<i>X</i>	<i>11-29-22 1140</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>																												
<i>MWF-1122</i>		<i>6</i>	<i>X</i>				<i>X</i>	<i>X</i>	<i>11-29-22 1325</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>																												


REMARKS

Sample Received Intact: Yes  No  | Temperature received: Ice  No ice

Relinquished by: <i>SARAH JON WATSON</i>	Date: <i>11-29-22</i> Time: <i>1635</i>	Received by: <i>Jon Hall</i>	Date: <i>11/29/22</i> Time: <i>1635</i>
Relinquished by:	Date: Time:	Received by:	Date: Time:
Relinquished by:	Date: Time:	Received by:	Date: Time:
Relinquished by:	Date: Time:	Received by laboratory:	Date: Time:

Lab Work No.

**R2211404 5**  
 Casella Waste Systems  
 Hakes C&D - 363 Routine Parameters





# Cooler Receipt and Preservation Check Form

R2211404

5

Caseella Waste Systems  
Makes C&D - 363 Routine Parameters



Project/Client Caseella Folder Number \_\_\_\_\_

Cooler received on 11/29/22 by: AK

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N
2	Custody papers properly completed (ink, signed)?	<input checked="" type="checkbox"/> N
3	Did all bottles arrive in good condition (unbroken)?	<input checked="" type="checkbox"/> N
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	<input checked="" type="checkbox"/> N

5a	Perchlorate samples have required headspace?	Y N <u>NA</u>
5b	Did VOA vials <u>AK</u> or Sulfide have sig* bubbles?	<input checked="" type="checkbox"/> N NA
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as:	Bulk Encore 5035set <u>NA</u>

8. Temperature Readings Date: 11/29 Time: 1700 ID: IR#7 IR#10 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>4.4</u>	<u>5.3</u>	<u>3.1</u>	<u>6.4</u>			
Within 0-6°C?	<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N	Y <input checked="" type="checkbox"/>	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: Room by AK on 11/29 at 1710  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 11/30/22 Time: 1341 by: AK

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized YES Tedlar® Bags Inflated NA

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
≤2	<u>207622</u>	HNO <sub>3</sub>	<input checked="" type="checkbox"/>		<u>220212547</u>					
≤2	<u>↓</u>	H <sub>2</sub> SO <sub>4</sub>	<input checked="" type="checkbox"/>		<u>L170-10, 22200057</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522	<input checked="" type="checkbox"/>		If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: AK 090922-1EKP, 22-09-19 090922-2ADD 2005-07  
Explain all Discrepancies/ Other Comments:

SB - AK For LES

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: AK  
PC Secondary Review: AK 12/14/22

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



## Miscellaneous Forms

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## REPORT QUALIFIERS AND DEFINITIONS

<p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p>	<p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>



# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211404

**Sample Name:** FB1-1122  
**Lab Code:** R2211404-001  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWJ-1122  
**Lab Code:** R2211404-002  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters/

**Service Request:** R2211404

**Sample Name:** MWP-1122  
**Lab Code:** R2211404-003  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG

**Sample Name:** MWE-1122  
**Lab Code:** R2211404-004  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
9056A		KAWONG
9066		BBOWE
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KWONG



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

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# Metals

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ALS Group USA, Corp.  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** FB1-1122  
**Lab Code:** R2211404-001

**Service Request:** R2211404  
**Date Collected:** 11/29/22 05:45  
**Date Received:** 11/29/22 16:35  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/07/22 18:59	12/06/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/07/22 18:59	12/06/22	
Calcium, Total	6010C	1000 U	ug/L	1000	300	1	12/07/22 18:59	12/06/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/07/22 18:59	12/06/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/07/22 18:59	12/06/22	
Magnesium, Total	6010C	1000 U	ug/L	1000	30	1	12/07/22 18:59	12/06/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/07/22 18:59	12/06/22	
Potassium, Total	6010C	2000 U	ug/L	2000	400	1	12/07/22 18:59	12/06/22	
Sodium, Total	6010C	1000 U	ug/L	1000	200	1	12/07/22 18:59	12/06/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWJ-1122  
**Lab Code:** R2211404-002

**Service Request:** R2211404  
**Date Collected:** 11/29/22 09:50  
**Date Received:** 11/29/22 16:35  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/07/22 19:02	12/06/22	
Cadmium, Total	6010C	<b>0.4 J</b>	ug/L	5.0	0.4	1	12/07/22 19:02	12/06/22	
Calcium, Total	6010C	<b>108000</b>	ug/L	1000	300	1	12/07/22 19:02	12/06/22	
Iron, Total	6010C	<b>1830</b>	ug/L	100	70	1	12/07/22 19:02	12/06/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/07/22 19:02	12/06/22	
Magnesium, Total	6010C	<b>32600</b>	ug/L	1000	30	1	12/07/22 19:02	12/06/22	
Manganese, Total	6010C	<b>509</b>	ug/L	10	4	1	12/07/22 19:02	12/06/22	
Potassium, Total	6010C	<b>4600</b>	ug/L	2000	400	1	12/07/22 19:02	12/06/22	
Sodium, Total	6010C	<b>91600</b>	ug/L	1000	200	1	12/07/22 19:02	12/06/22	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWP-1122  
**Lab Code:** R2211404-003

**Service Request:** R2211404  
**Date Collected:** 11/29/22 11:40  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/07/22 19:06	12/06/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/07/22 19:06	12/06/22	
Calcium, Total	6010C	<b>65700</b>	ug/L	1000	300	1	12/07/22 19:06	12/06/22	
Iron, Total	6010C	<b>660</b>	ug/L	100	70	1	12/07/22 19:06	12/06/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/07/22 19:06	12/06/22	
Magnesium, Total	6010C	<b>18800</b>	ug/L	1000	30	1	12/07/22 19:06	12/06/22	
Manganese, Total	6010C	<b>1180</b>	ug/L	10	4	1	12/07/22 19:06	12/06/22	
Potassium, Total	6010C	<b>2200</b>	ug/L	2000	400	1	12/07/22 19:06	12/06/22	
Sodium, Total	6010C	<b>23600</b>	ug/L	1000	200	1	12/07/22 19:06	12/06/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWE-1122  
**Lab Code:** R2211404-004

**Service Request:** R2211404  
**Date Collected:** 11/29/22 13:25  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/07/22 19:09	12/06/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/07/22 19:09	12/06/22	
Calcium, Total	6010C	<b>121000</b>	ug/L	1000	300	1	12/07/22 19:09	12/06/22	
Iron, Total	6010C	<b>1990</b>	ug/L	100	70	1	12/07/22 19:09	12/06/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/07/22 19:09	12/06/22	
Magnesium, Total	6010C	<b>32400</b>	ug/L	1000	30	1	12/07/22 19:09	12/06/22	
Manganese, Total	6010C	<b>561</b>	ug/L	10	4	1	12/07/22 19:09	12/06/22	
Potassium, Total	6010C	<b>2000</b>	ug/L	2000	400	1	12/07/22 19:09	12/06/22	
Sodium, Total	6010C	<b>15300</b>	ug/L	1000	200	1	12/07/22 19:09	12/06/22	



## General Chemistry

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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** FB1-1122  
**Lab Code:** R2211404-001

**Service Request:** R2211404  
**Date Collected:** 11/29/22 05:45  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/05/22 09:53	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 17:41	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 10:01	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/30/22 13:24	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/08/22 16:37	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	2.0 U	mg/L	2.0	0.5	10	11/30/22 13:24	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	6.62 U	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/30/22 13:24	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 22:02	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:32	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	2.0 U	mg/L	2.0	0.4	10	11/30/22 13:24	NA	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWJ-1122  
**Lab Code:** R2211404-002

**Service Request:** R2211404  
**Date Collected:** 11/29/22 09:50  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>364</b>	mg/L	2.0	1.8	1	12/05/22 15:43	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 17:42	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 10:01	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/30/22 13:30	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>0.9 J</b>	mg/L	1.0	0.5	1	12/08/22 16:47	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>122</b>	mg/L	4.0	0.9	20	12/05/22 07:45	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>405</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/30/22 13:30	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.15 J</b>	mg/L	0.20	0.15	1	12/09/22 22:11	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:36	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>640</b>	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	<b>58.1</b>	mg/L	2.0	0.4	10	11/30/22 13:30	NA	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWP-1122  
**Lab Code:** R2211404-003

**Service Request:** R2211404  
**Date Collected:** 11/29/22 11:40  
**Date Received:** 11/29/22 16:35  
**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>234</b>	mg/L	2.0	1.8	1	12/05/22 09:40	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>0.039 J</b>	mg/L	0.050	0.026	1	12/12/22 17:43	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 10:04	NA	
Bromide	9056A	1.0 U	mg/L	1.0	0.4	10	11/30/22 13:47	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/08/22 16:57	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>6.6</b>	mg/L	2.0	0.5	10	11/30/22 13:47	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>241</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	11/30/22 13:47	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 22:12	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:40	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>309</b>	mg/L	10	9	1	12/01/22 12:50	NA	
Sulfate	9056A	<b>48.4</b>	mg/L	2.0	0.4	10	11/30/22 13:47	NA	

**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** MWE-1122  
**Lab Code:** R2211404-004

**Service Request:** R2211404  
**Date Collected:** 11/29/22 13:25  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>382</b>	mg/L	2.0	1.8	1	12/05/22 15:51	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050	U mg/L	0.050	0.026	1	12/12/22 17:44	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0	U mg/L	2.0	-	1	11/30/22 10:05	NA	
Bromide	9056A	1.0	U mg/L	1.0	0.4	10	11/30/22 13:53	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>2.2</b>	mg/L	1.0	0.5	1	12/08/22 17:07	NA	
Chemical Oxygen Demand, Total	410.4	<b>4.2</b>	J mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	<b>7.3</b>	mg/L	2.0	0.5	10	11/30/22 13:53	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>437</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	<b>0.4</b>	J mg/L	1.0	0.2	10	11/30/22 13:53	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>0.27</b>	mg/L	0.20	0.15	1	12/09/22 22:12	12/08/22	
Phenolics, Total Recoverable	9066	0.0050	U mg/L	0.0050	0.0029	1	12/06/22 00:53	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>474</b>	mg/L	10	9	1	12/01/22 12:50	NA	
Sulfate	9056A	<b>65.8</b>	mg/L	2.0	0.4	10	11/30/22 13:53	NA	



# QC Summary Forms

**ALS Environmental—Rochester Laboratory**  
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# Metals

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211404-MB

**Service Request:** R2211404  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Arsenic, Total	6010C	10 U	ug/L	10	6	1	12/07/22 18:13	12/06/22	
Cadmium, Total	6010C	5.0 U	ug/L	5.0	0.4	1	12/07/22 18:13	12/06/22	
Calcium, Total	6010C	1000 U	ug/L	1000	300	1	12/07/22 18:13	12/06/22	
Iron, Total	6010C	100 U	ug/L	100	70	1	12/07/22 18:13	12/06/22	
Lead, Total	6010C	5.0 U	ug/L	5.0	2.1	1	12/07/22 18:13	12/06/22	
Magnesium, Total	6010C	1000 U	ug/L	1000	30	1	12/07/22 18:13	12/06/22	
Manganese, Total	6010C	10 U	ug/L	10	4	1	12/07/22 18:13	12/06/22	
Potassium, Total	6010C	2000 U	ug/L	2000	400	1	12/07/22 18:13	12/06/22	
Sodium, Total	6010C	1000 U	ug/L	1000	200	1	12/07/22 18:13	12/06/22	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Analyzed:** 12/07/22

**Lab Control Sample Summary**  
**Inorganic Parameters**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
R2211404-LCS

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Arsenic, Total	6010C	42.8	40	107	80-120
Cadmium, Total	6010C	51.5	50.0	103	80-120
Calcium, Total	6010C	2000	2000	100	80-120
Iron, Total	6010C	997	1000	100	80-120
Lead, Total	6010C	514	500	103	80-120
Magnesium, Total	6010C	1980	2000	99	80-120
Manganese, Total	6010C	505	500	101	80-120
Potassium, Total	6010C	18400	20000	92	80-120
Sodium, Total	6010C	19800	20000	99	80-120



## General Chemistry

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**ALS Group USA, Corp.**  
dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211404-MB1

**Service Request:** R2211404  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/05/22 07:26	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/12/22 17:24	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 13:49	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	11/30/22 11:53	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/08/22 13:40	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/08/22 21:00	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	11/30/22 11:53	NA	
Nitrate as Nitrogen	9056A	0.10 U	mg/L	0.10	0.02	1	11/30/22 11:53	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 21:40	12/08/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/06/22 00:04	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	12/01/22 10:45	NA	
Sulfate	9056A	0.20 U	mg/L	0.20	0.04	1	11/30/22 11:53	NA	

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dba ALS Environmental

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211404-MB2

**Service Request:** R2211404  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

Inorganic Parameters

<b>Analyte Name</b>	<b>Analysis Method</b>	<b>Result</b>	<b>Units</b>	<b>MRL</b>	<b>MDL</b>	<b>Dil.</b>	<b>Date Analyzed</b>	<b>Date Extracted</b>	<b>Q</b>
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	12/05/22 04:23	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/09/22 22:06	12/08/22	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	12/01/22 12:50	NA	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:**R2211404  
**Date Collected:**11/29/22  
**Date Received:**11/29/22  
**Date Analyzed:**11/30/22

**Duplicate Matrix Spike Summary  
General Chemistry Parameters**

**Sample Name:** MWJ-1122 **Units:**mg/L  
**Lab Code:** R2211404-002 **Basis:**NA

Analyte Name	Method	Sample Result	Result	Matrix Spike R2211404-002MS			Duplicate Matrix Spike R2211404-002DMS			RPD	RPD Limit
				Spike Amount	% Rec	Result	Spike Amount	% Rec	Limits		
Bromide	9056A	1.0 U	9.5	10.0	95	9.5	10.0	95	80-120	<1	15
Sulfate	9056A	58.1	74.3	20.0	81	74.3	20.0	81	80-120	<1	15
Nitrate as Nitrogen	9056A	1.0 U	9.2	10.0	92	9.2	10.0	92	80-120	<1	15

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Collected:** 11/29/22  
**Date Received:** 11/29/22  
**Date Analyzed:** 12/6/22

**Duplicate Matrix Spike Summary**  
**Phenolics, Total Recoverable**

**Sample Name:** MWP-1122  
**Lab Code:** R2211404-003  
**Analysis Method:** 9066

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2211404-003MS			Duplicate Matrix Spike R2211404-003DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Phenolics, Total Recoverable	0.0050 U	0.0366	0.0400	91	0.0364	0.0400	91	49-137	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Collected:** 11/29/22  
**Date Received:** 11/29/22  
**Date Analyzed:** 12/9/22  
**Date Extracted:** 12/8/22

**Duplicate Matrix Spike Summary**  
**Nitrogen, Total Kjeldahl (TKN)**

**Sample Name:** MWE-1122  
**Lab Code:** R2211404-004  
**Analysis Method:** 351.2  
**Prep Method:** Method

**Units:** mg/L  
**Basis:** NA

Analyte Name	Sample Result	Matrix Spike R2211404-004MS			Duplicate Matrix Spike R2211404-004DMS			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Nitrogen, Total Kjeldahl (TKN)	0.27	2.74	2.50	99	2.74	2.50	99	90-110	<1	20

Results flagged with an asterisk (\*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

Matrix Spike and Matrix Spike Duplicate Data is presented for information purposes only. The matrix may or may not be relevant to samples reported in this report. The laboratory evaluates system performance based on the LCS and LCSD control limits.

**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Analyzed:** 11/30/22 - 12/12/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211404-LCS1

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	21.4	20.0	107	80-120
Ammonia as Nitrogen, undistilled	350.1	0.248	0.250	99	90-110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	192	198	97	85-115
Bromide	9056A	0.94	1.00	94	80-120
Carbon, Total Organic (TOC)	SM 5310 B-2014	25.5	25.0	102	80-121
Chemical Oxygen Demand, Total	410.4	54.0	50.0	108	90-110
Chloride	9056A	1.86	2.00	93	80-120
Nitrate as Nitrogen	9056A	0.93	1.00	93	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.51	2.50	100	90-110
Phenolics, Total Recoverable	9066	0.0385	0.0400	96	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	922	914	101	90-110
Sulfate	9056A	1.86	2.00	93	80-120

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - 363 Routine Parameters  
**Sample Matrix:** Water

**Service Request:** R2211404  
**Date Analyzed:** 12/01/22 - 12/09/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211404-LCS2

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Chloride	9056A	1.84	2.00	92	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.41	2.50	96	90-110
Solids, Total Dissolved (TDS)	SM 2540 C-2015	878	914	96	90-110



January 23, 2023

Service Request No:R2210728

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D Landfill - Tank SED RAD**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 07, 2022  
For your reference, these analyses have been assigned our service request number **R2210728**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

**ADDRESS** 1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
**PHONE** +1 585 288 5380 | **FAX** +1 585 288 8475  
ALS Group USA, Corp.  
dba ALS Environmental



# Narrative Documents

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**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D Landfill - Tank SED RAD  
**Sample Matrix:** Soil

**Service Request:** R2210728  
**Date Received:** 11/07/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

**Sample Receipt:**

One soil sample was received for analysis at ALS Environmental on 11/07/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

**Subcontracted Analytical Parameters:**

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

A handwritten signature in black ink, appearing to read 'Samanta', is written over a horizontal line.

Approved by \_\_\_\_\_

Date 12/07/2022



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
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# Cooler Receipt and Preservation

R2210728

5

Casefile Waste Systems  
Makes C&D Landfill - Tank SED RAD



Project/Client Casefile

Folder Number \_\_\_\_\_

Cooler received on 11/07/22

by: AL

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	<u>Y</u>	N
2	Custody papers properly completed (ink, signed)?	<u>Y</u>	N
3	Did all bottles arrive in good condition (unbroken)?	<u>Y</u>	N
4	Circle: Wet Ice Dry Ice Gel packs present?	<u>Y</u>	<u>N</u>

5a	Perchlorate samples have required headspace?	Y	N	<u>NA</u>
5b	Did VOA vials, Alk, or Sulfide have sig* bubbles?	Y	N	<u>NA</u>
6	Where did the bottles originate?	<u>ALS/ROC</u>	CLIENT	
7	Soil VOA received as: Bulk Encore 5035set	<u>NA</u>		

8. Temperature Readings Date: 11/07/22 Time: 1336 ID: IR#7 IR#11 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>16.8</u>							
Within 0-6°C?	<u>Y</u>	N	Y	N	Y	N	Y	N
If <0°C, were samples frozen?	<u>Y</u>	N	Y	N	Y	N	Y	N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: R-002 by AL on 11/07/22 at 1337  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 11/07/22 Time: 1422 by: AL

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
>12		NaOH								
<u>2</u>		HNO <sub>3</sub>								
<u>2</u>		H <sub>2</sub> SO <sub>4</sub>								
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 053022-1TW  
Explain all Discrepancies/ Other Comments: \_\_\_\_\_

HPROD	BULK
HTR	FLDT
SUB	HGFB
<u>ALS</u>	LL3541

Labels secondary reviewed by: AL  
PC Secondary Review: AMS 11/29/22

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

## REPORT QUALIFIERS AND DEFINITIONS

<p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p>	<p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.



## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Subcontracted Analytical Parameters

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

# Eberline Analytical

## Final Report of Analysis

Report To:

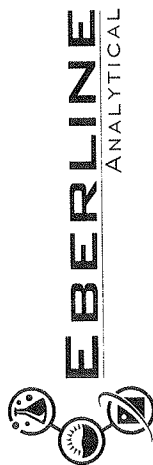
Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd Bldg 300 suite 360  
Rochester, NY 14623

Work Order Details:

SDG: **22-11049 REVISED**  
Purchase Order: 58R2210728  
Analysis Category: ENVIRONMENTAL  
Sample Matrix: SO

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-11049-01	LCS	KNOWN	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Cobalt-60	EPA 901.1 Modified	2.66E+02	1.04E+01			pCi/g
22-11049-01	LCS	KNOWN	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Cesium-137	EPA 901.1 Modified	1.62E+02	6.66E+00			pCi/g
22-11049-01	LCS	SPIKE	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Cobalt-60	EPA 901.1 Modified	2.79E+02	1.59E+01	2.14E+01	2.18E+00	pCi/g
22-11049-01	LCS	SPIKE	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Cesium-137	EPA 901.1 Modified	1.70E+02	1.52E+01	1.75E+01	1.88E+00	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Radium-228	EPA 901.1 Modified	3.02E-02	9.14E-02	9.14E-02	1.63E-01	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	12/5/2022	22-11049	Radium-226	EPA 901.1 Modified	4.86E-03	8.14E-02	8.14E-02	1.17E-01	pCi/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	12/6/2022	22-11049	Radium-228	EPA 901.1 Modified	2.87E+00	4.28E-01	4.53E-01	9.84E-01	pCi/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	12/6/2022	22-11049	Radium-226	EPA 901.1 Modified	2.43E+00	3.57E-01	3.78E-01	4.92E-01	pCi/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	12/6/2022	22-11049	Radium-228	EPA 901.1 Modified	3.08E+00	4.65E-01	4.92E-01	6.41E-01	pCi/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	12/6/2022	22-11049	Radium-226	EPA 901.1 Modified	2.35E+00	3.74E-01	3.92E-01	4.92E-01	pCi/g
22-11049-01	LCS	KNOWN	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-234	EPA 908.0 Modified	7.96E+00	2.87E-01			pCi/g
22-11049-01	LCS	SPIKE	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-234	EPA 908.0 Modified	7.04E+00	8.35E-01	9.73E-01	7.71E-02	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-234	EPA 908.0 Modified	1.43E-01	9.17E-02	9.22E-02	7.84E-02	pCi/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-234	EPA 908.0 Modified	2.27E-01	1.45E-01	1.46E-01	1.54E-01	pCi/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-234	EPA 908.0 Modified	1.38E-01	8.69E-02	8.74E-02	6.92E-02	pCi/g
22-11049-01	LCS	SPIKE	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-235	EPA 908.0 Modified	4.43E-01	1.67E-01	1.70E-01	8.52E-02	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-235	EPA 908.0 Modified	1.71E-02	4.75E-02	4.75E-02	1.03E-01	pCi/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-235	EPA 908.0 Modified	7.49E-02	9.52E-02	9.54E-02	1.42E-01	pCi/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-235	EPA 908.0 Modified	-8.30E-03	3.32E-02	3.32E-02	8.53E-02	pCi/g
22-11049-01	LCS	KNOWN	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-238	EPA 908.0 Modified	7.71E+00	2.78E-01			pCi/g
22-11049-01	LCS	SPIKE	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-238	EPA 908.0 Modified	6.85E+00	8.15E-01	9.50E-01	6.41E-02	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Uranium-238	EPA 908.0 Modified	6.46E-02	6.14E-02	6.16E-02	6.63E-02	pCi/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-238	EPA 908.0 Modified	1.31E-01	1.01E-01	1.01E-01	8.03E-02	pCi/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Uranium-238	EPA 908.0 Modified	6.75E-02	7.00E-02	7.02E-02	9.96E-02	pCi/g
22-11049-02	MBL	BLANK	11/11/22 00:00	11/11/2022	11/30/2022	22-11049	Total Uranium	EPA 908.0 Modified	2.00E-01	1.84E-01	1.85E-01	2.45E-01	ug/g
22-11049-03	DUP	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Total Uranium	EPA 908.0 Modified	4.26E-01	3.03E-01	3.05E-01	3.05E-01	ug/g
22-11049-04	DO	LCSSD-1122	11/04/22 11:00	11/11/2022	11/30/2022	22-11049	Total Uranium	EPA 908.0 Modified	1.97E-01	2.09E-01	2.09E-01	3.36E-01	ug/g

CU=Counting Uncertainty;CSU=Combined Standard Uncertainty (1-sigma);MDA=Minimal Detected Activity;LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



EBERLINE ANALYTICAL CORPORATION

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621



February 02, 2023

Service Request No:R2211405

Zach Hall  
Casella Waste Systems  
1488 County Rd, 60  
Lowman, NY 14861

**Laboratory Results for: Hakes C&D - Part 363 Expanded Leachate**

Dear Zach,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2022  
For your reference, these analyses have been assigned our service request number **R2211405**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at [Janice.Jaeger@alsglobal.com](mailto:Janice.Jaeger@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Janice Jaeger  
Project Manager

CC: Jon Brandes

**ADDRESS**

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

**PHONE** +1 585 288 5380 | **FAX** +1 585 288 8475

ALS Group USA, Corp.  
dba ALS Environmental





# Narrative Documents

**ALS Environmental—Rochester Laboratory**  
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Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)



**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Received:** 11/29/2022 - 11/30/2022

**CASE NARRATIVE**

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level IV requested by the client.

**Sample Receipt:**

Four water samples were received for analysis at ALS Environmental on 11/29/2022 - 11/30/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

One or more samples were subcontracted to another laboratory for testing. The certified analytical report from the subcontractor has been included in its entirety at the end of this report and includes the name and address of the subcontracted laboratory.

**Semivolatiles by GC/MS:**

Method 8270D, 12/08/2022: The upper control criterion was exceeded for one or more analytes in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Method 8270D, 787920: The lower control limit for the spike recovery of the Duplicate Laboratory Control Sample (LCSD) was exceeded for one or more analyte. The Laboratory Control Sample (LCS) passed limits. There were no detections of the analyte (s) in the associated field samples. The analytes affected are flagged in the LCS Summary.

Method 8270D, 787920: The reporting limit is elevated for one or more analytes. The sample extract was diluted prior to instrumental analysis due to relatively high levels of non-target background components. The extract was highly colored and viscous, which indicated the need to perform a dilution prior to injection into the instrument. Clean-up of the extract was performed within the scope of the method, but did not eliminate enough of the background components to prevent dilution. The result(s) are flagged to indicate the matrix interference.

Method 8270D, 787920: The control limits were exceeded for one or more surrogates due to matrix interferences. Sample location(s) have had low surrogate in past extractions. No further corrective action was appropriate.

Method 8270D SIM, 787585: The control limits were exceeded for one or more surrogates due to suspected matrix interferences. Sediment in sample appears to be clogging the filter used during SPE extraction. Re-extraction to confirm is scheduled, and will occur past holding times.

Method 8270D SIM: The extraction of one or more sample(s) was initially performed within holding time, but were re-extracted due to a QC failure. Efforts were made to re-extract the samples as soon as possible. The re-extraction was performed past the recommended holding time. The data are flagged to indicate the holding time exceedance.

**Semivolatile GC:**

Method 8151A, 12/06/2022: The upper control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). The field samples analyzed in this sequence did not contain the analyte(s) in question above the Method Reporting Limit (MRL). Since the exceedance equates to a potential high bias, the data quality was not significantly affected and no further corrective action was taken.

The RPD between the LCS and the LCSD was greater than the RPD limit. The percent recovery limit was met for both the LCS

Approved by \_\_\_\_\_

Date 02/02/2023



and the LCSD.

**Metals:**

No significant anomalies were noted with this analysis.

**General Chemistry:**

Method 7196A, 11/29/2022: The upper control criterion was exceeded for Hexavalent Chromium in the Laboratory Control Sample (LCS). There were no detections of the analyte(s) above the MRL in the associated field samples. The error associated with elevated recovery equates to a high bias. The sample data is not significantly affected. No further corrective action was appropriate.

Method 7196A, R2211405-001: Sample(s) required dilution due to the nature of the matrix. The reporting limits are adjusted to reflect the dilution.

**Subcontracted Analytical Parameters:**

No significant anomalies were noted with this analysis.

**Volatiles by GC/MS:**

Method 8260C, R2211405-001: Sample(s) required dilution due to the foaming nature of the matrix. The reporting limits are adjusted to reflect the dilution.

Method 8260C, 12/01/2022: The lower control limit was exceeded for one or more analytes in the Continuing Calibration Verification (CCV). Since there were no detections of the analyte(s) above the MRL in the associated field samples, the quantitation is not affected. The data quality was not significantly affected and no further corrective action was taken.

A handwritten signature in black ink, appearing to read "Samantha", is written over a horizontal line.

Approved by \_\_\_\_\_

Date 02/02/2023



## Sample Receipt Information

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405

**SAMPLE CROSS-REFERENCE**

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
R2211405-001	LCS-1122	11/29/2022	1420
R2211405-003	Trip Blank	11/29/2022	
R2211405-004	Field Blank	11/29/2022	1420



ALS-Environmental  
1565 Jefferson Rd, Bldg 300, Suite 360  
Rochester, NY 14623  
585.288.5380

Client: **Casella/On-Site**  
4376 Manning Ridge Road  
Campbell, NY 14870  
Project Manager **Zachary Hall/Jon Brandes**

**CHAIN of CUSTODY**

Project: **Hakes C&D - Part 363 Expanded Leachate**  
Telephone No. 585-593-1824  
Email: jonb@on-sitehs.com

Method of Shipment  
*on-site*

Special Detection  
Limit/Reporting

PDF to Zach and On-Site, and EDD to On-Site.  
PO: C6702

Sample I.D.

Lab Sample No.	No. of Containers	Matrix				Prsv.		Sampling Date	Sampling Time	VOC's 8260 (HCL)	TOC, Phenols (H2SO4)	BOD, Alkalinity, Total Color (NP)	8081/8082/8151/8270 (NP)	T-Metals (Exp List), Hard (HNO3)	T-CN (NaOH)	TDS, Cr+6, NO3, Br, Cl, SO4 (NP)	NH3, TKN, COD (H2SO4)	T- Ra-226(903.1), Ra-228(904.0)(HNO3)	Total: Uranium (908.0) (HNO3)	Diss: Ra-226 (903.1), Ra-228 (904.0) (NP)	Dissolved: Uranium (908.0) (NP)	PFAS (EPA 537) (NP)	1,4 Dioxane (EPA 8270 SIM) (NP)
		Soil	Water	Air	Other	Yes	No																
<i>LCS-1122</i>	<i>28</i>	<i>X</i>				<i>X</i>	<i>X</i>	<i>11-29-22</i>	<i>1420</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>	<i>X</i>

Sample Received Intact: Yes No Temperature received: Ice No ice

Relinq. by sampler (Sign & Print Name) *Scott Watts* Date Time *11-29-22 1635* Received by (Sign & Print Name) *Suhda* *ALS 11/29/22 1635*

Relinquished by Date Time Received by

Relinquished by Date Time Received by

Relinquished by Date Time Received by laboratory Date Time

Lab Work No.

**R2211405** **5**  
Casella Waste Systems  
Hakes C&D - Part 363 Expanded Leachate



# Cooler Receipt and Preservation Check Form

R2211405 5

Casella Waste Systems  
Hokes C&D - Part 363 Expanded Leachate



Project/Client Casella Folder Number \_\_\_\_\_

Cooler received on 11/29/22 by: Sub

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	Y <input checked="" type="checkbox"/> N
2	Custody papers properly completed (ink, signed)?	<input checked="" type="checkbox"/> N
3	Did all bottles arrive in good condition (unbroken)?	<input checked="" type="checkbox"/> N
4	Circle: <u>Wet Ice</u> Dry Ice Gel packs present?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N

5a	Perchlorate samples have required headspace?	Y N <u>NA</u>
5b	Did VOA vials <u>Al</u> or Sulfide have sig* bubbles?	<input checked="" type="checkbox"/> N NA
6	Where did the bottles originate?	<u>ALS/ROC</u> CLIENT
7	Soil VOA received as:	Bulk Encore 5035set <u>NA</u>

8. Temperature Readings Date: 11/29 Time: 1700 ID: IR#7 IR#11 From: Temp Blank Sample Bottle

Observed Temp (°C)	<u>4.4</u>	<u>5.3</u>	<u>3.1</u>	<u>6.4</u>			
Within 0-6°C?	<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N	<input checked="" type="checkbox"/> N	Y <input checked="" type="checkbox"/> N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: \_\_\_\_\_ Ice melted Poorly Packed (described below) Same Day Rule  
& Client Approval to Run Samples: \_\_\_\_\_ Standing Approval Client aware at drop-off Client notified by: \_\_\_\_\_

All samples held in storage location: Room by Sub on 11/29 at 1710  
5035 samples placed in storage location: \_\_\_\_\_ by \_\_\_\_\_ on \_\_\_\_\_ at \_\_\_\_\_ within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check\*\*: Date: 11/30/22 Time: 1354 by: AD

- 9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
- 10. Did all bottle labels and tags agree with custody papers? YES NO
- 11. Were correct containers used for the tests indicated? YES NO
- 12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
- 13. Air Samples: Cassettes / Tubes Intact Y/N with MS Y/N Canisters Pressurized Tedlar® Bags Inflated NA

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
>12	<u>206722</u>	NaOH	✓		<u>199040</u>					
<2		HNO <sub>3</sub>	✓	✓	<u>B28053B 22012547</u>					
<2		H <sub>2</sub> SO <sub>4</sub>	✓		<u>112010, 22200059</u>					
<4		NaHSO <sub>4</sub>								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN Phenol 625, 608pest, 522	✓		If +, contact PM to add Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub> (625, 608, CN), ascorbic (phenol).					
		Na <sub>2</sub> S <sub>2</sub> O <sub>3</sub>								
		ZnAcetate	-	-						
		HCl	**	**						

\*\*VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: 100377-2 EGY 09122-3AKH 08222-1EAB, 22-05-27, 22-09-19, 090522-12L  
Explain all Discrepancies/ Other Comments: 2209183

SB - AK for LES

HPROD	BULK
HTR	FLDT
<u>SUB</u>	HGFB
ALS	LL3541

Labels secondary reviewed by: Q  
PC Secondary Review: ams 12/1/22

\*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter

**ALS Group USA, Corp.**  
dba ALS Environmental

**Internal Chain of Custody Report**

**Client:** Casella Waste Systems  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405

<b>Bottle ID</b>	<b>Methods</b>	<b>Date</b>	<b>Time</b>	<b>Sample Location / User</b>	<b>Disposed On</b>
<b>R2211405-001.01</b>	8151A	11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.02</b>	8082A	11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.03</b>		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.04</b>	SM 2120 B-2001(2011)	11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.05</b>	8270D	11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.06</b>	7196A,9056A,9056A,9056A,9056A,SM 2540 C-2015	11/30/2022	1353	SMO / GLAFORCE	
		12/1/2022	1358	R-022 / GLAFORCE	
		12/1/2022	1359	RT000206 / GLAFORCE	
		1/4/2023	1650	R-002 / MMARLEY	
<b>R2211405-001.07</b>		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	SUBBED / GLAFORCE	
<b>R2211405-001.08</b>	SM 5210 B-2016	11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1410	R-002 / GLAFORCE	
		11/30/2022	1412	RT000057 / GLAFORCE	
<b>R2211405-001.09</b>		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	SUBBED / GLAFORCE	
		12/7/2022	1543	OLC 12 / SMO2	
		12/7/2022	1544	K-DELILAH-K03 / SMO2	



**ALS Group USA, Corp.**  
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**Internal Chain of Custody Report**

**Client:** Casella Waste Systems  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405

<b>Bottle ID</b>	<b>Methods</b>	<b>Date</b>	<b>Time</b>	<b>Sample Location / User</b>	<b>Disposed On</b>
<b>R2211405-001.10</b>					
	PFC/537M,PFC/537M				
		11/30/2022	1353	SMO / GLAFORCE	12/13/2022
		11/30/2022	1358	SUBBED / GLAFORCE	12/13/2022
		12/7/2022	1543	OLC 12 / SMO2	12/13/2022
		12/7/2022	1544	K-DELILAH-K03 / SMO2	12/13/2022
		12/12/2022	1016	In Lab / AMOORE	12/13/2022
		12/13/2022	1824	K-Disposed / AMOORE	12/13/2022
<b>R2211405-001.11</b>					
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.12</b>					
	8081B				
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.13</b>					
	7470A				
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	R-002 / GLAFORCE	
<b>R2211405-001.14</b>					
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	SUBBED / GLAFORCE	
<b>R2211405-001.15</b>					
		11/30/2022	1353	SMO / GLAFORCE	
<b>R2211405-001.16</b>					
	8260C				
		11/30/2022	1353	SMO / GLAFORCE	
		12/1/2022	1259	In Lab / KRUEST	
		12/1/2022	1303	R-001-S06 / KRUEST	
<b>R2211405-001.17</b>					
		11/30/2022	1353	SMO / GLAFORCE	
<b>R2211405-001.18</b>					
	8270D SIM,8270D SIM				
		11/30/2022	1353	SMO / GLAFORCE	
<b>R2211405-001.19</b>					



ALS Group USA, Corp.  
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Internal Chain of Custody Report

**Client:** Casella Waste Systems  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405

Bottle ID	Methods	Date	Time	Sample Location / User	Disposed On
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	SUBBED / GLAFORCE	
<b>R2211405-002.03</b>					
		11/30/2022	1353	SMO / GLAFORCE	
		11/30/2022	1358	SUBBED / GLAFORCE	
<b>R2211405-003.01</b>					
		11/30/2022	1354	SMO / GLAFORCE	
<b>R2211405-003.02</b>					
	8260C				
		11/30/2022	1354	SMO / GLAFORCE	
		12/1/2022	1259	In Lab / KRUEST	
		12/1/2022	1303	R-001-S06 / KRUEST	
<b>R2211405-003.03</b>					
		11/30/2022	1354	SMO / GLAFORCE	
<b>R2211405-004.09</b>					
	PFC/537M,PFC/537M				
		11/30/2022	1355	SMO / GLAFORCE	12/13/2022
		11/30/2022	1358	SUBBED / GLAFORCE	12/13/2022
		12/7/2022	1543	OLC 12 / SMO2	12/13/2022
		12/7/2022	1544	K-DELILAH-K03 / SMO2	12/13/2022
		12/12/2022	1017	In Lab / AMOORE	12/13/2022
		12/13/2022	1824	K-Disposed / AMOORE	12/13/2022
<b>R2211405-004.31</b>					
	PFC/537M				
		12/9/2022	0740	SMO / JJAEGER	



## Miscellaneous Forms

**ALS Environmental—Rochester Laboratory**  
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## REPORT QUALIFIERS AND DEFINITIONS

<p><b>U</b> Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.</p> <p><b>J</b> Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration &gt;40% difference between two GC columns (pesticides/Aroclors).</p> <p><b>B</b> Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.</p> <p><b>E</b> Inorganics- Concentration is estimated due to the serial dilution was outside control limits.</p> <p><b>E</b> Organics- Concentration has exceeded the calibration range for that specific analysis.</p> <p><b>D</b> Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.</p> <p><b>*</b> Indicates that a quality control parameter has exceeded laboratory limits. Under the “Notes” column of the Form I, this qualifier denotes analysis was performed out of Holding Time.</p> <p><b>H</b> Analysis was performed out of hold time for tests that have an “immediate” hold time criteria.</p> <p><b>#</b> Spike was diluted out.</p>	<p><b>+</b> Correlation coefficient for MSA is &lt;0.995.</p> <p><b>N</b> Inorganics- Matrix spike recovery was outside laboratory limits.</p> <p><b>N</b> Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.</p> <p><b>S</b> Concentration has been determined using Method of Standard Additions (MSA).</p> <p><b>W</b> Post-Digestion Spike recovery is outside control limits and the sample absorbance is &lt;50% of the spike absorbance.</p> <p><b>P</b> Concentration &gt;40% difference between the two GC columns.</p> <p><b>C</b> Confirmed by GC/MS</p> <p><b>Q</b> DoD reports: indicates a pesticide/Aroclor is not confirmed (<math>\geq 100\%</math> Difference between two GC columns).</p> <p><b>X</b> See Case Narrative for discussion.</p> <p><b>MRL</b> Method Reporting Limit. Also known as:</p> <p><b>LOQ</b> Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.</p> <p><b>MDL</b> Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).</p> <p><b>LOD</b> Limit of Detection. A value at or above the MDL which has been verified to be detectable.</p> <p><b>ND</b> Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.</p>
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### Rochester Lab ID # for State Accreditations<sup>1</sup>



NELAP States
Florida ID # E87674
New Hampshire ID # 2941
New York ID # 10145
Pennsylvania ID# 68-786
Virginia #460167

Non-NELAP States
Connecticut ID #PH0556
Delaware Approved
Maine ID #NY01587
North Carolina #36701
North Carolina #676
Rhode Island LAO00333

<sup>1</sup> Analyses were performed according to our laboratory’s NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

# ALS Laboratory Group

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## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.  
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Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate/

**Service Request:** R2211405

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
350.1		MROGERSON
351.2	CCAMPBELL	MROGERSON
410.4		MROGERSON
6010C	CDISTEFANO	NMANSEN
7196A		MROGERSON
7470A	NMANSEN	NMANSEN
8081B	JVANHEYNINGEN	AFELSER
8082A	JVANHEYNINGEN	AFELSER
8151A	JVANHEYNINGEN	AFELSER
8260C		KRUEST
8270D	JVANHEYNINGEN	AMOSSES
8270D SIM	MMCMAHON	MMCMAHON
9056A		KAWONG
9066		BBOWE
Kelada-01		MROGERSON
PFC/537M	AMOORE	MSESSIONS
SM 2120 B-2001(2011)		SBIRNBERG
SM 2320 B-1997(2011)		KAWONG
SM 2540 C-2015		HCASTROVINCI
SM 5210 B-2016		STALARICO
SM 5310 B-2014		KAWONG

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001.R01  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

Analysis Method	Extracted/Digested By	Analyzed By
8270D SIM	MMCMAHON	MMCMAHON
PFC/537M	AMOORE	MSESSIONS

ALS Group USA, Corp.  
dba ALS Environmental

Analyst Summary report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate/

**Service Request:** R2211405

**Sample Name:** Trip Blank  
**Lab Code:** R2211405-003  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/30/22

**Analysis Method**  
8260C

**Extracted/Digested By**

**Analyzed By**  
KRUEST

**Sample Name:** Field Blank  
**Lab Code:** R2211405-004  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
AMOORE

**Analyzed By**  
MSESSIONS

**Sample Name:** Field Blank  
**Lab Code:** R2211405-004.R01  
**Sample Matrix:** Water

**Date Collected:** 11/29/22  
**Date Received:** 11/29/22

**Analysis Method**  
PFC/537M

**Extracted/Digested By**  
AMOORE

**Analyzed By**  
MSESSIONS





## INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

### Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

### Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



# Sample Results

**ALS Environmental—Rochester Laboratory**  
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## Volatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
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Phone (585) 288-5380 Fax (585) 288-8475  
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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	130 U	130	5.0	25	12/01/22 20:45	
1,1,1-Trichloroethane (TCA)	130 U	130	5.0	25	12/01/22 20:45	
1,1,2,2-Tetrachloroethane	130 U	130	5.0	25	12/01/22 20:45	
1,1,2-Trichloroethane	130 U	130	5.0	25	12/01/22 20:45	
1,1-Dichloroethane (1,1-DCA)	130 U	130	5.0	25	12/01/22 20:45	
1,1-Dichloroethene (1,1-DCE)	130 U	130	5.0	25	12/01/22 20:45	
1,1-Dichloropropene	130 U	130	5.0	25	12/01/22 20:45	
1,2,3-Trichloropropane	130 U	130	6.5	25	12/01/22 20:45	
1,2-Dibromo-3-chloropropane (DBCP)	130 U	130	12	25	12/01/22 20:45	
1,2-Dibromoethane	130 U	130	5.0	25	12/01/22 20:45	
1,2-Dichloroethane	130 U	130	5.0	25	12/01/22 20:45	
1,2-Dichloropropane	130 U	130	5.0	25	12/01/22 20:45	
1,3-Dichloropropane	130 U	130	5.0	25	12/01/22 20:45	
2,2-Dichloropropane	130 U	130	6.0	25	12/01/22 20:45	
2-Butanone (MEK)	<b>650</b>	250	20	25	12/01/22 20:45	
2-Chloro-1,3-butadiene	130 U	130	5.0	25	12/01/22 20:45	
2-Hexanone	<b>11 J</b>	250	5.0	25	12/01/22 20:45	
2-Methyl-1-propanol (Isobutyl Alcohol)	2500 U	2500	830	25	12/01/22 20:45	
3-Chloro-1-propene	130 U	130	9.0	25	12/01/22 20:45	
4-Methyl-2-pentanone	<b>61 J</b>	250	5.0	25	12/01/22 20:45	
Acetone	<b>1400</b>	250	130	25	12/01/22 20:45	
Acetonitrile	2500 U	2500	130	25	12/01/22 20:45	
Acrolein	2500 U	2500	23	25	12/01/22 20:45	
Acrylonitrile	2500 U	2500	23	25	12/01/22 20:45	
Benzene	130 U	130	5.0	25	12/01/22 20:45	
Bromochloromethane	130 U	130	5.0	25	12/01/22 20:45	
Bromodichloromethane	130 U	130	5.0	25	12/01/22 20:45	
Bromoform	130 U	130	6.3	25	12/01/22 20:45	
Bromomethane	130 U	130	18	25	12/01/22 20:45	
Carbon Disulfide	250 U	250	11	25	12/01/22 20:45	
Carbon Tetrachloride	130 U	130	8.5	25	12/01/22 20:45	
Chlorobenzene	130 U	130	5.0	25	12/01/22 20:45	
Chloroethane	130 U	130	5.8	25	12/01/22 20:45	
Chloroform	130 U	130	6.0	25	12/01/22 20:45	
Chloromethane	130 U	130	7.0	25	12/01/22 20:45	
Dibromochloromethane	130 U	130	5.0	25	12/01/22 20:45	
Dibromomethane	130 U	130	5.0	25	12/01/22 20:45	
Dichlorodifluoromethane (CFC 12)	130 U	130	5.3	25	12/01/22 20:45	
Dichloromethane	130 U	130	17	25	12/01/22 20:45	
Ethyl Methacrylate	250 U	250	5.0	25	12/01/22 20:45	
Ethylbenzene	130 U	130	5.0	25	12/01/22 20:45	
Iodomethane	250 U	250	110	25	12/01/22 20:45	
Methacrylonitrile	500 U	500	13	25	12/01/22 20:45	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Methyl Methacrylate	250 U	250	6.0	25	12/01/22 20:45	
Propionitrile	2500 U	2500	75	25	12/01/22 20:45	
Styrene	130 U	130	5.0	25	12/01/22 20:45	
Tetrachloroethene (PCE)	130 U	130	5.3	25	12/01/22 20:45	
Toluene	<b>7.5 J</b>	130	5.0	25	12/01/22 20:45	
Trichloroethene (TCE)	130 U	130	5.0	25	12/01/22 20:45	
Trichlorofluoromethane (CFC 11)	130 U	130	6.0	25	12/01/22 20:45	
Vinyl Acetate	250 U	250	28	25	12/01/22 20:45	
Vinyl Chloride	130 U	130	5.0	25	12/01/22 20:45	
cis-1,2-Dichloroethene	130 U	130	5.8	25	12/01/22 20:45	
cis-1,3-Dichloropropene	130 U	130	5.0	25	12/01/22 20:45	
m,p-Xylenes	<b>6.8 J</b>	130	5.0	25	12/01/22 20:45	
o-Xylene	130 U	130	5.0	25	12/01/22 20:45	
trans-1,2-Dichloroethene	130 U	130	5.0	25	12/01/22 20:45	
trans-1,3-Dichloropropene	130 U	130	5.8	25	12/01/22 20:45	
trans-1,4-Dichloro-2-butene	130 U	130	20	25	12/01/22 20:45	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	103	85 - 122	12/01/22 20:45	
Dibromofluoromethane	106	80 - 116	12/01/22 20:45	
Toluene-d8	103	87 - 121	12/01/22 20:45	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22  
**Date Received:** 11/30/22 16:35

**Sample Name:** Trip Blank  
**Lab Code:** R2211405-003

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1,1-Trichloroethane (TCA)	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1,2,2-Tetrachloroethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1,2-Trichloroethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1-Dichloroethane (1,1-DCA)	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1-Dichloroethene (1,1-DCE)	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,1-Dichloropropene	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,2,3-Trichloropropane	5.0 U	5.0	0.26	1	12/01/22 20:23	
1,2-Dibromo-3-chloropropane (DBCP)	5.0 U	5.0	0.45	1	12/01/22 20:23	
1,2-Dibromoethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,2-Dichloroethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,2-Dichloropropane	5.0 U	5.0	0.20	1	12/01/22 20:23	
1,3-Dichloropropane	5.0 U	5.0	0.20	1	12/01/22 20:23	
2,2-Dichloropropane	5.0 U	5.0	0.24	1	12/01/22 20:23	
2-Butanone (MEK)	10 U	10	0.78	1	12/01/22 20:23	
2-Chloro-1,3-butadiene	5.0 U	5.0	0.20	1	12/01/22 20:23	
2-Hexanone	10 U	10	0.20	1	12/01/22 20:23	
2-Methyl-1-propanol (Isobutyl Alcohol)	100 U	100	33	1	12/01/22 20:23	
3-Chloro-1-propene	5.0 U	5.0	0.36	1	12/01/22 20:23	
4-Methyl-2-pentanone	10 U	10	0.20	1	12/01/22 20:23	
Acetone	10 U	10	5.0	1	12/01/22 20:23	
Acetonitrile	100 U	100	5.2	1	12/01/22 20:23	
Acrolein	100 U	100	0.90	1	12/01/22 20:23	
Acrylonitrile	100 U	100	0.90	1	12/01/22 20:23	
Benzene	5.0 U	5.0	0.20	1	12/01/22 20:23	
Bromochloromethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
Bromodichloromethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
Bromoform	5.0 U	5.0	0.25	1	12/01/22 20:23	
Bromomethane	5.0 U	5.0	0.70	1	12/01/22 20:23	
Carbon Disulfide	10 U	10	0.42	1	12/01/22 20:23	
Carbon Tetrachloride	5.0 U	5.0	0.34	1	12/01/22 20:23	
Chlorobenzene	5.0 U	5.0	0.20	1	12/01/22 20:23	
Chloroethane	5.0 U	5.0	0.23	1	12/01/22 20:23	
Chloroform	5.0 U	5.0	0.24	1	12/01/22 20:23	
Chloromethane	5.0 U	5.0	0.28	1	12/01/22 20:23	
Dibromochloromethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
Dibromomethane	5.0 U	5.0	0.20	1	12/01/22 20:23	
Dichlorodifluoromethane (CFC 12)	5.0 U	5.0	0.21	1	12/01/22 20:23	
Dichloromethane	5.0 U	5.0	0.65	1	12/01/22 20:23	
Ethyl Methacrylate	10 U	10	0.20	1	12/01/22 20:23	
Ethylbenzene	5.0 U	5.0	0.20	1	12/01/22 20:23	
Iodomethane	10 U	10	4.3	1	12/01/22 20:23	
Methacrylonitrile	20 U	20	0.52	1	12/01/22 20:23	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22  
**Date Received:** 11/30/22 16:35

**Sample Name:** Trip Blank  
**Lab Code:** R2211405-003

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Methyl Methacrylate	10 U	10	0.24	1	12/01/22 20:23	
Propionitrile	100 U	100	3.0	1	12/01/22 20:23	
Styrene	5.0 U	5.0	0.20	1	12/01/22 20:23	
Tetrachloroethene (PCE)	5.0 U	5.0	0.21	1	12/01/22 20:23	
Toluene	5.0 U	5.0	0.20	1	12/01/22 20:23	
Trichloroethene (TCE)	5.0 U	5.0	0.20	1	12/01/22 20:23	
Trichlorofluoromethane (CFC 11)	5.0 U	5.0	0.24	1	12/01/22 20:23	
Vinyl Acetate	10 U	10	1.1	1	12/01/22 20:23	
Vinyl Chloride	5.0 U	5.0	0.20	1	12/01/22 20:23	
cis-1,2-Dichloroethene	5.0 U	5.0	0.23	1	12/01/22 20:23	
cis-1,3-Dichloropropene	5.0 U	5.0	0.20	1	12/01/22 20:23	
m,p-Xylenes	5.0 U	5.0	0.20	1	12/01/22 20:23	
o-Xylene	5.0 U	5.0	0.20	1	12/01/22 20:23	
trans-1,2-Dichloroethene	5.0 U	5.0	0.20	1	12/01/22 20:23	
trans-1,3-Dichloropropene	5.0 U	5.0	0.23	1	12/01/22 20:23	
trans-1,4-Dichloro-2-butene	5.0 U	5.0	0.78	1	12/01/22 20:23	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	99	85 - 122	12/01/22 20:23	
Dibromofluoromethane	101	80 - 116	12/01/22 20:23	
Toluene-d8	99	87 - 121	12/01/22 20:23	



## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623  
Phone (585) 288-5380 Fax (585) 288-8475  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4,5-Tetrachlorobenzene	100 U	100	12	10	12/08/22 23:04	12/1/22	
1,2,4-Trichlorobenzene	100 U	100	12	10	12/08/22 23:04	12/1/22	
1,2-Dichlorobenzene	100 U	100	12	10	12/08/22 23:04	12/1/22	
1,3,5-Trinitrobenzene	100 U	100	44	10	12/08/22 23:04	12/1/22	
1,3-Dichlorobenzene	100 U	100	11	10	12/08/22 23:04	12/1/22	
1,3-Dinitrobenzene	100 U	100	18	10	12/08/22 23:04	12/1/22	
1,4-Dichlorobenzene	100 U	100	12	10	12/08/22 23:04	12/1/22	
1,4-Naphthoquinone	500 U	500	14	10	12/08/22 23:04	12/1/22	
p-Phenylenediamine	500 U	500	-	10	12/08/22 23:04	12/1/22	
1-Naphthylamine	100 U	100	10	10	12/08/22 23:04	12/1/22	
2,3,4,6-Tetrachlorophenol	100 U	100	12	10	12/08/22 23:04	12/1/22	
2,4,5-Trichlorophenol	100 U	100	11	10	12/08/22 23:04	12/1/22	
2,4,6-Trichlorophenol	100 U	100	14	10	12/08/22 23:04	12/1/22	
2,4-Dichlorophenol	100 U	100	13	10	12/08/22 23:04	12/1/22	
2,4-Dimethylphenol	100 U	100	14	10	12/08/22 23:04	12/1/22	
2,4-Dinitrophenol	500 U	500	200	10	12/08/22 23:04	12/1/22	
2,4-Dinitrotoluene	100 U	100	24	10	12/08/22 23:04	12/1/22	
2,6-Dichlorophenol	100 U	100	12	10	12/08/22 23:04	12/1/22	
2,6-Dinitrotoluene	100 U	100	14	10	12/08/22 23:04	12/1/22	
2-Acetylaminofluorene	100 U	100	16	10	12/08/22 23:04	12/1/22	
2-Chloronaphthalene	100 U	100	14	10	12/08/22 23:04	12/1/22	
2-Chlorophenol	100 U	100	11	10	12/08/22 23:04	12/1/22	
5-Nitro-2-methylaniline	100 U	100	19	10	12/08/22 23:04	12/1/22	
2-Methylnaphthalene	100 U	100	13	10	12/08/22 23:04	12/1/22	
2-Methylphenol	100 U	100	10	10	12/08/22 23:04	12/1/22	
2-Naphthylamine	100 U	100	14	10	12/08/22 23:04	12/1/22	
2-Nitroaniline	100 U	100	14	10	12/08/22 23:04	12/1/22	
2-Nitrophenol	100 U	100	15	10	12/08/22 23:04	12/1/22	
3,3'-Dichlorobenzidine	100 U	100	12	10	12/08/22 23:04	12/1/22	
3,3'-Dimethylbenzidine	500 U	500	82	10	12/08/22 23:04	12/1/22	
3- and 4-Methylphenol Coelution	<b>58 J</b>	100	12	10	12/08/22 23:04	12/1/22	
3-Methylcholanthrene	100 U	100	15	10	12/08/22 23:04	12/1/22	
3-Nitroaniline	100 U	100	11	10	12/08/22 23:04	12/1/22	
4,6-Dinitro-2-methylphenol	500 U	500	87	10	12/08/22 23:04	12/1/22	
4-Aminobiphenyl	100 U	100	12	10	12/08/22 23:04	12/1/22	
4-Bromophenyl Phenyl Ether	100 U	100	17	10	12/08/22 23:04	12/1/22	
4-Chloro-3-methylphenol	100 U	100	11	10	12/08/22 23:04	12/1/22	
4-Chloroaniline	100 U	100	10	10	12/08/22 23:04	12/1/22	
4-Chlorophenyl Phenyl Ether	100 U	100	15	10	12/08/22 23:04	12/1/22	
4-Nitroaniline	100 U	100	14	10	12/08/22 23:04	12/1/22	
4-Nitrophenol	500 U	500	64	10	12/08/22 23:04	12/1/22	
7,12-Dimethylbenz(a)anthracene	500 U	500	10	10	12/08/22 23:04	12/1/22	
Acenaphthene	100 U	100	14	10	12/08/22 23:04	12/1/22	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthylene	100 U	100	14	10	12/08/22 23:04	12/1/22	
Acetophenone	100 U	100	13	10	12/08/22 23:04	12/1/22	
Anthracene	100 U	100	13	10	12/08/22 23:04	12/1/22	
Benz(a)anthracene	100 U	100	16	10	12/08/22 23:04	12/1/22	
Benzo(a)pyrene	100 U	100	12	10	12/08/22 23:04	12/1/22	
Benzo(b)fluoranthene	100 U	100	12	10	12/08/22 23:04	12/1/22	
Benzo(g,h,i)perylene	100 U	100	10	10	12/08/22 23:04	12/1/22	
Benzo(k)fluoranthene	100 U	100	13	10	12/08/22 23:04	12/1/22	
Benzyl Alcohol	100 U	100	16	10	12/08/22 23:04	12/1/22	
2,2'-Oxybis(1-chloropropane)	100 U	100	14	10	12/08/22 23:04	12/1/22	
Bis(2-chloroethoxy)methane	100 U	100	19	10	12/08/22 23:04	12/1/22	
Bis(2-chloroethyl) Ether	100 U	100	13	10	12/08/22 23:04	12/1/22	
Bis(2-ethylhexyl) Phthalate	100 U	100	78	10	12/08/22 23:04	12/1/22	
Butyl Benzyl Phthalate	100 U	100	14	10	12/08/22 23:04	12/1/22	
Chlorobenzilate	100 U	100	13	10	12/08/22 23:04	12/1/22	
Chrysene	100 U	100	12	10	12/08/22 23:04	12/1/22	
Di-n-butyl Phthalate	100 U	100	17	10	12/08/22 23:04	12/1/22	
Di-n-octyl Phthalate	100 U	100	33	10	12/08/22 23:04	12/1/22	
Diallate	100 U	100	20	10	12/08/22 23:04	12/1/22	
Dibenz(a,h)anthracene	100 U	100	11	10	12/08/22 23:04	12/1/22	
Dibenzofuran	100 U	100	14	10	12/08/22 23:04	12/1/22	
Diethyl Phthalate	100 U	100	11	10	12/08/22 23:04	12/1/22	
Dimethoate	100 U	100	18	10	12/08/22 23:04	12/1/22	
Dimethyl Phthalate	100 U	100	13	10	12/08/22 23:04	12/1/22	
Diphenylamine	100 U	100	27	10	12/08/22 23:04	12/1/22	
Disulfoton	100 U	100	30	10	12/08/22 23:04	12/1/22	
Ethyl Methanesulfonate	100 U	100	11	10	12/08/22 23:04	12/1/22	
Famphur	100 U	100	54	10	12/08/22 23:04	12/1/22	
Fluoranthene	100 U	100	15	10	12/08/22 23:04	12/1/22	
Fluorene	100 U	100	13	10	12/08/22 23:04	12/1/22	
Hexachlorobenzene	100 U	100	16	10	12/08/22 23:04	12/1/22	
Hexachlorobutadiene	100 U	100	10	10	12/08/22 23:04	12/1/22	
Hexachlorocyclopentadiene	100 U	100	22	10	12/08/22 23:04	12/1/22	
Hexachloroethane	100 U	100	11	10	12/08/22 23:04	12/1/22	
Hexachloropropene	100 U	100	10	10	12/08/22 23:04	12/1/22	
Indeno(1,2,3-cd)pyrene	100 U	100	18	10	12/08/22 23:04	12/1/22	
Isodrin	100 U	100	15	10	12/08/22 23:04	12/1/22	
Isophorone	100 U	100	14	10	12/08/22 23:04	12/1/22	
Isosafrole	100 U	100	17	10	12/08/22 23:04	12/1/22	
Kepone	500 U	500	97	10	12/08/22 23:04	12/1/22	
Methapyrilene	500 U	500	440	10	12/08/22 23:04	12/1/22	
Methyl Methanesulfonate	100 U	100	11	10	12/08/22 23:04	12/1/22	
Methyl Parathion	100 U	100	17	10	12/08/22 23:04	12/1/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
N-Nitrosodi-n-butylamine	100 U	100	21	10	12/08/22 23:04	12/1/22	
N-Nitrosodi-n-propylamine	100 U	100	12	10	12/08/22 23:04	12/1/22	
N-Nitrosodiethylamine	100 U	100	14	10	12/08/22 23:04	12/1/22	
N-Nitrosodimethylamine	100 U	100	10	10	12/08/22 23:04	12/1/22	
N-Nitrosodiphenylamine	100 U	100	27	10	12/08/22 23:04	12/1/22	
N-Nitrosomethylethylamine	100 U	100	12	10	12/08/22 23:04	12/1/22	
N-Nitrosopiperidine	100 U	100	14	10	12/08/22 23:04	12/1/22	
N-Nitrosopyrrolidine	100 U	100	10	10	12/08/22 23:04	12/1/22	
Naphthalene	<b>49 J</b>	100	12	10	12/08/22 23:04	12/1/22	
Nitrobenzene	100 U	100	15	10	12/08/22 23:04	12/1/22	
O,O,O-Triethyl Phosphorothioate	100 U	100	14	10	12/08/22 23:04	12/1/22	
Parathion	100 U	100	35	10	12/08/22 23:04	12/1/22	
Pentachlorobenzene	100 U	100	14	10	12/08/22 23:04	12/1/22	
Pentachloronitrobenzene (PCNB)	100 U	100	15	10	12/08/22 23:04	12/1/22	
Pentachlorophenol (PCP)	500 U	500	97	10	12/08/22 23:04	12/1/22	
Phenacetin	100 U	100	15	10	12/08/22 23:04	12/1/22	
Phenanthrene	100 U	100	14	10	12/08/22 23:04	12/1/22	
Phenol	<b>19 J</b>	100	10	10	12/08/22 23:04	12/1/22	
Phorate	100 U	100	14	10	12/08/22 23:04	12/1/22	
Pronamide	100 U	100	18	10	12/08/22 23:04	12/1/22	
Pyrene	100 U	100	15	10	12/08/22 23:04	12/1/22	
Safrole	100 U	100	13	10	12/08/22 23:04	12/1/22	
Thionazin	100 U	100	16	10	12/08/22 23:04	12/1/22	
o-Toluidine	100 U	100	10	10	12/08/22 23:04	12/1/22	
p-Dimethylaminoazobenzene	100 U	100	13	10	12/08/22 23:04	12/1/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	91	35 - 141	12/08/22 23:04	
2-Fluorobiphenyl	77	31 - 118	12/08/22 23:04	
2-Fluorophenol	46	10 - 105	12/08/22 23:04	
Nitrobenzene-d5	0 *	31 - 110	12/08/22 23:04	*
Phenol-d6	37	10 - 107	12/08/22 23:04	
p-Terphenyl-d14	62	10 - 165	12/08/22 23:04	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	64	0.13	0.090	1	12/06/22 15:58	12/6/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrahydrofuran-d8 (SUR)	58 *	64 - 124	12/06/22 15:58	*

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	91	0.13	0.090	1	12/07/22 15:32	12/7/22	*

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrahydrofuran-d8 (SUR)	86	64 - 124	12/07/22 15:32	



## Semivolatile Organic Compounds by GC

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Organochlorine Pesticides by Gas Chromatography**

**Analysis Method:** 8081B  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
4,4'-DDD	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
4,4'-DDE	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
4,4'-DDT	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Aldrin	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Dieldrin	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Endosulfan I	<b>0.32</b>	0.050	0.020	1	12/08/22 19:36	12/5/22	
Endosulfan II	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Endosulfan Sulfate	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Endrin	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Endrin Aldehyde	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Heptachlor	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Heptachlor Epoxide	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Methoxychlor	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
Toxaphene	0.50 U	0.50	0.50	1	12/08/22 19:36	12/5/22	
alpha-BHC	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
alpha-Chlordane	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
beta-BHC	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
delta-BHC	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
gamma-BHC (Lindane)	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	
gamma-Chlordane	0.050 U	0.050	0.020	1	12/08/22 19:36	12/5/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	16	10 - 164	12/08/22 19:36	
Tetrachloro-m-xylene	66	10 - 147	12/08/22 19:36	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Polychlorinated Biphenyls (PCBs) by GC**

**Analysis Method:** 8082A  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aroclor 1016	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	
Aroclor 1221	2.0 U	2.0	1.0	1	12/07/22 19:55	12/5/22	
Aroclor 1232	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	
Aroclor 1242	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	
Aroclor 1248	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	
Aroclor 1254	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	
Aroclor 1260	1.0 U	1.0	0.50	1	12/07/22 19:55	12/5/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	13	10 - 152	12/07/22 19:55	
Tetrachloro-m-xylene	55	14 - 129	12/07/22 19:55	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ug/L  
**Basis:** NA

**Chlorinated Herbicides by GC**

**Analysis Method:** 8151A  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.46 U	0.46	0.14	1	12/06/22 16:18	12/2/22	
2,4,5-TP	0.46 U	0.46	0.12	1	12/06/22 16:18	12/2/22	
2,4-D	0.46 U	0.46	0.35	1	12/06/22 16:18	12/2/22	
Dinoseb	0.46 U	0.46	0.21	1	12/06/22 16:18	12/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
DCAA	121	10 - 136	12/06/22 16:18	



# Metals

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Form 1

# Inorganic Analysis Data Sheet

## Metals by EPA 6010C, EPA 7470A

Workorder

**R2211405**

Client

**Casella Waste Systems**

Project

**Hakes C&D - Part 363 Expanded  
Leachate**

01/25/2023

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# Form 1 - Inorganic Analysis Data Sheet

Client Casella Waste Systems  
Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Metals by EPA 6010C, EPA 7470A

R2211405-001	<b>Collected</b>	<b>Received</b>	<b>Matrix</b>
<b>LCS-1122</b>	11/29/22 1420	11/29/22 1635	Water

Analyte	Units	MC	Result	Q	DL	LOQ	DF	Analysis Date	Run ID	DataFile	PrepBatch
Aluminum, Total	ug/L	P	200		30	100	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Antimony, Total	ug/L	P	60	U	7	60	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Arsenic, Total	ug/L	P	44		6	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Barium, Total	ug/L	P	1280		3	20	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Beryllium, Total	ug/L	P	3.0	U	0.2	3.0	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Boron, Total	ug/L	P	11800		200	2000	10	12/08/22 22:22	RPAES06_787944	6DEC08B	411009
Cadmium, Total	ug/L	P	5.0	U	0.4	5.0	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Calcium, Total	ug/L	P	339000		3000	10000	10	12/08/22 22:22	RPAES06_787944	6DEC08B	411009
Chromium, Total	ug/L	P	53		2	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Cobalt, Total	ug/L	P	1	J	0.9	50	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Copper, Total	ug/L	P	20	U	4	20	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Iron, Total	ug/L	P	2420		70	100	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Lead, Total	ug/L	P	5.0	U	2.1	5.0	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Magnesium, Total	ug/L	P	195000		30	1000	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Manganese, Total	ug/L	P	8600		4	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Mercury, Total	ug/L	CV	0.20	U	0.08	0.20	1	12/14/22 14:47	RCVAA02_788499	NA	411471
Nickel, Total	ug/L	P	14	J	3	40	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Potassium, Total	ug/L	P	131000		4000	20000	10	12/08/22 22:22	RPAES06_787944	6DEC08B	411009
Selenium, Total	ug/L	P	10	U	7	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Silver, Total	ug/L	P	10	U	0.6	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Sodium, Total	ug/L	P	839000		2000	10000	10	12/08/22 22:22	RPAES06_787944	6DEC08B	411009
Thallium, Total	ug/L	P	10	U	7	10	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Tin, Total	ug/L	P	500	U	8	500	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Vanadium, Total	ug/L	P	21	J	0.7	50	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009
Zinc, Total	ug/L	P	65		3	20	1	12/07/22 20:43	RPAES06_787770	6DEC07A	411009

MC - Method Class CV - Cold Vapor/AA P - ICP/AES MS - ICP/MS



# Form 1 - Inorganic Analysis Data Sheet

Client Casella Waste Systems  
Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Metals by EPA 6010C, EPA 7470A

R2211405-MB	<b>Matrix</b>
<b>Method Blank</b>	Water

Analyte	Units	MC	Result	Q	DL	LOQ	DF	Analysis Date	Run ID	DataFile	PrepBatch
Aluminum, Total	ug/L	P	100	U	30	100	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Antimony, Total	ug/L	P	60	U	7	60	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Arsenic, Total	ug/L	P	10	U	6	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Barium, Total	ug/L	P	20	U	3	20	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Beryllium, Total	ug/L	P	3.0	U	0.2	3.0	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Boron, Total	ug/L	P	200	U	20	200	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Cadmium, Total	ug/L	P	5.0	U	0.4	5.0	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Calcium, Total	ug/L	P	1000	U	300	1000	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Chromium, Total	ug/L	P	10	U	2	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Cobalt, Total	ug/L	P	50	U	0.9	50	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Copper, Total	ug/L	P	20	U	4	20	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Iron, Total	ug/L	P	100	U	70	100	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Lead, Total	ug/L	P	5.0	U	2.1	5.0	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Magnesium, Total	ug/L	P	1000	U	30	1000	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Manganese, Total	ug/L	P	10	U	4	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Mercury, Total	ug/L	CV	0.20	U	0.08	0.20	1	12/14/22 14:43	RCVAA02_788499	NA	411471
Nickel, Total	ug/L	P	40	U	3	40	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Potassium, Total	ug/L	P	2000	U	400	2000	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Selenium, Total	ug/L	P	10	U	7	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Silver, Total	ug/L	P	10	U	0.6	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Sodium, Total	ug/L	P	1000	U	200	1000	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Thallium, Total	ug/L	P	10	U	7	10	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Tin, Total	ug/L	P	500	U	8	500	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Vanadium, Total	ug/L	P	50	U	0.7	50	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009
Zinc, Total	ug/L	P	20	U	3	20	1	12/07/22 20:34	RPAES06_787770	6DEC07A	411009

MC - Method Class CV - Cold Vapor/AA P - ICP/AES MS - ICP/MS



# General Chemistry

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water  
**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date</u> <u>Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	<b>1760</b>	mg/L	20	18	10	12/10/22 15:51	NA	
Ammonia as Nitrogen, undistilled	350.1	<b>159</b>	mg/L	10	6	200	12/27/22 20:41	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	<b>73.5</b>	mg/L	2.0	-	1	11/30/22 08:53	NA	
Bromide	9056A	<b>5.7</b>	mg/L	1.0	0.4	10	12/01/22 11:05	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	<b>1060</b>	mg/L	3.8	1.7	3.75	12/21/22 18:17	NA	
Chemical Oxygen Demand, Total	410.4	<b>823</b>	mg/L	5.0	3.8	1	12/21/22 23:00	NA	
Chloride	9056A	<b>1550</b>	mg/L	60	13	300	12/05/22 07:57	NA	
Chromium, Hexavalent	7196A	0.10 U	mg/L	0.10	0.03	10	11/29/22 23:51	NA	
Color, True	SM 2120 B-2001(2011)	<b>375</b>	ColorUnits	25	-	25	11/30/22 16:27	NA	
Cyanide, Total	Kelada-01	<b>0.0191</b>	mg/L	0.0050	0.0040	1	12/08/22 02:01	NA	
Hardness, Total as CaCO3	SM 2340 B-1997(2011)	<b>1650</b>	mg/L	6.62	-	1	NA	NA	
Nitrate as Nitrogen	9056A	1.0 U	mg/L	1.0	0.2	10	12/01/22 11:05	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	<b>163</b>	mg/L	20	15	10	12/21/22 19:28	12/20/22	
pH of Color Analysis	SM 2120 B-2001(2011)	<b>7.51</b>	pH Units	-	-	25	11/30/22 16:27	NA	
Phenolics, Total Recoverable	9066	<b>0.112</b>	mg/L	0.020	0.012	4	12/13/22 00:06	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	<b>4780</b>	mg/L	25	23	1	12/01/22 12:50	NA	
Sulfate	9056A	<b>523</b>	mg/L	20	4	100	12/01/22 11:16	NA	



## QC Summary Forms

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## Volatile Organic Compounds by GC/MS

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**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Extraction Method:** EPA 5030C

Sample Name	Lab Code	4-Bromofluorobenzene	Dibromofluoromethane	Toluene-d8
		85-122	80-116	87-121
LCS-1122	R2211405-001	103	106	103
Trip Blank	R2211405-003	99	101	99
Method Blank	RQ2215049-04	99	103	99
Lab Control Sample	RQ2215049-03	103	101	101

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215049-04

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
1,1,1,2-Tetrachloroethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1,1-Trichloroethane (TCA)	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1,2,2-Tetrachloroethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1,2-Trichloroethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1-Dichloroethane (1,1-DCA)	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1-Dichloroethene (1,1-DCE)	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,1-Dichloropropene	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,2,3-Trichloropropane	5.0 U	5.0	0.26	1	12/01/22 12:35	
1,2-Dibromo-3-chloropropane (DBCP)	5.0 U	5.0	0.45	1	12/01/22 12:35	
1,2-Dibromoethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,2-Dichloroethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,2-Dichloropropane	5.0 U	5.0	0.20	1	12/01/22 12:35	
1,3-Dichloropropane	5.0 U	5.0	0.20	1	12/01/22 12:35	
2,2-Dichloropropane	5.0 U	5.0	0.24	1	12/01/22 12:35	
2-Butanone (MEK)	10 U	10	0.78	1	12/01/22 12:35	
2-Chloro-1,3-butadiene	5.0 U	5.0	0.20	1	12/01/22 12:35	
2-Hexanone	10 U	10	0.20	1	12/01/22 12:35	
2-Methyl-1-propanol (Isobutyl Alcohol)	100 U	100	33	1	12/01/22 12:35	
3-Chloro-1-propene	5.0 U	5.0	0.36	1	12/01/22 12:35	
4-Methyl-2-pentanone	10 U	10	0.20	1	12/01/22 12:35	
Acetone	10 U	10	5.0	1	12/01/22 12:35	
Acetonitrile	100 U	100	5.2	1	12/01/22 12:35	
Acrolein	100 U	100	0.90	1	12/01/22 12:35	
Acrylonitrile	100 U	100	0.90	1	12/01/22 12:35	
Benzene	5.0 U	5.0	0.20	1	12/01/22 12:35	
Bromochloromethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
Bromodichloromethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
Bromoform	5.0 U	5.0	0.25	1	12/01/22 12:35	
Bromomethane	5.0 U	5.0	0.70	1	12/01/22 12:35	
Carbon Disulfide	10 U	10	0.42	1	12/01/22 12:35	
Carbon Tetrachloride	5.0 U	5.0	0.34	1	12/01/22 12:35	
Chlorobenzene	5.0 U	5.0	0.20	1	12/01/22 12:35	
Chloroethane	5.0 U	5.0	0.23	1	12/01/22 12:35	
Chloroform	5.0 U	5.0	0.24	1	12/01/22 12:35	
Chloromethane	5.0 U	5.0	0.28	1	12/01/22 12:35	
Dibromochloromethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
Dibromomethane	5.0 U	5.0	0.20	1	12/01/22 12:35	
Dichlorodifluoromethane (CFC 12)	5.0 U	5.0	0.21	1	12/01/22 12:35	
Dichloromethane	5.0 U	5.0	0.65	1	12/01/22 12:35	
Ethyl Methacrylate	10 U	10	0.20	1	12/01/22 12:35	
Ethylbenzene	5.0 U	5.0	0.20	1	12/01/22 12:35	
Iodomethane	10 U	10	4.3	1	12/01/22 12:35	
Methacrylonitrile	20 U	20	0.52	1	12/01/22 12:35	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215049-04

**Units:** ug/L  
**Basis:** NA

**Volatile Organic Compounds by GC/MS**

**Analysis Method:** 8260C  
**Prep Method:** EPA 5030C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Q
Methyl Methacrylate	10 U	10	0.24	1	12/01/22 12:35	
Propionitrile	100 U	100	3.0	1	12/01/22 12:35	
Styrene	5.0 U	5.0	0.20	1	12/01/22 12:35	
Tetrachloroethene (PCE)	5.0 U	5.0	0.21	1	12/01/22 12:35	
Toluene	5.0 U	5.0	0.20	1	12/01/22 12:35	
Trichloroethene (TCE)	5.0 U	5.0	0.20	1	12/01/22 12:35	
Trichlorofluoromethane (CFC 11)	5.0 U	5.0	0.24	1	12/01/22 12:35	
Vinyl Acetate	10 U	10	1.1	1	12/01/22 12:35	
Vinyl Chloride	5.0 U	5.0	0.20	1	12/01/22 12:35	
cis-1,2-Dichloroethene	5.0 U	5.0	0.23	1	12/01/22 12:35	
cis-1,3-Dichloropropene	5.0 U	5.0	0.20	1	12/01/22 12:35	
m,p-Xylenes	5.0 U	5.0	0.20	1	12/01/22 12:35	
o-Xylene	5.0 U	5.0	0.20	1	12/01/22 12:35	
trans-1,2-Dichloroethene	5.0 U	5.0	0.20	1	12/01/22 12:35	
trans-1,3-Dichloropropene	5.0 U	5.0	0.23	1	12/01/22 12:35	
trans-1,4-Dichloro-2-butene	5.0 U	5.0	0.78	1	12/01/22 12:35	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
4-Bromofluorobenzene	99	85 - 122	12/01/22 12:35	
Dibromofluoromethane	103	80 - 116	12/01/22 12:35	
Toluene-d8	99	87 - 121	12/01/22 12:35	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/01/22

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2215049-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
1,1,1,2-Tetrachloroethane	8260C	22.7	20.0	113	76-129
1,1,1-Trichloroethane (TCA)	8260C	21.0	20.0	105	75-125
1,1,2,2-Tetrachloroethane	8260C	19.4	20.0	97	78-126
1,1,2-Trichloroethane	8260C	21.2	20.0	106	82-121
1,1-Dichloroethane (1,1-DCA)	8260C	19.2	20.0	96	80-124
1,1-Dichloroethene (1,1-DCE)	8260C	19.9	20.0	100	71-118
1,1-Dichloropropene	8260C	20.2	20.0	101	76-118
1,2,3-Trichloropropane	8260C	21.5	20.0	108	75-118
1,2-Dibromo-3-chloropropane (DBCP)	8260C	22.6	20.0	113	55-136
1,2-Dibromoethane	8260C	22.2	20.0	111	82-127
1,2-Dichloroethane	8260C	21.9	20.0	109	71-127
1,2-Dichloropropane	8260C	20.0	20.0	100	80-119
1,3-Dichloropropane	8260C	21.5	20.0	107	83-119
2,2-Dichloropropane	8260C	21.7	20.0	109	61-139
2-Butanone (MEK)	8260C	16.9	20.0	85	61-137
2-Chloro-1,3-butadiene	8260C	19.0	20.0	95	68-139
2-Hexanone	8260C	19.8	20.0	99	63-124
2-Methyl-1-propanol (Isobutyl Alcohol)	8260C	393	400	98	51-143
3-Chloro-1-propene	8260C	20.6	20.0	103	61-143
4-Methyl-2-pentanone	8260C	19.3	20.0	97	66-124
Acetone	8260C	18.5	20.0	93	40-161
Acetonitrile	8260C	83.5 J	100	84	46-154
Acrolein	8260C	33.8 J	40.0	85	13-165
Acrylonitrile	8260C	91.6 J	100	92	71-130
Benzene	8260C	20.3	20.0	102	79-119
Bromochloromethane	8260C	20.4	20.0	102	81-126
Bromodichloromethane	8260C	20.7	20.0	104	81-123
Bromoform	8260C	23.9	20.0	119	65-146
Bromomethane	8260C	24.6	20.0	123	42-166
Carbon Disulfide	8260C	18.3	20.0	92	66-128
Carbon Tetrachloride	8260C	23.3	20.0	116	70-127
Chlorobenzene	8260C	20.1	20.0	100	80-121
Chloroethane	8260C	18.4	20.0	92	62-131

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/01/22

**Lab Control Sample Summary**  
**Volatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2215049-03

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chloroform	8260C	19.0	20.0	95	79-120
Chloromethane	8260C	16.4	20.0	82	65-135
Dibromochloromethane	8260C	22.5	20.0	112	72-128
Dibromomethane	8260C	21.5	20.0	108	80-118
Dichlorodifluoromethane (CFC 12)	8260C	15.6	20.0	78	59-155
Dichloromethane	8260C	18.9	20.0	94	73-122
Ethyl Methacrylate	8260C	21.8	20.0	109	68-132
Ethylbenzene	8260C	21.7	20.0	109	76-120
Iodomethane	8260C	19.9	20.0	100	18-160
Methacrylonitrile	8260C	19.2 J	20.0	96	68-123
Methyl Methacrylate	8260C	21.7	20.0	109	68-129
Propionitrile	8260C	96.2 J	100	96	69-126
Styrene	8260C	22.3	20.0	112	80-124
Tetrachloroethene (PCE)	8260C	23.0	20.0	115	72-125
Toluene	8260C	20.8	20.0	104	79-119
Trichloroethene (TCE)	8260C	22.4	20.0	112	74-122
Trichlorofluoromethane (CFC 11)	8260C	20.7	20.0	103	71-136
Vinyl Acetate	8260C	17.6	20.0	88	52-174
Vinyl Chloride	8260C	15.2	20.0	76	74-159
cis-1,2-Dichloroethene	8260C	18.7	20.0	93	80-121
cis-1,3-Dichloropropene	8260C	21.9	20.0	110	77-122
m,p-Xylenes	8260C	45.0	40.0	113	80-126
o-Xylene	8260C	21.1	20.0	106	79-123
trans-1,2-Dichloroethene	8260C	19.7	20.0	99	73-118
trans-1,3-Dichloropropene	8260C	22.8	20.0	114	71-133
trans-1,4-Dichloro-2-butene	8260C	24.4	20.0	122	39-137



## Semivolatile Organic Compounds by GC/MS

**ALS Environmental—Rochester Laboratory**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	2,4,6-Tribromophenol	2-Fluorobiphenyl	2-Fluorophenol
		35-141	31-118	10-105
LCS-1122	R2211405-001	91	77	46
Method Blank	RQ2215030-01	67	56	41
Lab Control Sample	RQ2215030-02	87	80	55
Duplicate Lab Control Sample	RQ2215030-03	76	68	52



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	Nitrobenzene-d5	Phenol-d6	p-Terphenyl-d14
		31-110	10-107	10-165
LCS-1122	R2211405-001	0*	37	62
Method Blank	RQ2215030-01	62	28	78
Lab Control Sample	RQ2215030-02	82	41	96
Duplicate Lab Control Sample	RQ2215030-03	72	38	85

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215030-01

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,2,4,5-Tetrachlorobenzene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
1,2,4-Trichlorobenzene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
1,2-Dichlorobenzene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
1,3,5-Trinitrobenzene	10 U	10	4.4	1	12/07/22 21:30	12/1/22	
1,3-Dichlorobenzene	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
1,3-Dinitrobenzene	10 U	10	1.8	1	12/07/22 21:30	12/1/22	
1,4-Dichlorobenzene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
1,4-Naphthoquinone	50 U	50	1.4	1	12/07/22 21:30	12/1/22	
p-Phenylenediamine	50 U	50	-	1	12/07/22 21:30	12/1/22	
1-Naphthylamine	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
2,3,4,6-Tetrachlorophenol	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
2,4,5-Trichlorophenol	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
2,4,6-Trichlorophenol	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2,4-Dichlorophenol	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
2,4-Dimethylphenol	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2,4-Dinitrophenol	50 U	50	20	1	12/07/22 21:30	12/1/22	
2,4-Dinitrotoluene	10 U	10	2.4	1	12/07/22 21:30	12/1/22	
2,6-Dichlorophenol	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
2,6-Dinitrotoluene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2-Acetylaminofluorene	10 U	10	1.6	1	12/07/22 21:30	12/1/22	
2-Chloronaphthalene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2-Chlorophenol	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
5-Nitro-2-methylaniline	10 U	10	1.9	1	12/07/22 21:30	12/1/22	
2-Methylnaphthalene	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
2-Methylphenol	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
2-Naphthylamine	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2-Nitroaniline	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
2-Nitrophenol	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
3,3'-Dichlorobenzidine	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
3,3'-Dimethylbenzidine	50 U	50	8.2	1	12/07/22 21:30	12/1/22	
3- and 4-Methylphenol Coelution	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
3-Methylcholanthrene	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
3-Nitroaniline	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
4,6-Dinitro-2-methylphenol	50 U	50	8.7	1	12/07/22 21:30	12/1/22	
4-Aminobiphenyl	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
4-Bromophenyl Phenyl Ether	10 U	10	1.7	1	12/07/22 21:30	12/1/22	
4-Chloro-3-methylphenol	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
4-Chloroaniline	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
4-Chlorophenyl Phenyl Ether	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
4-Nitroaniline	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
4-Nitrophenol	50 U	50	6.4	1	12/07/22 21:30	12/1/22	
7,12-Dimethylbenz(a)anthracene	50 U	50	1.0	1	12/07/22 21:30	12/1/22	
Acenaphthene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215030-01

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Acenaphthylene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Acetophenone	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Anthracene	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Benz(a)anthracene	10 U	10	1.6	1	12/07/22 21:30	12/1/22	
Benzo(a)pyrene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
Benzo(b)fluoranthene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
Benzo(g,h,i)perylene	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
Benzo(k)fluoranthene	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Benzyl Alcohol	10 U	10	1.6	1	12/07/22 21:30	12/1/22	
2,2'-Oxybis(1-chloropropane)	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Bis(2-chloroethoxy)methane	10 U	10	1.9	1	12/07/22 21:30	12/1/22	
Bis(2-chloroethyl) Ether	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Bis(2-ethylhexyl) Phthalate	10 U	10	7.8	1	12/07/22 21:30	12/1/22	
Butyl Benzyl Phthalate	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Chlorobenzilate	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Chrysene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
Di-n-butyl Phthalate	10 U	10	1.7	1	12/07/22 21:30	12/1/22	
Di-n-octyl Phthalate	10 U	10	3.3	1	12/07/22 21:30	12/1/22	
Diallate	10 U	10	2.0	1	12/07/22 21:30	12/1/22	
Dibenz(a,h)anthracene	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
Dibenzofuran	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Diethyl Phthalate	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
Dimethoate	10 U	10	1.8	1	12/07/22 21:30	12/1/22	
Dimethyl Phthalate	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Diphenylamine	10 U	10	2.7	1	12/07/22 21:30	12/1/22	
Disulfoton	10 U	10	3.0	1	12/07/22 21:30	12/1/22	
Ethyl Methanesulfonate	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
Famphur	10 U	10	5.4	1	12/07/22 21:30	12/1/22	
Fluoranthene	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
Fluorene	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Hexachlorobenzene	10 U	10	1.6	1	12/07/22 21:30	12/1/22	
Hexachlorobutadiene	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
Hexachlorocyclopentadiene	10 U	10	2.2	1	12/07/22 21:30	12/1/22	
Hexachloroethane	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
Hexachloropropene	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
Indeno(1,2,3-cd)pyrene	10 U	10	1.8	1	12/07/22 21:30	12/1/22	
Isodrin	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
Isophorone	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Isosafrole	10 U	10	1.7	1	12/07/22 21:30	12/1/22	
Kepone	50 U	50	9.7	1	12/07/22 21:30	12/1/22	
Methapyrilene	50 U	50	44	1	12/07/22 21:30	12/1/22	
Methyl Methanesulfonate	10 U	10	1.1	1	12/07/22 21:30	12/1/22	
Methyl Parathion	10 U	10	1.7	1	12/07/22 21:30	12/1/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215030-01

**Units:** ug/L  
**Basis:** NA

**Semivolatile Organic Compounds by GC/MS**

**Analysis Method:** 8270D  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
N-Nitrosodi-n-butylamine	10 U	10	2.1	1	12/07/22 21:30	12/1/22	
N-Nitrosodi-n-propylamine	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
N-Nitrosodiethylamine	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
N-Nitrosodimethylamine	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
N-Nitrosodiphenylamine	10 U	10	2.7	1	12/07/22 21:30	12/1/22	
N-Nitrosomethylethylamine	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
N-Nitrosopiperidine	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
N-Nitrosopyrrolidine	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
Naphthalene	10 U	10	1.2	1	12/07/22 21:30	12/1/22	
Nitrobenzene	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
O,O,O-Triethyl Phosphorothioate	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Parathion	10 U	10	3.5	1	12/07/22 21:30	12/1/22	
Pentachlorobenzene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Pentachloronitrobenzene (PCNB)	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
Pentachlorophenol (PCP)	50 U	50	9.7	1	12/07/22 21:30	12/1/22	
Phenacetin	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
Phenanthrene	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Phenol	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
Phorate	10 U	10	1.4	1	12/07/22 21:30	12/1/22	
Pronamide	10 U	10	1.8	1	12/07/22 21:30	12/1/22	
Pyrene	10 U	10	1.5	1	12/07/22 21:30	12/1/22	
Safrole	10 U	10	1.3	1	12/07/22 21:30	12/1/22	
Thionazin	10 U	10	1.6	1	12/07/22 21:30	12/1/22	
o-Toluidine	10 U	10	1.0	1	12/07/22 21:30	12/1/22	
p-Dimethylaminoazobenzene	10 U	10	1.3	1	12/07/22 21:30	12/1/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
2,4,6-Tribromophenol	67	35 - 141	12/07/22 21:30	
2-Fluorobiphenyl	56	31 - 118	12/07/22 21:30	
2-Fluorophenol	41	10 - 105	12/07/22 21:30	
Nitrobenzene-d5	62	31 - 110	12/07/22 21:30	
Phenol-d6	28	10 - 107	12/07/22 21:30	
p-Terphenyl-d14	78	10 - 165	12/07/22 21:30	

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/07/22

**Duplicate Lab Control Sample Summary**  
**Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2215030-02				Duplicate Lab Control Sample RQ2215030-03				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
1,2,4,5-Tetrachlorobenzene	8270D	33.7	40.0	84	31.7	40.0	79	15-132	6	30
1,2,4-Trichlorobenzene	8270D	49.1	80.0	61	43.6	80.0	55	10-127	10	30
1,2-Dichlorobenzene	8270D	48.5	80.0	61	42.2	80.0	53	23-130	14	30
1,3-Dichlorobenzene	8270D	45.2	80.0	57	40.8	80.0	51	21-90	11	30
1,3-Dinitrobenzene	8270D	76.9	80.0	96	67.4	80.0	84	55-130	13	30
1,4-Dichlorobenzene	8270D	46.2	80.0	58	40.3	80.0	50	10-124	15	30
2,3,4,6-Tetrachlorophenol	8270D	77.6	80.0	97	66.5	80.0	83	42-136	16	30
2,4,5-Trichlorophenol	8270D	78.5	80.0	98	65.3	80.0	82	48-134	18	30
2,4,6-Trichlorophenol	8270D	76.5	80.0	96	66.8	80.0	84	44-135	13	30
2,4-Dichlorophenol	8270D	70.9	80.0	89	63.0	80.0	79	48-127	12	30
2,4-Dimethylphenol	8270D	70.7	80.0	88	53.7	80.0	67	35-99	27	30
2,4-Dinitrophenol	8270D	63.7	80.0	80	50.9	80.0	64	21-154	22	30
2,4-Dinitrotoluene	8270D	76.3	80.0	95	67.5	80.0	84	54-130	12	30
2,6-Dinitrotoluene	8270D	79.0	80.0	99	68.3	80.0	85	51-127	15	30
2-Chloronaphthalene	8270D	62.2	80.0	78	55.4	80.0	69	40-108	12	30
2-Chlorophenol	8270D	62.3	80.0	78	57.5	80.0	72	42-112	8	30
2-Methylnaphthalene	8270D	54.5	80.0	68	47.7	80.0	60	34-102	13	30
2-Methylphenol	8270D	61.1	80.0	76	54.3	80.0	68	47-100	11	30
2-Nitroaniline	8270D	77.7	80.0	97	67.8	80.0	85	52-133	13	30
2-Nitrophenol	8270D	65.2	80.0	81	60.0	80.0	75	43-131	8	30
3,3'-Dichlorobenzidine	8270D	50.0	80.0	63	40.0	80.0	50 *	57-131	23	30
3- and 4-Methylphenol Coelution	8270D	56.4	80.0	71	51.0	80.0	64	40-92	10	30
3-Nitroaniline	8270D	63.2	80.0	79	52.6	80.0	66	50-125	18	30
4,6-Dinitro-2-methylphenol	8270D	73.2	80.0	92	61.1	80.0	76	36-152	19	30
4-Bromophenyl Phenyl Ether	8270D	81.0	80.0	101	70.0	80.0	87	48-114	15	30
4-Chloro-3-methylphenol	8270D	76.1	80.0	95	66.0	80.0	83	52-113	13	30
4-Chloroaniline	8270D	59.3	80.0	74	44.4	80.0	55	44-109	29	30
4-Chlorophenyl Phenyl Ether	8270D	71.8	80.0	90	62.0	80.0	77	51-107	16	30
4-Nitroaniline	8270D	72.4	80.0	90	60.8	80.0	76	54-133	17	30
4-Nitrophenol	8270D	40.4 J	80.0	50	35.0 J	80.0	44	10-126	13	30
Acenaphthene	8270D	68.0	80.0	85	59.3	80.0	74	52-107	14	30
Acenaphthylene	8270D	69.5	80.0	87	61.5	80.0	77	55-109	12	30
Acetophenone	8270D	127	80.0	159 *	114	80.0	143 *	46-114	11	30

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/07/22

**Duplicate Lab Control Sample Summary**  
**Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2215030-02				Duplicate Lab Control Sample RQ2215030-03				RPD	RPD Limit
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits		
Anthracene	8270D	78.4	80.0	98	68.0	80.0	85	55-116	14	30
Benz(a)anthracene	8270D	77.9	80.0	97	68.0	80.0	85	61-121	13	30
Benzo(a)pyrene	8270D	82.2	80.0	103	71.6	80.0	90	68-144	13	30
Benzo(b)fluoranthene	8270D	79.3	80.0	99	70.4	80.0	88	62-115	12	30
Benzo(g,h,i)perylene	8270D	79.4	80.0	99	66.1	80.0	83	63-136	18	30
Benzo(k)fluoranthene	8270D	87.5	80.0	109	73.6	80.0	92	49-133	17	30
Benzyl Alcohol	8270D	70.8	80.0	89	70.1	80.0	88	31-109	1	30
2,2'-Oxybis(1-chloropropane)	8270D	68.1	80.0	85	60.0	80.0	75	32-122	13	30
Bis(2-chloroethoxy)methane	8270D	75.7	80.0	95	67.3	80.0	84	53-124	12	30
Bis(2-chloroethyl) Ether	8270D	63.3	80.0	79	58.6	80.0	73	46-102	8	30
Bis(2-ethylhexyl) Phthalate	8270D	78.4	80.0	98	67.6	80.0	84	51-132	15	30
Butyl Benzyl Phthalate	8270D	81.3	80.0	102	68.5	80.0	86	41-148	17	30
Chrysene	8270D	85.0	80.0	106	73.0	80.0	91	57-118	15	30
Di-n-butyl Phthalate	8270D	93.9	80.0	117	81.5	80.0	102	75-144	14	30
Di-n-octyl Phthalate	8270D	81.5	80.0	102	68.2	80.0	85	33-151	18	30
Dibenz(a,h)anthracene	8270D	98.2	80.0	123	104	80.0	130	54-135	6	30
Dibenzofuran	8270D	71.5	80.0	89	61.5	80.0	77	55-110	14	30
Diethyl Phthalate	8270D	72.4	80.0	91	63.4	80.0	79	55-120	14	30
Dimethyl Phthalate	8270D	76.5	80.0	96	67.7	80.0	85	51-112	12	30
Fluoranthene	8270D	85.6	80.0	107	76.6	80.0	96	66-127	11	30
Fluorene	8270D	74.1	80.0	93	63.4	80.0	79	54-106	16	30
Hexachlorobenzene	8270D	85.1	80.0	106	73.8	80.0	92	53-123	14	30
Hexachlorobutadiene	8270D	45.6	80.0	57	41.8	80.0	52	16-95	9	30
Hexachlorocyclopentadiene	8270D	37.5	80.0	47	34.5	80.0	43	10-99	9	30
Hexachloroethane	8270D	40.2	80.0	50	36.8	80.0	46	15-92	8	30
Indeno(1,2,3-cd)pyrene	8270D	78.8	80.0	98	66.5	80.0	83	62-137	17	30
Isophorone	8270D	67.1	80.0	84	59.5	80.0	74	50-116	13	30
N-Nitrosodi-n-propylamine	8270D	66.9	80.0	84	59.7	80.0	75	49-115	11	30
N-Nitrosodimethylamine	8270D	37.8	80.0	47	38.0	80.0	48	31-70	2	30
N-Nitrosodiphenylamine	8270D	88.6	80.0	111	77.0	80.0	96	45-123	14	30
Naphthalene	8270D	56.7	80.0	71	48.9	80.0	61	38-99	15	30
Nitrobenzene	8270D	65.1	80.0	81	59.1	80.0	74	46-108	9	30
Pentachlorophenol (PCP)	8270D	73.1	80.0	91	57.5	80.0	72	29-164	23	30

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/07/22

**Duplicate Lab Control Sample Summary**  
**Semivolatile Organic Compounds by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample RQ2215030-02				Duplicate Lab Control Sample RQ2215030-03					
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Phenanthrene	8270D	80.1	80.0	100	70.1	80.0	88	58-118	13	30
Phenol	8270D	34.9	80.0	44	35.4	80.0	44	10-113	<1	30
Pyrene	8270D	82.6	80.0	103	70.8	80.0	89	61-122	15	30

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**1,4-Dioxane by GC/MS**

**Analysis Method:** 8270D SIM  
**Extraction Method:** EPA 3535A

Sample Name	Lab Code	Tetrahydrofuran-d8 (SUR)
		64-124
LCS-1122	R2211405-001	58*
LCS-1122 RE	R2211405-001	86
Method Blank	RQ2215243-01	95
Method Blank	RQ2215329-01	82
Lab Control Sample	RQ2215243-02	63*
Duplicate Lab Control Sample	RQ2215243-03	64
Lab Control Sample	RQ2215329-02	81
Duplicate Lab Control Sample	RQ2215329-03	84



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215243-01

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	12/06/22 15:05	12/6/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrahydrofuran-d8 (SUR)	95	64 - 124	12/06/22 15:05	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215329-01

**Units:** ug/L  
**Basis:** NA

1,4-Dioxane by GC/MS

**Analysis Method:** 8270D SIM  
**Prep Method:** EPA 3535A

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
1,4-Dioxane	0.040 U	0.040	0.027	1	12/07/22 14:39	12/7/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Tetrahydrofuran-d8 (SUR)	82	64 - 124	12/07/22 14:39	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/06/22

**Duplicate Lab Control Sample Summary**  
**1,4-Dioxane by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Result	Lab Control Sample		Duplicate Lab Control Sample		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	8270D SIM	6.56	10.0	66	7.02	10.0	70	58-124	7	30

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/07/22

**Duplicate Lab Control Sample Summary**  
**1,4-Dioxane by GC/MS**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Result	Lab Control Sample		Duplicate Lab Control Sample		% Rec Limits	RPD	RPD Limit	
			Spike Amount	% Rec	Result	Spike Amount				% Rec
1,4-Dioxane	8270D SIM	8.95	10.0	89	8.83	10.0	88	58-124	1	30



## Semivolatile Organic Compounds by GC

**ALS Environmental—Rochester Laboratory**  
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**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Organochlorine Pesticides by Gas Chromatography**

**Analysis Method:** 8081B  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	Decachlorobiphenyl	Tetrachloro-m-xylene
		10-164	10-147
LCS-1122	R2211405-001	16	66
Method Blank	RQ2215146-01	37	58
Lab Control Sample	RQ2215146-02	49	70
Duplicate Lab Control Sample	RQ2215146-03	39	73

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215146-01

**Units:** ug/L  
**Basis:** NA

**Organochlorine Pesticides by Gas Chromatography**

**Analysis Method:** 8081B  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
4,4'-DDD	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
4,4'-DDE	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
4,4'-DDT	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Aldrin	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Dieldrin	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Endosulfan I	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Endosulfan II	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Endosulfan Sulfate	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Endrin	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Endrin Aldehyde	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Heptachlor	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Heptachlor Epoxide	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Methoxychlor	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
Toxaphene	0.50 U	0.50	0.50	1	12/08/22 17:40	12/5/22	
alpha-BHC	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
alpha-Chlordane	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
beta-BHC	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
delta-BHC	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
gamma-BHC (Lindane)	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	
gamma-Chlordane	0.050 U	0.050	0.020	1	12/08/22 17:40	12/5/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	37	10 - 164	12/08/22 17:40	
Tetrachloro-m-xylene	58	10 - 147	12/08/22 17:40	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/08/22

**Duplicate Lab Control Sample Summary**  
**Organochlorine Pesticides by Gas Chromatography**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Analytical Method	Lab Control Sample RQ2215146-02			Duplicate Lab Control Sample RQ2215146-03			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
4,4'-DDD	8081B	0.351	0.400	88	0.320	0.400	80	42-159	9	30
4,4'-DDE	8081B	0.365	0.400	91	0.339	0.400	85	47-147	7	30
4,4'-DDT	8081B	0.375	0.400	94	0.340	0.400	85	41-149	10	30
Aldrin	8081B	0.300	0.400	75	0.295	0.400	74	22-137	2	30
Dieldrin	8081B	0.371	0.400	93	0.345	0.400	86	52-144	7	30
Endosulfan I	8081B	0.340	0.400	85	0.318	0.400	79	52-136	7	30
Endosulfan II	8081B	0.342	0.400	86	0.332	0.400	83	57-138	3	30
Endosulfan Sulfate	8081B	0.302	0.400	76	0.300	0.400	75	34-156	<1	30
Endrin	8081B	0.383	0.400	96	0.354	0.400	88	56-143	8	30
Endrin Aldehyde	8081B	0.135	0.400	34	0.174	0.400	43	10-166	25	30
Heptachlor	8081B	0.334	0.400	84	0.331	0.400	83	32-141	<1	30
Heptachlor Epoxide	8081B	0.367	0.400	92	0.346	0.400	86	51-143	6	30
Methoxychlor	8081B	0.390	0.400	98	0.360	0.400	90	56-149	8	30
alpha-BHC	8081B	0.338	0.400	85	0.338	0.400	85	36-151	<1	30
alpha-Chlordane	8081B	0.365	0.400	91	0.341	0.400	85	50-139	7	30
beta-BHC	8081B	0.352	0.400	88	0.343	0.400	86	55-149	3	30
delta-BHC	8081B	0.309	0.400	77	0.291	0.400	73	29-159	6	30
gamma-BHC (Lindane)	8081B	0.332	0.400	83	0.325	0.400	81	41-149	2	30
gamma-Chlordane	8081B	0.363	0.400	91	0.340	0.400	85	50-140	6	30



**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Polychlorinated Biphenyls (PCBs) by GC**

**Analysis Method:** 8082A  
**Extraction Method:** EPA 3510C

Sample Name	Lab Code	Decachlorobiphenyl	Tetrachloro-m-xylene
		10-152	14-129
LCS-1122	R2211405-001	13	55
Method Blank	RQ2215146-01	30	56
Lab Control Sample	RQ2215146-04	32	66
Duplicate Lab Control Sample	RQ2215146-05	33	62

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215146-01

**Units:** ug/L  
**Basis:** NA

**Polychlorinated Biphenyls (PCBs) by GC**

**Analysis Method:** 8082A  
**Prep Method:** EPA 3510C

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
Aroclor 1016	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	
Aroclor 1221	2.0 U	2.0	1.0	1	12/07/22 17:57	12/5/22	
Aroclor 1232	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	
Aroclor 1242	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	
Aroclor 1248	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	
Aroclor 1254	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	
Aroclor 1260	1.0 U	1.0	0.50	1	12/07/22 17:57	12/5/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Decachlorobiphenyl	30	10 - 152	12/07/22 17:57	
Tetrachloro-m-xylene	56	14 - 129	12/07/22 17:57	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/07/22

**Duplicate Lab Control Sample Summary**  
**Polychlorinated Biphenyls (PCBs) by GC**

**Units:**ug/L  
**Basis:**NA

Analyte Name	Lab Control Sample				Duplicate Lab Control Sample					
	Analytical Method	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec	% Rec Limits	RPD	RPD Limit
Aroclor 1016	8082A	3.87	4.00	97	3.64	4.00	91	49-123	6	30
Aroclor 1260	8082A	3.72	4.00	93	3.55	4.00	89	30-120	5	30

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Chlorinated Herbicides by GC**

**Analysis Method:** 8151A  
**Extraction Method:** Method

<b>Sample Name</b>	<b>Lab Code</b>	<b>DCAA 10-136</b>
LCS-1122	R2211405-001	121
Method Blank	RQ2215093-01	63
Lab Control Sample	RQ2215093-02	51
Duplicate Lab Control Sample	RQ2215093-03	102

**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** RQ2215093-01

**Units:** ug/L  
**Basis:** NA

**Chlorinated Herbicides by GC**

**Analysis Method:** 8151A  
**Prep Method:** Method

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
2,4,5-T	0.50 U	0.50	0.14	1	12/06/22 14:19	12/2/22	
2,4,5-TP	0.50 U	0.50	0.12	1	12/06/22 14:19	12/2/22	
2,4-D	0.50 U	0.50	0.35	1	12/06/22 14:19	12/2/22	
Dinoseb	0.50 U	0.50	0.21	1	12/06/22 14:19	12/2/22	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
DCAA	63	10 - 136	12/06/22 14:19	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 12/06/22

**Duplicate Lab Control Sample Summary**  
**Chlorinated Herbicides by GC**

**Units:**ug/L  
**Basis:**NA

**Lab Control Sample**  
RQ2215093-02

**Duplicate Lab Control Sample**  
RQ2215093-03

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>	<b>RPD</b>	<b>RPD Limit</b>
2,4,5-T	8151A	2.06	4.00	51	3.37	4.00	84	21-125	48*	30
2,4,5-TP	8151A	1.99	4.00	50	3.52	4.00	88	21-120	56*	30
2,4-D	8151A	2.58	4.00	65	4.09	4.00	102	26-154	45*	30
Dinoseb	8151A	1.75	4.00	44	2.80	4.00	70	13-112	46*	30



# Metals

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Form 3

## Blanks

# Metals by EPA 7470A, EPA 6010C

Workorder

**R2211405**

Client

**Casella Waste Systems**

Project

**Hakes C&D - Part 363 Expanded  
Leachate**

01/25/2023

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# Form 3 - Blanks

Client Casella Waste Systems  
 Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Mercury by EPA 7470A

RCVAA02_788499			ICB	CCB	CCB	MB788499	CCB	CCB
Units	Run Date		12/14/22	12/14/22	12/14/22	12/14/22	12/14/22	12/14/22
~	Run Time		11:20	14:18	14:41	14:43	14:59	15:21
Analyte	DL	LOQ	Result	Q	Result	Q	Result	Q
Mercury	0.08	0.20	0.08	U	0.08	U	0.08	U

RCVAA02_788499			CCB
Units	Run Date		12/14/22
~	Run Time		15:51
Analyte	DL	LOQ	Result
Mercury	0.08	0.20	0.08



# Form 3 - Blanks

Client Casella Waste Systems  
 Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Metals by EPA 6010C

RPAES06_787770			ICB		CCB		CCB		MB787770		CCB		CCB	
Units			Run Date		Run Date		Run Date		Run Date		Run Date		Run Date	
Run Date			12/07/22		12/07/22		12/07/22		12/07/22		12/07/22		12/07/22	
Run Time			17:54		20:04		20:30		20:34		21:10		21:45	
Data File			6DEC07A		6DEC07A		6DEC07A		6DEC07A		6DEC07A		6DEC07A	
Analyte	DL	LOQ	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Aluminum	30	100	30	U	30	U	30	U	30	U	30	U	30	U
Antimony	7	60	7	U	7	U	7	U	7	U	7	U	7	U
Arsenic	6	10	6	U	6	U	6	U	6	U	6	U	6	U
Barium	3	20	3	U	3	U	3	U	3	U	3	U	3	U
Beryllium	0.2	3.0	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
Boron	20	200	200	U	200	U	200	U	20	U	200	U	200	U
Cadmium	0.4	5.0	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U	0.4	U
Calcium	300	1000	1000	U	1000	U	1000	U	300	U	1000	U	1000	U
Chromium	2	10	2	U	2	U	2	U	2	U	2	U	2	U
Cobalt	0.9	50	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U	0.9	U
Copper	4	20	4	U	4	U	4	U	4	U	4	U	4	U
Iron	70	100	70	U	70	U	70	U	70	U	70	U	70	U
Lead	2.1	5.0	2.1	U	2.1	U	2.1	U	2.1	J	2.1	U	2.1	U
Magnesium	30	1000	30	U	30	U	30	U	30	U	30	U	30	U
Manganese	4	10	4	U	4	U	4	U	4	U	4	U	4	U
Nickel	3	40	3	U	3	U	3	U	3	U	3	U	3	U
Potassium	400	2000	2000	U	2000	U	2000	U	400	U	2000	U	2000	U
Selenium	7	10	7	U	7	U	7	U	7	U	7	U	7	U
Silver	0.6	10	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U	0.6	U
Sodium	200	1000	1000	U	1000	J	1000	U	200	U	1000	U	1000	U
Thallium	7	10	7	J	7	U	7	U	7	U	7	U	7	J
Tin	8	500	8	U	8	U	8	U	8	U	8	U	8	U
Vanadium	0.7	50	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U	0.7	U
Zinc	3	20	3	U	3	U	3	U	3	U	3	U	3	U



# Form 3 - Blanks

Client Casella Waste Systems  
 Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Metals by EPA 6010C

RPAES06_787770			CCB	
Units		Run Date	12/07/22	
		Run Time	22:02	
		Data File	6DEC07A	
Analyte	DL	LOQ	Result	Q
Aluminum	30	100	30	U
Antimony	7	60	7	U
Arsenic	6	10	6	U
Barium	3	20	3	U
Beryllium	0.2	3.0	0.2	U
Boron	20	200	200	U
Cadmium	0.4	5.0	0.4	U
Calcium	300	1000	1000	U
Chromium	2	10	2	U
Cobalt	0.9	50	0.9	U
Copper	4	20	4	U
Iron	70	100	70	U
Lead	2.1	5.0	2.1	J
Magnesium	30	1000	30	U
Manganese	4	10	4	U
Nickel	3	40	3	U
Potassium	400	2000	2000	U
Selenium	7	10	7	U
Silver	0.6	10	0.6	U
Sodium	200	1000	1000	U
Thallium	7	10	7	U
Tin	8	500	8	U
Vanadium	0.7	50	0.7	U
Zinc	3	20	3	U



# Form 3 - Blanks

Client Casella Waste Systems  
 Project Hakes C&D - Part 363 Expanded Leachate

Workorder  
**R2211405**

## Metals by EPA 6010C

RPAES06_787944			ICB		CCB		CCB		CCB		CCB	
Units		Run Date	12/08/22		12/08/22		12/08/22		12/08/22		12/08/22	
		Run Time	16:57		21:27		21:43		22:32		22:48	
		Data File	6DEC08B		6DEC08B		6DEC08B		6DEC08B		6DEC08B	
Analyte	DL	LOQ	Result	Q	Result	Q	Result	Q	Result	Q	Result	Q
Boron	20	200	20	U	20	U	20	U	20	U	20	U
Calcium	300	1000	300	U	300	U	300	U	300	U	300	U
Potassium	400	2000	400	U	400	U	400	U	400	U	400	U
Sodium	200	1000	200	U	200	U	200	U	200	U	200	U



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Form 7

## Laboratory Control Sample

# Metals by EPA 6010C, EPA 7470A

Workorder

**R2211405**

Client

**Casella Waste Systems**

Project

**Hakes C&D - Part 363 Expanded  
Leachate**

01/25/2023

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# Form 7 - Laboratory Control Sample

Client Casella Waste Systems

Workorder

Project Hakes C&D - Part 363 Expanded Leachate

**R2211405**

## Mercury by EPA 7470A

RCVAA02_788499	QC ID		R2211405-LCS2		
QC Matrix Water	Run Date		12/14/22		
Prep Method Method	Units	Run Time	14:45		
Prep Batch 411471 12/13/22	ug/L	Prep Amt	25 mL		
Analyte	%R Limits	Spike Added	LCS Result	%R	Q
Mercury	80-120	1.00	1.03	103	

# - %Recovery / RPD Flag

\* - %Recovery / RPD Outside Limits



# Form 7 - Laboratory Control Sample

Client Casella Waste Systems

Workorder

Project Hakes C&D - Part 363 Expanded Leachate

**R2211405**

## Metals by EPA 6010C

RPAES06_787770	QC ID		R2211405-LCS1			R2211405-LCS1					
QC Matrix Water		Run Date	12/07/22			12/07/22					
Prep Method EPA 3005A/3010A	Units	Run Time	20:37			20:40					
Prep Batch 411009 12/06/22	ug/L	Prep Amt	50 mL			50 mL					
Analyte	%R Limits	Spike Added	LCS Result	%R	Q	LCSD Result	%R	Q	RPD Limit	RPD	Q
Aluminum	80-120	2000	2040	102		2020	101.0		20	<1	
Antimony	80-120	500	511	102		508	102.0		20	<1	
Arsenic	80-120	40	41	102		43	107.0		20	5	
Barium	80-120	2000	2120	106		2100	105.0		20	<1	
Beryllium	80-120	50.0	48.9	98		48.6	97.0		20	<1	
Boron	80-120	1000	1010	101		1000	100.0		20	<1	
Cadmium	80-120	50.0	52.2	104		51.9	104.0		20	<1	
Calcium	80-120	2000	2000	102		2000	101.0		20	<1	
Chromium	80-120	200	208	104		207	103.0		20	<1	
Cobalt	80-120	500	520	104		515	103.0		20	<1	
Copper	80-120	250	255	102		252	101.0		20	<1	
Iron	80-120	1000	1010	101		1000	100.0		20	<1	
Lead	80-120	500	521	104		516	103.0		20	<1	
Magnesium	80-120	2000	2000	101		2000	100.0		20	<1	
Manganese	80-120	500	512	102		509	102.0		20	<1	
Nickel	80-120	500	531	106		527	105.0		20	<1	
Potassium	80-120	20000	18700	94		18600	93.0		20	<1	
Selenium	80-120	1010	999	99		994	98.0		20	<1	
Silver	80-120	50	51	101		50	100.0		20	1	
Sodium	80-120	20000	20100	100		19900	100.0		20	<1	
Thallium	80-120	2000	1900	95		1890	94.0		20	<1	
Tin	80-120	5000	5180	104		5100	102.0		20	2	
Vanadium	80-120	500	505	101		502	100.0		20	<1	
Zinc	80-120	500	515	103		511	102.0		20	<1	

# - %Recovery / RPD Flag

\* - %Recovery / RPD Outside Limits



## General Chemistry

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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water  
**Sample Name:** Method Blank  
**Lab Code:** R2211405-MB

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA  
**Basis:** NA

**Inorganic Parameters**

<u>Analyte Name</u>	<u>Analysis Method</u>	<u>Result</u>	<u>Units</u>	<u>MRL</u>	<u>MDL</u>	<u>Dil.</u>	<u>Date Analyzed</u>	<u>Date</u> <u>Extracted</u>	<u>Q</u>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	2.0 U	mg/L	2.0	1.8	1	12/10/22 14:55	NA	
Ammonia as Nitrogen, undistilled	350.1	0.050 U	mg/L	0.050	0.026	1	12/27/22 20:24	NA	
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	2.0 U	mg/L	2.0	-	1	11/30/22 13:49	NA	
Bromide	9056A	0.10 U	mg/L	0.10	0.04	1	12/01/22 10:30	NA	
Carbon, Total Organic (TOC)	SM 5310 B-2014	1.0 U	mg/L	1.0	0.5	1	12/21/22 14:00	NA	
Chemical Oxygen Demand, Total	410.4	5.0 U	mg/L	5.0	3.8	1	12/21/22 23:00	NA	
Chloride	9056A	0.20 U	mg/L	0.20	0.05	1	12/05/22 04:23	NA	
Chromium, Hexavalent	7196A	0.010 U	mg/L	0.010	0.003	1	11/29/22 23:46	NA	
Cyanide, Total	Kelada-01	0.0050 U	mg/L	0.0050	0.0040	1	12/08/22 01:17	NA	
Nitrate as Nitrogen	9056A	0.10 U	mg/L	0.10	0.02	1	12/01/22 10:30	NA	
Nitrogen, Total Kjeldahl (TKN)	351.2	0.20 U	mg/L	0.20	0.15	1	12/21/22 19:24	12/20/22	
Phenolics, Total Recoverable	9066	0.0050 U	mg/L	0.0050	0.0029	1	12/12/22 22:03	NA	
Solids, Total Dissolved (TDS)	SM 2540 C-2015	10 U	mg/L	10	9	1	12/01/22 12:50	NA	
Sulfate	9056A	<b>0.05 J</b>	mg/L	0.20	0.04	1	12/01/22 10:30	NA	

**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 11/29/22 - 12/27/22

**Lab Control Sample Summary**  
**General Chemistry Parameters**

**Units:**mg/L  
**Basis:**NA

**Lab Control Sample**  
R2211405-LCS

<b>Analyte Name</b>	<b>Analytical Method</b>	<b>Result</b>	<b>Spike Amount</b>	<b>% Rec</b>	<b>% Rec Limits</b>
Alkalinity, Total as CaCO3	SM 2320 B-1997(2011)	20.9	20.0	104	80-120
Ammonia as Nitrogen, undistilled	350.1	0.252	0.250	101	90-110
Biochemical Oxygen Demand (BOD)	SM 5210 B-2016	204	198	103	85-115
Bromide	9056A	0.955	1.00	96	80-120
Carbon, Total Organic (TOC)	SM 5310 B-2014	24.4	25.0	98	80-121
Chemical Oxygen Demand, Total	410.4	524	500	105	90-110
Chloride	9056A	1.84	2.00	92	80-120
Chromium, Hexavalent	7196A	0.107	0.100	107	80-120
Cyanide, Total	Kelada-01	0.0945	0.100	95	90-110
Nitrate as Nitrogen	9056A	0.951	1.00	95	80-120
Nitrogen, Total Kjeldahl (TKN)	351.2	2.61	2.50	104	90-110
Phenolics, Total Recoverable	9066	0.0416	0.0400	104	85-115
Solids, Total Dissolved (TDS)	SM 2540 C-2015	878	914	96	90-110
Sulfate	9056A	1.88	2.00	94	80-120



## Subcontracted Analytical Parameters

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EBS-OR-50553

January 5, 2023

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Bldg 300, Suite 360  
Rochester, NY 14623

CASE NARRATIVE  
Work Order # 22-12043-OR

SAMPLE RECEIPT

This work order contains two water samples received 12/13/2022. Samples were analyzed for Isotopic Uranium.

<u>CLIENT ID</u>	<u>LAB ID</u>
LCS-1122	22-12043-04
LCS-1122 DISS	22-12043-05

ANALYTICAL METHODS

Isotopic Uranium was analyzed using EPA Method 908.0 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CONSIDERATIONS

Lab fraction -05 (Client ID: LCS-1122 DISS) was filtered prior to analysis.

ISOTOPIC URANIUM

Samples were prepared by removing representative aliquots from the samples. Uranium was dissolved in chloride solution and separated by anion-exchange resin columns. Uranium was micro-precipitated directly using Hydrogen Fluoride, and Neodymium carrier was added. Uranium was filtered onto micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235, and Uranium-238. Chemical recovery was determined using a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

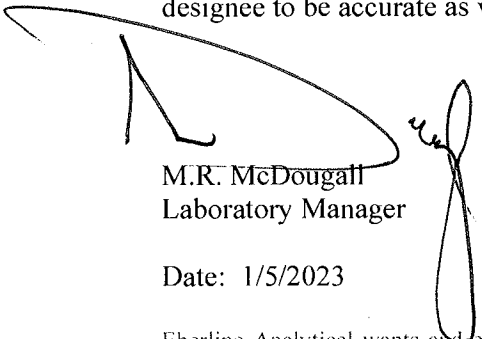
ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM CONTINUED

Samples demonstrated acceptable results for all Uranium-234, Uranium-235, and Uranium-238 analyses. Chemical recovery was acceptable for all analyses. The Uranium-234, Uranium-235, and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-234, Uranium-235, and Uranium-238 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 1/5/2023

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# Eberline Analytical

## Final Report of Analysis

**Janice Jaeger**  
**ALS Environmental**  
**1565 Jefferson Rd Bldg 300 suite 360**  
**Rochester, NY 14623**

Report To:

Work Order Details:

**SDG: 22-12043 REVISED**  
 Purchase Order: 58R2211405  
 Analysis Category: ENVIRONMENTAL  
 Sample Matrix: WVA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-12043-01	LCS	KNOWN	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	7.97E+00	2.87E-01			pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	6.71E+00	7.87E-01	9.22E-01	8.57E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	3.18E-02	4.75E-02	4.75E-02	7.73E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	2.74E-01	1.90E-01	1.91E-01	1.82E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	6.23E-01	3.02E-01	3.06E-01	1.87E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	1.02E-01	1.67E-01	1.67E-01	2.93E-01	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	5.23E-01	1.77E-01	1.81E-01	8.12E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	1.40E-02	3.36E-02	3.36E-02	7.05E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	2.25E-01	1.95E-01	1.96E-01	2.25E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	-7.47E-03	8.74E-02	8.74E-02	1.84E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	1.28E-01	1.55E-01	1.55E-01	1.89E-01	pCi/l
22-12043-01	LCS	KNOWN	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	7.72E+00	2.78E-01			pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	7.32E+00	8.39E-01	9.89E-01	6.97E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	1.37E-02	3.79E-02	3.79E-02	8.20E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	1.77E-01	1.47E-01	1.47E-01	1.27E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	3.32E-01	2.24E-01	2.25E-01	2.01E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	3.11E-01	2.18E-01	2.19E-01	1.92E-01	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	2.20E+01	2.50E+00	3.02E+00	2.45E-01	ug/L
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	4.72E-02	1.14E-01	1.14E-01	2.76E-01	ug/L
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	6.30E-01	4.46E-01	4.49E-01	4.81E-01	ug/L
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	9.83E-01	6.67E-01	6.71E-01	6.82E-01	ug/L
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	9.83E-01	6.52E-01	6.57E-01	6.58E-01	ug/L

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (1-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



**EBERLINE**  
ANALYTICAL

EBERLINE ANALYTICAL CORPORATION

601 SCARBORO ROAD OAK RIDGE, TN 37830 865/481-0683 FAX 865/483-4621

# ALS Environmental Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

Project Number: R2211405  
 Project Manager: Janice Jaeger  
 QAP: LAB QAP

REC'D DEC 13 2022  
 22-12043

Lab Code	Sample ID	# of Cont.	Matrix	Sample			Lab ID	Nat U 9080
				Date	Time	Time		
4	R2211405-001	1	Water	11/29/22	1420	Eberline TN	X	
5	R2211405-002	1	Water	11/29/22	1420	Eberline TN	X	

*need in lab folder*

Special Instructions/Comments  <i>excel add</i>	Turnaround Requirements RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD	Report Requirements I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries III. Results + QC and Calibration Summaries <input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data	Invoice Information
	Requested FAX Date: _____ Requested Report Date: 12/23/22	PQL/MDL/J <u>Y</u> EDD <u>Y</u>	PO# 58R2211405 Bill to _____
NPDES			
H - Test is On Hold		P - Test is Authorized for Prep Only	

Relinquished By: *Janice Jaeger* Received By: *Janice Jaeger* 12/12/22 10:00  
 Airbill Number: \_\_\_\_\_  
 12-13-22 *DF3D*

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>22-12043</b>	<b>UUIISO</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>ALS Enviromental</b>

**Laboratory Control Sample**

Analyte	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
U-234	84.19%	13.73%	100.00%	3.60%	7.97E+00	2.87E-01	6.71E+00	9.22E-01	U-8a	3.20E+01	3.60E+00	5.53E-01
U-238	94.70%	13.52%	100.00%	3.60%	7.72E+00	2.78E-01	7.32E+00	9.89E-01	U-8a	3.10E+01	3.60E+00	5.53E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

**Replicate Sample**

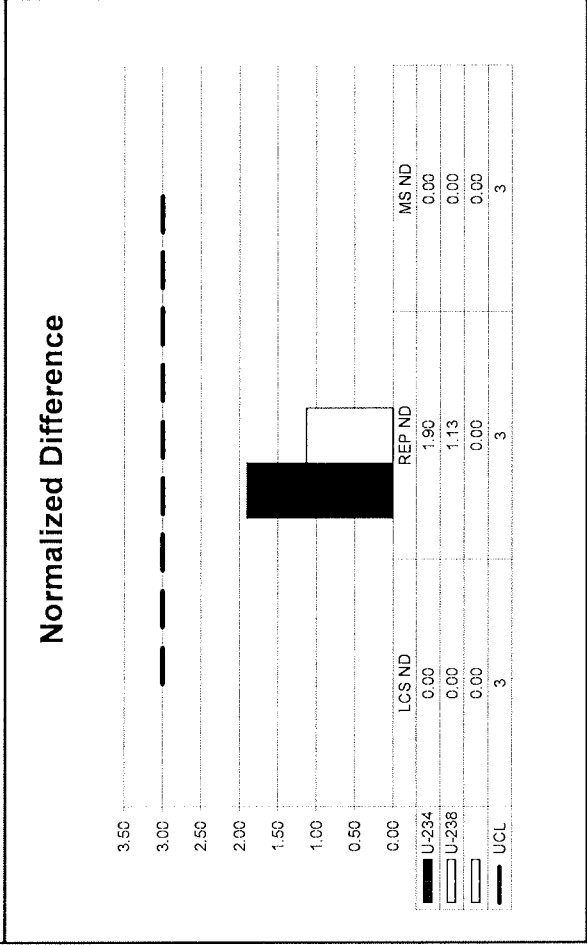
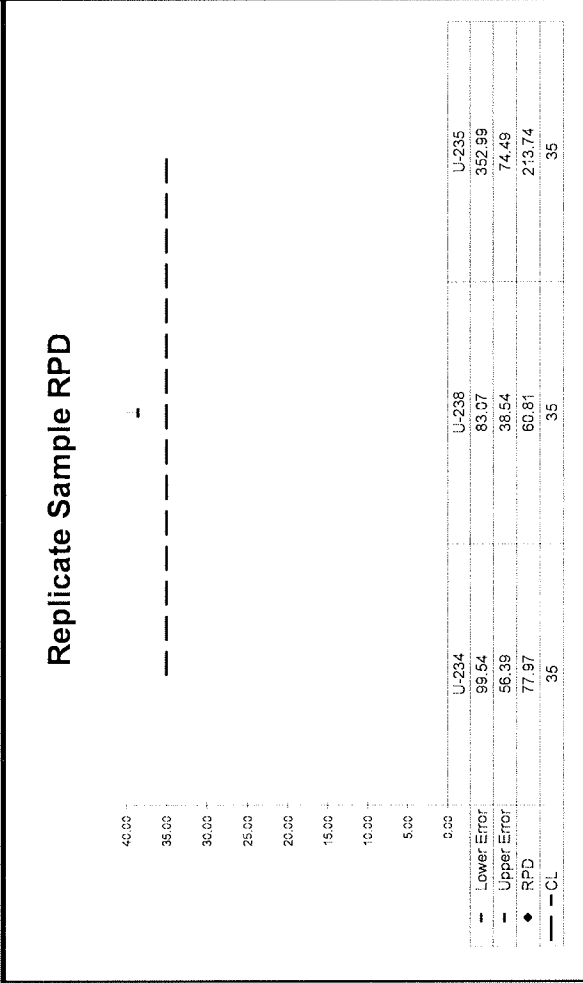
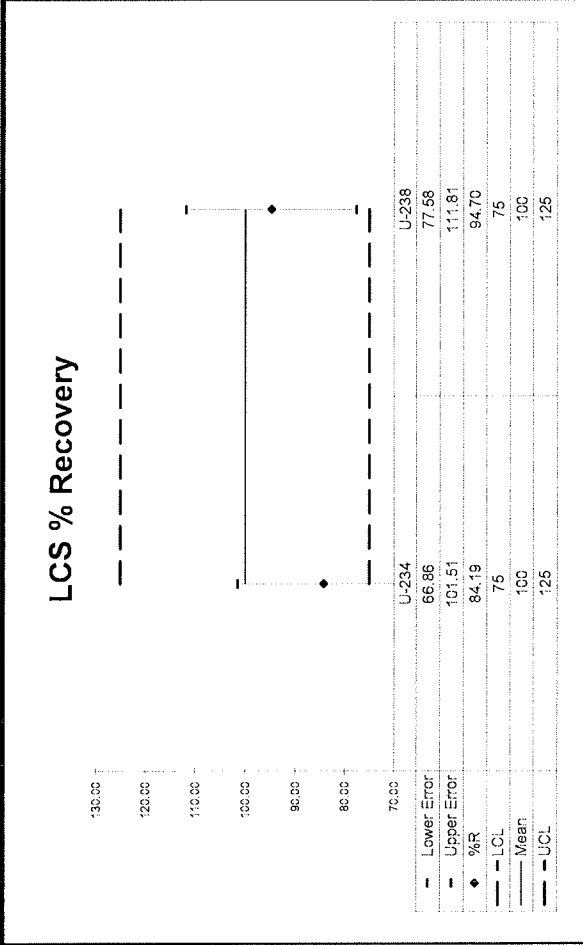
Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	1.90	77.97	6.23E-01	3.06E-01	2.74E-01	1.91E-01	0.84	OK			NA	OK
U-238	1.13	60.81	3.32E-01	2.25E-01	1.77E-01	1.47E-01	0.95	OK			NA	OK
U-235	2.12	213.74	-7.47E-03	8.74E-02	2.25E-01	1.96E-01		OK			NA	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	1.90	77.97	6.23E-01	3.06E-01	2.74E-01	1.91E-01	0.84	OK			NA	OK
U-238	1.13	60.81	3.32E-01	2.25E-01	1.77E-01	1.47E-01	0.95	OK			NA	OK
U-235	2.12	213.74	-7.47E-03	8.74E-02	2.25E-01	1.96E-01		OK			NA	OK



WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>22-12043</b>	<b>UUISO</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>ALS Environmental</b>



**No Matrix Spike**



December 27, 2022

Nicole Mansen  
ALS Environmental  
1565 Jefferson Rd  
Building 300, Suite 360  
Rochester, New York 14623

Re: Rochester - Mansen L4 & 2  
Work Order: 603993

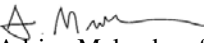
Dear Nicole Mansen:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on December 13, 2022. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Test results for NELAP or ISO 17025 accredited tests are verified to meet the requirements of those standards, with any exceptions noted. The results reported relate only to the items tested and to the sample as received by the laboratory. These results may not be reproduced except as full reports without approval by the laboratory. Copies of GEL's accreditations and certifications can be found on our website at [www.gel.com](http://www.gel.com).

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4422.

Sincerely,

  
Adrian Melendrez for  
Jake Crook  
Project Manager

Purchase Order: 58R2211405  
Enclosures



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# Case Narrative

Receipt Narrative  
for  
ALS Environmental  
SDG: 603993

December 27, 2022

Laboratory Identification:

GEL Laboratories LLC  
2040 Savage Road  
Charleston, South Carolina 29407  
(843) 556-8171

Summary:

Sample receipt: The samples arrived at GEL Laboratories LLC, Charleston, South Carolina on December 13, 2022 for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

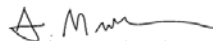
Sample Identification: The laboratory received the following samples:

<u>Laboratory ID</u>	<u>Client ID</u>
603993001	LCS-1122
603993002	LCS-1122 Diss

Case Narrative:

Sample analyses were conducted using methodology as outlined in GEL's Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

The enclosed data package contains the following sections: Case Narrative, Chain of Custody, Cooler Receipt Checklist, Data Package Qualifier Definitions and data from the following fractions: Radiochemistry.

  
Adrian Melendrez for  
Jake Crook  
Project Manager

# **Chain of Custody and Supporting Documentation**

# ALS Environmental Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

603993

Project Number: R2211405  
 Project Manager: Janice Jaeger  
 CAP: LAB QAP

SDG: 603993

Lab Code	Sample ID	# of Cont.	Matrix	Sample			Lab ID
				Date	Time	Time	
R2211405-001	LCS-1122	2	Water	11/29/22	1420	GEL Labs LLC	Radium 228 904.0
R2211405-002	LCS-1122 Diss	2	Water	11/29/22	1420	GEL Labs LLC	Radium 226 903.1

*need in lab files*  
*add excel add*

Special Instructions/Comments  NPDES  H - Test is On Hold	Turnaround Requirements RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: 12/23/22	Report Requirements I. Results Only _____ <input checked="" type="checkbox"/> II. Results + QC Summaries III. Results + QC and Calibration Summaries _____ <input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>Y</u> EDD <u>Y</u>	Invoice Information PO# 58R2211405 Bill to _____
	P - Test is Authorized for Prep Only		

Relinquished By: *Janice Jaeger* 12/12/22 1020 Received By: \_\_\_\_\_ Airbill Number: \_\_\_\_\_

**SAMPLE RECEIPT & REVIEW FORM**

603993

Client: <b>ALSE</b>	SDG/AR/COC/Work Order:
Received By: <b>MLS</b>	Date Received: <b>12.13.22</b>
Carrier and Tracking Number	Circle Applicable: <input checked="" type="radio"/> FedEx Express <input type="radio"/> FedEx Ground <input type="radio"/> UPS <input type="radio"/> Field Services <input type="radio"/> Courier <input type="radio"/> Other 5779 0452 1577 15 5779 0452 1588-11 1695 1656 2422-3

Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
A) Shipped as a DOT Hazardous?		<input checked="" type="checkbox"/>	Hazard Class Shipped: _____ UN#: _____ If UN2910, Is the Radioactive Shipment Survey Compliant? Yes ___ No ___
B) Did the client designate the samples are to be received as radioactive?		<input checked="" type="checkbox"/>	COC notation or radioactive stickers on containers equal client designation.
C) Did the RSO classify the samples as radioactive?		<input checked="" type="checkbox"/>	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): <u>13</u> (CPM) mR/Hr Classified as: Rad 1 Rad 2 Rad 3
D) Did the client designate samples are hazardous?		<input checked="" type="checkbox"/>	COC notation or hazard labels on containers equal client designation.
E) Did the RSO identify possible hazards?		<input checked="" type="checkbox"/>	If D or E is yes, select Hazards below. PCB's Flammable Foreign Soil RCRA Asbestos Beryllium Other:

Sample Receipt Criteria		Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Chain of custody documents included with shipment?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Client contacted and provided COC COC created upon receipt
3	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Preservation Method: Wet ice <input checked="" type="checkbox"/> Ice Packs Dry ice <input checked="" type="checkbox"/> None Other: _____ *all temperatures are recorded in Celsius TEMP: _____
4	Daily check performed and passed on IR temperature gun?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Temperature Device Serial #: <u>IR 2-21</u> Secondary Temperature Device Serial # (If Applicable): _____
5	Sample containers intact and sealed?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
6	Samples requiring chemical preservation at proper pH?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Sample ID's and Containers Affected: <u>ALL Preserved ones</u> If Preservation added, Lot#: _____
7	Do any samples require Volatile Analysis?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		If Yes, are Encores or Soil Kits present for solids? Yes ___ No ___ NA ___ (If yes, take to VOA Freezer)
					Do liquid VOA vials contain acid preservation? Yes ___ No ___ NA ___ (If unknown, select No)
					Are liquid VOA vials free of headspace? Yes ___ No ___ NA ___
8	Samples received within holding time?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		ID's and tests affected:
9	Sample ID's on COC match ID's on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		ID's and containers affected:
10	Date & time on COC match date & time on bottles?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: No dates on containers No times on containers COC missing info Other (describe)
11	Number of containers received match number indicated on COC?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: No container count on COC Other (describe)
12	Are sample containers identifiable as GEL provided by use of GEL labels?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
13	COC form is properly signed in relinquished/received sections?	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		Circle Applicable: Not relinquished Other (describe)

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials (Signature) Date 12/14/22 Page \_\_\_ of \_\_\_



# Laboratory Certifications

**List of current GEL Certifications as of 27 December 2022**

<b>State</b>	<b>Certification</b>
Alabama	42200
Alaska	17-018
Alaska Drinking Water	SC00012
Arkansas	88-0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH-0169
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330-15-00283, P330-15-00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho	SC00012
Illinois NELAP	200029
Indiana	C-SC-01
Kansas NELAP	E-10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana Drinking Water	LA024
Louisiana NELAP	03046 (AI33904)
Maine	2019020
Maryland	270
Massachusetts	M-SC012
Massachusetts PFAS Approv	Letter
Michigan	9976
Mississippi	SC00012
Nebraska	NE-OS-26-13
Nevada	SC000122023-4
New Hampshire NELAP	2054
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R-158
Oklahoma	2022-160
Pennsylvania NELAP	68-00485
Puerto Rico	SC00012
S. Carolina Radiochem	10120002
Sanitation Districts of L	9255651
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235-22-20
Utah NELAP	SC000122022-37
Vermont	VT87156
Virginia NELAP	460202
Washington	C780

# Radiological Analysis

# Case Narrative

**Radiochemistry  
Technical Case Narrative  
ALS Environmental  
SDG #: 603993**

**Product:** GFPC Ra228, Liquid

**Analytical Method:** EPA 904.0/SW846 9320 Modified

**Analytical Procedure:** GL-RAD-A-063 REV# 5

**Analytical Batch:** 2356602

**Filtration Method:** GL-RAD-A-026

**Filtration Procedure:** GL-RAD-A-026 REV# 18

**Filtration Batch:** 2356043

The following samples were analyzed using the above methods and analytical procedure\*s,.

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
603993001	LCS-1122
603993002	LCS-1122 Diss
1205272182	Method Blank •MB,
1205272183	604095012•NonSDG, Sample Duplicate •DUP,
1205272184	Laboratory Control Sample •LCS,

The samples in this SDG were analyzed on an "as received" basis.

**Data Summary:**

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

**Product:** Lucas Cell, Ra226, Liquid

**Analytical Method:** EPA 903.1 Modified

**Analytical Procedure:** GL-RAD-A-008 REV# 15

**Analytical Batch:** 2356591

**Filtration Method:** GL-RAD-A-026

**Filtration Procedure:** GL-RAD-A-026 REV# 18

**Filtration Batch:** 2356043

The following samples were analyzed using the above methods and analytical procedure\*s,.

<b><u>GEL Sample ID#</u></b>	<b><u>Client Sample Identification</u></b>
603993001	LCS-1122
603993002	LCS-1122 Diss
1205272144	Method Blank •MB,
1205272145	604095012•NonSDG, Sample Duplicate •DUP,

1205272146  
1205272147

604095012(NonSDG) Matrix Spike (MS)  
Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Preparation Information

Aliquot Reduced

1205272145 (Non SDG 604095012DUP) and 1205272146 (Non SDG 604095012MS) Aliquots were reduced due to limited sample volume.

Quality Control •QC. Information

RDL Met

Samples (See Below) did not meet the detection limits due to limited sample volume. Samples were counted the maximum count time in order to achieve the lowest MDAs possible.

Sample	Analyte	Value
1205272144 (MB)	Radium-226	Result 0.455 < MDA 0.736 > RDL 0.5 pCi/L
1205272145 (Non SDG 604095012DUP)	Radium-226	Result 0.702 < MDA 0.785 > RDL 0.5 pCi/L

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Qualifier Definition Report for

ALSE001 ALS Environmental

Client SDG: 603993 GEL Work Order: 603993

### The Qualifiers in this report are defined as follows:

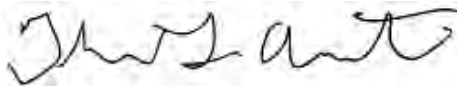
- \* A quality control analyte recovery is outside of specified acceptance criteria
- \*\* Analyte is a Tracer compound
- U Analyte was analyzed for, but not detected above the MDL, MDA, MDC or LOD.

### Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:



Name: Theresa Austin

Date: 28 DEC 2022

Title: Group Leader

# Sample Data Summary



# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: December 28, 2022

Company : ALS Environmental  
Address : 1565 Jefferson Rd  
Building 300, Suite 360  
Rochester, New York 14623  
Contact: Nicole Mansen  
Project: Rochester - Mansen L4 & 2

Client Sample ID: LCS-1122 Project: ALSE03622  
Sample ID: 603993001 Client ID: ALSE001  
Matrix: Water  
Collect Date: 29-NOV-22 14:20  
Receive Date: 13-DEC-22  
Collector: Client

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	1.63	+/-1.11	1.73	3.00	pCi/L		JE1	12/22/22	0826	2356602		1
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.04	+/-0.527	0.637	1.00	pCi/L		LXP1	12/22/22	0811	2356591		2

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			90.3	(15%-125%)

### Notes:

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor                      Lc/LC: Critical Level  
DL: Detection Limit                      PF: Prep Factor  
MDA: Minimum Detectable Activity      RL: Reporting Limit  
MDC: Minimum Detectable Concentration      SQL: Sample Quantitation Limit

# GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

## Certificate of Analysis

Report Date: December 28, 2022

Company : ALS Environmental  
 Address : 1565 Jefferson Rd  
 Building 300, Suite 360  
 Rochester, New York 14623  
 Contact: Nicole Mansen  
 Project: Rochester - Mansen L4 & 2

Client Sample ID: LCS-1122 Diss	Project: ALSE03622
Sample ID: 603993002	Client ID: ALSE001
Matrix: Water	
Collect Date: 29-NOV-22 14:20	
Receive Date: 13-DEC-22	
Collector: Client	

Parameter	Qualifier	Result	Uncertainty	MDC	RL	Units	PF	DF	Analyst	Date	Time	Batch	Method
Rad Gas Flow Proportional Counting													
GFPC Ra228, Liquid "As Received"													
Radium-228	U	0.909	+/-0.985	1.64	3.00	pCi/L		JE1	12/22/22	0826	2356602		1
Rad Radium-226													
Lucas Cell, Ra226, Liquid "As Received"													
Radium-226		1.85	+/-0.609	0.592	1.00	pCi/L		LXP1	12/22/22	0811	2356591		2

The following Prep Methods were performed:

Method	Description	Analyst	Date	Time	Prep Batch
GL-RAD-A-026	Laboratory Filtration				2356043

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	EPA 904.0/SW846 9320 Modified	
2	EPA 903.1 Modified	

Surrogate/Tracer Recovery	Test	Result	Nominal	Recovery%	Acceptable Limits
Barium-133 Tracer	GFPC Ra228, Liquid "As Received"			87.7	(15%-125%)

**Notes:**

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

Column headers are defined as follows:

DF: Dilution Factor	Lc/LC: Critical Level
DL: Detection Limit	PF: Prep Factor
MDA: Minimum Detectable Activity	RL: Reporting Limit
MDC: Minimum Detectable Concentration	SQL: Sample Quantitation Limit

# Quality Control Summary

# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Report Date: December 28, 2022

Page 1 of 2

**ALS Environmental**  
**1565 Jefferson Rd**  
**Building 300, Suite 360**  
**Rochester, New York**

**Contact:** Nicole Mansen

**Workorder:** 603993

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
<b>Rad Gas Flow</b>											
Batch	2356602										
QC1205272183	604095012		DUP								
Radium-228	U	-0.0489	U	0.0448	pCi/L	N/A		N/A	JE1	12/22/22	08:26
	Uncertainty	+/-0.305		+/-0.223							
QC1205272184	LCS										
Radium-228	21.8			20.2	pCi/L		92.6	(75%-125%)		12/22/22	08:26
	Uncertainty			+/-1.31							
QC1205272182	MB										
Radium-228			U	-0.0587	pCi/L					12/22/22	08:26
	Uncertainty			+/-0.258							
<b>Rad Ra-226</b>											
Batch	2356591										
QC1205272145	604095012		DUP								
Radium-226	U	0.371	U	0.702	pCi/L	N/A		N/A	LXP1	12/22/22	08:11
	Uncertainty	+/-0.524		+/-0.545							
QC1205272147	LCS										
Radium-226	26.7			25.3	pCi/L		94.9	(75%-125%)		12/22/22	08:43
	Uncertainty			+/-2.01							
QC1205272144	MB										
Radium-226			U	0.455	pCi/L					12/22/22	08:11
	Uncertainty			+/-0.455							
QC1205272146	604095012		MS								
Radium-226	134	U	0.371	109	pCi/L		81.6	(75%-125%)		12/22/22	08:43
	Uncertainty			+/-0.524	+/-9.74						

**Notes:**

Counting Uncertainty is calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

- \*\* Analyte is a Tracer compound
- < Result is less than value reported
- > Result is greater than value reported
- BD Results are either below the MDC or tracer recovery is low
- FA Failed analysis.

# GEL LABORATORIES LLC

2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

## QC Summary

Workorder: 603993

Page 2 of 2

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time
H											
J											
J											
K											
L											
M											
M											
N/A											
NI											
ND											
NJ											
Q											
R											
U											
UI											
UJ											
UL											
X											
Y											
^											
h											

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.

^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where the duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.

\* Indicates that a Quality Control parameter was not within specifications.

For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.



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ALS Group USA, Corp  
1317 South 13th Avenue  
Kelso, WA 98626  
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F : +1 360 636 1068  
[www.alsglobal.com](http://www.alsglobal.com)

February 02, 2023

**Analytical Report for Service Request No: R2211405**

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Building 300  
Suite 360  
Rochester, NY 14623

**RE: Hakes C&D - Part 363 Expanded Leachate**

Dear Janice Jaeger,

Enclosed are the results of the sample(s) submitted to our laboratory November 29, 2022  
For your reference, these analyses have been assigned our service request number **R2211405**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 3260. You may also contact me via email at [Luke.Rahn@alsglobal.com](mailto:Luke.Rahn@alsglobal.com).

Respectfully submitted,

**ALS Group USA, Corp. dba ALS Environmental**

Luke Rahn  
Project Manager



---

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Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

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Chain of Custody

Per- and Polyfluoroalkyl Substances (PFAS) by LCMSMS

## Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.



### **Inorganic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

### **Metals Data Qualifiers**

- # The control limit criteria is not applicable.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Organic Data Qualifiers**

- \* The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- P The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.  
*DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.  
  - i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

### **Additional Petroleum Hydrocarbon Specific Qualifiers**

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso  
State Certifications, Accreditations, and Licenses**

<b>Agency</b>	<b>Web Site</b>	<b>Number</b>
Alaska DEH	<a href="http://dec.alaska.gov/eh/lab/cs/csapproval.htm">http://dec.alaska.gov/eh/lab/cs/csapproval.htm</a>	UST-040
Arizona DHS	<a href="http://www.azdhs.gov/lab/license/env.htm">http://www.azdhs.gov/lab/license/env.htm</a>	AZ0339
Arkansas - DEQ	<a href="http://www.adeq.state.ar.us/techsvs/labcert.htm">http://www.adeq.state.ar.us/techsvs/labcert.htm</a>	88-0637
California DHS (ELAP)	<a href="http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx">http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx</a>	2795
DOD ELAP	<a href="http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm">http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm</a>	L16-58-R4
Florida DOH	<a href="http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm">http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm</a>	E87412
Hawaii DOH	<a href="http://health.hawaii.gov/">http://health.hawaii.gov/</a>	-
ISO 17025	<a href="http://www.pjlabs.com/">http://www.pjlabs.com/</a>	L16-57
Louisiana DEQ	<a href="http://www.deq.louisiana.gov/page/la-lab-accreditation">http://www.deq.louisiana.gov/page/la-lab-accreditation</a>	03016
Maine DHS	<a href="http://www.maine.gov/dhhs/">http://www.maine.gov/dhhs/</a>	WA01276
Minnesota DOH	<a href="http://www.health.state.mn.us/accreditation">http://www.health.state.mn.us/accreditation</a>	053-999-457
Nevada DEP	<a href="http://ndep.nv.gov/bsdw/labservice.htm">http://ndep.nv.gov/bsdw/labservice.htm</a>	WA01276
New Jersey DEP	<a href="http://www.nj.gov/dep/enforcement/oqa.html">http://www.nj.gov/dep/enforcement/oqa.html</a>	WA005
New York - DOH	<a href="https://www.wadsworth.org/regulatory/elap">https://www.wadsworth.org/regulatory/elap</a>	12060
North Carolina DEQ	<a href="https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification">https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification</a>	605
Oklahoma DEQ	<a href="http://www.deq.state.ok.us/CSDnew/labcert.htm">http://www.deq.state.ok.us/CSDnew/labcert.htm</a>	9801
Oregon – DEQ (NELAP)	<a href="http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx">http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx</a>	WA100010
South Carolina DHEC	<a href="http://www.scdhec.gov/environment/EnvironmentalLabCertification/">http://www.scdhec.gov/environment/EnvironmentalLabCertification/</a>	61002
Texas CEQ	<a href="http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html">http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html</a>	T104704427
Washington DOE	<a href="http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html">http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html</a>	C544
Wyoming (EPA Region 8)	<a href="https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water">https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water</a>	-
Kelso Laboratory Website	<a href="http://www.alsglobal.com">www.alsglobal.com</a>	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at [www.ALSGlobal.com](http://www.ALSGlobal.com) or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



## Case Narrative

**ALS Environmental—Kelso Laboratory**  
1317 South 13th Avenue, Kelso, WA 98626  
Phone (360)577-7222 Fax (360)636-1068  
[www.alsglobal.com](http://www.alsglobal.com)

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Received:** 11/29/2022

### CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier level II requested by the client.

#### Sample Receipt:

Two water samples were received for analysis at ALS Environmental on 11/29/2022. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

#### Organic LC:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD) with this sample batch. A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

The lower or upper control criterion was exceeded for the following isotopes in sample LCS-1122 due to matrix interferences: 13C4-PFBA, 13C2-6:2 FTS, 13C2-8:2 FTS. The sample was reanalyzed at a dilution but produced similar results. Assuming the associated native analytes performed similar to the labeled analogs, the effect on the reported results was minimal. No further corrective action was taken.

The lower control criterion was exceeded for 13C5-PFPeA and 13C4-PFHxA in sample LCS-1122 due to matrix interferences. The sample was reanalyzed at a dilution; the isotopes in question were in control in the diluted analysis. The results are reported from the diluted analysis; the reporting limits are adjusted to reflect the dilution.

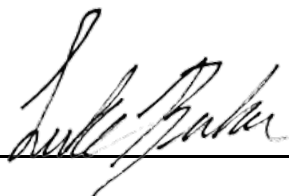
Method PFC/537M, 01/07/2023: Sample LCS-1122 required dilution due to the presence of elevated levels of 1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS). The reporting limits are adjusted to reflect the dilution.

Method PFC/537M, 01/07/2023: The analysis of sample LCS-1122 for Perfluoropentanoic acid (PFPeA), Perfluorohexanoic acid (PFHxA), and 1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS) was initially performed within the recommended holding time. Reanalysis at a dilution was required. Due to instrument instability and workload, the reanalysis was performed 19 days past the recommended holding time. The results from the second analysis were reported.

Method PFC/537M, 01/07/2023: The analysis of all samples and QC was initially performed on 01/07/2023. Due to significant shifting, 13C4-PFBA and the associated native, Perfluorobutanoic acid (PFBA), were not fully acquired in the MRM window. The isotope and native in question could not be fully quantitated and were not reported from this analysis. Efforts were made to reanalyze the extracts as soon as possible after the analytical system was back in control. However, the reanalysis of the extracts was performed 18-20 days past the recommended holding time. The results from the reanalysis were reported for the compounds in question. The data was flagged to indicate the holding time violation.

Method PFC/537M, 01/07/2023: The Relative Percent Difference (RPD) for N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA) in the replicate Laboratory Control Sample (LCS/DLCS) was outside control criteria. All spike recoveries in the LCS/DLCS were within acceptance limits, indicating the analytical batch was in control. No further corrective action was appropriate.

Approved by \_\_\_\_\_



Date \_\_\_\_\_

02/02/2023



# Chain of Custody

**ALS Environmental—Kelso Laboratory**  
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# Intra-Network Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

**Project Name:** Hakes C&D - Part 363 Expanded Leachate  
**Project Number:**  
**Project Manager:** Zach Hall  
**Company:** Casella Waste Systems  
**QAP:** LAB QAP

PFAS  
PFC/537M

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To	
				Date	Time			
<del>R2211405-001</del>	LCS-1122	2	Water	11/29/22	1420	11/29/22	KELSO	IV
<del>R2211405-004</del>	Field Blank	1	Water	11/29/22	1420	11/29/22	KELSO	IV

**Test Comments**  
 PFAS - PFC/537M                      R2211405-001,4                      NYS 21 list

<b>Special Instructions/Comments</b>  NPDES  pH Checked _____	<b>Turnaround Requirements</b> _____ RUSH (Surcharges Apply) <b>PLEASE CIRCLE WORK DAYS</b> 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: 12/23/22	<b>Report Requirements</b> ___ I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries ___ III. Results + QC and Calibration Summaries <input checked="" type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>Y</u> EDD <u>Y</u>	<b>Invoice Information</b> PO# 58R2211405 Bill to
---	--	--	--

Relinquished By:  12/5/22 1600      Received By:  1100 12-7-22      Airbill Number: \_\_\_\_\_

R2211405

   **Ship To: KELSO**  
ALS Environmental  
1317 South 13th Avenue  
Kelso, WA 98626

PC    Date 12/3/22  
SMO    Date 12/5

**Instructions:**

Ice   x    
Dry Ice     
No Ice   

**Shipping:**

Overnight   x    
2nd Day     
Ground   

Bill to Client Account   

Comments:

PM Luke

### Cooler Receipt and Preservation Form

Client Rochester

Service Request R22 11405

Received: 12-7-22 Opened: 12-7-22 By: [Signature] Unloaded: 12-7-22 By: [Signature]

- 1. Samples were received via?  USPS  Fed Ex  UPS  DHL  PDX  Courier  Hand Delivered
- 2. Samples were received in: (circle)  Cooler  Box  Envelope  Other \_\_\_\_\_  NA
- 3. Were custody seals on coolers?  NA  Y  N If yes, how many and where? \_\_\_\_\_  
If present, were custody seals intact?  Y  N If present, were they signed and dated?  Y  N

Temp Blank	Sample Temp	IR Gun	Cooler #/COC ID / NA	Out of temp Indicate with "X"	PM Notified If out of temp	Tracking Number NA	Filed
	<u>2.5</u>	<u>IR02</u>				<u>577904520401</u>	

- 4. Was a Temperature Blank present in cooler?  NA  Y  N If yes, notate the temperature in the appropriate column above:  
If no, take the temperature of a representative sample bottle contained within the cooler; notate in the column "Sample Temp":
- 5. Were samples received within the method specified temperature ranges?  NA  Y  N  
If no, were they received on ice and same day as collected? If not, notate the cooler # below and notify the PM.  NA  Y  N

If applicable, tissue samples were received: Frozen Partially Thawed Thawed

- 6. Packing material: Inserts  Baggies  Bubble Wrap  Gel Packs  Wet Ice  Dry Ice  Sleeves \_\_\_\_\_
- 7. Were custody papers properly filled out (ink, signed, etc.)?  NA  Y  N
- 8. Were samples received in good condition (unbroken)  NA  Y  N
- 9. Were all sample labels complete (ie, analysis, preservation, etc.)?  NA  Y  N
- 10. Did all sample labels and tags agree with custody papers?  NA  Y  N
- 11. Were appropriate bottles/containers and volumes received for the tests indicated?  NA  Y  N
- 12. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below  NA  Y  N
- 13. Were VOA vials received without headspace? Indicate in the table below.  NA  Y  N
- 14. Was C12/Res negative?  NA  Y  N
- 15. Were 100ml sterile microbiology bottles filled exactly to the 100ml mark?  NA  Y  N Under filled Overfilled

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, Resolutions: \_\_\_\_\_





# Per and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS

**ALS Environmental—Kelso Laboratory**  
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**ALS Group USA, Corp.**  
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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	<b>430</b>	4.3	0.28	1	01/07/23 12:47	12/13/22	
Perfluorohexane sulfonic acid (PFHxS)	<b>220</b>	4.3	1.3	1	01/07/23 12:47	12/13/22	
Perfluoroheptane sulfonic acid (PFHpS)	4.3 U	4.3	0.44	1	01/07/23 12:47	12/13/22	
Perfluorooctane sulfonic acid (PFOS)	<b>140</b>	1.7	0.44	1	01/07/23 12:47	12/13/22	
Perfluorodecane sulfonic acid (PFDS)	4.3 U	4.3	0.30	1	01/07/23 12:47	12/13/22	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	<b>810</b>	43	4.0	10	01/29/23 01:45	12/13/22	*
Perfluoropentanoic acid (PFPeA)	<b>2900</b>	43	17	10	01/29/23 01:45	12/13/22	*
Perfluorohexanoic acid (PFHxA)	<b>2600</b>	92	88	10	01/29/23 01:45	12/13/22	*
Perfluoroheptanoic acid (PFHpA)	<b>750</b>	4.3	0.63	1	01/07/23 12:47	12/13/22	
Perfluorooctanoic acid (PFOA)	<b>1200</b>	1.7	0.35	1	01/07/23 12:47	12/13/22	
Perfluorononanoic acid (PFNA)	<b>46</b>	4.3	1.1	1	01/07/23 12:47	12/13/22	
Perfluorodecanoic acid (PFDA)	<b>33</b>	4.3	1.2	1	01/07/23 12:47	12/13/22	
Perfluoroundecanoic acid (PFUnDA)	<b>7.1</b>	4.3	1.5	1	01/07/23 12:47	12/13/22	
Perfluorododecanoic acid (PFDOA)	<b>4.5</b>	4.3	1.3	1	01/07/23 12:47	12/13/22	
Perfluorotridecanoic acid (PFTrDA)	4.3 U	4.3	1.3	1	01/07/23 12:47	12/13/22	
Perfluorotetradecanoic acid (PFTDA)	4.3 U	4.3	2.0	1	01/07/23 12:47	12/13/22	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (PFOSAm)	4.3 U	4.3	0.52	1	01/07/23 12:47	12/13/22	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	<b>61</b>	4.3	1.4	1	01/07/23 12:47	12/13/22	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	<b>19</b>	4.3	0.50	1	01/07/23 12:47	12/13/22	
<b>Fluorotelomer Sulfonic Acids (FTSAs)</b>							
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	<b>270</b>	43	5.5	10	01/29/23 01:45	12/13/22	*
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	<b>11 J</b>	43	1.5	10	01/29/23 01:45	12/13/22	*

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** LCS-1122  
**Lab Code:** R2211405-001

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	61	20 - 109	01/07/23 12:47	
18O2-PFHxS	83	26 - 122	01/07/23 12:47	
13C4-PFOS	76	25 - 121	01/07/23 12:47	
13C4-PFBA	17	27 - 124	01/29/23 01:45	*
13C5-PFPeA	31	27 - 138	01/29/23 01:45	
13C2-PFHxA	48	28 - 132	01/29/23 01:45	
13C4-PFHpA	22	19 - 139	01/07/23 12:47	
13C4-PFOA	29	22 - 130	01/07/23 12:47	
13C5-PFNA	49	20 - 127	01/07/23 12:47	
13C2-PFDA	53	24 - 125	01/07/23 12:47	
13C2-PFUnDA	37	22 - 125	01/07/23 12:47	
13C2-PFDoDA	30	19 - 122	01/07/23 12:47	
13C2-PFTeDA	29	13 - 124	01/07/23 12:47	
13C8-FOSA	29	18 - 109	01/07/23 12:47	
D3-MeFOSAA	54	9 - 123	01/07/23 12:47	
D5-EtFOSAA	65	12 - 126	01/07/23 12:47	
13C2-6:2 FTS	575	10 - 226	01/29/23 01:45	*
13C2-8:2 FTS	275	10 - 202	01/29/23 01:45	*

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** Field Blank  
**Lab Code:** R2211405-004

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	4.5 U	4.5	0.28	1	01/07/23 12:58	12/13/22	
Perfluorohexane sulfonic acid (PFHxS)	4.5 U	4.5	1.3	1	01/07/23 12:58	12/13/22	
Perfluoroheptane sulfonic acid (PFHpS)	4.5 U	4.5	0.44	1	01/07/23 12:58	12/13/22	
Perfluorooctane sulfonic acid (PFOS)	1.8 U	1.8	0.44	1	01/07/23 12:58	12/13/22	
Perfluorodecane sulfonic acid (PFDS)	4.5 U	4.5	0.30	1	01/07/23 12:58	12/13/22	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	4.5 U	4.5	0.40	1	01/29/23 01:55	12/13/22	*
Perfluoropentanoic acid (PFPeA)	4.5 U	4.5	1.7	1	01/07/23 12:58	12/13/22	
Perfluorohexanoic acid (PFHxA)	9.2 U	9.2	8.8	1	01/07/23 12:58	12/13/22	
Perfluoroheptanoic acid (PFHpA)	4.5 U	4.5	0.63	1	01/07/23 12:58	12/13/22	
Perfluorooctanoic acid (PFOA)	<b>0.40 J</b>	1.8	0.35	1	01/07/23 12:58	12/13/22	
Perfluorononanoic acid (PFNA)	4.5 U	4.5	1.1	1	01/07/23 12:58	12/13/22	
Perfluorodecanoic acid (PFDA)	4.5 U	4.5	1.2	1	01/07/23 12:58	12/13/22	
Perfluoroundecanoic acid (PFUnDA)	4.5 U	4.5	1.5	1	01/07/23 12:58	12/13/22	
Perfluorododecanoic acid (PFDOA)	4.5 U	4.5	1.3	1	01/07/23 12:58	12/13/22	
Perfluorotridecanoic acid (PFTrDA)	4.5 U	4.5	1.3	1	01/07/23 12:58	12/13/22	
Perfluorotetradecanoic acid (PFTDA)	4.5 U	4.5	2.0	1	01/07/23 12:58	12/13/22	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (PFOSAm)	4.5 U	4.5	0.52	1	01/07/23 12:58	12/13/22	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	4.5 U	4.5	1.4	1	01/07/23 12:58	12/13/22	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	4.5 U	4.5	0.50	1	01/07/23 12:58	12/13/22	
<b>Fluorotelomer Sulfonic Acids (FTSAs)</b>							
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	4.5 U	4.5	0.55	1	01/07/23 12:58	12/13/22	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	4.5 U	4.5	0.15	1	01/07/23 12:58	12/13/22	

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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** 11/29/22 14:20  
**Date Received:** 11/29/22 16:35

**Sample Name:** Field Blank  
**Lab Code:** R2211405-004

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	96	20 - 109	01/07/23 12:58	
18O2-PFHxS	97	26 - 122	01/07/23 12:58	
13C4-PFOS	78	25 - 121	01/07/23 12:58	
13C4-PFBA	107	27 - 124	01/29/23 01:55	
13C5-PFPeA	97	27 - 138	01/07/23 12:58	
13C2-PFHxA	88	28 - 132	01/07/23 12:58	
13C4-PFHpA	91	19 - 139	01/07/23 12:58	
13C4-PFOA	101	22 - 130	01/07/23 12:58	
13C5-PFNA	86	20 - 127	01/07/23 12:58	
13C2-PFDA	75	24 - 125	01/07/23 12:58	
13C2-PFUnDA	74	22 - 125	01/07/23 12:58	
13C2-PFDoDA	62	19 - 122	01/07/23 12:58	
13C2-PFTeDA	83	13 - 124	01/07/23 12:58	
13C8-FOSA	49	18 - 109	01/07/23 12:58	
D3-MeFOSAA	55	9 - 123	01/07/23 12:58	
D5-EtFOSAA	54	12 - 126	01/07/23 12:58	
13C2-6:2 FTS	108	10 - 226	01/07/23 12:58	
13C2-8:2 FTS	76	10 - 202	01/07/23 12:58	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate/  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	LCS-1122	Field Blank	Method Blank
		R2211405-001	R2211405-004	KQ2221946-03
13C3-PFBS	20-109	61	96	81
18O2-PFHxS	26-122	83	97	75
13C4-PFOS	25-121	76	78	77
13C4-PFBA	27-124	17*	107	104
13C5-PFPeA	27-138	31	97	81
13C2-PFHxA	28-132	48	88	88
13C4-PFHpA	19-139	22	91	73
13C4-PFOA	22-130	29	101	72
13C5-PFNA	20-127	49	86	71
13C2-PFDA	24-125	53	75	68
13C2-PFUnDA	22-125	37	74	74
13C2-PFDoDA	19-122	30	62	70
13C2-PFTeDA	13-124	29	83	67
13C8-FOSA	18-109	29	49	65
D3-MeFOSAA	9-123	54	55	63
D5-EtFOSAA	12-126	65	54	57
13C2-6:2 FTS	10-226	575*	108	65
13C2-8:2 FTS	10-202	275*	76	65

**Results flagged with an asterisk (\*) indicate values outside control criteria.**

**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate/  
**Sample Matrix:** Water

**Service Request:** R2211405

**SURROGATE RECOVERY SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Extraction Method:** ALS SOP

Surrogate	Control Limits	Lab Control Sample	Duplicate Lab Control
		KQ2221946-01	Sample KQ2221946-02
13C3-PFBS	20-109	68	84
18O2-PFHxS	26-122	68	69
13C4-PFOS	25-121	65	73
13C4-PFBA	27-124	106	121
13C5-PFPeA	27-138	71	81
13C2-PFHxA	28-132	61	83
13C4-PFHpA	19-139	63	75
13C4-PFOA	22-130	63	77
13C5-PFNA	20-127	66	73
13C2-PFDA	24-125	59	73
13C2-PFUnDA	22-125	74	69
13C2-PFDoDA	19-122	64	69
13C2-PFTeDA	13-124	60	61
13C8-FOSA	18-109	67	59
D3-MeFOSAA	9-123	55	62
D5-EtFOSAA	12-126	45	58
13C2-6:2 FTS	10-226	85	86
13C2-8:2 FTS	10-202	68	74

**Results flagged with an asterisk (\*) indicate values outside control criteria.**  
**Results flagged with a pound (#) indicate the control criteria is not acceptable.**

Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** KQ2221946-03

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Analyte Name	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
<b>Perfluoroalkyl Sulfonic Acids (PFASs)</b>							
Perfluorobutane sulfonic acid (PFBS)	5.0 U	5.0	0.28	1	01/07/23 09:08	12/13/22	
Perfluorohexane sulfonic acid (PFHxS)	5.0 U	5.0	1.3	1	01/07/23 09:08	12/13/22	
Perfluoroheptane sulfonic acid (PFHpS)	5.0 U	5.0	0.44	1	01/07/23 09:08	12/13/22	
Perfluorooctane sulfonic acid (PFOS)	2.0 U	2.0	0.44	1	01/07/23 09:08	12/13/22	
Perfluorodecane sulfonic acid (PFDS)	5.0 U	5.0	0.30	1	01/07/23 09:08	12/13/22	
<b>Perfluoroalkyl Carboxylic Acids (PFCAs)</b>							
Perfluorobutanoic acid (PFBA)	5.0 U	5.0	0.40	1	01/30/23 21:08	12/13/22	*
Perfluoropentanoic acid (PFPeA)	5.0 U	5.0	1.7	1	01/07/23 09:08	12/13/22	
Perfluorohexanoic acid (PFHxA)	10 U	10	8.8	1	01/07/23 09:08	12/13/22	
Perfluoroheptanoic acid (PFHpA)	5.0 U	5.0	0.63	1	01/07/23 09:08	12/13/22	
Perfluorooctanoic acid (PFOA)	<b>0.45 J</b>	2.0	0.35	1	01/07/23 09:08	12/13/22	
Perfluorononanoic acid (PFNA)	5.0 U	5.0	1.1	1	01/07/23 09:08	12/13/22	
Perfluorodecanoic acid (PFDA)	5.0 U	5.0	1.2	1	01/07/23 09:08	12/13/22	
Perfluoroundecanoic acid (PFUnDA)	5.0 U	5.0	1.5	1	01/07/23 09:08	12/13/22	
Perfluorododecanoic acid (PFDOA)	5.0 U	5.0	1.3	1	01/07/23 09:08	12/13/22	
Perfluorotridecanoic acid (PFTrDA)	5.0 U	5.0	1.3	1	01/07/23 09:08	12/13/22	
Perfluorotetradecanoic acid (PFTDA)	5.0 U	5.0	2.0	1	01/07/23 09:08	12/13/22	
<b>Perfluoroalkyl Sulfonamido Substances</b>							
Perfluorooctane sulfonamide (PFOSAm)	5.0 U	5.0	0.52	1	01/07/23 09:08	12/13/22	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	5.0 U	5.0	1.4	1	01/07/23 09:08	12/13/22	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	5.0 U	5.0	0.50	1	01/07/23 09:08	12/13/22	
<b>Fluorotelomer Sulfonic Acids (FTSAs)</b>							
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	5.0 U	5.0	0.55	1	01/07/23 09:08	12/13/22	
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	5.0 U	5.0	0.15	1	01/07/23 09:08	12/13/22	



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Analytical Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Collected:** NA  
**Date Received:** NA

**Sample Name:** Method Blank  
**Lab Code:** KQ2221946-03

**Units:** ng/L  
**Basis:** NA

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
13C3-PFBS	81	20 - 109	01/07/23 09:08	
18O2-PFHxS	75	26 - 122	01/07/23 09:08	
13C4-PFOS	77	25 - 121	01/07/23 09:08	
13C4-PFBA	104	27 - 124	01/30/23 21:08	
13C5-PFPeA	81	27 - 138	01/07/23 09:08	
13C2-PFHxA	88	28 - 132	01/07/23 09:08	
13C4-PFHpA	73	19 - 139	01/07/23 09:08	
13C4-PFOA	72	22 - 130	01/07/23 09:08	
13C5-PFNA	71	20 - 127	01/07/23 09:08	
13C2-PFDA	68	24 - 125	01/07/23 09:08	
13C2-PFUnDA	74	22 - 125	01/07/23 09:08	
13C2-PFDoDA	70	19 - 122	01/07/23 09:08	
13C2-PFTeDA	67	13 - 124	01/07/23 09:08	
13C8-FOSA	65	18 - 109	01/07/23 09:08	
D3-MeFOSAA	63	9 - 123	01/07/23 09:08	
D5-EtFOSAA	57	12 - 126	01/07/23 09:08	
13C2-6:2 FTS	65	10 - 226	01/07/23 09:08	
13C2-8:2 FTS	65	10 - 202	01/07/23 09:08	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405  
**Date Analyzed:**01/07/23 04:15

**Internal Standard Area and RT SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**File ID:** J:\LCMS06\Data\230106\_B3\230106\_060  
**Instrument ID:** K-LCMS-06  
**Analysis Method:** PFC/537M

**Lab Code:**KQ2300434-02  
**Analysis Lot:**791021  
**Signal ID:**1

	13C7-PFUnDA	
	Area	RT
<b>Result ==&gt;</b>	1,386,244	5.312
<b>Upper Limit ==&gt;</b>	2,772,488	6.31
<b>Lower Limit ==&gt;</b>	693,122	4.31

**Associated Analyses**

		Area	RT
Continuing Calibration Blank	KQ2300434-01	1824447	5.305
Method Blank	KQ2221946-03	1757422	5.299
Lab Control Sample	KQ2221946-01	2081600	5.298
Duplicate Lab Control Sample	KQ2221946-02	1800703	5.299
LCS-1122	R2211405-001	1145498	5.336
Field Blank	R2211405-004	1459498	5.337

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405  
**Date Analyzed:**01/28/23 20:00

**Internal Standard Area and RT SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**File ID:** J:\LCMS06\Data\230128\_B3\230128\_011  
**Instrument ID:** K-LCMS-06  
**Analysis Method:** PFC/537M

**Lab Code:**KQ2301699-02  
**Analysis Lot:**793056  
**Signal ID:**1

	13C7-PFUnDA	
	Area	RT
<b>Result ==&gt;</b>	4,602,521	4.914
<b>Upper Limit ==&gt;</b>	9,205,042	5.91
<b>Lower Limit ==&gt;</b>	2,301,261	3.91

**Associated Analyses**

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Continuing Calibration Blank	KQ2301699-01	4169427	4.924
Lab Control Sample	KQ2221946-01	3027266	5.062
Duplicate Lab Control Sample	KQ2221946-02	2693901	5.059

ALS Group USA, Corp.  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405  
**Date Analyzed:**01/28/23 20:00

**Internal Standard Area and RT SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**File ID:** J:\LCMS06\Data\230128\_B4\230128\_011  
**Instrument ID:** K-LCMS-06  
**Analysis Method:** PFC/537M

**Lab Code:**KQ2301703-02  
**Analysis Lot:**793060  
**Signal ID:**1

	13C7-PFUnDA	
	Area	RT
<b>Result ==&gt;</b>	4,602,521	4.914
<b>Upper Limit ==&gt;</b>	9,205,042	5.91
<b>Lower Limit ==&gt;</b>	2,301,261	3.91

**Associated Analyses**

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Continuing Calibration Blank	KQ2301703-01	4169427	4.924
LCS-1122	R2211405-001	3321825	5.047
Field Blank	R2211405-004	4000589	5.042

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405  
**Date Analyzed:**01/30/23 19:34

**Internal Standard Area and RT SUMMARY**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**File ID:** J:\LCMS06\Data\230130\_B3\230130\_004  
**Instrument ID:** K-LCMS-06  
**Analysis Method:** PFC/537M

**Lab Code:**KQ2301745-02  
**Analysis Lot:**793175  
**Signal ID:**1

	13C7-PFUnDA	
	Area	RT
<b>Result ==&gt;</b>	4,769,448	4.955
<b>Upper Limit ==&gt;</b>	9,538,896	5.96
<b>Lower Limit ==&gt;</b>	2,384,724	3.96

**Associated Analyses**

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Continuing Calibration Blank	KQ2301745-01	3999405	4.982
Method Blank	KQ2221946-03	2546370	5.001

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 01/07/23  
**Date Extracted:** 12/13/22

**Duplicate Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

**Units:** ng/L  
**Basis:** NA  
**Analysis Lot:** 791021

Analyte Name	Lab Control Sample KQ2221946-01			Duplicate Lab Control Sample KQ2221946-02			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	38.4	30.7	125	38.7	30.7	126	65-166	<1	30
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	33.0	30.4	108	28.3	30.4	93	77-150	15	30
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	37.7	32.0	118	34.6	32.0	108	68-149	8	30
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	38.7	32.0	121	28.2	32.0	88	66-162	31 *	30
Perfluorobutane sulfonic acid (PFBS)	30.3	28.4	107	27.7	28.4	97	67-145	9	30
Perfluorodecane sulfonic acid (PFDS)	29.5	30.9	96	29.0	30.9	94	60-129	2	30
Perfluorodecanoic acid (PFDA)	34.9	32.0	109	32.6	32.0	102	68-152	7	30
Perfluorododecanoic acid (PFDOA)	33.6	32.0	105	35.7	32.0	111	66-142	6	30
Perfluoroheptane sulfonic acid (PFHpS)	28.2	30.5	92	36.9	30.5	121	60-162	27	30
Perfluoroheptanoic acid (PFHpA)	31.3	32.0	98	32.5	32.0	102	64-147	4	30
Perfluorohexane sulfonic acid (PFHxS)	30.7	29.2	105	32.5	29.2	111	65-148	6	30
Perfluorohexanoic acid (PFHxA)	32.1	32.0	100	33.2	32.0	104	65-149	3	30
Perfluorononanoic acid (PFNA)	33.7	32.0	105	38.3	32.0	120	72-145	13	30
Perfluorooctane sulfonamide (PFOSAm)	27.6	32.0	86	34.5	32.0	108	71-134	22	30
Perfluorooctane sulfonic acid (PFOS)	32.9	29.7	111	32.6	29.7	110	67-135	<1	30
Perfluorooctanoic acid (PFOA)	35.9	32.0	112	37.2	32.0	116	59-147	4	30
Perfluoropentanoic acid (PFPeA)	31.9	32.0	100	31.6	32.0	99	66-159	1	30
Perfluorotetradecanoic acid (PFTDA)	34.1	32.0	107	33.0	32.0	103	61-148	3	30
Perfluorotridecanoic acid (PFTrDA)	32.7	32.0	102	40.6	32.0	127	64-153	21	30
Perfluoroundecanoic acid (PFUnDA)	36.4	32.0	114	36.4	32.0	114	68-145	<1	30

**ALS Group USA, Corp.**  
dba ALS Environmental

QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 01/28/23  
**Date Extracted:** 12/13/22

**Duplicate Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**Prep Method:** ALS SOP

**Units:** ng/L  
**Basis:** NA  
**Analysis Lot:** 793056

Analyte Name	Lab Control Sample KQ2221946-01			Duplicate Lab Control Sample KQ2221946-02			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perfluorobutanoic acid (PFBA)	28.3	32.0	89	29.4	32.0	92	81-139	4	30

ALS Group USA, Corp.  
dba ALS Environmental

QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 01/07/23 09:08  
**Date Extracted:** 12/13/22

**Method Blank Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Sample Name:** Method Blank **Instrument ID:** K-LCMS-06  
**Lab Code:** KQ2221946-03 **File ID:** J:\LCMS06\Data\230106\_B3\230106\_088  
**Analysis Method:** PFC/537M **Analysis Lot:** 791021,793056,793060  
**Prep Method:** ALS SOP **Extraction Lot:** 411482

This Method Blank applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
Lab Control Sample	KQ2221946-01	J:\LCMS06\Data\230106_B3\230106_089	01/07/23 09:18
Duplicate Lab Control Sample	KQ2221946-02	J:\LCMS06\Data\230106_B3\230106_090	01/07/23 09:29
LCS-1122	R2211405-001	J:\LCMS06\Data\230106_B3\230106_109	01/07/23 12:47
Field Blank	R2211405-004	J:\LCMS06\Data\230106_B3\230106_110	01/07/23 12:58
Lab Control Sample	KQ2221946-01	J:\LCMS06\Data\230128_B3\230128_025	01/28/23 22:26
Duplicate Lab Control Sample	KQ2221946-02	J:\LCMS06\Data\230128_B3\230128_026	01/28/23 22:36
LCS-1122	R2211405-001	J:\LCMS06\Data\230128_B4\230128_044	01/29/23 01:45
Field Blank	R2211405-004	J:\LCMS06\Data\230128_B4\230128_045	01/29/23 01:55



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:** R2211405  
**Date Analyzed:** 01/07/23 09:18  
**Date Extracted:** 12/13/22

**Lab Control Sample Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Sample Name:** Lab Control Sample      **Instrument ID:** K-LCMS-06  
**Lab Code:** KQ2221946-01      **File ID:** J:\LCMS06\Data\230106\_B3\230106\_089  
**Analysis Method:** PFC/537M      **Analysis Lot:** 791021,793056,793060,793175  
**Prep Method:** ALS SOP      **Extraction Lot:** 411482

This Lab Control Sample applies to the following analyses.

<b>Sample Name</b>	<b>Lab Code</b>	<b>File ID</b>	<b>Date Analyzed</b>
Method Blank	KQ2221946-03	J:\LCMS06\Data\230106_B3\230106_088	01/07/23 09:08
Duplicate Lab Control Sample	KQ2221946-02	J:\LCMS06\Data\230106_B3\230106_090	01/07/23 09:29
LCS-1122	R2211405-001	J:\LCMS06\Data\230106_B3\230106_109	01/07/23 12:47
Field Blank	R2211405-004	J:\LCMS06\Data\230106_B3\230106_110	01/07/23 12:58
Duplicate Lab Control Sample	KQ2221946-02	J:\LCMS06\Data\230128_B3\230128_026	01/28/23 22:36
LCS-1122	R2211405-001	J:\LCMS06\Data\230128_B4\230128_044	01/29/23 01:45
Field Blank	R2211405-004	J:\LCMS06\Data\230128_B4\230128_045	01/29/23 01:55
Method Blank	KQ2221946-03	J:\LCMS06\Data\230130_B3\230130_013	01/30/23 21:08

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2300016-01	PFC ICAL @ 0.05 ppb	230106_018	01/06/2023 20:49
02	KC2300016-02	PFC ICAL @ 0.1 PPB	230106_019	01/06/2023 21:00
03	KC2300016-03	PFC ICAL @ 0.5 PPB	230106_020	01/06/2023 21:10
04	KC2300016-04	PFC ICAL @ 1.0 PPB	230106_021	01/06/2023 21:21
05	KC2300016-05	PFC ICAL @ 5.0ppb	230106_022	01/06/2023 21:31
06	KC2300016-06	PFC ICAL @ 10ppb	230106_023	01/06/2023 21:41
07	KC2300016-07	PFC ICAL @ 15ppb	230106_025	01/06/2023 22:02

**Analyte**

**13C2-6:2 FTS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1004	02	5.0000	0.08695	03	5.0000	0.08044	04	5.0000	0.1024
05	5.0000	0.08084	06	5.0000	0.0839	07	5.0000	0.08464			

**13C2-8:2 FTS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.09634	02	5.0000	0.07359	03	5.0000	0.07351	04	5.0000	0.0903
05	5.0000	0.0819	06	5.0000	0.08043	07	5.0000	0.07597			

**13C2-PFDA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.5528	02	5.0000	0.4961	03	5.0000	0.5006	04	5.0000	0.5511
05	5.0000	0.5317	06	5.0000	0.4861	07	5.0000	0.4891			

**13C2-PFDoDA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	1.302	02	5.0000	1.251	03	5.0000	1.317	04	5.0000	1.39
05	5.0000	1.304	06	5.0000	1.282	07	5.0000	1.305			

**13C2-PFHxA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.584	02	5.0000	0.4888	03	5.0000	0.516	04	5.0000	0.5974
05	5.0000	0.6529	06	5.0000	0.6032	07	5.0000	0.5159			

**13C2-PFTeDA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.917	02	5.0000	0.8966	03	5.0000	0.935	04	5.0000	1.13
05	5.0000	0.9037	06	5.0000	0.862	07	5.0000	0.9781			

**13C2-PFUnDA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.9993	02	5.0000	0.9611	03	5.0000	1.063	04	5.0000	1.062
05	5.0000	0.9914	06	5.0000	0.973	07	5.0000	0.9758			

**13C3-PFBS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.102	02	5.0000	0.1059	03	5.0000	0.1041	04	5.0000	0.1227

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

**Analyte**

<b>13C3-PFBS</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	5.0000	0.109	06	5.0000	0.1075	07	5.0000	0.1099			
<b>13C4-PFBA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.2352	02	5.0000	0.2593	03	5.0000	0.2339	04	5.0000	0.2911
05	5.0000	0.2373	06	5.0000	0.2313	07	5.0000	0.242			
<b>13C4-PFHpA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.6553	02	5.0000	0.59	03	5.0000	0.5687	04	5.0000	0.7482
05	5.0000	0.6626	06	5.0000	0.5989	07	5.0000	0.5753			
<b>13C4-PFOA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.9131	02	5.0000	0.8311	03	5.0000	0.8513	04	5.0000	1.011
05	5.0000	0.9563	06	5.0000	0.9284	07	5.0000	0.9257			
<b>13C4-PFOS</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1459	02	5.0000	0.144	03	5.0000	0.1451	04	5.0000	0.1377
05	5.0000	0.1491	06	5.0000	0.1407	07	5.0000	0.1485			
<b>13C5-PFNA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.5643	02	5.0000	0.5399	03	5.0000	0.5729	04	5.0000	0.6389
05	5.0000	0.5451	06	5.0000	0.5131	07	5.0000	0.5162			
<b>13C5-PFPeA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1998	02	5.0000	0.203	03	5.0000	0.1929	04	5.0000	0.2111
05	5.0000	0.1952	06	5.0000	0.189	07	5.0000	0.1976			
<b>13C8-FOSA</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.2904	02	5.0000	0.273	03	5.0000	0.2515	04	5.0000	0.3387
05	5.0000	0.3198	06	5.0000	0.3047	07	5.0000	0.2796			
<b>18O2-PFHxS</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.07338	02	5.0000	0.08143	03	5.0000	0.07406	04	5.0000	0.08846
05	5.0000	0.07257	06	5.0000	0.0703	07	5.0000	0.07344			
<b>1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)</b>											
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0480	0.8382	02	0.0960	1.209	03	0.4800	1.142	04	0.9600	1.044
05	4.8002	1.056	06	9.6005	0.9269	07	14.4007	1.04			

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

**Analyte**

**1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0476	1.465	02	0.0951	1.335	03	0.4756	1.353	04	0.9512	1.214
05	4.7558	1.476	06	9.5117	1.192	07	14.2676	1.115			

**D3-MeFOSAA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1335	02	5.0000	0.1299	03	5.0000	0.1261	04	5.0000	0.1661
05	5.0000	0.1453	06	5.0000	0.1307	07	5.0000	0.1376			

**D5-EtFOSAA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1436	02	5.0000	0.1396	03	5.0000	0.1393	04	5.0000	0.1364
05	5.0000	0.1307	06	5.0000	0.1188	07	5.0000	0.1284			

**N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.1000	1.325	03	0.5000	0.8545	04	1.0000	1.2	05	5.0000	1.149
06	10.0000	1.123	07	15.0000	0.9488						

**N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	0.6555	02	0.1000	1.125	03	0.5000	1.286	04	1.0000	1.023
05	5.0000	1.278	06	10.0000	1.271	07	15.0000	1.266			

**Perfluorobutane sulfonic acid (PFBS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0444	1.66	02	0.0887	1.65	03	0.4437	1.577	04	0.8874	1.374
05	4.4369	1.623	06	8.8737	1.644	07	13.3106	1.695			

**Perfluorobutanoic acid (PFBA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.954	02	0.1000	1.982	03	0.5000	1.319	04	1.0000	1.311
05	5.0000	1.495	06	10.0000	1.42	07	15.0000	1.434			

**Perfluorodecane sulfonic acid (PFDS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0482	1.242	02	0.0965	1.519	03	0.4823	1.201	04	0.9647	1.48
05	4.8233	1.361	06	9.6467	1.369	07	14.4700	1.34			

**Perfluorodecanoic acid (PFDA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.787	02	0.1000	1.625	03	0.5000	1.486	04	1.0000	1.511
05	5.0000	1.438	06	10.0000	1.543	07	15.0000	1.533			

**Perfluorododecanoic acid (PFDOA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	0.8472	02	0.1000	0.8721	03	0.5000	0.7106	04	1.0000	0.6584
05	5.0000	0.7794	06	10.0000	0.7149	07	15.0000	0.785			

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

**Analyte**

**Perfluoroheptane sulfonic acid (PFHpS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0477	1.851	02	0.0953	1.648	03	0.4767	1.829	04	0.9534	1.502
05	4.7672	1.827	06	9.5344	1.832	07	14.3016	2.126			

**Perfluoroheptanoic acid (PFHpA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.368	02	0.1000	1.64	03	0.5000	1.269	04	1.0000	1.168
05	5.0000	1.266	06	10.0000	1.325	07	15.0000	1.395			

**Perfluorohexane sulfonic acid (PFHxS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.0913	1.306	03	0.4565	1.522	04	0.9131	1.449	05	4.5654	1.972
06	9.1308	1.842	07	13.6961	1.827						

**Perfluorohexanoic acid (PFHxA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.328	02	0.1000	1.618	03	0.5000	1.339	04	1.0000	1.36
05	5.0000	1.306	06	10.0000	1.354	07	15.0000	1.522			

**Perfluorononanoic acid (PFNA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.397	02	0.1000	1.46	03	0.5000	1.19	04	1.0000	1.336
05	5.0000	1.373	06	10.0000	1.318	07	15.0000	1.404			

**Perfluorooctane sulfonamide (PFOSAm)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.1000	2.208	03	0.5000	1.83	04	1.0000	1.725	05	5.0000	1.865
06	10.0000	1.839	07	15.0000	1.88						

**Perfluorooctane sulfonic acid (PFOS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0465	0.7476	02	0.0929	0.6803	03	0.4646	0.5925	04	0.9292	0.726
05	4.6461	0.7038	06	9.2923	0.7062	07	13.9385	0.6883			

**Perfluorooctanoic acid (PFOA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	0.9154	02	0.1000	0.988	03	0.5000	1.026	04	1.0000	0.9117
05	5.0000	0.943	06	10.0000	0.9789	07	15.0000	1.026			

**Perfluoropentanoic acid (PFPeA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	3.939	02	0.1000	3.513	03	0.5000	3.086	04	1.0000	3.092
05	5.0000	3.254	06	10.0000	3.086	07	15.0000	3.117			

**Perfluorotetradecanoic acid (PFTDA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	0.7876	02	0.1000	0.7512	03	0.5000	0.6644	04	1.0000	0.6666
05	5.0000	0.7345	06	10.0000	0.6869	07	15.0000	0.6889			

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

**Analyte**

**Perfluorotridecanoic acid (PFTrDA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	0.6163	02	0.1000	0.9353	03	0.5000	0.7409	04	1.0000	0.807
05	5.0000	0.9548	06	10.0000	0.9329	07	15.0000	0.7863			

**Perfluoroundecanoic acid (PFUnDA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.1000	0.7819	03	0.5000	0.7138	04	1.0000	0.7312	05	5.0000	0.7564
06	10.0000	0.7556	07	15.0000	0.8305						

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
13C2-6:2 FTS	SURR	Average RF	% RSD	10.3	20	0.08851	
13C2-8:2 FTS	SURR	Average RF	% RSD	10.7	20	0.08172	
13C2-PFDA	SURR	Average RF	% RSD	5.7	20	0.5154	
13C2-PFDoDA	SURR	Average RF	% RSD	3.3	20	1.307	
13C2-PFHxA	SURR	Average RF	% RSD	10.5	20	0.5654	
13C2-PFTeDA	SURR	Average RF	% RSD	9.4	20	0.946	
13C2-PFUnDA	SURR	Average RF	% RSD	4.2	20	1.004	
13C3-PFBS	SURR	Average RF	% RSD	6.2	20	0.1087	
13C4-PFBA	SURR	Average RF	% RSD	8.7	20	0.2472	
13C4-PFHpA	SURR	Average RF	% RSD	10.3	20	0.6284	
13C4-PFOA	SURR	Average RF	% RSD	6.6	20	0.9167	
13C4-PFOS	SURR	Average RF	% RSD	2.8	20	0.1444	
13C5-PFNA	SURR	Average RF	% RSD	7.7	20	0.5558	
13C5-PFPeA	SURR	Average RF	% RSD	3.6	20	0.1984	
13C8-FOSA	SURR	Average RF	% RSD	10.1	20	0.294	
18O2-PFHxS	SURR	Average RF	% RSD	8.4	20	0.07623	
1H, 1H, 2H, 2H- Perfluorodecanesulfonic acid (8:2 FTS)	TRG	Average RF	% RSD	12.0	20	1.037	
1H, 1H, 2H, 2H- Perfluorooctanesulfonic acid (6:2 FTS)	TRG	Average RF	% RSD	10.6	20	1.307	
D3-MeFOSAA	SURR	Average RF	% RSD	9.9	20	0.1384	
D5-EtFOSAA	SURR	Average RF	% RSD	6.3	20	0.1338	
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	TRG	Average RF	% RSD	15.6	20	1.1	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	TRG	Linear	R2	0.9989	0.99	1.129	
Perfluorobutane sulfonic acid (PFBS)	TRG	Average RF	% RSD	6.7	20	1.603	
Perfluorobutanoic acid (PFBA)	TRG	Average RF	% RSD	18.4	20	1.559	
Perfluorodecane sulfonic acid (PFDS)	TRG	Average RF	% RSD	8.5	20	1.359	
Perfluorodecanoic acid (PFDA)	TRG	Average RF	% RSD	7.4	20	1.561	
Perfluorododecanoic acid (PFDOA)	TRG	Linear	R2	0.9929	0.99	0.7668	
Perfluoroheptane sulfonic acid (PFHpS)	TRG	Average RF	% RSD	10.7	20	1.802	
Perfluoroheptanoic acid (PFHpA)	TRG	Linear	R2	0.9979	0.99	1.347	

**Client:** Casella Waste Systems (Hampden ME)  
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**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
Perfluorohexane sulfonic acid (PFHxS)	TRG	Average RF	% RSD	15.9	20	1.653	
Perfluorohexanoic acid (PFHxA)	TRG	Linear	R2	0.9956	0.99	1.404	
Perfluorononanoic acid (PFNA)	TRG	Linear	R2	0.9989	0.99	1.354	
Perfluorooctane sulfonamide (PFOSAm)	TRG	Average RF	% RSD	8.7	20	1.891	
Perfluorooctane sulfonic acid (PFOS)	TRG	Average RF	% RSD	7.1	20	0.6921	
Perfluorooctanoic acid (PFOA)	TRG	Linear	R2	0.9975	0.99	0.9698	
Perfluoropentanoic acid (PFPeA)	TRG	Linear	R2	0.9996	0.99	3.298	
Perfluorotetradecanoic acid (PFTDA)	TRG	Linear	R2	0.9993	0.99	0.7114	
Perfluorotridecanoic acid (PFTrDA)	TRG	Linear	R2	0.9915	0.99	0.8248	
Perfluoroundecanoic acid (PFUnDA)	TRG	Linear	R2	0.9966	0.99	0.7616	



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/27/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300066  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
01	KC2300066-01	0.05 PPB ICAL 537M	230127_019	01/27/2023 20:32
02	KC2300066-02	0.10 PPB ICAL 537M	230127_020	01/27/2023 20:42
03	KC2300066-03	0.50 PPB ICAL 537M	230127_021	01/27/2023 20:53
04	KC2300066-04	1.0 PPB ICAL 537M	230127_022	01/27/2023 21:03
05	KC2300066-05	5.0 PPB ICAL 537M	230127_023	01/27/2023 21:14
06	KC2300066-06	10 PPB ICAL 537M	230127_024	01/27/2023 21:24
07	KC2300066-07	15 PPB ICAL 537M	230127_026	01/27/2023 21:45

**Analyte**

**13C2-6:2 FTS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.03086	02	5.0000	0.03575	03	5.0000	0.04002	04	5.0000	0.03767
05	5.0000	0.03767	06	5.0000	0.03705	07	5.0000	0.03704			

**13C2-8:2 FTS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.03143	02	5.0000	0.04093	03	5.0000	0.04328	04	5.0000	0.04031
05	5.0000	0.03833	06	5.0000	0.0406	07	5.0000	0.03854			

**13C2-PFHxA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.6722	02	5.0000	0.7696	03	5.0000	0.6863	04	5.0000	0.6823
05	5.0000	0.6641	06	5.0000	0.6396	07	5.0000	0.721			

**13C3-PFBS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1004	02	5.0000	0.09957	03	5.0000	0.1163	04	5.0000	0.1152
05	5.0000	0.1028	06	5.0000	0.1026	07	5.0000	0.1052			

**13C4-PFBA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.3003	02	5.0000	0.3505	03	5.0000	0.4056	04	5.0000	0.3559
05	5.0000	0.346	06	5.0000	0.332	07	5.0000	0.3445			

**13C5-PFPeA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1975	02	5.0000	0.22	03	5.0000	0.2171	04	5.0000	0.211
05	5.0000	0.1997	06	5.0000	0.1976	07	5.0000	0.208			

**18O2-PFHxS**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.07574	02	5.0000	0.08649	03	5.0000	0.1018	04	5.0000	0.1116
05	5.0000	0.08478	06	5.0000	0.09749	07	5.0000	0.09624			

**1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0480	1.378	02	0.0960	1.065	03	0.4800	1.234	04	0.9600	1.185

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/27/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300066  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

**Analyte**

**1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
05	4.8002	1.074	06	9.6005	0.9411	07	14.4007	1.033			

**1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0476	1.096	02	0.0951	1.192	03	0.4756	1.662	04	0.9512	1.475
05	4.7558	1.434	06	9.5117	1.378	07	14.2676	1.421			

**D3-MeFOSAA**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	5.0000	0.1167	02	5.0000	0.121	03	5.0000	0.1462	04	5.0000	0.1411
05	5.0000	0.1309	06	5.0000	0.1081	07	5.0000	0.1203			

**N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.1000	0.6945	03	0.5000	0.7634	04	1.0000	0.6878	05	5.0000	0.8871
06	10.0000	0.944	07	15.0000	0.7687						

**Perfluorobutane sulfonic acid (PFBS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0444	2.136	02	0.0887	2.272	03	0.4437	2.267	04	0.8874	2.058
05	4.4369	2.126	06	8.8737	2.158	07	13.3106	2.054			

**Perfluorobutanoic acid (PFBA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	3.705	02	0.1000	2.808	03	0.5000	1.834	04	1.0000	1.635
05	5.0000	1.636	06	10.0000	1.599	07	15.0000	1.623			

**Perfluorohexane sulfonic acid (PFHxS)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	0.0913	1.341	03	0.4565	1.421	04	0.9131	1.458	05	4.5654	1.565
06	9.1308	1.389	07	13.6961	1.421						

**Perfluorohexanoic acid (PFHxA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	1.218	02	0.1000	1.316	03	0.5000	1.272	04	1.0000	1.166
05	5.0000	1.185	06	10.0000	1.251	07	15.0000	1.22			

**Perfluoropentanoic acid (PFPeA)**

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.0500	4.847	02	0.1000	3.915	03	0.5000	3.598	04	1.0000	3.487
05	5.0000	3.471	06	10.0000	3.463	07	15.0000	3.501			

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/27/2023

**Initial Calibration Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300066  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

Analyte Name	Compound Type	Calibration Evaluation				Calibration Evaluation	
		Fit Type	Eval	Eval Result	Control Criteria	Average RRF	Minimum RRF
13C2-6:2 FTS	SURR	Average RF	% RSD	7.7	20	0.03658	
13C2-8:2 FTS	SURR	Average RF	% RSD	9.6	20	0.03906	
13C2-PFHxA	SURR	Average RF	% RSD	6.2	20	0.6907	
13C3-PFBS	SURR	Average RF	% RSD	6.5	20	0.106	
13C4-PFBA	SURR	Average RF	% RSD	9.0	20	0.3478	
13C5-PFPeA	SURR	Average RF	% RSD	4.5	20	0.2073	
18O2-PFHxS	SURR	Average RF	% RSD	12.8	20	0.09345	
1H, 1H, 2H, 2H- Perfluorodecanesulfonic acid (8:2 FTS)	TRG	Average RF	% RSD	12.9	20	1.13	
1H, 1H, 2H, 2H- Perfluorooctanesulfonic acid (6:2 FTS)	TRG	Average RF	% RSD	13.5	20	1.38	
D3-MeFOSAA	SURR	Average RF	% RSD	10.8	20	0.1263	
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	TRG	Average RF	% RSD	13.1	20	0.7909	
Perfluorobutane sulfonic acid (PFBS)	TRG	Average RF	% RSD	4.1	20	2.153	
Perfluorobutanoic acid (PFBA)	TRG	Linear	R2	0.9998	0.99	2.12	
Perfluorohexane sulfonic acid (PFHxS)	TRG	Average RF	% RSD	5.3	20	1.433	
Perfluorohexanoic acid (PFHxA)	TRG	Average RF	% RSD	4.2	20	1.232	
Perfluoropentanoic acid (PFPeA)	TRG	Linear	R2	1.0000	0.99	3.755	

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Verification Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC2300016-08	PFC ICV @ 1.0ppb	230106_027	01/06/2023 22:23

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorobutane sulfonic acid (PFBS)	0.887	0.838	1.603E0	1.514E0	-5.601	±30	Average RF
Perfluorohexane sulfonic acid (PFHxS)	0.913	0.935	1.653E0	1.692E0	2.36	±30	Average RF
Perfluoroheptane sulfonic acid (PFHpS)	0.953	0.976	1.802E0	1.844E0	2.33	±30	Average RF
Perfluorooctane sulfonic acid (PFOS)	0.929	0.895	6.921E-1	6.669E-1	-3.637	±30	Average RF
Perfluorodecane sulfonic acid (PFDS)	0.965	1.01	1.359E0	1.416E0	4.19	±30	Average RF
Perfluorobutanoic acid (PFBA)	1.00	0.821	1.559E0	1.28E0	-17.914	±30	Average RF
Perfluoropentanoic acid (PFPeA)	1.00	0.951	3.298E0	3.006E0	-4.889	±30	Linear
Perfluorohexanoic acid (PFHxA)	1.00	0.960	1.404E0	1.365E0	-4.039	±30	Linear
Perfluoroheptanoic acid (PFHpA)	1.00	1.00	1.347E0	1.347E0	0.149	±30	Linear
Perfluorooctanoic acid (PFOA)	1.00	1.01	9.698E-1	9.871E-1	0.816	±30	Linear
Perfluorononanoic acid (PFNA)	1.00	0.971	1.354E0	1.325E0	-2.886	±30	Linear
Perfluorodecanoic acid (PFDA)	1.00	0.936	1.561E0	1.461E0	-6.360	±30	Average RF
Perfluoroundecanoic acid (PFUnDA)	1.00	0.955	7.616E-1	7.261E-1	-4.507	±30	Linear
Perfluorododecanoic acid (PFDOA)	1.00	0.973	7.668E-1	7.202E-1	-2.729	±30	Linear
Perfluorotridecanoic acid (PFTrDA)	1.00	0.998	8.248E-1	8.514E-1	-0.243	±30	Linear
Perfluorotetradecanoic acid (PFTDA)	1.00	1.01	7.114E-1	7.023E-1	0.674	±30	Linear
Perfluorooctane sulfonamide (PFOSAm)	1.00	0.926	1.891E0	1.752E0	-7.383	±30	Average RF
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	1.00	1.05	1.129E0	1.301E0	4.97	±30	Linear
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	1.00	0.849	1.1E0	9.341E-1	-15.086	±30	Average RF
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.951	0.876	1.307E0	1.203E0	-7.949	±30	Average RF
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.960	0.998	1.037E0	1.077E0	3.93	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
13C3-PFBS	5.00	4.79	1.087E-1	1.042E-1	-4.198	±30	Average RF
18O2-PFHxS	5.00	4.79	7.623E-2	7.304E-2	-4.191	±30	Average RF
13C4-PFOS	5.00	4.74	1.444E-1	1.37E-1	-5.116	±30	Average RF
13C4-PFBA	5.00	5.32	2.472E-1	2.628E-1	6.35	±30	Average RF
13C5-PFPeA	5.00	4.86	1.984E-1	1.929E-1	-2.768	±30	Average RF
13C2-PFHxA	5.00	4.44	5.654E-1	5.018E-1	-11.260	±30	Average RF
13C4-PFHpA	5.00	4.39	6.284E-1	5.519E-1	-12.185	±30	Average RF
13C4-PFOA	5.00	4.53	9.167E-1	8.297E-1	-9.489	±30	Average RF

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/6/2023

**Initial Calibration Verification Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300016  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
13C5-PFNA	5.00	4.68	5.558E-1	5.207E-1	-6.305	±30	Average RF
13C2-PFDA	5.00	4.73	5.154E-1	4.876E-1	-5.394	±30	Average RF
13C2-PFUnDA	5.00	4.68	1.004E0	9.394E-1	-6.397	±30	Average RF
13C2-PFDoDA	5.00	4.70	1.307E0	1.229E0	-5.954	±30	Average RF
13C2-PFTeDA	5.00	5.01	9.46E-1	9.485E-1	0.267	±30	Average RF
13C8-FOSA	5.00	4.95	2.94E-1	2.91E-1	-0.994	±30	Average RF
D3-MeFOSAA	5.00	4.93	1.384E-1	1.366E-1	-1.349	±30	Average RF
D5-EtFOSAA	5.00	5.28	1.338E-1	1.413E-1	5.60	±30	Average RF
13C2-6:2 FTS	5.00	4.66	8.851E-2	8.255E-2	-6.743	±30	Average RF
13C2-8:2 FTS	5.00	4.40	8.172E-2	7.196E-2	-11.947	±30	Average RF

**ALS Group USA, Corp.**  
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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Calibration Date:** 1/27/2023

**Initial Calibration Verification Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Calibration ID:** KC2300066  
**Instrument ID:** K-LCMS-06

**Signal ID:** 1

#	Lab Code	Sample Name	File Location	Acquisition Date
08	KC2300066-08	ICV 1.0 PPB 537M	230127_028	01/27/2023 22:06

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorobutane sulfonic acid (PFBS)	0.887	0.802	2.153E0	1.947E0	-9.583	±30	Average RF
Perfluorohexane sulfonic acid (PFHxS)	0.913	0.810	1.433E0	1.27E0	-11.319	±30	Average RF
Perfluorobutanoic acid (PFBA)	1.00	0.907	2.12E0	1.563E0	-9.308	±30	Linear
Perfluoropentanoic acid (PFPeA)	1.00	0.979	3.755E0	3.462E0	-2.065	±30	Linear
Perfluorohexanoic acid (PFHxA)	1.00	0.972	1.232E0	1.198E0	-2.807	±30	Average RF
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	1.00	1.08	7.909E-1	8.571E-1	8.37	±30	Average RF
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.951	0.945	1.38E0	1.37E0	-0.684	±30	Average RF
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.960	0.918	1.13E0	1.081E0	-4.327	±30	Average RF

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
13C3-PFBS	5.00	5.43	1.06E-1	1.152E-1	8.64	±30	Average RF
18O2-PFHxS	5.00	4.82	9.345E-2	9.017E-2	-3.511	±30	Average RF
13C4-PFBA	5.00	5.37	3.478E-1	3.738E-1	7.47	±30	Average RF
13C5-PFPeA	5.00	5.47	2.073E-1	2.269E-1	9.48	±30	Average RF
13C2-PFHxA	5.00	5.45	6.907E-1	7.523E-1	8.92	±30	Average RF
D3-MeFOSAA	5.00	4.29	1.263E-1	1.085E-1	-14.104	±30	Average RF
13C2-6:2 FTS	5.00	5.24	3.658E-2	3.835E-2	4.84	±30	Average RF
13C2-8:2 FTS	5.00	5.44	3.906E-2	4.25E-2	8.81	±30	Average RF

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Date Analyzed:** 01/07/23 04:15

**Continuing Calibration Verification (CCV) Summary  
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**File ID:** J:\LCMS06\Data\230106\_B3\230106\_060  
**Signal ID:** 1

**Calibration Date:** 1/6/2023  
**Calibration ID:** KC2300016  
**Analysis Lot:** 791021  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
Perfluorobutane sulfonic acid (PFBS)	0.887	0.792	1.6034	1.4313	89.3	NA	±30	Average RF
Perfluorohexane sulfonic acid (PFHxS)	0.913	0.875	1.6527	1.5833	95.8	NA	±30	Average RF
Perfluoroheptane sulfonic acid (PFHpS)	0.953	0.904	1.8021	1.7091	94.8	NA	±30	Average RF
Perfluorooctane sulfonic acid (PFOS)	0.929	0.905	0.6921	0.6738	97.3	NA	±30	Average RF
Perfluorodecane sulfonic acid (PFDS)	0.965	0.960	1.3589	1.3524	99.5	NA	±30	Average RF
Perfluorobutanoic acid (PFBA)	1.00	0.817	1.5594	1.2735	81.7	NA	±30	Average RF
Perfluoropentanoic acid (PFPeA)	1.00	0.906	3.2981	2.8665	90.6	-9.4	±30	Linear
Perfluorohexanoic acid (PFHxA)	1.00	1.03	1.4039	1.4617	103	2.7	±30	Linear
Perfluoroheptanoic acid (PFHpA)	1.00	0.873	1.3472	1.1743	87.3	-12.7	±30	Linear
Perfluorooctanoic acid (PFOA)	1.00	1.11	0.9698	1.0888	111	11.2	±30	Linear
Perfluorononanoic acid (PFNA)	1.00	0.882	1.3542	1.2038	88.2	-11.8	±30	Linear
Perfluorodecanoic acid (PFDA)	1.00	0.840	1.5605	1.31	84.0	NA	±30	Average RF
Perfluoroundecanoic acid (PFUnDA)	1.00	1.00	0.7616	0.7617	100	0.2	±30	Linear
Perfluorododecanoic acid (PFDOA)	1.00	0.943	0.7668	0.6986	94.3	-5.7	±30	Linear
Perfluorotridecanoic acid (PFTrDA)	1.00	0.895	0.8248	0.7627	89.5	-10.5	±30	Linear
Perfluorotetradecanoic acid (PFTDA)	1.00	0.889	0.7114	0.6209	88.9	-11.1	±30	Linear
Perfluorooctane sulfonamide (PFOSAm)	1.00	0.950	1.8912	1.7974	95.0	NA	±30	Average RF
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	1.00	0.777	1.1291	0.9555	77.7	-22.3	±30	Linear
N-Ethylperfluorooctane sulfonamido acetic acid (NEtFOSAA)	1.00	0.729	1.1	0.8019	72.9	NA	±30	Average RF
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.951	1.03	1.307	1.416	108	NA	±30	Average RF
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.960	1.04	1.0366	1.1183	108	NA	±30	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
13C3-PFBS	5.00	5.71	0.1087	0.1242	114	NA	±30	Average RF
18O2-PFHxS	5.00	5.82	0.0762	0.0887	116	NA	±30	Average RF
13C4-PFOS	5.00	5.27	0.1444	0.1522	105	NA	±30	Average RF
13C4-PFBA	5.00	5.94	0.2472	0.2936	119	NA	±30	Average RF
13C5-PFPeA	5.00	5.56	0.1984	0.2207	111	NA	±30	Average RF
13C2-PFHxA	5.00	5.33	0.5654	0.6028	107	NA	±30	Average RF
13C4-PFHpA	5.00	5.45	0.6284	0.6854	109	NA	±30	Average RF
13C4-PFOA	5.00	4.97	0.9167	0.9112	99.4	NA	±30	Average RF

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Date Analyzed:** 01/07/23 04:15

**Continuing Calibration Verification (CCV) Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**File ID:** J:\LCMS06\Data\230106\_B3\230106\_060  
**Signal ID:** 1

**Calibration Date:** 1/6/2023  
**Calibration ID:** KC2300016  
**Analysis Lot:** 791021  
**Units:** ng/mL

13C5-PFNA	5.00	5.09	0.5558	0.566	102	NA	±30	Average RF
13C2-PFDA	5.00	5.26	0.5154	0.5418	105	NA	±30	Average RF
13C2-PFUnDA	5.00	5.12	1.0036	1.0281	102	NA	±30	Average RF
13C2-PFDoDA	5.00	5.69	1.3071	1.4862	114	NA	±30	Average RF
13C2-PFTeDA	5.00	6.14	0.946	1.161	123	NA	±30	Average RF
13C8-FOSA	5.00	5.58	0.294	0.3278	112	NA	±30	Average RF
D3-MeFOSAA	5.00	6.50	0.1384	0.1799	130	NA	±30	Average RF
D5-EtFOSAA	5.00	5.89	0.1338	0.1577	118	NA	±30	Average RF
13C2-6:2 FTS	5.00	5.04	0.0885	0.0891	101	NA	±30	Average RF
13C2-8:2 FTS	5.00	5.24	0.0817	0.0856	105	NA	±30	Average RF



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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Date Analyzed:** 01/28/23 20:00

**Continuing Calibration Verification (CCV) Summary**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**File ID:** J:\LCMS06\Data\230128\_B3\230128\_011  
**Signal ID:** 1

**Calibration Date:** 1/27/2023  
**Calibration ID:** KC2300066  
**Analysis Lot:** 793056  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
Perfluorobutanoic acid (PFBA)	1.00	0.941	2.1199	1.6178	94.1	-5.9	±30	Linear

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
13C4-PFBA	5.00	4.47	0.3478	0.3108	89.4	NA	±30	Average RF

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Date Analyzed:** 01/28/23 20:00

**Continuing Calibration Verification (CCV) Summary  
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**File ID:** J:\LCMS06\Data\230128\_B4\230128\_011  
**Signal ID:** 1

**Calibration Date:** 1/27/2023  
**Calibration ID:** KC2300066  
**Analysis Lot:** 793060  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
Perfluorobutane sulfonic acid (PFBS)	0.887	0.884	2.1529	2.1458	99.7	NA	±30	Average RF
Perfluorohexane sulfonic acid (PFHxS)	0.913	0.970	1.4325	1.5214	106	NA	±30	Average RF
Perfluorobutanoic acid (PFBA)	1.00	0.942	2.1199	1.6188	94.2	-5.8	±30	Linear
Perfluoropentanoic acid (PFPeA)	1.00	0.978	3.7546	3.4579	97.8	-2.2	±30	Linear
Perfluorohexanoic acid (PFHxA)	1.00	0.895	1.2325	1.1031	89.5	NA	±30	Average RF
N-Methylperfluorooctane sulfonamido acetic acid (NMeFOSAA)	1.00	1.05	0.7909	0.8281	105	NA	±30	Average RF
1H, 1H, 2H, 2H-Perfluorooctanesulfonic acid (6:2 FTS)	0.951	0.978	1.3799	1.4192	103	NA	±30	Average RF
1H, 1H, 2H, 2H-Perfluorodecanesulfonic acid (8:2 FTS)	0.960	0.992	1.13	1.168	103	NA	±30	Average RF

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
13C3-PFBS	5.00	4.48	0.106	0.095	89.7	NA	±30	Average RF
18O2-PFHxS	5.00	5.36	0.0935	0.1002	107	NA	±30	Average RF
13C4-PFBA	5.00	4.47	0.3478	0.3108	89.4	NA	±30	Average RF
13C5-PFPeA	5.00	4.82	0.2073	0.1998	96.4	NA	±30	Average RF
13C2-PFHxA	5.00	4.22	0.6907	0.5834	84.5	NA	±30	Average RF
D3-MeFOSAA	5.00	5.07	0.1263	0.1281	101	NA	±30	Average RF
13C2-6:2 FTS	5.00	4.77	0.0366	0.0349	95.5	NA	±30	Average RF
13C2-8:2 FTS	5.00	5.08	0.0391	0.0397	102	NA	±30	Average RF

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:** R2211405  
**Date Analyzed:** 01/30/23 19:34

**Continuing Calibration Verification (CCV) Summary  
Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M  
**File ID:** J:\LCMS06\Data\230130\_B3\230130\_004  
**Signal ID:** 1

**Calibration Date:** 1/27/2023  
**Calibration ID:** KC2300066  
**Analysis Lot:** 793175  
**Units:** ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
Perfluorobutanoic acid (PFBA)	1.00	0.989	2.1199	1.6946	98.9	-1.1	±30	Linear

Analyte Name	Expected	Result	Average RF	CCV RF	Rec.	% Drift	Criteria	Curve Fit
13C4-PFBA	5.00	4.08	0.3478	0.2837	81.6	NA	±30	Average RF

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405

**Analysis Run Log**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M

**Analysis Lot:**791021

**Instrument ID:**K-LCMS-06

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
J:\LCMS06\Data\230106_B3\230106_060	Continuing Calibration Verification	KQ2300434-02	1/7/2023	04:15	
J:\LCMS06\Data\230106_B3\230106_061	Continuing Calibration Blank	KQ2300434-01	1/7/2023	04:26	
J:\LCMS06\Data\230106_B3\230106_088	Method Blank	KQ2221946-03	1/7/2023	09:08	
J:\LCMS06\Data\230106_B3\230106_089	Lab Control Sample	KQ2221946-01	1/7/2023	09:18	
J:\LCMS06\Data\230106_B3\230106_090	Duplicate Lab Control Sample	KQ2221946-02	1/7/2023	09:29	
J:\LCMS06\Data\230106_B3\230106_091	ZZZZZZZ	ZZZZZZZ	1/7/2023	09:39	
J:\LCMS06\Data\230106_B3\230106_092	ZZZZZZZ	ZZZZZZZ	1/7/2023	09:50	
J:\LCMS06\Data\230106_B3\230106_093	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:00	
J:\LCMS06\Data\230106_B3\230106_094	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:11	
J:\LCMS06\Data\230106_B3\230106_095	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:21	
J:\LCMS06\Data\230106_B3\230106_096	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:32	
J:\LCMS06\Data\230106_B3\230106_097	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:42	
J:\LCMS06\Data\230106_B3\230106_098	ZZZZZZZ	ZZZZZZZ	1/7/2023	10:52	
J:\LCMS06\Data\230106_B3\230106_099	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:03	
J:\LCMS06\Data\230106_B3\230106_100	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:13	
J:\LCMS06\Data\230106_B3\230106_101	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:24	
J:\LCMS06\Data\230106_B3\230106_102	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:34	
J:\LCMS06\Data\230106_B3\230106_103	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:45	
J:\LCMS06\Data\230106_B3\230106_104	ZZZZZZZ	ZZZZZZZ	1/7/2023	11:55	
J:\LCMS06\Data\230106_B3\230106_105	ZZZZZZZ	ZZZZZZZ	1/7/2023	12:06	
J:\LCMS06\Data\230106_B3\230106_106	ZZZZZZZ	ZZZZZZZ	1/7/2023	12:16	
J:\LCMS06\Data\230106_B3\230106_107	ZZZZZZZ	ZZZZZZZ	1/7/2023	12:27	
J:\LCMS06\Data\230106_B3\230106_108	ZZZZZZZ	ZZZZZZZ	1/7/2023	12:37	
J:\LCMS06\Data\230106_B3\230106_109	LCS-1122	R2211405-001	1/7/2023	12:47	
J:\LCMS06\Data\230106_B3\230106_110	Field Blank	R2211405-004	1/7/2023	12:58	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405

**Analysis Run Log**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M

**Analysis Lot:**793056  
**Instrument ID:**K-LCMS-06

<b>Raw Data File</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>	<b>Q</b>
J:\LCMS06\Data\230128_B3\230128_011	Continuing Calibration Verification	KQ2301699-02	1/28/2023	20:00	
J:\LCMS06\Data\230128_B3\230128_012	Continuing Calibration Blank	KQ2301699-01	1/28/2023	20:10	
J:\LCMS06\Data\230128_B3\230128_022	ZZZZZZZ	ZZZZZZZ	1/28/2023	21:55	
J:\LCMS06\Data\230128_B3\230128_025	Lab Control Sample	KQ2221946-01	1/28/2023	22:26	*
J:\LCMS06\Data\230128_B3\230128_026	Duplicate Lab Control Sample	KQ2221946-02	1/28/2023	22:36	*
J:\LCMS06\Data\230128_B3\230128_027	ZZZZZZZ	ZZZZZZZ	1/28/2023	22:47	
J:\LCMS06\Data\230128_B3\230128_028	ZZZZZZZ	ZZZZZZZ	1/28/2023	22:57	
J:\LCMS06\Data\230128_B3\230128_029	ZZZZZZZ	ZZZZZZZ	1/28/2023	23:08	
J:\LCMS06\Data\230128_B3\230128_030	ZZZZZZZ	ZZZZZZZ	1/28/2023	23:18	
J:\LCMS06\Data\230128_B3\230128_040	ZZZZZZZ	ZZZZZZZ	1/29/2023	01:03	
J:\LCMS06\Data\230128_B3\230128_041	ZZZZZZZ	ZZZZZZZ	1/29/2023	01:13	
J:\LCMS06\Data\230128_B3\230128_042	ZZZZZZZ	ZZZZZZZ	1/29/2023	01:24	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405

**Analysis Run Log**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M

**Analysis Lot:**793060  
**Instrument ID:**K-LCMS-06

<b>Raw Data File</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>	<b>Q</b>
J:\LCMS06\Data\230128_B4\230128_011	Continuing Calibration Verification	KQ2301703-02	1/28/2023	20:00	
J:\LCMS06\Data\230128_B4\230128_012	Continuing Calibration Blank	KQ2301703-01	1/28/2023	20:10	
J:\LCMS06\Data\230128_B4\230128_044	LCS-1122	R2211405-001	1/29/2023	01:45	*
J:\LCMS06\Data\230128_B4\230128_045	Field Blank	R2211405-004	1/29/2023	01:55	*
J:\LCMS06\Data\230128_B4\230128_046	ZZZZZZZ	ZZZZZZZ	1/29/2023	02:06	
J:\LCMS06\Data\230128_B4\230128_049	ZZZZZZZ	ZZZZZZZ	1/29/2023	02:37	
J:\LCMS06\Data\230128_B4\230128_050	ZZZZZZZ	ZZZZZZZ	1/29/2023	02:48	
J:\LCMS06\Data\230128_B4\230128_051	ZZZZZZZ	ZZZZZZZ	1/29/2023	02:58	
J:\LCMS06\Data\230128_B4\230128_052	ZZZZZZZ	ZZZZZZZ	1/29/2023	03:08	
J:\LCMS06\Data\230128_B4\230128_053	ZZZZZZZ	ZZZZZZZ	1/29/2023	03:19	

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QA/QC Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate

**Service Request:**R2211405

**Analysis Run Log**  
**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Analysis Method:** PFC/537M

**Analysis Lot:**793175  
**Instrument ID:**K-LCMS-06

<b>Raw Data File</b>	<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Analyzed</b>	<b>Time Analyzed</b>	<b>Q</b>
J:\LCMS06\Data\230130_B3\230130_004	Continuing Calibration Verification	KQ2301745-02	1/30/2023	19:34	
J:\LCMS06\Data\230130_B3\230130_005	Continuing Calibration Blank	KQ2301745-01	1/30/2023	19:44	
J:\LCMS06\Data\230130_B3\230130_009	ZZZZZZZ	ZZZZZZZ	1/30/2023	20:26	
J:\LCMS06\Data\230130_B3\230130_010	ZZZZZZZ	ZZZZZZZ	1/30/2023	20:37	
J:\LCMS06\Data\230130_B3\230130_011	ZZZZZZZ	ZZZZZZZ	1/30/2023	20:47	
J:\LCMS06\Data\230130_B3\230130_012	ZZZZZZZ	ZZZZZZZ	1/30/2023	20:57	
J:\LCMS06\Data\230130_B3\230130_013	Method Blank	KQ2221946-03	1/30/2023	21:08	*
J:\LCMS06\Data\230130_B3\230130_022	ZZZZZZZ	ZZZZZZZ	1/30/2023	22:42	

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Prep Summary Report

**Client:** Casella Waste Systems (Hampden ME)  
**Project:** Hakes C&D - Part 363 Expanded Leachate  
**Sample Matrix:** Water

**Service Request:**R2211405

**Per- and Polyfluoroalkyl Substances (PFAS) by LC/MS/MS**

**Prep Method:** ALS SOP  
**Analytical Method:** PFC/537M

**Extraction Lot:** 411482  
**Extraction Date:** 12/13/22 09:42

<b>Sample Name</b>	<b>Lab Code</b>	<b>Date Collected</b>	<b>Date Received</b>	<b>Sample Amount</b>	<b>Final Amount</b>	<b>Percent Solids</b>
Lab Control Sample	KQ2221946-01LCS	NA	NA	250 mL	8 mL	
Lab Control Sample	KQ2221946-01LCS	NA	NA	250 mL	8 mL	
Duplicate Lab Control Sample	KQ2221946-02DLCS	NA	NA	250 mL	8 mL	
Duplicate Lab Control Sample	KQ2221946-02DLCS	NA	NA	250 mL	8 mL	
Method Blank	KQ2221946-03MB	NA	NA	250 mL	8 mL	
Method Blank	KQ2221946-03MB	NA	NA	250 mL	8 mL	
LCS-1122	R2211405-001	11/29/22	11/29/22	290.0000 mL	8 mL	
LCS-1122	R2211405-001	11/29/22	11/29/22	290.0000 mL	8 mL	
Field Blank	R2211405-004	11/29/22	11/29/22	275.0000 mL	8 mL	
Field Blank	R2211405-004	11/29/22	11/29/22	275.0000 mL	8 mL	





EBS-OR-50553

January 5, 2023

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd, Bldg 300, Suite 360  
Rochester, NY 14623

CASE NARRATIVE  
Work Order # 22-12043-OR

SAMPLE RECEIPT

This work order contains two water samples received 12/13/2022. Samples were analyzed for Isotopic Uranium.

<u>CLIENT ID</u>	<u>LAB ID</u>
LCS-1122	22-12043-04
LCS-1122 DISS	22-12043-05

ANALYTICAL METHODS

Isotopic Uranium was analyzed using EPA Method 908.0 Modified.

ANALYTICAL RESULTS

Combined Standard Uncertainty is reported at 1-sigma value.

Minimum Detectable Activity (MDA) values for data represented in this report are sample-specific. MDA measurements are determined based on factors and conditions including instrument settings, aliquot size, and matrix type.

SPECIAL CONSIDERATIONS

Lab fraction -05 (Client ID: LCS-1122 DISS) was filtered prior to analysis.

ISOTOPIC URANIUM

Samples were prepared by removing representative aliquots from the samples. Uranium was dissolved in chloride solution and separated by anion-exchange resin columns. Uranium was micro-precipitated directly using Hydrogen Fluoride, and Neodymium carrier was added. Uranium was filtered onto micro-porous filter media. Sample activities were then determined by alpha spectroscopy using energy specific regions of interest for Uranium-234, Uranium-235, and Uranium-238. Chemical recovery was determined using a Uranium-232 tracer. Activity of the Uranium-232 tracer was determined by alpha spectroscopy using an energy specific region of interest.

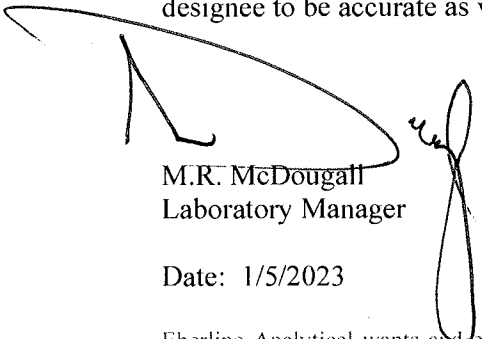
ANALYTICAL RESULTS CONTINUED

ISOTOPIC URANIUM CONTINUED

Samples demonstrated acceptable results for all Uranium-234, Uranium-235, and Uranium-238 analyses. Chemical recovery was acceptable for all analyses. The Uranium-234, Uranium-235, and Uranium-238 method blank demonstrated acceptable results. Results for the Uranium-234, Uranium-235, and Uranium-238 duplicate demonstrated a high relative percent difference; however, normalized difference is within acceptable limits for the analytical technique. Results for the Uranium-234 and Uranium-238 laboratory control sample demonstrated an acceptable percent recovery.

CERTIFICATION OF ACCURACY

I certify that this data report complies with the terms and conditions of the Purchase Order, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hard copy data package has been authorized by the cognizant project manager or his/her designee to be accurate as verified by the following signature.



M.R. McDougall  
Laboratory Manager

Date: 1/5/2023

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# Eberline Analytical

## Final Report of Analysis

Janice Jaeger  
ALS Environmental  
1565 Jefferson Rd Bldg 300 suite 360  
Rochester, NY 14623

Report To:

Work Order Details:

SDG: **22-12043 REVISED**  
Purchase Order: 58R2211405  
Analysis Category: ENVIRONMENTAL  
Sample Matrix: WVA

Lab ID	Sample Type	Client ID	Sample Date	Receipt Date	Analysis Date	Batch ID	Analyte	Method	Result	CU	CSU	MDA	Report Units
22-12043-01	LCS	KNOWN	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	7.97E+00	2.87E-01	9.22E-01	8.57E-02	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	6.71E+00	7.87E-01	9.22E-01	8.57E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	3.18E-02	4.75E-02	4.75E-02	7.73E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	2.74E-01	1.90E-01	1.91E-01	1.82E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	6.23E-01	3.02E-01	3.06E-01	1.87E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-234	EPA 908.0 Modified	1.02E-01	1.67E-01	1.67E-01	2.93E-01	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	5.23E-01	1.77E-01	1.81E-01	8.12E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	1.40E-02	3.36E-02	3.36E-02	7.05E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	2.25E-01	1.95E-01	1.96E-01	2.25E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	-7.47E-03	8.74E-02	8.74E-02	1.84E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-235	EPA 908.0 Modified	1.28E-01	1.55E-01	1.55E-01	1.89E-01	pCi/l
22-12043-01	LCS	KNOWN	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	7.72E+00	2.78E-01	2.78E-01	6.97E-02	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	7.32E+00	8.39E-01	9.89E-01	6.97E-02	pCi/l
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	1.37E-02	3.79E-02	3.79E-02	8.20E-02	pCi/l
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	1.77E-01	1.47E-01	1.47E-01	1.27E-01	pCi/l
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	3.32E-01	2.24E-01	2.25E-01	2.01E-01	pCi/l
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Uranium-238	EPA 908.0 Modified	3.11E-01	2.18E-01	2.19E-01	1.92E-01	pCi/l
22-12043-01	LCS	SPIKE	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	2.20E+01	2.50E+00	3.02E+00	2.45E-01	ug/L
22-12043-02	MBL	BLANK	12/13/22 00:00	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	4.72E-02	1.14E-01	1.14E-01	2.76E-01	ug/L
22-12043-03	DUP	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	6.30E-01	4.46E-01	4.49E-01	4.81E-01	ug/L
22-12043-04	DO	LCS-1122	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	9.83E-01	6.67E-01	6.71E-01	6.82E-01	ug/L
22-12043-05	TRG	LCS-1122 DISS	11/29/22 14:20	12/13/2022	12/28/2022	22-12043	Total Uranium	EPA 908.0 Modified	9.83E-01	6.52E-01	6.57E-01	6.58E-01	ug/L

CU=Counting Uncertainty; CSU=Combined Standard Uncertainty (1-sigma); MDA=Minimal Detected Activity; LCS=Laboratory Control Sample; MBL=Blank; DUP=Duplicate; TRG=Normal Sample; DO=Duplicate Original



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# ALS Environmental Chain of Custody

1565 Jefferson Rd, Building 300 • Rochester, NY 14623 • 585-288-5380 • FAX 585-288-8475

ALS Contact: Janice Jaeger

Project Number: R2211405  
 Project Manager: Janice Jaeger  
 QAP: LAB QAP

REC'D DEC 13 2022  
 22-12043

Lab Code	Sample ID	# of Cont.	Matrix	Sample			Lab ID	Nat U 9080
				Date	Time	Time		
4 R2211405-001	LCS-1122	1	Water	11/29/22	1420	Eberline TN	X	
5 R2211405-002	LCS-1122 Diss	1	Water	11/29/22	1420	Eberline TN	X	

*need in lab folder*

*excel add*

Special Instructions/Comments	Turnaround Requirements RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input checked="" type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: 12/23/22	Report Requirements I. Results Only _____ II. Results + QC Summaries <input checked="" type="checkbox"/> III. Results + QC and Calibration Summaries _____ IV. Data Validation Report with Raw Data <input checked="" type="checkbox"/> PQL/MDL/J <input type="checkbox"/> Y <input type="checkbox"/> EDD <input type="checkbox"/> Y <input type="checkbox"/>	Invoice Information
NPDES H - Test is On Hold      P - Test is Authorized for Prep Only			

Relinquished By: *Janice Jaeger*      Received By: *Janice Jaeger*      Airbill Number: \_\_\_\_\_  
 Date: 12/12/22      1000      12-13-22      0930

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>22-12043</b>	<b>UUIISO</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>ALS Enviromental</b>

**Laboratory Control Sample**

Analyte	LCS Measured	CSU Measured	LCS Expected	Uncert. Expected	Known	Known Error	Result	CSU	Standard ID	Standard ACT (dpm)	Standard Error	Standard Added (g)
U-234	84.19%	13.73%	100.00%	3.60%	7.97E+00	2.87E-01	6.71E+00	9.22E-01	U-8a	3.20E+01	3.60E+00	5.53E-01
U-238	94.70%	13.52%	100.00%	3.60%	7.72E+00	2.78E-01	7.32E+00	9.89E-01	U-8a	3.10E+01	3.60E+00	5.53E-01

**Matrix Spike**

Analyte	Normalized Difference	MS Actual % Rec	Expected MS Result	Expected MS Uncert	Actual MS Result	Actual MS CSU	Sample Result	Sample CSU	Sample Aliquot	Standard ID	Standard ACT (dpm)	Standard Error %	Standard Added (g)

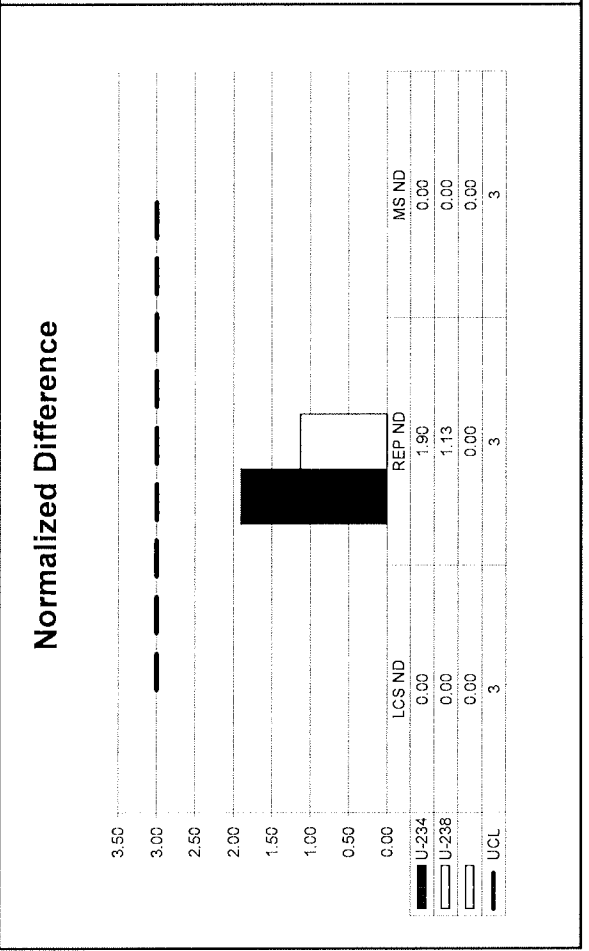
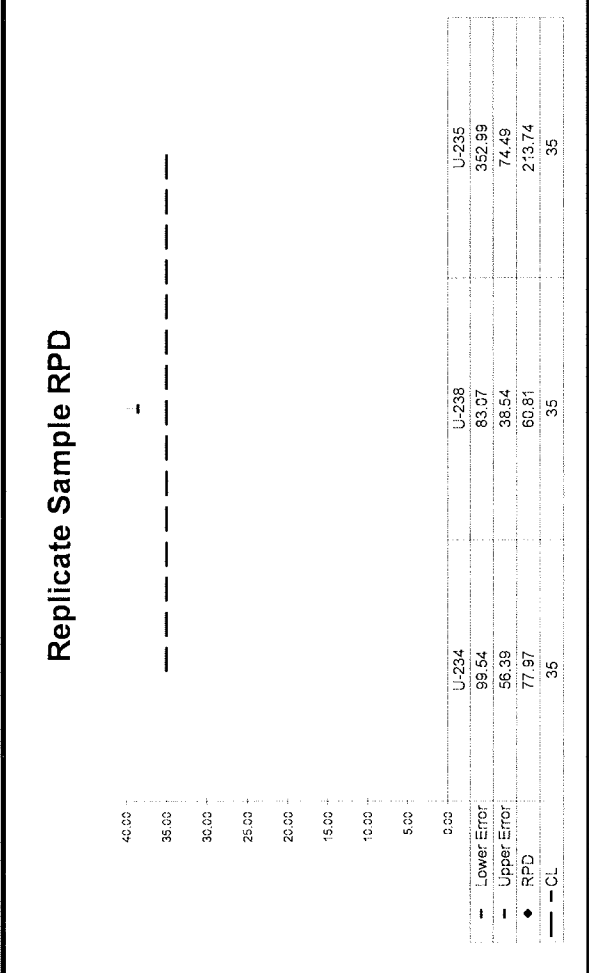
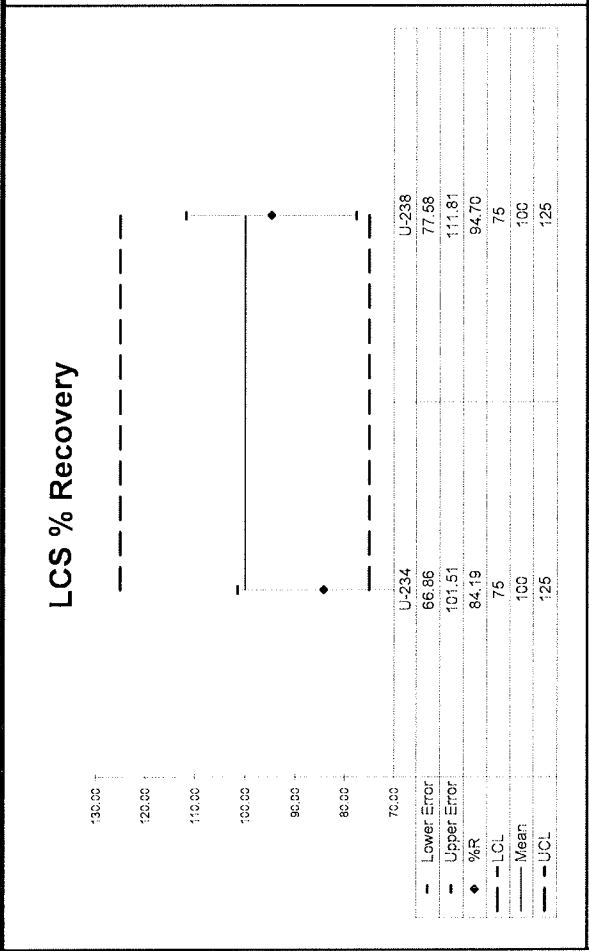
**Replicate Sample**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	1.90	77.97	6.23E-01	3.06E-01	2.74E-01	1.91E-01	0.84	OK			NA	OK
U-238	1.13	60.81	3.32E-01	2.25E-01	1.77E-01	1.47E-01	0.95	OK			NA	OK
U-235	2.12	213.74	-7.47E-03	8.74E-02	2.25E-01	1.96E-01		OK			NA	OK

**QC Summary**

Analyte	Normalized Difference	RPD	Original Result	Original CSU	Replicate Result	Replicate CSU	LCS Relative Bias	LCS % R	MS % R	MS ND	Rep RPD	Rep ND
U-234	1.90	77.97	6.23E-01	3.06E-01	2.74E-01	1.91E-01	0.84	OK			NA	OK
U-238	1.13	60.81	3.32E-01	2.25E-01	1.77E-01	1.47E-01	0.95	OK			NA	OK
U-235	2.12	213.74	-7.47E-03	8.74E-02	2.25E-01	1.96E-01		OK			NA	OK

WO	Analysis	Run	Activity Units	Aliquot Units	Client Name
<b>22-12043</b>	<b>UUISO</b>	<b>1</b>	<b>pCi</b>	<b>I</b>	<b>ALS Environmental</b>



**No Matrix Spike**

# **Appendix C**

## **Historic Groundwater Monitoring Statistics**

**Alkalinity (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					193	122		530	194									
21-Feb-17	335	233	364	374			291				223							
04-Apr-17										229					148	141	190	208
05-Apr-17													120	115				
24-May-17	332		370	264	217		312	551			226							
25-May-17		234				122			212									
01-Aug-17										224					162	144	422	235
02-Aug-17	343		372		214	125	314	557	190		229							
03-Aug-17		237		214														
08-Aug-17														142				
14-Nov-17										222				148	160	144	420	237
15-Nov-17							318				234							
16-Nov-17	336	245	376		224	128		537	164									
12-Feb-18	343		340		222	133	318	530	192		225							
13-Feb-18		225		236														
14-Feb-18										219					160	139	432	250
21-Feb-18														148				
08-May-18	348	232	310		269	137	313	535	194		225							
09-May-18				278														
22-Aug-18	318	233	292		270		335	508	177		220							
23-Aug-18				363		136												
07-Nov-18	330	226			276		306	494	179		212							
08-Nov-18			314	430		132												
11-Feb-19							303		166		210							
13-Feb-19	309	224	301		266			500										
14-Feb-19				338		126												
30-Apr-19						120			186									
01-May-19	342	235	310	335	300		317	530			218							
12-Aug-19		224	299		297			488	171									
13-Aug-19						111	308											
14-Aug-19	318			276							208							
09-Sep-19										216				160	172	148		220
10-Sep-19																	460	
18-Nov-19	322					114			182									
19-Nov-19		232	314	274	297		319	492			211							
10-Dec-19										198				152	162	130	412	224
14-Jan-20										176				155	166	136	433	232
23-Jan-20	311					114												
27-Jan-20			304				316											
28-Jan-20									167									
11-Feb-20	288		300	392							216							
12-Feb-20		228			264	114	316	369	187			13.2						
11-May-20	305	243	283	328	302			380										
12-May-20							319		182		211							
14-May-20						106						24.8						
05-Aug-20	340		312			107	324		179		208							



**Alkalinity (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		230		232	297			428				29.2						
09-Nov-20	346		326			111	328	180			214							
10-Nov-20		246		209	326			430				14.8						
15-Dec-20													30	150	136		408	190
16-Dec-20										202						137		
08-Feb-21	339					118	342			79.3	230	20					474	
09-Feb-21		268			333			474	187									222
10-Feb-21			360															
11-Feb-21				365									63.2	167	144			
12-Feb-21																151		
05-May-21		265			351			401		78.2		13						
06-May-21	343		342			115	346	197			228						417	
11-May-21				473									15.1	162	142	147		242
24-Aug-21					335			459		123				159	156	145		247
25-Aug-21				490					188				30.3				435	
26-Aug-21	339		360				343				227							
27-Aug-21		258				112						39.4						
10-Nov-21								168									447	
11-Nov-21	353	270	370	419	339	118	355	469		159	233	40.8	106	166	175	150		253
15-Feb-22						110			142			30.4						
16-Feb-22	360	249	338	442	329			459		75.3	228		52.2		163	144	452	249
17-Feb-22							345											
17-Mar-22														160				
10-May-22		263			349			367		56.2		25.8						
11-May-22														160	157	142		
12-May-22	363					103			188				29.5					
17-May-22			339	346			353				226						443	249
04-Aug-22		248			346			432	189	146		66.3			173	148		
08-Aug-22						112	361				231		94.6					
09-Aug-22	344		358	315														230
10-Aug-22														160			450	
22-Nov-22	347	263			382	125		423	194	176		95		168	166	149	446	
29-Nov-22			382	278			364				234		50.7					270

**Statistics**

Mean	334.16	242.125	333.44	333.5217	291.5833	118.84	326.64	472.625	182.2	161.1875	221.9583	34.39167	59.16	154.5	158.875	143.4375	421.3125	234.875
Standard Deviation	17.87848	15.13795	30.48234	81.8118	51.07873	9.502982	19.49119	58.29223	13.95827	60.95556	8.720187	24.24123	36.19703	12.89961	11.34827	5.738394	64.29382	19.43493
Median	339	236	338	335	297	118	319	481	186	176	225	27.5	51.45	159.5	161	144	434	236
10th Percentile	309.8	225.3	299.4	232.8	218.5	108.2	306.8	386.3	166.4	76.75	210.3	13.36	28.06	145	143	136.5	410	214
90th Percentile	351	264.4	371.2	439.6	348.1	132.6	354.2	536.4	194	223	232.4	63.75	107.4	166.5	172.5	149.5	456	251.5

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Aluminum (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.526			0.0475 J									
21-Feb-17	0.127	0.335	0.0638 J	5.1	7.95		0.59	2.75			0.0432 J							
04-Apr-17										0.719					0.232	3.88	2.68	0.141
05-Apr-17													0.2	0.405				
08-Aug-17														0.164				
08-May-18	0.1 U		0.152			0.177	4.11		0.1 U		0.1 U							
09-May-18		0.269		0.821	0.395			0.281										
12-Aug-19		0.042 J	0.115		0.227			0.176	0.0347 J									
13-Aug-19						0.0273 J	0.638											
14-Aug-19	0.0498 J			0.132							0.334							
09-Sep-19										0.792				0.1 U	0.0493 J	0.0234 J		0.0611 J
10-Sep-19																		0.0976 J
10-Dec-19														0.1 U	0.1 U	0.107	0.1 U	0.61
11-Dec-19										0.294								
14-Jan-20										0.748				0.1 U	0.0261 J	0.0784 J	0.0964 J	0.0373 J
23-Jan-20	0.0564 J					0.0368 J												
27-Jan-20			0.184				1.26											
28-Jan-20									0.0531 J									
12-Feb-20																		
11-May-20	0.141		0.442	0.191														
12-May-20		0.209			0.144		0.614	0.447	0.0509 J		0.449							
14-May-20						0.0491 J						0.0505 J						
06-May-21	0.1 U	0.454	0.0265 J		0.109	0.1 U	1.84	0.182	0.1 U	0.0671 J	0.1 U	0.0567 J					0.1 U	
11-May-21				0.256									1.74	0.1 U	0.0442 J	0.0527 J		0.1 U
10-May-22					0.0765 J			0.737										
11-May-22		0.0567 J								0.257		0.0376 J		0.1 U	0.0379 J	0.1 U		
12-May-22	0.1 U					0.0437 J			0.1 U				0.997					
17-May-22			0.534	0.0655 J			2.43				0.0877 J						0.1 U	0.1 U

**Statistics**

Mean	0.074886	0.227617	0.216757	1.09425	1.483583	0.129986	1.640286	0.762167	0.048029	0.479517	0.168983	0.07195	0.979	0.117	0.07325	0.698583	0.504	0.15823333
Standard Deviation	0.040653	0.160316	0.194333	1.981084	3.169934	0.181957	1.295414	0.996308	0.006104	0.310193	0.176852	0.04803	0.770158	0.133914	0.078272	1.558827	1.066267	0.22444544
Median	0.05	0.239	0.152	0.2235	0.1855	0.0491	1.26	0.364	0.05	0.5065	0.06885	0.0536	0.997	0.05	0.04675	0.06555	0.0732	0.05555
10th Percentile	0.04992	0.04935	0.04888	0.09875	0.09275	0.033	0.6044	0.179	0.04238	0.16205	0.0466	0.04147	0.3594	0.05	0.032	0.0367	0.05	0.04365
90th Percentile	0.1326	0.3945	0.4788	2.9605	4.1725	0.3166	3.102	1.7435	0.05178	0.77	0.3915	0.11711	1.5914	0.2604	0.141	1.9935	1.3888	0.3755

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Ammonia Nitrogen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					0.05 U	0.05 U		0.167	0.05 U									
21-Feb-17	0.05 U	0.05 U	0.05 U	0.05 U			0.05 U				0.05 U							
04-Apr-17										0.05 U					0.05 U	0.05 U	0.17	0.05 U
05-Apr-17													0.05 U	0.05 U				
24-May-17	0.05 U	0.05 U	0.05 U	0.05 U	0.116		0.05 U	0.226			0.05 U							
25-May-17						0.05 U		0.05 U										
01-Aug-17										0.05 U					0.05 U	0.05 U	0.203	0.05 U
02-Aug-17	0.05 U	0.05 U	0.05 U		0.061	0.05 U	0.05 U	0.12	0.05 U		0.05 U							
03-Aug-17				0.05 U														
08-Aug-17														0.05 U				
14-Nov-17										0.041 J				0.05 U	0.05 U	0.05 U	0.153	0.034 J
15-Nov-17							0.05 U				0.05 U							
16-Nov-17	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.148	0.05 U									
12-Feb-18	0.05 U	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.16	0.05 U		0.05 U							
13-Feb-18				0.05 U														
14-Feb-18										0.05 U					0.05 U	0.05 U	0.05 U	0.05 U
21-Feb-18														0.05 U				
08-May-18	0.075	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.144	0.05 UJ		0.05 U							
09-May-18				0.05 U														
22-Aug-18	0.05 U	0.041 J	0.05 U		0.103		0.05 U	0.172	0.05 U		0.05 U							
23-Aug-18				0.05 U		0.05 U												
07-Nov-18	0.05 U	0.05 U			0.05 U		0.05 U	0.321	0.05 U		0.05 U							
08-Nov-18			0.05 U	0.05 U		0.05 U												
11-Feb-19							0.05 U		0.05 U		0.05 U							
13-Feb-19	0.05 U	0.036 J	0.05 U		0.05 U			0.388										
14-Feb-19				0.05 U		0.05 U												
30-Apr-19							0.05 U		0.05 U									
01-May-19	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.05 U	0.268			0.05 U							
12-Aug-19		0.05 U	0.05 U		0.05 U			0.436	0.05 U									
13-Aug-19						0.05 U	0.05 U											
14-Aug-19	0.05 UJ			0.05 U							0.05 U							
09-Sep-19										0.025 J				0.021 J	0.05 U	0.01 J		0.034 J
10-Sep-19																	0.082	
18-Nov-19	0.05 U					0.05 U			0.05 U									
19-Nov-19		0.016 J	0.05 U	0.05 U	0.05 U		0.006 J	0.247			0.018 J							
10-Dec-19										0.013 J				0.014 J	0.05 UJ	0.013 J	0.05 UJ	0.027 J
14-Jan-20										0.06				0.015 J	0.05 U	0.016 J	0.05 U	0.033 J
23-Jan-20	0.05 U						0.05 UJ											
27-Jan-20			0.05 U								0.05 U							
28-Jan-20									0.05 U									
11-Feb-20	0.05 U		0.05 U	0.05 U							0.009 J							
12-Feb-20		0.03 J			0.05 U	0.05 U	0.05 U	0.202	0.05 U			0.05 U						
11-May-20	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.242										
12-May-20							0.05 U		0.05 U		0.05 U							
14-May-20							0.05 U					0.05 U						
05-Aug-20	0.05 U		0.026 J			0.05 U	0.05 U		0.05 U		0.028 J							

**Ammonia Nitrogen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		0.05 U		0.05 U	0.05 U			0.23				0.05						
09-Nov-20	0.05 U		0.05 U			0.05 U	0.05 U		0.05 U		0.05 U							
10-Nov-20		0.05 U		0.05 U	0.05 U			0.32				0.05 U						
15-Dec-20													0.05 U	0.05 U	0.05 U		0.05 U	0.034 J
16-Dec-20										0.032 J						0.05 U		
08-Feb-21	0.05 U					0.05 U	0.05 U			0.05 U	0.05 U	0.05 U					0.05 U	
09-Feb-21		0.05 U			0.05 U			0.206	0.05 U									0.027 J
10-Feb-21			0.05 U															
11-Feb-21				0.05 U									0.05 U	0.05 U	0.05 U			
12-Feb-21																0.05 U		
05-May-21		0.05 U			0.05 U			0.13		0.043 J		0.05 U						
06-May-21	0.05 U		0.05 UJ			0.05 U	0.05 U		0.05 U		0.05 U						0.05 UJ	
11-May-21				0.05 U									0.05 U	0.05 U	0.05 U	0.041 J		0.046 J
24-Aug-21					0.05 U			0.174		0.05 U				0.05 U	0.05 U	0.05 U		0.05 U
25-Aug-21				0.05 U					0.05 U				0.05 U				0.05 U	
26-Aug-21	0.05 U		0.05 U				0.05 U				0.05 U							
27-Aug-21		0.05 U				0.05 U						0.05 U						
10-Nov-21								0.05 U									0.05 U	
11-Nov-21	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.032 J	0.132		0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U		0.034 J
15-Feb-22						0.05 U			0.05 U			0.05 U						
16-Feb-22	0.05 U	0.05 U	0.05 U	0.05 U	0.05 U			0.191		0.05 U	0.05 U		0.05 U		0.05 U	0.05 U	0.05 U	0.039 J
17-Feb-22							0.05 U											
17-Mar-22														0.05 U				
10-May-22		0.05 U			0.05 U			0.05 U		0.05 U		0.05 U						
11-May-22														0.05 U	0.05 U	0.05 U		
12-May-22	0.05 U					0.05 U		0.05 U					0.05 U					
17-May-22			0.05 U	0.05 U			0.05 U				0.05 U						0.05 U	0.05 U
04-Aug-22		0.05 U			0.05 U			0.185	0.05 U	0.05 U		0.05 U			0.027 J	0.026 J		
08-Aug-22						0.05 U	0.05 U				0.05 U		0.05 U					
09-Aug-22	0.05 U		0.058	0.05 U														0.034 J
10-Aug-22														0.029 J			0.05 U	
22-Nov-22	0.05 U	0.05 U			0.05 U	0.05 U		0.127	0.05 U	0.05 U		0.05 U		0.035 J	0.05 U	0.03 J	0.028 J	
29-Nov-22			0.05 U	0.05 U			0.05 U				0.039 J		0.05 U					0.039 J

**Statistics**

Mean	0.027	0.025958	0.02636	0.025	0.033542	0.025	0.02452	0.206708	0.025	0.029	0.02475	0.027083	0.025	0.024313	0.025125	0.024125	0.056938	0.031625
Standard Deviation	0.01	0.004477	0.006595	7.09E-18	0.024592	7.08E-18	0.004104	0.09122	7.08E-18	0.010777	0.004702	0.007217	3.66E-18	0.004799	0.0005	0.006927	0.061118	0.006365
Median	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.188	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.0335
10th Percentile	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.1279	0.025	0.025	0.025	0.025	0.025	0.018	0.025	0.0145	0.025	0.025
90th Percentile	0.025	0.0285	0.025	0.025	0.0502	0.025	0.025	0.3207	0.025	0.042	0.025	0.025	0.025	0.027	0.025	0.028	0.1615	0.039

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Antimony (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.06 U			0.06 U									
21-Feb-17	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U		0.06 U	0.06 U			0.06 U							
04-Apr-17										0.06 U					0.06 U	0.06 U	0.06 U	0.06 U
05-Apr-17													0.06 U	0.06 U				
08-Aug-17														0.06 U				
08-May-18	0.06 U		0.06 U			0.06 U	0.06 U		0.06 U		0.06 U							
09-May-18		0.06 U		0.06 U	0.06 U			0.06 U										
12-Aug-19		0.06 U	0.06 U		0.06 U			0.06 U	0.06 U									
13-Aug-19						0.06 U	0.06 U											
14-Aug-19	0.06 U			0.06 U							0.06 U							
09-Sep-19										0.06 U				0.06 U	0.06 U	0.06 U		0.06 U
10-Sep-19																	0.06 U	
10-Dec-19														0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
11-Dec-19										0.06 U								
14-Jan-20										0.06 U				0.06 U	0.06 U	0.06 U	0.06 U	0.06 U
23-Jan-20	0.06 U					0.06 U												
27-Jan-20			0.06 U				0.06 U											
28-Jan-20									0.06 U									
12-Feb-20												0.06 U						
11-May-20	0.06 U		0.06 U	0.06 U														
12-May-20		0.06 U			0.06 U		0.06 U	0.06 U	0.06 U		0.06 U							
14-May-20						0.06 U						0.06 U						
06-May-21	0.06 U	0.06 U	0.06 U		0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U					0.06 U	
11-May-21				0.06 U									0.06 U	0.0048 J	0.06 U	0.06 U		0.06 U
10-May-22					0.06 U			0.06 U										
11-May-22		0.06 U								0.06 U		0.06 U		0.06 U	0.06 U	0.06 U		
12-May-22	0.06 U					0.06 U			0.06 U				0.06 U					
17-May-22			0.06 U	0.06 U			0.06 U				0.0066 J						0.06 U	0.06 U

Mean	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.0261	0.03	0.03	0.0264	0.03	0.03	0.03	0.03
Standard Deviation	0	0	0	0	0	0	0	0	0	0	0.009553	0	0	0.009525	0	0	0	0
Median	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
10th Percentile	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
90th Percentile	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Barium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.0213 E			0.0677 E									
21-Feb-17	0.0491	0.105 E	0.0892	0.225	0.115 E		0.0844	0.163 E			0.0316							
04-Apr-17										0.0387					0.0699	0.143	0.0221	0.0262
05-Apr-17													0.0218	0.0698				
01-Aug-17																0.125		
08-Aug-17														0.0686				
08-May-18	0.0544		0.0818			0.0227	0.105		0.0586		0.0327							
09-May-18		0.0923		0.132	0.0805			0.136										
12-Aug-19		0.087	0.0831		0.113			0.127	0.0539									
13-Aug-19						0.0159 J	0.0773											
14-Aug-19	0.0624			0.138							0.0446							
09-Sep-19									0.0425					0.0911	0.081	0.129		0.0355
10-Sep-19																		0.0355
10-Dec-19														0.0931	0.0785	0.113	0.0295	0.0483
11-Dec-19									0.0458									
14-Jan-20									0.0467					0.0909	0.0763	0.122	0.0331	0.0522
23-Jan-20	0.0583					0.0158 J												
27-Jan-20			0.0892				0.0874											
28-Jan-20									0.0666									
12-Feb-20												0.0575						
11-May-20	0.0609		0.0849	0.153														
12-May-20		0.0868			0.123		0.0811	0.0909	0.0635		0.0439							
14-May-20						0.0141 J						0.0246						
06-May-21	0.0592	0.102	0.085		0.124	0.0139 J	0.0905	0.133	0.0598	0.0152 J	0.0309	0.0718					0.0076 J	
11-May-21				0.179									0.0221	0.0858	0.106	0.133		0.0424
10-May-22					0.135			0.0891										
11-May-22		0.0907								0.0197 J		0.0823		0.0861	0.0798	0.133		
12-May-22	0.0641					0.0145 J			0.0717				0.0261					
17-May-22			0.0964	0.145			0.1				0.0343						0.023	0.0436

**Statistics**

Mean	0.058343	0.093967	0.087086	0.162	0.115083	0.016886	0.089386	0.123167	0.063114	0.034767	0.036333	0.05905	0.023333	0.083629	0.081917	0.128286	0.025133	0.041367
Standard Deviation	0.005129	0.007741	0.004977	0.03494	0.018651	0.003601	0.01001	0.028511	0.006101	0.013779	0.006243	0.025115	0.002401	0.010217	0.012433	0.009534	0.010111	0.009337
Median	0.0592	0.0915	0.085	0.149	0.119	0.0158	0.0874	0.13	0.0635	0.0406	0.0335	0.06465	0.0221	0.0861	0.07915	0.129	0.02625	0.043
10th Percentile	0.05228	0.0869	0.08258	0.135	0.09675	0.01402	0.07958	0.09	0.05672	0.01745	0.03125	0.03447	0.02186	0.06932	0.0731	0.1184	0.01485	0.03085
90th Percentile	0.06308	0.1035	0.09208	0.202	0.1295	0.02186	0.102	0.1495	0.0693	0.04625	0.04425	0.07915	0.0253	0.0919	0.0935	0.137	0.0343	0.05025

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Biochemical Oxygen Demand (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						2 U			2 U									
21-Feb-17	2 U	2 U	2 U	2 U	2 U		2 U	2 U			2 U							
04-Apr-17										2 U					2 U	2 U		2 U
05-Apr-17													2 U	2 U			8.4	
24-May-17	2 U		2 U	2 U			2 U				2 U							
25-May-17		2 U			6.4	2 U		2 U	2 U									
01-Aug-17										2 U					6 U	2 U	6 U	2 U
02-Aug-17	2 U		2 U		5.2 X	2 U	2 U	2.2 X	2 U		2 U							
03-Aug-17		2 U		2 U														
08-Aug-17														2 U				
14-Nov-17										2 U				2 U	2 U	2 U	2 U	2 U
15-Nov-17							2 U				2 U							
16-Nov-17	2 U		2 U	2 U	3	2 U		4.2	2 U									
12-Feb-18	2 U		2 U			2 U	2 U		2 U		2 U							
13-Feb-18		2 U		2 U	2 U			2 U										
14-Feb-18										2 U					2 U	2 U	2 U	2 U
21-Feb-18														2 U				
08-May-18	2 U		2 U			2 U	2 U		2 U		2 U							
09-May-18		5		2 U	2 U			2 U										
22-Aug-18	2 U	3.4	2 U		2 U		2 U	3	2 U		2 U							
23-Aug-18				2 U		2 U												
07-Nov-18	2 U						2 U		2 U		2 U							
08-Nov-18		2 U	2 U	2 U	2 U	2 U		5.2										
11-Feb-19							2 U		2 U		2 U							
13-Feb-19	2 U	2 U	2 U		2 U			3.1										
14-Feb-19				2 U		2 U												
30-Apr-19						2 U			2 U									
01-May-19	2 U	2 U	2 U	2 U	2 U		2 U	2.5			2 U							
12-Aug-19			2 U						2 U									
13-Aug-19		2 U			2 U	2 U	2 U	2.2										
14-Aug-19	2 U			2 U							2 U							
09-Sep-19										2 U				2 U	2 U	2.7		2 U
10-Sep-19																	2 U	
18-Nov-19	2 U					2 U			2 U									
19-Nov-19		2 U	2 U	2 U	2 U		2 U	3.5			2 U							
10-Dec-19										2 U				2 U	2 U	2 U	2 U	2 U
11-Dec-19										2 U								
14-Jan-20										2.8				2 U	2 U	2 U	2 U	2 U
23-Jan-20	2 U					2 U												
27-Jan-20			2 U				2 U											
28-Jan-20									2 U									
11-Feb-20	2 U		2 U	2 U							2 U							
12-Feb-20		2 U			11.6	2 U	2 U	2.4	2 U			2 U						
11-May-20	2 U		2 U	2 U	4			2 U										
12-May-20		2 U					2 U		2 U		2 U							
14-May-20						2 U						2 U						

**Biochemical Oxygen Demand (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	2 U		2 U			2 U	2 U		2 U		2 U							
06-Aug-20		2 U		2 U	2 U			2 U				2 U						
09-Nov-20	2 U		2 U			2 U	2 U		2 U		2 U							
10-Nov-20		2 U		2 U	2 U			2.3				2 U						
15-Dec-20													2 U	2 U	2 U		2 U	2 U
16-Dec-20										2.2						2 U		
08-Feb-21	2 U					2 U	2 U				2 U						2 U	
09-Feb-21		2 U			2 U			2 U	2 U	2 U		2 U						2 U
10-Feb-21			2 U															
11-Feb-21				2 U									2 U	2 U	2 U			
12-Feb-21																2 U		
06-May-21	2 U	2 U	2 U		2 U	2 U	2 U	3.2	2 U	2 U	2 U	2 U					2 U	
11-May-21				2 U									2 U	2 U	2 U	2 U		2 U
24-Aug-21					2 U			2 U		2 U				2 U				2 U
25-Aug-21				2 U					2 U				2 U					2 U
26-Aug-21	2 U		2 U				2 U				2 U							
27-Aug-21		2 U				2 U						2 U						
10-Nov-21									2 U								2 U	
11-Nov-21	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U	2 U	2 U	2 U	2 U	2 U	2 U		2 U
15-Feb-22						2 U				2 U								
16-Feb-22	2 U	2 U	2 U	2 U	2 U			2 U		2 U	2 U	2 U	2 U		2 U	2 U	2 U	2 U
17-Feb-22							2 U											
17-Mar-22														2 U				
10-May-22					2 U			2 U										
11-May-22		2 U								2 U		2 U		2 U	2 U	2 U		
12-May-22	2 U					2 U			2 U				2 U					
17-May-22			2 U	2 U			2 U				2 U						2 U	2 U
04-Aug-22		2 U			2 U			2 U	2 U	2 U		2 U			2 U	2 U		
08-Aug-22						2 U	2 U				2 U		2 U					
09-Aug-22	2 U		2 U	2 U														2 U
10-Aug-22														2 U,*			2 U	
22-Nov-22	2 U	2 U			2 U	2 U		2 U	2 U	2 U		2 U		2 U	2 U	2 U	2 U	
29-Nov-22			2 U	2 U			2 U				2 U		2 U					2 U

**Statistics**

Mean	1	1.278261	1	1	2.05	1	1	1.95	1	1.176471	1	1	1	1	1.133333	1.113333	1.5875	1
Standard Deviation	0	0.952965	0	0	2.516899	0	0	1.224745	0	0.509325	0	0	0	0	0.516398	0.438938	1.883923	0
Median	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
10th Percentile	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
90th Percentile	1	1	1	1	4.84	1	1	3.41	1	1.48	1	1	1	1	1	1	2	1

Note: one-half detection limit utilized in statistical calculations for non-detect results.



**Boron (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.0175 J			0.03 J									
21-Feb-17	0.0334 J	0.0188 J	0.0215 J	0.0247 J	0.0209 J		0.0527 J	0.0677 J			0.0773 J							
04-Apr-17										0.088 J					0.043 J	0.0372 J	0.129 J	0.0679 J
05-Apr-17													0.0155 J	0.0373 J				
08-Aug-17														0.2 U				
08-May-18	0.0313 J		0.0211 J			0.0175 J	0.0521 J		0.0282 J		0.0808 J							
09-May-18		0.0184 J		0.0168 J	0.2 U			0.0573 J										
12-Aug-19		0.0175 J	0.0219 J		0.0158 J			0.0582 J	0.0278 J									
13-Aug-19						0.0192 J	0.0429 J											
14-Aug-19	0.0289 J			0.0198 J							0.0796 J							
09-Sep-19										0.0891 J				0.047 J	0.0546 J	0.0374 J		0.0654 J
10-Sep-19																	0.128 J	
10-Dec-19													0.0467 J	0.0521 J	0.0347 J	0.125 J	0.0674 J	
11-Dec-19										0.0758 J								
14-Jan-20										0.0669 J				0.0422 J	0.047 J	0.0285 J	0.125 J	0.0606 J
23-Jan-20	0.0317 J					0.0158 J												
27-Jan-20			0.0232 J				0.0428 J											
28-Jan-20										0.0242 J								
12-Feb-20												0.2 U						
11-May-20	0.0322 J		0.0256 J	0.0223 J														
12-May-20		0.0203 J			0.019 J		0.04 J	0.0488 J	0.0305 J		0.0834 J							
14-May-20						0.0148 J						0.0127 J						
06-May-21	0.0147 J	0.2 U	0.2 U		0.2 U	0.2 U	0.035 J	0.0354 J	0.0146 J	0.0176 J	0.0671 J	0.2 U					0.0992 J	
11-May-21				0.0261 J									0.019 J	0.0452 J	0.0326 J	0.0312 J		0.0737 J
10-May-22					0.0187 J			0.0476 J										
11-May-22		0.019 J								0.0268 J		0.016 J		0.0434 J	0.0482 J	0.033 J		
12-May-22	0.0257 J					0.0127 J			0.0275 J				0.0169 J					
17-May-22			0.0238 J	0.0173 J			0.0355 J				0.0814 J						0.122 J	0.072 J

**Statistics**

Mean	0.028271	0.032333	0.033871	0.021167	0.045733	0.028214	0.043	0.0525	0.026114	0.0607	0.078267	0.057175	0.017133	0.051686	0.04625	0.033667	0.121367	0.067833
Standard Deviation	0.006505	0.033162	0.029201	0.003847	0.042066	0.031725	0.007144	0.011106	0.005472	0.031065	0.005831	0.049468	0.001762	0.021559	0.007813	0.003485	0.011139	0.004695
Median	0.0313	0.0189	0.0232	0.02105	0.01995	0.0175	0.0428	0.05305	0.0278	0.07135	0.0802	0.058	0.0169	0.0452	0.0476	0.03385	0.125	0.06765
10th Percentile	0.0213	0.01795	0.02134	0.01705	0.01725	0.01396	0.0353	0.0415	0.02036	0.0222	0.0722	0.01369	0.01578	0.04024	0.0378	0.02985	0.1106	0.063
90th Percentile	0.03268	0.06015	0.05536	0.0254	0.1	0.05152	0.05234	0.06295	0.0302	0.08855	0.0824	0.1	0.01858	0.0682	0.05335	0.0373	0.1285	0.07285

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Cadmium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.005 U			0.005 U									
21-Feb-17	0.005 U	0.0002 J	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U			0.005 U							
04-Apr-17										0.005 U					0.005 U	0.005 U	0.005 U	0.005 U
05-Apr-17													0.005 U	0.005 U				
24-May-17	0.005 U	0.005 U	0.005 U	0.005 U			0.0002 J				0.005 U							
25-May-17					0.005 U	0.0002 J		0.005 U	0.005 U									
01-Aug-17										0.005 U					0.005 U	0.005 U	0.005 U	0.005 U
02-Aug-17	0.005 U	0.005 U	0.005 U			0.005 U	0.005 U		0.005 U		0.005 U							
03-Aug-17				0.005 U	0.005 U			0.005 U										
08-Aug-17														0.005 U				
14-Nov-17										0.005 U				0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
15-Nov-17							0.005 U				0.005 U							
16-Nov-17	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U									
12-Feb-18	0.005 U		0.005 U			0.005 U	0.005 U		0.005 U		0.005 U							
13-Feb-18		0.005 U		0.005 U	0.005 U			0.005 U										
14-Feb-18										0.005 U					0.005 U	0.005 U	0.005 U	0.005 U
21-Feb-18														0.005 U				
08-May-18	0.005 U		0.005 U			0.005 U	0.005 U		0.005 U		0.005 U							
09-May-18		0.005 U		0.005 U	0.005 U			0.005 U										
22-Aug-18	0.005 U		0.005 U				0.005 U		0.005 U		0.005 U							
23-Aug-18		0.005 U		0.005 U	0.005 U	0.005 U		0.005 U										
07-Nov-18	0.005 U						0.005 U		0.005 U		0.005 U							
08-Nov-18		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		0.005 U										
11-Feb-19							0.005 U		0.005 U		0.005 U							
13-Feb-19	0.005 U	0.005 U	0.005 U		0.005 U			0.005 U										
14-Feb-19				0.005 U		0.005 U												
30-Apr-19						0.005 U			0.005 U									
01-May-19	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U			0.005 U							
12-Aug-19		0.005 U	0.005 U		0.005 U			0.005 U	0.005 U									
13-Aug-19						0.005 U	0.005 U											
14-Aug-19	0.005 U			0.005 U							0.005 U							
09-Sep-19										0.005 U				0.005 U	0.005 U	0.005 U		0.005 U
10-Sep-19																	0.005 U	
18-Nov-19	0.005 U					0.005 U			0.005 U									
19-Nov-19		0.005 U	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U			0.005 U							
10-Dec-19														0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
11-Dec-19										0.005 U								
14-Jan-20										0.005 U				0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
23-Jan-20	0.005 U					0.005 U												
27-Jan-20			0.005 U				0.005 U											
28-Jan-20									0.005 U									
11-Feb-20	0.005 U		0.005 U	0.005 U							0.005 U							
12-Feb-20		0.005 U			0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			0.005 U						
11-May-20	0.005 U		0.005 U	0.005 U														
12-May-20		0.005 U			0.005 U		0.005 U	0.005 U	0.005 U		0.005 U							
14-May-20						0.005 U						0.005 U						

**Cadmium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	0.005 U		0.005 U			0.005 U	0.005 U		0.005 U		0.005 U							
06-Aug-20		0.005 U		0.005 U	0.005 U			0.005 U				0.005 U						
09-Nov-20	0.005 U		0.005 U			0.005 U	0.005 U		0.005 U		0.005 U							
10-Nov-20		0.005 U		0.005 U	0.005 U			0.005 U				0.005 U						
15-Dec-20													0.005 U	0.005 U	0.005 U		0.005 U	0.005 U
16-Dec-20										0.005 U						0.005 U		
08-Feb-21	0.005 U					0.005 U	0.005 U				0.005 U						0.005 U	
09-Feb-21		0.005 U			0.005 U			0.005 U	0.005 U	0.005 U		0.005 U						0.005 U
10-Feb-21			0.005 U															
11-Feb-21				0.005 U									0.005 U	0.005 U	0.005 U			
12-Feb-21																0.005 U		
06-May-21	0.005 U	0.005 U	0.005 U		0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U					0.005 U	
11-May-21				0.005 U									0.005 U	0.005 U	0.005 U	0.005 U		0.005 U
24-Aug-21					0.005 U			0.005 U		0.005 U				0.005 U	0.005 U	0.005 U		0.005 U
25-Aug-21				0.005 U					0.005 U				0.005 U				0.005 U	
26-Aug-21	0.005 U		0.005 U				0.005 U				0.005 U							
27-Aug-21		0.005 U				0.005 U						0.005 U						
10-Nov-21								0.005 U									0.005 U	
11-Nov-21	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U
15-Feb-22						0.005 U		0.005 U		0.005 U		0.005 U						
16-Feb-22	0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			0.005 U		0.005 U	0.005 U	0.005 U			0.005 U	0.005 U	0.005 U	0.005 U
17-Feb-22							0.005 U											
17-Mar-22														0.005 U				
10-May-22					0.005 U			0.005 U										
11-May-22		0.005 U								0.005 U		0.005 U		0.005 U	0.005 U	0.005 U		
12-May-22	0.005 U					0.005 U		0.005 U		0.005 U			0.005 U					
17-May-22			0.005 U	0.005 U			0.005 U				0.005 U						0.005 U	0.005 U
04-Aug-22		0.005 U			0.005 U			0.005 U	0.005 U	0.005 U	0.005 U	0.005 U			0.005 U	0.005 U		
08-Aug-22						0.005 U	0.005 U				0.005 U		0.005 U					
09-Aug-22	0.005 U		0.005 U	0.005 U														0.005 U
10-Aug-22														0.005 U			0.005 U	
22-Nov-22	0.005 U	0.005 U			0.005 U	0.005 U		0.005 U	0.005 U	0.005 U		0.005 U		0.005 U	0.005 U	0.005 U	0.005 U	
29-Nov-22			0.005 U	0.005 U			0.0004 J				0.005 U		0.005 U					0.005 U

**Statistics**

Mean	334.16	242.125	333.44	333.5217	291.5833	118.84	326.64	472.625	182.2	161.1875	221.9583	34.39167	59.16	154.5	158.875	143.4375	421.3125	234.875
Standard Deviation	17.87848	15.13795	30.48234	81.8118	51.07873	9.502982	19.49119	58.29223	13.95827	60.95556	8.720187	24.24123	36.19703	12.89961	11.34827	5.738394	64.29382	19.43493
Median	339	236	338	335	297	118	319	481	186	176	225	27.5	51.45	159.5	161	144	434	236
10th Percentile	309.8	225.3	299.4	232.8	218.5	108.2	306.8	386.3	166.4	76.75	210.3	13.36	28.06	145	143	136.5	410	214
90th Percentile	351	264.4	371.2	439.6	348.1	132.6	354.2	536.4	194	223	232.4	63.75	107.4	166.5	172.5	149.5	456	251.5

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Calcium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						75.3			46									
21-Feb-17	94.3	72.1	110	123	58.4		117	152			64.6							
04-Apr-17										64.9					41.9	38	141	64.2
05-Apr-17													40.5	46.1				
24-May-17	93.8	73.2	112	94.8			117				66.5							
25-May-17					66	81.9		155	47									
01-Aug-17										67.3					47.9	39.2	127	62.9
02-Aug-17	96.8	76.9	120			76.2	124		48		70.4							
03-Aug-17				84.5	75.8			167										
08-Aug-17														43.7				
14-Nov-17										64				45.6	46.7	38.3	113	72.1
15-Nov-17							127				68.8							
16-Nov-17	96	75.7	114	85.3	67.3	77.8		155	23.1									
12-Feb-18	98.9		112			92.2	117		44.5		66.9							
13-Feb-18		74.6		82.9	76.2			155										
14-Feb-18										60.9					46.3	35.5	104	82.5
21-Feb-18														44				
08-May-18	101		109			89.1	118		46.6		67							
09-May-18		72.3		95.8	82.8			157										
22-Aug-18	100		105				110		44		65.7							
23-Aug-18		72.6		133	85.7	68.5		156										
07-Nov-18	105						105		47.9		68.5							
08-Nov-18		78.3	110	170	97.4	70.8		160										
11-Feb-19							116		38.4		66							
13-Feb-19	99.9	79.7	109		102			163										
14-Feb-19				143		72.2												
30-Apr-19						58.3			46									
01-May-19	102	77.1	102	131	104		108	155			66							
12-Aug-19		68	97		96.9			151	41.1									
13-Aug-19						53.4	105											
14-Aug-19	96.9			103							62.1							
09-Sep-19										63.3 E				48 J	50.9 E	37.8 E		71.4 E
10-Sep-19																	98.8 E	
18-Nov-19	92.8					56.2			44.2									
19-Nov-19		71.7	99.1	104	96.3		101	141			62.3							
10-Dec-19														48	49	34.4	103	76.6
11-Dec-19										59.2								
14-Jan-20										50.8				48	48.5	36.6	112	79
23-Jan-20	94.8					64.1												
27-Jan-20			109				109											
28-Jan-20									35.2									
11-Feb-20	85		103	140							62.8							
12-Feb-20		71.9			97.8	56	97.3	110	43.9			35.3						
11-May-20	94.3		98.5	119														
12-May-20		76.2			102		98.4	120	44.8		64.8							
14-May-20						52.3						15.1						
05-Aug-20	101		106			53.5	98.1		46.1		64.4							

**Calcium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		75.3		88.6	104			126				27.3						
09-Nov-20	104		111			61.9	108		45.2		63.1							
10-Nov-20		79.1		82.2	110			124				32.2						
15-Dec-20													15.3	49.4	42.3		87.4	64.3
16-Dec-20										52.1						41.5		
08-Feb-21	92.7					68.8	113				65.2						78.9	
09-Feb-21		80.4			107			126	39.5	17		42.2						68.1
10-Feb-21			119															
11-Feb-21				114									28.2	50.2	40.9			
12-Feb-21																42		
06-May-21	94.3	78.5	110		106	53.7	103	124	43.6	12.4	62.7	44					22.4	
11-May-21				147									8.35	47.6	39.4	39		76.4
24-Aug-21					108			128		23.1				47.5	45.1	39.5		89.7
25-Aug-21				149					43.5				13				83.1	
26-Aug-21	95.2		114				100				64.9							
27-Aug-21		77.6				48.8						13.7						
10-Nov-21									33.1								77.9	
11-Nov-21	98.3	83.8	107	133	108	53.3	95.4	125		28.7	65.3	12.9	39.6	48.1	49.5	39.2		73.2
15-Feb-22						51.9			20.5				86.6					
16-Feb-22	105	77.9	113	145	110			116		19	65.5		31.6		50.3	41.7	90.2	77.5
17-Feb-22								99.8										
17-Mar-22														47.6				
10-May-22					112			102										
11-May-22		80								11.3		58		48.7	46	39.8		
12-May-22	102					48.6			43.3				13.4					
17-May-22			110	115			94.8				65.5						94.6	81.3
04-Aug-22		74.6			111			108	42.8	34		44.6			49.8	40.5		
08-Aug-22						50.5	98.3				64.2		48					
09-Aug-22	92.2		107	102														68.7
10-Aug-22														48.2			92.4	
22-Nov-22	87.9	73.5			112	66.4		104	41.5	37.8		31.4		46.7	44.6	39.1	81.6	
29-Nov-22			121	87.6			108				65.7		28.1					78.8

**Statistics**

Mean	96.964	75.875	109.104	115.5292	95.69167	64.068	107.524	136.6667	41.592	41.6125	65.37083	36.94167	26.605	47.3375	46.19375	38.88125	94.20625	74.16875
Standard Deviation	5.036937	3.594954	6.214867	25.59659	16.23158	12.76998	9.136296	20.86742	6.984263	20.84974	2.050128	20.8667	13.6216	1.759498	3.567159	2.123588	25.99183	7.445958
Median	96.8	75.95	110	114.5	102	61.9	108	134.5	43.9	44.3	65.4	33.75	28.15	47.8	46.5	39.15	93.5	74.8
10th Percentile	92.4	71.96	100.26	84.74	69.85	51.06	97.62	108.6	33.94	14.7	62.73	13.84	12.535	44.8	41.4	36.05	78.4	64.25
90th Percentile	103.2	79.91	117	146.4	110.7	80.26	117.6	159.1	46.84	64.45	68.05	56.66	41.25	49.05	50.05	41.6	120	81.9

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Chloride (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					3	91.5		2.3	1.8 J									
21-Feb-17	17	9.7	14.9	17.5			194				11.5							
04-Apr-17										1.8 J					1.4 J	1.4 J	5.3	2
05-Apr-17													3.1	1.2 J				
24-May-17	16.6	10.3	14.6	34.5	2.9		182	2.3			11							
25-May-17							122		1.7 J									
01-Aug-17										2 J					1.3 J	1.3 J	2.5	1.6 J
02-Aug-17	17.3	10.2	13		2.8	92.8	172	2	1.5 J		10.9							
03-Aug-17				36.9														
08-Aug-17														0.9 J				
14-Nov-17										1.9 J				1.2 J	1.4 J	1.3 J	2.4	1.5 J
15-Nov-17							174				10.2							
16-Nov-17	18.3		11.6	37.5	3.4	124		7.6	1.8 J									
12-Feb-18	16.1	10.2	10.6		3.1	133	169	4.2	1.8 J		8.7							
13-Feb-18				31.1														
14-Feb-18										1.1 J					1.3 J	1.5 J	2 J	1.6 J
21-Feb-18														1.2 J				
08-May-18	16.5	10.3	10.8		3.2	116	166	4.2	1.7 J		8.7							
09-May-18				34.4														
22-Aug-18	16.9		11.3				173		1.8 J		9.4							
23-Aug-18		11		38.8	3.7	69.1		4.2										
07-Nov-18	15.4	10.1			3.4		158	3.3	1.5 J		7.7							
08-Nov-18			8	38.9		52												
11-Feb-19							162		1.8 J		8.7							
13-Feb-19	16.3	10.7	8.2		3.9			3.4										
14-Feb-19				36.6		38												
30-Apr-19						23.3			1.4 J									
01-May-19	16.7	10.2	7.9	17.7	3.9		161	2.8			8.2							
12-Aug-19		10.9	7.8		4.3			2.7	1.5 J									
13-Aug-19						10.1	153											
14-Aug-19	17.6			29.9							10							
09-Sep-19										1.9 J				0.9 J	1.3 J	1.1 J		1.2 J
10-Sep-19																	1.9 J	
18-Nov-19	17					14			1.8 J									
19-Nov-19		11.7	10.1	32.8	5.6		166	3.2			9.3							
10-Dec-19										1.9 J				0.7 J	1.2 J	1.1 J	1.8 J	1.1 J
14-Jan-20										2.3				0.8 J	1.3 J	1 J	1.8 J	1.1 J
23-Jan-20	16.1					14.4												
27-Jan-20			7.8				161											
28-Jan-20									1.8 J									
11-Feb-20	16		7.8	23.7							8.4							
12-Feb-20		11.5			5.8	13.5	159	3.7	1.7 J		219							
11-May-20	16.7	12.2	7.3	26.2	6.5			3.6										
12-May-20							151		1.7 J		9.2							
14-May-20						7.4					103							
05-Aug-20	17.3		9.2			5.9	161		1.8 J		9							

**Chloride (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		12.2		34.9	8.5			3.3				115						
09-Nov-20	16.8		10.3			9.9	150		1.8 J		8.3							
10-Nov-20		11.1		36.9	4.6			3.1				115						
15-Dec-20													3.1	0.9 J	1.4 J		1.6 J	1.2 J
16-Dec-20									1.7 J							1 J		
08-Feb-21	15.4					63.1	149		2.8	8.1	195						1.7 J	
09-Feb-21		11.5			7.4			3.2	1.7 J									1.2 J
10-Feb-21			7.9															
11-Feb-21				25.5									3.1	1.2 J	1.2 J			
12-Feb-21																1.1 J		
05-May-21		12.6			7.7			3.3		3.1	256							
06-May-21	16.5		9.2			32.7	155		1.1 J		8							0.8 J
11-May-21				16.7									2 U	2 U	0.6 J	1.8 J		2 U
24-Aug-21					8.1			2.8		1.9 J				0.7 J	1.2 J	1 J		1 J
25-Aug-21				14.4					1.8 J				2.1					1.6 J
26-Aug-21	15.7		7.4				149				7.3							
27-Aug-21		12				18						93						
10-Nov-21									1.7 J									1.5 J
11-Nov-21	13.6	11.7	7.7	18.5	8.3	15.4	137	2.2		1.5 J	7	73.4	1.8 J	0.6 J	1.1 J	0.9 J		0.8 J
15-Feb-22						12.7			1.7 J			475						
16-Feb-22	14.7	11.7	6.5	10.5	10.2			2.4		2.1	7.4		2.4		1.1 J	0.9 J	1.5 J	0.8 J
17-Feb-22							142											
17-Mar-22													2 U					
10-May-22		11.8			9			1.8 J		1.7 J		317 J-						
11-May-22														1 J	1.3 J	1.1 J		
12-May-22	14.1					10.3			1.8 J			2						
17-May-22			5.2	19.6			128				7.2						1.5 J	1 J
04-Aug-22		11.5			10			2.3	1.7 J	1.5 J		273			1.1 J	0.9 J		
08-Aug-22						40.9	137				6.6		2.1					
09-Aug-22	14.4		7.5	27.5														1.2 J
10-Aug-22														0.8 J				1.7 J
22-Nov-22	13.7	11.6			6.5	144		2.3	1.9 J	1.5 J		150		0.8 J	1.3 J	1.2 J	1.6 J	
29-Nov-22			7.3	28.3			122				6.6		9.7					1.1 J

**Statistics**

Mean	16.108	11.16087	9.196	27.8875	5.658333	50.96	157.24	3.175	1.692	1.91875	8.641667	198.7	3.04	0.93125	1.21875	1.1625	1.95	1.2125
Standard Deviation	1.225738	0.813935	2.444293	8.720855	2.457626	46.59006	16.4197	1.173716	0.173013	0.494259	1.366976	117.5431	2.434109	0.195683	0.193972	0.247319	0.972968	0.318067
Median	16.5	11.5	8	29.1	5.1	32.7	159	3.15	1.7	1.9	8.55	172.5	2.25	0.9	1.3	1.1	1.7	1.15
10th Percentile	14.22	10.2	7.3	16.94	3.03	9.98	137	2.23	1.5	1.5	7.06	94	1.72	0.7	1.1	0.9	1.5	0.9
90th Percentile	17.3	12.16	12.44	37.32	8.85	123.2	173.6	4.2	1.8	2.55	10.69	312.6	3.76	1.2	1.4	1.45	2.45	1.6

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Chromium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.0009 J			0.0003 J									
21-Feb-17	0.01 U	0.0018 J	0.01 U	0.0056 J	0.0118		0.0024 J	0.002 J			0.01 U							
04-Apr-17										0.0006 J					0.01 U	0.0051 J	0.0054 J	0.01 U
05-Apr-17													0.0003 J	0.0015 J				
08-Aug-17														0.01 U				
08-May-18	0.01 U		0.01 U			0.01 U	0.0052 J		0.01 U		0.01 U							
09-May-18		0.01 U		0.01 U	0.01 U			0.01 U										
12-Aug-19		0.01 U	0.01 U		0.01 U			0.01 U	0.01 U									
13-Aug-19						0.01 U	0.001 J											
14-Aug-19	0.01 U			0.01 U							0.01 U							
09-Sep-19										0.01 U				0.01 U	0.01 U	0.01 U		0.01 U
10-Sep-19																		0.0009 J
10-Dec-19														0.01 U	0.01 U	0.01 U	0.01 U	0.01 U
11-Dec-19										0.01 U								
14-Jan-20										0.0007 J				0.01 U	0.01 U	0.01 U	0.0007 J	0.01 U
23-Jan-20	0.01 U					0.01 U												
27-Jan-20			0.01 U				0.0019 J											
28-Jan-20										0.0008 J								
12-Feb-20												0.01 U						
11-May-20	0.01 U		0.0012 J	0.0017 J														
12-May-20		0.0009 J			0.01 U		0.0027 J	0.01 U	0.0006 J		0.01 U							
14-May-20						0.01 U						0.01 U						
06-May-21	0.01 U	0.0008 J	0.0006 J		0.01 U	0.01 U	0.0023 J	0.01 U	0.01 U	0.0011 J	0.01 U	0.01 U					0.0014 J	
11-May-21				0.0019 J									0.0031 J	0.01 U	0.01 U	0.01 U		0.01 U
10-May-22					0.01 U			0.01 U										
11-May-22		0.01 U								0.0018 J		0.01 U		0.01 U	0.01 U	0.01 U		
12-May-22	0.01 U					0.01 U			0.01 U				0.01 U					
17-May-22			0.0015 J	0.01 U			0.0038 J				0.01 U						0.01 U	0.01 U

**Statistics**

Mean	0.005	0.003083	0.003329	0.004033	0.006133	0.004414	0.002757	0.0045	0.0031	0.002367	0.005	0.005	0.0028	0.0045	0.005	0.005017	0.003067	0.005
Standard Deviation	0	0.002128	0.002101	0.001747	0.002776	0.00155	0.001367	0.001225	0.002374	0.002083	0	0	0.002364	0.001323	0	4.08E-05	0.00228	0
Median	0.005	0.0034	0.005	0.005	0.005	0.005	0.0024	0.005	0.005	0.00145	0.005	0.005	0.0031	0.005	0.005	0.005	0.0032	0.005
10th Percentile	0.005	0.00085	0.00096	0.0018	0.005	0.00336	0.00154	0.0035	0.00048	0.00065	0.005	0.005	0.00086	0.0036	0.005	0.005	0.0008	0.005
90th Percentile	0.005	0.005	0.005	0.0053	0.0084	0.005	0.00436	0.005	0.005	0.005	0.005	0.005	0.00462	0.005	0.005	0.00505	0.0052	0.005

Note: one-half detection limit utilized in statistical calculations for non-detect results



**Cobalt (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.05 U			0.05 U									
21-Feb-17	0.05 U	0.05 U	0.05 U	0.0019 J	0.0041 J		0.05 U	0.0031 J			0.05 U							
04-Apr-17										0.05 U					0.05 U	0.0015 J	0.0079 J	0.05 U
05-Apr-17													0.05 U	0.05 U				
08-Aug-17														0.05 U				
08-May-18	0.05 U		0.05 U			0.05 U	0.05 U		0.05 U		0.05 U							
09-May-18		0.05 U		0.05 U	0.05 U			0.05 U										
12-Aug-19		0.05 U	0.05 U		0.05 U			0.0023 J	0.05 U									
13-Aug-19						0.05 U	0.05 U											
14-Aug-19	0.05 U			0.05 U							0.05 U							
09-Sep-19										0.05 U				0.05 U	0.05 U	0.05 U		0.05 U
10-Sep-19																	0.05 U	
10-Dec-19														0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
11-Dec-19										0.05 U								
14-Jan-20										0.05 U				0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
23-Jan-20	0.05 U					0.05 U												
27-Jan-20			0.05 U				0.05 U											
28-Jan-20									0.0011 J									
12-Feb-20												0.0068 J						
11-May-20	0.05 U		0.05 U	0.05 U														
12-May-20		0.05 U			0.001 J		0.0016 J	0.0056 J	0.05 U		0.001 J							
14-May-20						0.05 U						0.0022 J						
06-May-21	0.05 U	0.05 U	0.05 U		0.05 U	0.05 U	0.05 U	0.0024 J	0.05 U	0.05 U	0.05 U	0.0034 J					0.05 U	
11-May-21				0.05 U									0.0015 J	0.05 U	0.05 U	0.05 U		0.05 U
10-May-22					0.05 U			0.05 U										
11-May-22		0.05 U								0.05 U		0.002 J		0.05 U	0.05 U	0.05 U		
12-May-22	0.05 U					0.05 U			0.05 U				0.0017 J					
17-May-22			0.05 U	0.05 U			0.0015 J				0.05 U						0.05 U	0.05 U

**Statistics**

Mean	0.025	0.025	0.025	0.02115	0.017517	0.025	0.0183	0.010567	0.021586	0.025	0.021	0.0036	0.0094	0.025	0.025	0.021083	0.02215	0.025
Standard Deviation	3.7474E-18	3.8E-18	3.75E-18	0.009431	0.011635	3.75E-18	0.011442	0.011244	0.009033	3.8E-18	0.009798	0.002221	0.01351	3.75E-18	3.8E-18	0.009594	0.006981	3.8E-18
Median	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.00435	0.025	0.025	0.025	0.0028	0.0017	0.025	0.025	0.025	0.025	0.025
10th Percentile	0.025	0.025	0.025	0.01345	0.00255	0.025	0.00156	0.00235	0.01544	0.025	0.013	0.00206	0.00154	0.025	0.025	0.01325	0.01645	0.025
90th Percentile	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.00578	0.02034	0.025	0.025	0.025	0.025	0.025

Note: one-half detection limit utilized in statistical calculations for non-detect results

**COD (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					5 U	5 U		6.9	5 U									
21-Feb-17	5 U	5 U	3.9 J	5.9			6.5				5 U							
04-Apr-17										5.8					5 U	6.1	44.8	6.1 J
05-Apr-17													4.1 J	5.4 J				
24-May-17	5 U	5 U	5.4	6.8	9.1		5 U	7.1			5 U							
25-May-17							3.7 J		5 U									
01-Aug-17										5 U					5 U	5 U	12.4	5 U
02-Aug-17	5 U	5 U	9.8		12.4	5 U	7.8	14	4.1 J		4.7 J							
03-Aug-17				8.1														
08-Aug-17														5 U				
14-Nov-17										23.6				5.8	8.1	5.4	23	10.5
15-Nov-17							5 U				5 U							
16-Nov-17	5 U	27.8	5 U	10.8	7.8	9.8		19.7	14.7									
12-Feb-18	5.4	10.1	11.4		5 U	5 U	7.8	18.1	5 U		3.4 J							
13-Feb-18				5 U														
14-Feb-18										5 U					6.1	10.1	9.5	4.1 J
21-Feb-18														5 U				
08-May-18	5 U	5 U	5 U		5 U	5 U	5 U	8.5	5 U		5 U							
09-May-18				5 U														
22-Aug-18	5 U	5 U	5 U		5 U		5.8	5.8	5 U		5 U							
23-Aug-18				5.8		5 U												
07-Nov-18	5 U	5 U			5 U		5 U	9.1	5 U		5 U							
08-Nov-18			4.1 J	6.8		5 U												
11-Feb-19								8.8		3.4 J		5 U						
13-Feb-19	5 U	7.5	4.8 J		5 U			16.9										
14-Feb-19				12.4			8.5											
30-Apr-19							5 U		5 U									
01-May-19	5 U	5 U	7.5	9.1	5 U		4.8 J	5.8			5 U							
12-Aug-19		5 U	6		5 U			11	5 U									
13-Aug-19						5 U	5 U											
14-Aug-19	5 U			5 U							5 U							
09-Sep-19										5 U				5 UJ	5 U	5 U		5 U
10-Sep-19																	6.6	
18-Nov-19	4.2 J					5 U			5 U									
19-Nov-19		5 U	5 U	7.4	5 U		5.3	11.9			5 U							
10-Dec-19										5 U				5 U	5 U	5 U	7.4	5 U
14-Jan-20										7.7				5 UJ	5.7	5.1	8	5.4
23-Jan-20	8.4						6.7 J											
27-Jan-20			5.4					5.7										
28-Jan-20									5 U									
11-Feb-20	5 U		7	8.7							5 U							
12-Feb-20		5 U			14.1	5 U	5 U	7.7	5 U			7.4						
11-May-20	5.7	7.4	7.4 J	10.3	13.8			11.6										
12-May-20							4.7 J		5 U		5 U							
14-May-20						5 U						5 U						
05-Aug-20	5 U		5.3			5 U	4 J		5 U		5 U							

**COD (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		5 U		6.6	5.3			4 J				9.1						
09-Nov-20	5 U		4 J			5 U	5 U		5 U		5 U							
10-Nov-20		5 U		5 U	5 U			4 J				7.5						
15-Dec-20													5 U	5 U	5 U		5 U	5 U
16-Dec-20										5 U						5 U		
08-Feb-21	5 U					4 J	6.3			5 U	5 U	5 U					5.6	
09-Feb-21		5 U			5 U			8.1	4.3 J									5 U
10-Feb-21			9.1															
11-Feb-21				7.2									5 U	5 U	5 U			
12-Feb-21																5 U		
05-May-21		5 U			5 U			5 U		5 U		5.9						
06-May-21	5 U		5.3			5 U	5 U		5 U		5 U						36.5	
11-May-21				5 U									5 U	5 U	5 U	5 U		5 UJ
24-Aug-21					5 J			10.5		5 J				5 U	5 U	4.6 J		4 J
25-Aug-21				9.2					5 U				5 U				5 U	
26-Aug-21	4.6 J		7.2				5 U				5 U							
27-Aug-21		5 U				5 U						5.9						
10-Nov-21								5 U									5 U	
11-Nov-21	5 U	5 U	5 U	4.6 J	5 U	5 U	5 U	5.3	5 U	5 U	5 U	4.3 J	5 U	5 U	5 U	5 U		5 U
15-Feb-22						5 U			5 U			5 U						
16-Feb-22	5 U	5 U	5 U	5 U	5 U			4 J	5 U	5 U	5 U		5 U		5 U	5 U	5 U	5 U
17-Feb-22							5 U											
17-Mar-22														5 U				
10-May-22		5 U			5 U			5 U		5 U		4.6 J						
11-May-22														5 UJ	5 U	5 U		
12-May-22	5 U					5 U		5 U				5.3						
17-May-22			5 U	5 U			5 UJ				5 U						5 U	5 U
04-Aug-22		5 U			5 U			5.6	5 U	5 U		8.7			5 U	5 U		
08-Aug-22						5 U	4.2 J				5 U		5 U					
09-Aug-22	5 U		5 U	5 U														5 U
10-Aug-22														5 U			5 U	
22-Nov-22	5 U	5 U			5 U	5 U		5 U	5 U	5 U		4.5 J		5 U	5 U	5 U	5 U	
29-Nov-22			4.2 J	5 U			5 U				5 U		5 U					5 U

**Statistics**

Mean	3.132	4.283333	5.112	5.925	4.583333	3.308	4.168	8.4625	3.16	4.50625	2.629167	5.45	2.94	2.8875	3.275	3.675	10.70625	3.6
Standard Deviation	1.45451	5.39941	2.553971	3.170551	3.855168	1.982196	2.051365	4.923132	2.454248	5.32284	0.477748	2.361625	0.969765	1.061367	1.731088	2.132448	12.95055	2.172863
Median	2.5	2.5	4.8	6.25	2.5	2.5	2.5	7.4	2.5	2.5	2.5	5.25	2.5	2.5	2.5	2.5	6.1	2.5
10th Percentile	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.95	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.5
90th Percentile	5.08	7.47	8.46	9.97	11.41	5.62	7.28	16.03	3.82	6.75	2.5	8.58	4.22	3.95	5.9	5.75	29.75	5.75

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Color ( True ) (C.U.) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		10 B			35	10 B		25	1 B									
21-Feb-17	5 B		5 B	10 B			25				1 B							
04-Apr-17										10 B					5 B	11	30	7 B
05-Apr-17													5 B	5 B				
08-Aug-17														4				
08-May-18	10		7			6	14		4		5							
09-May-18		12		12	9			22										
12-Aug-19			14						10									
13-Aug-19		17			19	19	25	35										
14-Aug-19	6			9							16							
09-Sep-19										12				12	15	10		12
10-Sep-19																	25	
10-Dec-19										20				18	18	20	25	20
14-Jan-20										25				17	17	20	32	17
23-Jan-20	20					15												
27-Jan-20			15				25											
28-Jan-20								15										
12-Feb-20												20						
11-May-20	8		14	3														
12-May-20		1			1		1	5	1		2							
14-May-20						3						3						
06-May-21	11	10	7		9	10	10	10	9	10	6	11					11	
11-May-21				11									7	6	8	7		10
10-May-22		1			2			3		2		4						
11-May-22														1	2	1		
12-May-22	4					3			3				3					
17-May-22			2	2			2				2						2	3

**Statistics**

Mean	9.142857	8.5	9.142857	7.833333	12.5	9.428571	14.57143	16.66667	6.142857	13.16667	5.333333	9.5	5	9	10.83333	11.5	20.83333	11.5
Standard Deviation	5.429198	6.348228	5.145502	4.262237	12.77106	6.023762	10.72158	12.65965	5.304984	8.15884	5.573748	7.852813	2	6.683313	6.735478	7.449832	11.78841	6.284903
Median	8	10	7	9.5	9	10	14	16	4	11	3.5	7.5	5	6	11.5	10.5	25	11
10th Percentile	4.6	1	3.8	2.5	1.5	3	1.6	4	1	6	1.5	3.3	3.4	2.8	3.5	4	6.5	5
90th Percentile	14.6	14.5	14.4	11.5	27	16.6	25	30	12	22.5	11	17.3	6.6	17.4	17.5	20	31	18.5

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Specific Conductivity (us/cm) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		446.2			355.4	747		871	368.6									
21-Feb-17	651		748	787			1104				504							
04-Apr-17									496						298.6	266.9	1162	519
05-Apr-17													239.4	303.3				
24-May-17	640	460	725	650	412.7		1109	913			500.1							
25-May-17						780			359.7									
01-Aug-17										494.6					322.9	270.1	1129	553
02-Aug-17	650	474.7	737		434.7	734	1126	959	367.4		509.5							
03-Aug-17				590														
08-Aug-17														319.6				
14-Nov-17										468				320.4	313.9	266.5	1078	571.6
15-Nov-17							1119				488.4							
16-Nov-17	625.4	474	721	648.7	413.7	782		884	330.5									
12-Feb-18	634.9	446.9	687.1		409.4	839	1114	860	351.9		484.6							
13-Feb-18				638.6														
14-Feb-18										459.5					326.2	258.4	1059	589.4
21-Feb-18														308.5				
08-May-18	643	445.5	663		475	808	1092	883	351.4		485							
09-May-18				725														
22-Aug-18	662	496	710		521.7		1128	959	374.2		500.6							
23-Aug-18				886		703												
07-Nov-18	691	473.2			555.2		1110	915	355.6		495							
08-Nov-18			685.6	1005		667.5												
11-Feb-19							1091		334.7		485.8							
13-Feb-19	607.7	453.9	637.2		519			877										
14-Feb-19				811		627												
30-Apr-19						563.1			364.8									
01-May-19	671	491.9	659	794	565		1113	906			495.9							
12-Aug-19		491.5	682		596.9			932	352.6									
13-Aug-19						543.6	1111											
14-Aug-19	664			721							499.4							
09-Sep-19										453.3				341.4	340.7	269.3		543
10-Sep-19																	1060	
18-Nov-19	542.8					563.1			363.8									
19-Nov-19		487.1	679.8	680.6	570		1074	864			483.4							
10-Dec-19										407.9				334.4	330	250.3	1055	562.6
11-Dec-19										375.4								
14-Jan-20										339				336	322.6	260	1108	558.6
23-Jan-20	620.7					591.7												
27-Jan-20			660				1079											
28-Jan-20									327									
11-Feb-20	584.1		654.9	855							486.4							
12-Feb-20		513.1			576.2	559.6	1085	689	364.1			712.5						
11-May-20	618.2	498.3	614.6	761	584.7			690.4										
12-May-20							1068		358.6		480.8							
14-May-20						492.6						374.5						
05-Aug-20	705		718			526.9	1130		367.6		513.6							

**Specific Conductivity (us/cm) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		500.3		629	610			801				563.8						
09-Nov-20	686		706			578.3	1099		356.9		486.9							
10-Nov-20		499.8		580.7	632			775				632						
15-Dec-20													201.3	340	292.3		1086	508.9
16-Dec-20										422.9						281.4		
08-Feb-21	595.1					661.9	1058			236.2	466.9	699.5					1057	
09-Feb-21		489			524.4			744	330.2									510.2
10-Feb-21			715.5															
11-Feb-21				707									186	8.1	273.1			
12-Feb-21																269.7		
05-May-21		497			603.8			689		256.1		847						
06-May-21	612.3		691			549.7	1074		364.1		472.1						1051	
11-May-21				919									84.4	334.6	274.7	270		551.6
24-Aug-21				637				809		267.3				346.2	319.6	283		563.7
25-Aug-21				942					367.4				146.7				1043	
26-Aug-21	644		727				1092				494.2							
27-Aug-21		508.4				515.6						408.3						
10-Nov-21									284.7								895	
11-Nov-21	535.8	249.7	726	729	594.1	472.9	1098	757		181.5	499.5	180.7	241.7	353.4	343.4	272.3		478.3
15-Feb-22						477.5				255.2		1327						
16-Feb-22	619.3	451.2	620.9	793	563.4			726		175.8	465		183.6		307.1	261.7	957	523.7
17-Feb-22							982											
17-Mar-22														332.2				
10-May-22		481			602.9			614.4		145.8		1045						
11-May-22														317.6	298.4	262.7		
12-May-22	646					462.4			344.5				96.7					
17-May-22			673	714			1025				478.6						989	542.2
04-Aug-22		518.6			659			789	365.6	314.1		1025			349.8	285.6		
08-Aug-22						603	1084				511		293.9					
09-Aug-22	672		737	707														526.2
10-Aug-22														347.6			1050	
22-Nov-22	628.1	487.7			652.9	889		724	352.3	335.7		721		327.2	306.2	266.7	959	
29-Nov-22			712.8	621.8			1034				468		277.8					598.6

**Statistics**

Mean	633.976	472.2917	691.656	745.6417	544.5458	629.536	1087.96	817.95	348.536	342.8882	489.7792	711.3583	195.15	310.6563	313.7188	268.4125	1046.125	543.7875
Standard Deviation	40.96526	52.17156	36.92908	113.8723	85.62067	124.4359	34.73768	97.41455	27.32913	116.7046	13.77076	319.4204	70.92082	81.89459	22.69238	9.257276	67.80843	31.55782
Median	640	487.4	691	723	567.5	591.7	1092	834.5	356.9	339	487.65	706	193.65	333.3	316.75	268.1	1056	547.3
10th Percentile	588.5	446.41	644.28	623.96	413	483.54	1043.6	689.42	328.28	179.22	469.23	377.88	95.47	305.9	283.5	259.2	958	509.55
90th Percentile	680.4	505.97	733	909.1	635.5	797.6	1123.2	926.9	367.52	478.64	507.85	1043	279.41	346.9	342.05	282.2	1118.5	580.5

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Copper (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.02 U			0.02 U									
21-Feb-17	0.02 U	0.0023 J	0.02 U	0.006 J	0.0048 J		0.02 U	0.0059 J			0.02 U							
04-Apr-17										0.0011 J					0.0014 J	0.0025 J	0.0037 J	0.02 U
05-Apr-17													0.02 U	0.02 U				
08-Aug-17														0.02 U				
08-May-18	0.02 U		0.02 U			0.02 U	0.02 U		0.02 U		0.02 U							
09-May-18		0.02 U		0.02 U	0.02 U			0.02 U										
12-Aug-19		0.02 U	0.02 U		0.02 U			0.02 U	0.02 U									
13-Aug-19						0.02 U	0.02 U											
14-Aug-19	0.02 U			0.02 U							0.02 U							
09-Sep-19										0.02 U				0.02 U	0.02 U	0.02 U		0.02 U
10-Sep-19																		0.02 U
10-Dec-19														0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
11-Dec-19										0.02 U								
14-Jan-20										0.02 U				0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
23-Jan-20	0.02 U					0.02 U												
27-Jan-20			0.02 U				0.02 U											
28-Jan-20									0.02 U									
12-Feb-20												0.02 U						
11-May-20	0.02 U		0.02 U	0.02 U														
12-May-20		0.02 U			0.02 U		0.0064 J	0.02 U	0.02 U		0.02 U							
14-May-20						0.02 U						0.02 U						
06-May-21	0.02 U	0.02 U	0.02 U		0.02 U	0.0058 J	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U					0.02 U	
11-May-21				0.02 U									0.02 U	0.02 U	0.02 U	0.02 U		0.02 U
10-May-22					0.02 U			0.02 U										
11-May-22		0.02 U								0.02 U		0.02 U		0.02 U	0.02 U	0.02 U		
12-May-22	0.02 U					0.02 U			0.02 U				0.02 U					
17-May-22			0.02 U	0.02 U			0.02 U				0.02 U						0.02 U	0.02 U

**Statistics**

Mean	0.01	0.008717	0.01	0.009333	0.009133	0.0094	0.009486	0.009317	0.01	0.008517	0.01	0.01	0.01	0.01	0.008567	0.00875	0.00895	0.01
Standard Deviation	0	0.003144	0	0.001633	0.002123	0.001587	0.001361	0.001674	0	0.003633	0	0	0	0	0.003511	0.003062	0.002572	0
Median	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
10th Percentile	0.01	0.00615	0.01	0.008	0.0074	0.00832	0.00856	0.00795	0.01	0.00555	0.01	0.01	0.01	0.01	0.0057	0.00625	0.00685	0.01
90th Percentile	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Dissolved Oxygen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-E	MW-F	MW-H	MW-J	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17				3.16		3.63									
21-Feb-17	7.65	1.56	1.01		2.07			0.4							
04-Apr-17							3.53					1.39	0.5		0.56
05-Apr-17										4.52	0.15				
24-May-17	2.01	0.9	1.17		1.6			0.8							
25-May-17				1.09		3.24									
01-Aug-17							1.34					0.42	0.41	0.28	0.49
02-Aug-17	2.25	2.22		0.93	1.16	1.96		0.69							
03-Aug-17			4.16												
08-Aug-17											0.26				
14-Nov-17							1.63				0.82	0.94	1.16	2.06	1.41
15-Nov-17					3.88			1.49							
16-Nov-17	1.77	1.82	3.37	2.08		2.83									
12-Feb-18	2.3	2.13		2.59	2.68	4.11		0.59							
13-Feb-18			3.44												
14-Feb-18							1.27					0.65	0.29	2.8	1.55
21-Feb-18											0.46				
08-May-18	2.01	1.24		0.79	1.59	2.21		0.61							
09-May-18			2.03												
22-Aug-18	1.68	1.12			0.73	0.71		0.29							
23-Aug-18			1.19	1.63											
07-Nov-18	1.98				1.65	0.52		0.97							
08-Nov-18		3.9	2.03	4.16											
11-Feb-19					3.52	5.25		1.79							
13-Feb-19	3.15	1.45													
14-Feb-19			3.19	5.19											
30-Apr-19				2.4		5.26									
01-May-19	2.38	1.01	0.58		2.14			0.38							
12-Aug-19		0.55				1.85									
13-Aug-19				2.72	2.16										
14-Aug-19	1.26		2.51					0.38							
09-Sep-19							0.38				0.8	0.25	0.23		0.39
10-Sep-19														0.64	
18-Nov-19	1.44			3.15		1.01									
19-Nov-19		3.44	3.52		1.84			0.41							
10-Dec-19							0.53				0.29	0.43	0.53	1.55	0.74
14-Jan-20							0.89				1.01	5.18	2.82	2.47	0.53
23-Jan-20	5.34			4.65											
27-Jan-20		3.03			2.67										
28-Jan-20						4.8									
11-Feb-20	10.04	3.52	1.96					1.49							
12-Feb-20				3.49	4.08	5.84			3.52						
11-May-20	3.53	1.3	0.87												
12-May-20					2.06	3.38		0.51							
14-May-20				3.18					3.56						



**Dissolved Oxygen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-E	MW-F	MW-H	MW-J	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	2.83	1.36		2.4	1.63	0.91		0.56							
06-Aug-20			1.15												
09-Nov-20	2.45	1.91		4.19	1.18	0.68		0.37							
10-Nov-20			4.38												
15-Dec-20										2.19	0.19	0.75		1.5	1.16
16-Dec-20													0.4		
08-Feb-21	5.43			2.95	2.18			0.69						1.8	
09-Feb-21						4.06									1.38
10-Feb-21		2.08													
11-Feb-21										5.67	6.7	0.25			
12-Feb-21													0.61		
06-May-21	4.85	2.33		2.54	1.84	2.99		0.65						2.49	
11-May-21			1.67							5.93	0.2	0.19	0.43		1.37
24-Aug-21											0.34	0.29	0.14		0.4
25-Aug-21			0.7			2.03				1.33				0.93	
26-Aug-21	2.08	0.9			4.23			0.43							
27-Aug-21				5.12											
10-Nov-21						4.07								0.65	
11-Nov-21	3.58	1.66	2.98	3.12	1.61			1.98		0.82	1.53	0.57	0.36		0.51
15-Feb-22				5.07		6.65									
16-Feb-22	0.53	1.27	6.08					0.33		9.68		0.53	0.9	3.99	8.39
17-Feb-22					1.99										
17-Mar-22											0.76				
11-May-22											0.26	0.22	0.39		
12-May-22	2.45			2.22		3.64				6.28					
17-May-22		0.95	0.65		2.09			0.35						1.37	0.49
04-Aug-22						0.8						0.48	0.56		
08-Aug-22				2.35	0.53			0.49		1.88					
09-Aug-22	2.54	1.51	0.96												0.72
10-Aug-22											0.33			0.47	
22-Nov-22	2.99			2.73		1.38					0.53	2.67	0.62	3.94	
29-Nov-22		4.43	2.82		9.44			3.18		3.63					0.45

**Statistics**

Mean	3.1408	1.9036	2.2791304	2.956	2.422	2.9524	1.3671429	0.82625	3.54	4.193	0.914375	0.950625	0.646875	1.796	1.28375
Standard Deviation	2.1122479	1.0244913	1.4428756	1.2445046	1.7439634	1.777384	1.0535767	0.6927062	0.0282843	2.7693002	1.5874213	1.285667	0.6306158	1.1713777	1.9400477
Median	2.45	1.56	2.03	2.73	2.06	2.99	1.27	0.575	3.54	4.075	0.4	0.505	0.465	1.55	0.64
10th Percentile	1.536	0.92	0.734	1.306	1.168	0.746	0.47	0.356	3.524	1.279	0.195	0.235	0.26	0.538	0.425
90th Percentile	5.394	3.488	4.032	4.902	4	5.256	2.39	1.7	3.556	6.62	1.27	2.03	1.03	3.484	1.48

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Hardness (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		247			197	327		540	181									
21-Feb-17	354		414	449			435				240							
04-Apr-17										243					148	136		248
05-Apr-17													127	158			594	
24-May-17	355	249	424	351			428				245							
25-May-17					212	348		544	181									
01-Aug-17										250					167	138	552	250
02-Aug-17	366	262	446			326	449		185		258							
03-Aug-17				312	245			579										
08-Aug-17														158				
14-Nov-17										240				165	164	136	512	285
15-Nov-17							456				252							
16-Nov-17	360	257	417	306	216	341		536	116									
12-Feb-18	373		411			391	427		174		246							
13-Feb-18		253		294	245			537										
14-Feb-18										229					162	126	477	325
21-Feb-18														158				
08-May-18	377		396			375	434		179		245							
09-May-18		246		351	265			542										
22-Aug-18	378		396				401		173		245							
23-Aug-18		250		483	278	298		544										
07-Nov-18	394						371		184		253							
08-Nov-18		268	410	596	314	304		559										
11-Feb-19							423		156		244							
13-Feb-19	375	274	404		327			566										
14-Feb-19				511		307												
30-Apr-19						254			178									
01-May-19	385	267	381	463	335		388	541			244							
12-Aug-19			368						161									
13-Aug-19		235			313	232	383	527										
14-Aug-19	364			377							230							
09-Sep-19										235				174	178	134		279
10-Sep-19																	477	
18-Nov-19	351					244			171									
19-Nov-19		248	376	377	313		355	487			231							
10-Dec-19										220				173	171	121	480	295
14-Jan-20										192				173	168	129	507	299
23-Jan-20	354					270												
27-Jan-20			390				387											
28-Jan-20									145									
11-Feb-20	317		371	498							230							
12-Feb-20		247			318	243	342	375	170			143						
11-May-20	353		354	427														
12-May-20		263			330		356	408	171	337								
14-May-20						225						60.5						
05-Aug-20	380		380			229	353		175		236							

**Hardness (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		258		323	336			434				115						
09-Nov-20	388		400			265	400		171		231							
10-Nov-20		268		296	354			429				141						
15-Dec-20													54.3	176	148		432	243
16-Dec-20										196						145		
08-Feb-21	346					294	420				239						408	
09-Feb-21		274			345			435	157	77.8		180						260
10-Feb-21			425															
11-Feb-21				411									91.3	179	143			
12-Feb-21																146		
06-May-21	353	269	396		343	230	375	428	167	42.9	229	179					261	
11-May-21				519									33.2	170	139	136		289
24-Aug-21					349			438		96.5				170	157	138		322
25-Aug-21				517					165				45.9				411	
26-Aug-21	357		407				365				238							
27-Aug-21		267				209						54.1						
10-Nov-21									137									383
11-Nov-21	365	290	395	470	348	225	337	423		114	238	51.9	125	171	170	136		276
15-Feb-22						222			102			346						
16-Feb-22	393	264	406	508	357			390		75.4	240		99.9		174	146	423	294
17-Feb-22							359											
17-Mar-22														169				
10-May-22		278			360			343		45.5								
11-May-22												239		174	159	139		
12-May-22	382					210			167				46.4					
17-May-22			393	412			341				240						437	305
04-Aug-22		254			358			369	164	128		187			172	141		
08-Aug-22						215	356				235		152					
09-Aug-22	347		392	369														263
10-Aug-22														170			428	
22-Nov-22	332	251			363	284		352	157	143		126		166	155	137	382	
29-Nov-22			437	315			405				241		91.9					299

**Statistics**

Mean	363.96	259.9583	399.56	413.9583	309.2083	274.72	389.84	471.9167	163.48	158.0063	240.2917	151.875	86.69	169	160.9375	136.5	447.75	283.25
Standard Deviation	18.83366	12.606	21.49822	86.71266	51.84339	53.93323	36.3429	76.92793	20.15176	75.6436	7.578454	84.29735	40.52194	6.460134	11.71022	6.821535	77.60369	25.15684
Median	364	260	396	411.5	328.5	265	387	462.5	170	167.5	240	142	91.6	170	163	136.5	434.5	287
10th Percentile	346.4	247	373	307.8	224.7	217.8	346.4	370.8	140.2	60.45	230.3	54.74	44.63	158	145.5	127.5	382.5	249
90th Percentile	386.8	274	424.6	515.2	357.7	345.2	434.6	554.5	181	241.5	250.2	233.8	129.5	175	173	145.5	532	313.5

Note: one-half detection limit utilized in statistical calculations for non-detect results.

Iron (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.645			0.0384 J									
21-Feb-17	0.152	0.425	0.332	6.38	9.49		0.892	4.58			0.125							
04-Apr-17										0.926					0.226	3.53	7.68	0.384
05-Apr-17													0.163	0.3				
24-May-17	0.04 J	0.11	0.7	3.34			3.51				1.03							
25-May-17					0.43	0.61		2.58	0.04 J									
01-Aug-17										0.79					0.15	0.09 J	1.16	0.56
02-Aug-17	0.1 U	0.31	0.27			0.1 U	1.78		0.1 U		0.33							
03-Aug-17				1.2	1.01			0.94										
08-Aug-17														0.156				
14-Nov-17										0.46				0.1 U	0.55	0.1 U	2.12	0.71
15-Nov-17							0.62				0.18							
16-Nov-17	0.1 U	0.1 U	0.23	0.1 J	0.48	0.1 U		2.02	0.1 U									
12-Feb-18	0.1 U		0.59			0.15	0.35		0.1 U		0.1 U							
13-Feb-18		0.12		0.15	0.14			1.56										
14-Feb-18										0.38					0.1 U	0.1 U	0.73	2.35
21-Feb-18														0.1 U				
08-May-18	0.0522 J		0.152			0.174	3.5		0.1 U		0.0813 J							
09-May-18		0.276		0.678	0.401			0.688										
22-Aug-18	0.25		0.1 J				0.93		0.1 U		0.09 J							
23-Aug-18		0.1 U		0.37	0.46	0.1 U		0.64										
07-Nov-18	0.3						0.57		0.1 U		0.18							
08-Nov-18		0.1 U	0.09 J	0.12	0.2	0.06 J		3.29										
11-Feb-19							0.64		0.1 U		0.37							
13-Feb-19	0.1 U	0.37	0.12		0.1 U			4.8										
14-Feb-19				0.09 J		0.1 U												
30-Apr-19						0.1 U			0.02 J									
01-May-19	0.03 J	0.2	0.24	0.06 J	0.2		2.4	1.13			0.1							
12-Aug-19		0.0451 J	0.128		0.256			2.44	0.049 J									
13-Aug-19						0.1 U	0.775											
14-Aug-19	0.0489 J			0.151							0.725							
09-Sep-19										0.927				0.0552 J	0.0675 J	0.0221 J		0.245
10-Sep-19																	3.46	
18-Nov-19	0.17 B					0.07 BJ			0.22 B									
19-Nov-19		0.38	0.28	0.43	0.24		0.81	2.4			0.17 B							
10-Dec-19														0.0886 J	0.0873 J	0.207	0.0867 J	0.961
11-Dec-19										0.339								
14-Jan-20										0.62				0.043 J	0.0464 J	0.075 J	0.317	0.367
23-Jan-20	0.0751 J					0.0436 J												
27-Jan-20			0.22				1.28											
28-Jan-20									0.0728 J									
11-Feb-20	0.14		0.23	0.94							0.91							
12-Feb-20		0.2			0.11	0.17	1.54	1.51	0.09 J			0.278						
11-May-20	0.154		0.413	0.226														
12-May-20		0.24			0.155		0.61	0.579	0.1 U		0.671							
14-May-20						0.1 U						0.155						
05-Aug-20	0.47		0.14			0.1 U	2.14		0.1 U		0.34							
06-Aug-20		0.09 J		0.18	0.1 U			4.74				5.78						
09-Nov-20	0.95		0.21			0.1 U	0.35		0.1 U		0.32							
10-Nov-20		0.09 J		0.22	0.1 U			3.84				0.14						
15-Dec-20												2.17	0.12	0.31			0.09 J	0.48
16-Dec-20										0.33						0.1 U		

**Iron (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
08-Feb-21	0.1					0.11	2.64				0.13						0.16	
09-Feb-21		0.58			0.1 U			4.01	0.1 U	0.15		0.09 J						0.45
10-Feb-21			0.15															
11-Feb-21				0.08 J									2.37	0.1 U	0.16			
12-Feb-21																0.1 U		
06-May-21	0.1 U	0.505	0.1 U		0.129	0.1 U	1.55	0.671	0.1 U	0.1 U	0.1 U	0.0635 J					0.1 U	
11-May-21				0.324									1.44	0.1 U	0.0677 J	0.1 U		0.26
24-Aug-21					0.1 U			0.79		0.09 J				0.1 U	0.1 U	0.1 U		0.59
25-Aug-21				0.3					0.1 U				1.13				0.1 U	
26-Aug-21	0.1 U		0.26				0.46				0.37							
27-Aug-21		0.1 U				0.1 U						0.1 U						
10-Nov-21									0.1 U								0.1 U	
11-Nov-21	0.1 U	1.58	0.54	0.78	0.1 U	0.1 J	0.25	1.11		0.08 J	0.79	0.75	1.82	0.1 U	0.21	0.1 U		0.22
15-Feb-22						0.1 U			0.1 U			1.3						
16-Feb-22	0.07 J	0.1 U	0.1	0.25	0.1 U			3.82		0.72	0.1 U		1.63		0.08 J	0.1 U	0.1 U	0.17
17-Feb-22							0.42											
17-Mar-22													0.19					
10-May-22					0.108			0.785										
11-May-22		0.0721 J								0.236		0.144		0.1 U	0.1 U	0.1 U		
12-May-22	0.1 U					0.1 U			0.1 U				0.953					
17-May-22			0.556	0.0877 J			2.36				0.155						0.1 U	0.223
04-Aug-22		0.11			0.09 J			0.79	0.1 U	0.1 U		0.31			0.79	0.52		
08-Aug-22						0.1 U	0.8				0.4		1.86					
09-Aug-22	0.1 U		0.1 U	0.37														0.44
10-Aug-22														0.1 U			0.1 U	
22-Nov-22	0.1 U	0.53			0.11	0.1 U		0.38	0.1 U	0.1 J		0.17		0.1 U	0.35	0.76	0.1 U	
29-Nov-22			1.99	0.17			1.83				0.66		0.66					0.27

**Statistics**

Mean	0.140088	0.2701333	0.32564	0.7081958	0.5982917	0.115304	1.32028	2.0872083	0.057208	0.3905	0.3448875	0.7692083	1.4196	0.087675	0.2028063	0.3533813	1.0096063	0.5425
Standard Deviation	0.1972477	0.3272899	0.389047	1.3860663	1.9065322	0.1590894	0.9691923	1.5094719	0.0358565	0.3153176	0.2958399	1.6192591	0.6930557	0.0716898	0.2102703	0.871413	2.0195252	0.5253012
Median	0.05	0.16	0.23	0.238	0.1345	0.05	0.892	1.535	0.05	0.3345	0.25	0.1625	1.535	0.05	0.11865	0.05	0.08835	0.412
10th Percentile	0.04934	0.05	0.094	0.08839	0.05	0.05	0.378	0.6493	0.0436	0.065	0.05939	0.06615	0.6103	0.05	0.05	0.05	0.05	0.2215
90th Percentile	0.28	0.5225	0.5764	1.122	0.474	0.1724	2.544	4.409	0.06368	0.858	0.7705	1.245	2.19	0.173	0.45	0.64	2.79	0.8355

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Magnesium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						33.7			16									
21-Feb-17	28.8	16.3	33.9	34.3	12.4		34.7	38.8			19							
04-Apr-17										19.7					10.5	10.1	59	21.4
05-Apr-17													6.3	10.3				
24-May-17	29.3	16.1	34.7	27.8			33				19.1							
25-May-17					11.6	34.9		37.9	15.6									
01-Aug-17										19.9					11.4	9.7	57.1	22.6
02-Aug-17	30.1	17	35.2			33.1	33.9		15.7		19.9							
03-Aug-17				24.5	13.4			39.4										
08-Aug-17														11.8				
14-Nov-17										19.4				12.5	11.5	9.7	55.5	25.5
15-Nov-17							33.7				19.5							
16-Nov-17	29.1	16.5	32.3	22.6	11.6	35.7		36.1	14.1									
12-Feb-18	30.6		32.2			39	32.5		15.3		19.3							
13-Feb-18		16.2		21.1	13.3			36.6										
14-Feb-18										18.8					11.4	9.1	52.6	28.9
21-Feb-18														11.7				
08-May-18	30.4		30.1			37	33.8		15.2		19							
09-May-18		16		27.1	14.2			36.6										
22-Aug-18	31.2		32.6				30.5		15.3		19.6							
23-Aug-18		16.8		36.5	15.5	30.8		37.6										
07-Nov-18	32.1						26.3		15.6		19.9							
08-Nov-18		17.6	33.2	41.8	17.2	30.9		38.8										
11-Feb-19							32.5		14.5		19.2							
13-Feb-19	30.5	18.1	31.9		17.7			38.9										
14-Feb-19				37.5		30.7												
30-Apr-19						26.3			15.2									
01-May-19	31.5	18.2	30.6	33	18.3		28.8	37.2			19.2							
12-Aug-19		15.7	30.5		17.3			36.5	14.1									
13-Aug-19						24	29.2											
14-Aug-19	29.7			28.9							18.2							
09-Sep-19										18.7				13.1	12.3	9.52		24.3
10-Sep-19																	55.9	
18-Nov-19	28.9					25.3			14.7									
19-Nov-19		16.7	31.2	28.7	17.5		24.9	33			18.4							
10-Dec-19														13	11.9	8.65	54.4	25.1
11-Dec-19										17.5								
14-Jan-20										16				12.9	11.5	9.03	55.5	24.8
23-Jan-20	28.4					26.7												
27-Jan-20			28.5				28.1											
28-Jan-20									13.8									
11-Feb-20	25.5		27.6	35.7							17.9							
12-Feb-20		16.4			17.9	25	24.1	24.4	14.7			13.4						
11-May-20	28.4		26.3	31.5														
12-May-20		17.7			18.1		26.9	26.2	14.3		18.4							
14-May-20						22.9						5.55						

**Magnesium (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	30.8		28.3			23.1	26.3		14.6		18.2							
06-Aug-20		17		24.6	18.7			28.9				11.4						
09-Nov-20	31.3		29.5			26.7	31.9		14.1		17.9							
10-Nov-20		17.2		22	19.1			28.7				14.7						
15-Dec-20													3.9	12.7	10.2		51.9	20
16-Dec-20										15.9						10		
08-Feb-21	27.9					29.7	33.4				18.4						51.3	
09-Feb-21		17.8			18.9			29.1	14.1	8.6		18						21.8
10-Feb-21			31															
11-Feb-21				30.8									5.1	13.1	10			
12-Feb-21																9.9		
06-May-21	28.5	17.7	29.1		18.8	23.4	28.8	29	14.1	2.91	17.7	16.9					49.8	
11-May-21				36.7									3.01	12.6	9.74	9.46		23.8
24-Aug-21					19.1			28.5		9.4				12.4	10.8	9.5		23.8
25-Aug-21				35.4						13.7				3.3				49.4
26-Aug-21	29		29.6				27.8				18.5							
27-Aug-21		17.8				21.2							4.9					
10-Nov-21										13.2								45.8
11-Nov-21	29.1	19.6	30.7	33.9	19.1	22.3	24.1	27.2		10.3	18.3	4.8	6.3	12.4	11.3	9.2		22.7
15-Feb-22						22.5				12.4		31.6						
16-Feb-22	31.6	17	30.1	35.6	19.7			24.6		6.8	18.5		5.1		11.7	10	48.1	24.4
17-Feb-22							26.7											
17-Mar-22														12.2				
10-May-22					19.8			21.6										
11-May-22		19								4.17		22.9		12.7	10.8	9.59		
12-May-22	31					21.6			14.3				3.14					
17-May-22			29	30.6			25.4				18.6						48.8	24.7
04-Aug-22		16.4			19.8			23.9	13.9	10.4		18.4			11.6	9.7		
08-Aug-22						21.7	26.9				18.2		7.7					
09-Aug-22	28.4		30.6	27.8														22.1
10-Aug-22														12			47.8	
22-Nov-22	27.2	16.5			19.9	28.8		22.7	13	11.7		11.5		12	10.6	9.5	43.3	
29-Nov-22			32.4	23.4			32.6				18.8		5.3					24.8

**Statistics**

Mean	29.572	17.1375	30.844	30.49167	17.0375	27.88	29.472	31.75833	14.46	13.13625	18.7375	14.50417	4.915	12.3375	11.0775	9.540625	51.6375	23.79375
Standard Deviation	1.560854	0.969003	2.177169	5.663454	2.759302	5.375407	3.466449	6.067226	0.893029	5.792121	0.627495	7.87633	1.571533	0.701308	0.724868	0.39303	4.382218	2.061543
Median	29.3	17	30.6	30.7	18	26.7	28.8	31.05	14.3	13.8	18.55	14.05	5.1	12.45	11.35	9.555	51.6	24.05
10th Percentile	28.1	16.13	28.38	22.84	12.67	21.94	25.1	24.05	13.4	5.485	17.99	4.965	3.127	11.75	10.1	9.065	46.8	21.6
90th Percentile	31.42	18.17	33.62	36.64	19.77	35.38	33.76	38.8	15.6	19.55	19.57	22.45	6.44	13.05	11.8	10	56.5	25.3

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Manganese (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.161			0.0101									
21-Feb-17	0.0643	0.0154	0.345	0.108	0.11		0.2	3.85			0.974							
04-Apr-17										0.984					0.202	0.594	1.81	0.449
05-Apr-17													0.0145	0.278				
24-May-17	0.019	0.004 J	0.615	0.142			0.329				1.93							
25-May-17					0.023	0.107		3.6	0.008 J									
01-Aug-17										0.858					0.316	0.43	1.29	0.506
02-Aug-17	0.025	0.007 J	0.499			0.012	0.149		0.024		1.49							
03-Aug-17				0.089	0.034			4.11										
08-Aug-17														0.412				
14-Nov-17										0.802				0.477	0.344	0.39	1.22	0.783
15-Nov-17							0.051				1.06							
16-Nov-17	0.045 B	0.01 U	0.232	0.054	0.016 B	0.01 U		3.86	0.045									
12-Feb-18	0.02		0.799			0.06	0.089		0.015		0.836							
13-Feb-18		0.01 U		0.071	0.008 J			3.55										
14-Feb-18										0.75					0.432	0.406	0.983	0.976
21-Feb-18														0.436				
08-May-18	0.0278		0.216			0.0439	0.199		0.0133		1.04							
09-May-18		0.0054 J		0.045	0.0171			3.68										
22-Aug-18	0.139		0.163				0.144		0.035		1.27							
23-Aug-18		0.01 U		0.052	0.011	0.01 U		3.81										
07-Nov-18	0.132						0.323		0.084		1.19							
08-Nov-18		0.01 U	0.314	0.061	0.01 U	0.073		4.92										
11-Feb-19							0.191		0.026		2.22							
13-Feb-19	0.015	0.028	0.584		0.01 U			5.29										
14-Feb-19				0.061		0.009 J												
30-Apr-19						0.01 U			0.027									
01-May-19	0.013	0.005 J	0.864	0.008 J	0.01 J		0.421	4.38			1.29							
12-Aug-19		0.01 U	0.532		0.0057 J			4.71	0.0714									
13-Aug-19						0.01 U	0.0683											
14-Aug-19	0.0248			0.0461							3.42							
09-Sep-19										0.783				0.592	0.438	0.373		0.802
10-Sep-19																	1.34	
18-Nov-19	0.053					0.009 J			0.03									
19-Nov-19		0.006 J	0.298	0.059	0.005 J		0.316	4.35			0.98							
10-Dec-19														0.597	0.307	0.247	0.73	0.876
11-Dec-19										0.487								
14-Jan-20										1.1				0.596	0.329	0.288	0.751	0.795
23-Jan-20	0.0415					0.01 U												
27-Jan-20			0.745				0.163											
28-Jan-20									0.0167									
11-Feb-20	0.077		0.481	0.042							1.9							
12-Feb-20		0.01 U			0.007 J	0.027	0.126	2.99	0.01 J			0.285						
11-May-20	0.0361		0.808	0.0701														
12-May-20		0.0047 J			0.0047 J		0.143	3.09	0.0139		3.24							
14-May-20						0.01 U						0.0853						
05-Aug-20	0.023		0.108			0.017	0.226		0.004 J		2.2							



**Manganese (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		0.01 U		0.136	0.01 U			3.74	0.136			1.47						
09-Nov-20	0.025		0.076			0.008 J	0.143		0.035		1.53							
10-Nov-20		0.01 U		0.069	0.01 U			3.23				1.62						
15-Dec-20													0.088	0.548	0.663		0.921	0.677
16-Dec-20										0.195						0.366		
08-Feb-21	0.019					0.014	0.11				0.984						0.564	
09-Feb-21		0.014			0.01 U			3.34	0.007 J	0.008 J		0.621						0.73
10-Feb-21			0.495															
11-Feb-21				0.007 J									0.132	0.498	0.298			
12-Feb-21																0.405		
06-May-21	0.0176	0.0128	0.0495		0.0043 J	0.01 U	0.0543	2.72	0.0064 J	0.0072 J	0.834	0.132					0.0485	
11-May-21				0.0327									0.0461	0.587	0.539	0.949		0.838
24-Aug-21					0.01 U			2.9		0.01 U				0.589	0.512	0.404		0.916
25-Aug-21				0.051					0.041				0.05				0.308	
26-Aug-21	0.016		0.32				0.085				3.15							
27-Aug-21		0.01 U				0.008 J						0.032						
10-Nov-21									0.063								0.245	
11-Nov-21	0.01 J	0.05	0.37	0.075	0.01 U	0.072	0.132	2.75		0.007 J	1.72	0.076	0.09	0.607	0.461	0.745		0.792
15-Feb-22						0.01 U			0.006 J			0.258						
16-Feb-22	0.022	0.01 U	0.348	0.031	0.01 U			2.2		0.015	0.836		0.06		0.519	0.956	0.098	0.804
17-Feb-22							0.068											
17-Mar-22														1.06				
10-May-22					0.01 U			0.209										
11-May-22		0.01 U								0.0076 J		0.134		0.648	0.328	0.691		
12-May-22	0.0124					0.005 J			0.0088 J				0.0558					
17-May-22			0.402	0.0297			0.18				1.22						0.0524	0.848
04-Aug-22		0.01 U			0.01 U			2.1	0.017	0.054		0.228			0.877	1.34		
08-Aug-22						0.011	0.084				2.19		0.092					
09-Aug-22	0.017		0.117	0.143														0.741
10-Aug-22														0.508			0.061	
22-Nov-22	0.01	0.01			0.01 U	0.018		1.64	0.075	0.036		0.063		0.553	0.573	0.592	0.179	
29-Nov-22			0.561	0.03			0.509				1.18		0.026					0.859

**Statistics**

Mean	0.03618	0.009263	0.41366	0.063025	0.01295	0.027796	0.180144	3.375792	0.027704	0.381175	1.611833	0.417025	0.06544	0.561625	0.446125	0.5735	0.662556	0.7745
Standard Deviation	0.03435	0.010213	0.236854	0.037698	0.021885	0.038951	0.117234	1.115736	0.023493	0.42335	0.778318	0.550803	0.035171	0.162399	0.168023	0.297727	0.555901	0.136767
Median	0.023	0.005	0.37	0.0565	0.005	0.009	0.144	3.575	0.017	0.1245	1.28	0.181	0.0579	0.57	0.435	0.418	0.647	0.7985
10th Percentile	0.01264	0.005	0.1116	0.02979	0.005	0.005	0.06812	2.13	0.00664	0.0071	0.8774	0.0643	0.02485	0.424	0.3025	0.327	0.0567	0.5915
90th Percentile	0.07192	0.01498	0.7774	0.1276	0.02123	0.0726	0.3266	4.611	0.06804	0.921	2.871	1.3851	0.096	0.6275	0.618	0.9525	1.315	0.896

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Nickel (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.04 U			0.04 U									
21-Feb-17	0.04 U	0.004 J	0.04 U	0.04 U	0.0077 J		0.04 U	0.0037 J			0.04 U							
04-Apr-17										0.04 U					0.04 U	0.04 U	0.0057 J	0.04 U
05-Apr-17													0.04 U	0.04 U				
08-Aug-17														0.04 U				
08-May-18	0.04 U		0.04 U			0.04 U	0.04 U		0.04 U		0.04 U							
09-May-18		0.04 U		0.04 U	0.04 U			0.04 U										
12-Aug-19		0.04 U	0.04 U		0.04 U			0.04 U	0.04 U									
13-Aug-19						0.04 U	0.04 U											
14-Aug-19	0.04 U			0.04 U							0.04 U							
09-Sep-19										0.04 U				0.04 U	0.04 U	0.04 U		0.04 U
10-Sep-19																	0.04 U	
10-Dec-19														0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
11-Dec-19										0.04 U								
14-Jan-20										0.04 U				0.04 U	0.04 U	0.04 U	0.04 U	0.04 U
23-Jan-20	0.04 U					0.04 U												
27-Jan-20			0.04 U				0.04 U											
28-Jan-20									0.04 U									
12-Feb-20												0.0041 J						
11-May-20	0.04 U		0.04 U	0.04 U														
12-May-20		0.04 U			0.04 U		0.04 U	0.04 U	0.04 U		0.04 U							
14-May-20						0.04 U						0.003 J						
06-May-21	0.04 U	0.04 U	0.04 U		0.04 U	0.04 U	0.0031 J	0.0033 J	0.0026 J	0.0032 J	0.04 U	0.0069 J					0.0029 J	
11-May-21				0.04 U									0.04 U	0.04 U	0.04 U	0.04 U		0.04 U
10-May-22					0.04 U			0.04 U										
11-May-22		0.04 U								0.04 U		0.0057 J		0.04 U	0.04 U	0.04 U		
12-May-22	0.04 U					0.04 U			0.04 U				0.04 U					
17-May-22			0.04 U	0.04 U			0.04 U				0.04 U						0.04 U	0.04 U

**Statistics**

Mean	0.02	0.017333	0.02	0.02	0.01795	0.02	0.017586	0.0145	0.017514	0.0172	0.02	0.004925	0.02	0.02	0.02	0.02	0.014767	0.02
Standard Deviation	0	0.006532	0	0	0.005021	0	0.006388	0.008522	0.006577	0.006859	0	0.001721	0	0	0	0	0.008156	0
Median	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.0049	0.02	0.02	0.02	0.02	0.02	0.02
10th Percentile	0.02	0.012	0.02	0.02	0.01385	0.02	0.01324	0.0035	0.01304	0.0116	0.02	0.00333	0.02	0.02	0.02	0.02	0.0043	0.02
90th Percentile	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.00654	0.02	0.02	0.02	0.02	0.02	0.02

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Nitrate Nitrogen (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					1 U	0.6 J, *		1 U	1 U									
21-Feb-17	0.5 J	0.5 J	0.5 J	1 U			1 U				1 U							
04-Apr-17										1 U					0.7 J	1 U	1 U	1 U
05-Apr-17													0.7 J	1 U				
24-May-17	0.6 J	0.7 J	0.6 J	1 U	1 U		1 U	1 U			1 U							
25-May-17						0.6 J			1 U									
01-Aug-17										1 U					1 U	1 U	1 U	1 U
02-Aug-17	0.5 J	0.6 J	0.5 J		1 U	0.7 J	1 U	1 U	1 U		1 U							
03-Aug-17				1 U														
08-Aug-17														1 U				
14-Nov-17										1 U				1 U	1 U	1 U	1 U	1 U
15-Nov-17							1 U				1 U							
16-Nov-17	0.6 J		0.6 J	0.5 J	1 U	0.8 J		0.6 J	0.6 J									
12-Feb-18	0.5 J	0.6 J	0.6 J		1 U	0.7 J	1 U	1 U	1 U		1 U							
13-Feb-18				1 U														
14-Feb-18										1 U					1 U	1 U	0.5 J	1 U
21-Feb-18														1 U				
08-May-18	0.3 J	0.4 J	0.3 J		0.4 J	0.5 J	1 U	1 U	1 U		1 U							
09-May-18				1 U														
22-Aug-18	0.4 J		0.4 J				1 U		1 U		1 U							
23-Aug-18		0.6 J		1 U	0.4 J	0.6 J		1 U										
07-Nov-18	1 U	0.6 J			0.5 J		1 U	0.3 J	1 U		1 U							
08-Nov-18			1 U	1 U		0.5 J												
11-Feb-19							1 U		1 U		1 U							
13-Feb-19	1 U	0.6 J	1 U		1 U			1 U										
14-Feb-19				0.4 J		0.4 J												
30-Apr-19						0.4 J			1 U									
01-May-19	0.3 J	0.5 J	0.4 J	0.4 J	0.3 J		1 U	1 U			1 U							
12-Aug-19		0.5 J	1 U		0.3 J			1 U	1 U									
13-Aug-19						0.5 J	1 U											
14-Aug-19	1 U			1 U							1 U							
09-Sep-19										1 U				1 U	1 U	1 U		1 U
10-Sep-19																	1 U	
18-Nov-19	0.4 J					0.7 J			1 U									
19-Nov-19		0.6 J	0.8 J	1 U	0.5 J		1 U	0.4 J			1 U							
10-Dec-19										1 U				1 U	1 U	1 U	1 U	1 U
14-Jan-20										0.5 J				1 U	1 U	1 U	1 U	1 U
23-Jan-20	1 U					0.6 J												
27-Jan-20			0.8 J				1 U											
28-Jan-20									1 U									
11-Feb-20	0.4 J		0.9 J	0.4 J							1 U							
12-Feb-20		1.3			0.4 J	0.6 J	1 U	0.4 J	1 U			0.4 J						
11-May-20	1 U	0.5 J	0.9 J	0.6 J	0.2 J			1 U										
12-May-20							1 U		1 U		1 U							
14-May-20						0.5 J						1 U						
05-Aug-20	0.2 J		0.3 J			0.3 J	1 U		1 U		1 U							

**Nitrate Nitrogen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		0.4 J		1 U	0.3 J			0.3 J				1 U						
09-Nov-20	0.5 J		0.6 J			0.6 J	1 U		1 U		1 U							
10-Nov-20		0.6 J		1 U	1 U			1 U				0.4 J						
15-Dec-20													3.5	1 U	1 U		1 U	1 U
16-Dec-20										0.2 J						1 U		
08-Feb-21	0.2 J					0.6 J	1 U			0.6 J	1 U	0.3 J					1 U	
09-Feb-21		0.5 J			0.3 J			1 U	1 U									1 U
10-Feb-21			1.5															
11-Feb-21				0.3 J									3	1 U	1 U			
12-Feb-21																1 U		
05-May-21		0.5 UJ			0.5 J			0.3 J		0.7 J		0.3 UJ						
06-May-21	0.3 J		1.1			0.8 J	1 U		1 U		1 U						1 U	
11-May-21				1.8									1 U	1 U	1 U	3.1		1 U
24-Aug-21					0.5 J			1 U		0.4 J				1 U	1 U	1 U		1 U
25-Aug-21				0.4 J					1 U				2.4				1 U	
26-Aug-21	0.3 J		0.6 J				1 U				1 U							
27-Aug-21		0.5 J				0.6 J						0.2 J						
10-Nov-21								1 U									1 U	
11-Nov-21	1 U	0.4 J	1 U	1 U	0.4 J	0.4 J	1 U	1 U	1 U	1 U	1 U	1 U	1.9	1 U	1 U	1 U	1 U	1 U
15-Feb-22						0.3 J		1 U				0.5 J						
16-Feb-22	1 U	0.3 J	0.4 J	0.5 J	0.4 J			1 U	1 U	1 U	1 U		1.6		1 U	1 U	1 U	1 U
17-Feb-22							1 U											
17-Mar-22														1 U				
10-May-22		0.6 J			0.6 J			0.3 J		0.3 J		0.3 J						
11-May-22														1 UJ	1 UJ	1 UJ		
12-May-22	0.3 J					0.5 J		1 U					1.7					
17-May-22			0.6 J	0.3 J			1 U				1 U						1 U	1 U
04-Aug-22		0.5 J			0.6 J			0.3 J	1 U	1 U		1 U			1 U	1 U		
08-Aug-22						0.5 J	1 U				1 U		1.2					
09-Aug-22	0.4 J		0.3 J	1 U														1 U
10-Aug-22														1 U,*			0.3 J	
22-Nov-22	0.3 J	0.5 J			0.4 J	0.7 J		0.3 J	1 U	0.3 J		0.5 J		1 U	1 U	1 U	1 U	
29-Nov-22			0.4 J	0.2 J			1 U				1 U		2.4					1 U

**Statistics**

Mean	0.42	0.556522	0.604	0.5125	0.4375	0.56	0.5	0.445833	0.504	0.46875	0.5	0.425	1.89	0.5	0.5125	0.6625	0.4875	0.5
Standard Deviation	0.11547	0.185438	0.274591	0.28789	0.10135	0.135401	0	0.093153	0.02	0.119548	0	0.105529	0.959687	0	0.05	0.65	0.05	0
Median	0.5	0.5	0.5	0.5	0.5	0.6	0.5	0.5	0.5	0.5	0.5	0.5	1.8	0.5	0.5	0.5	0.5	0.5
10th Percentile	0.3	0.4	0.34	0.33	0.3	0.4	0.5	0.3	0.5	0.3	0.5	0.3	0.68	0.5	0.5	0.5	0.5	0.5
90th Percentile	0.5	0.6	0.9	0.5	0.5	0.7	0.5	0.5	0.5	0.55	0.5	0.5	3.05	0.5	0.5	0.5	0.5	0.5

Note: one-half detection limit utilized in statistical calculations for non-detect results.

ORP (mV) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		146.4			122.4	101.8		37.7	134.6									
21-Feb-17	189.1		78	139.1			99.9				14.5							
04-Apr-17										-96.7					111.1	-33.1	-1.8	-160.6
05-Apr-17													103.9	16.1				
24-May-17	36.4	87.1	19.1	53.4	87.7		107.7	-61.6			76.9							
25-May-17						128.1			104.9									
01-Aug-17										24.1					-46.1	-77	-79.6	-154
02-Aug-17	123.6	42.1	138.8		22.3	67.5	158.5	11.3	19.3		2.8							
03-Aug-17				206.9														
08-Aug-17														-89.8				
14-Nov-17										217.8				-6.1	-26.4	-17.4	-53.9	-133.4
15-Nov-17							138				59.3							
16-Nov-17	100.2	85.1	114.3	153.3	126.4	179.3		11.6	110.4									
12-Feb-18	93.3	159.1	104.9		133.5	173	135.4	38.1	154.7		47							
13-Feb-18				146.4														
14-Feb-18										47.6					36	42.7	-8	-120.9
21-Feb-18													21.4					
08-May-18	79.3	165	93.1		188.9	170.9	144.4	60.5	163.6		15.7							
09-May-18				99.1														
22-Aug-18	22.1	208.7	40.1		196.3		-24.9	13.8	178.2		-42.5							
23-Aug-18				191.7		182.7												
07-Nov-18	64.9	214.2			201.4		99.6	-31.6	184.5		28.4							
08-Nov-18			28.1	46.7		36.8												
11-Feb-19							114.7		77.6		85.1							
13-Feb-19	107.1	164.4	146.6		183.4			-35.4										
14-Feb-19				172.2		140.9												
30-Apr-19						158			112.2									
01-May-19	90.7	142.1	99.8	99.9	151.6		112.4	70			63.1							
12-Aug-19		191.9	155.8		203.4			-43.1	201.9									
13-Aug-19						193.8	169.3											
14-Aug-19	185.9			208.8							116.8							
09-Sep-19										18.3				-32.1	-8.9	-175.4		-98.4
10-Sep-19																	-116.4	
18-Nov-19	153					183.3			161									
19-Nov-19		25.9	90.9	111.6	221.1		91.7	31			27.4							
10-Dec-19										114.4				-33.7	25.8	38.7	239.1	-81.8
11-Dec-19										189.1								
14-Jan-20										139.2				-5.2	27.9	-6.3	109.2	-50.6
23-Jan-20	70					89.2												
27-Jan-20			45.8				79.4											
28-Jan-20									88.8									
11-Feb-20	186.2		172.2	172.4							144.3							
12-Feb-20		180.1			196.1	120.7	157.9	80.2	129.5			179.8						
11-May-20	190	209.6	212.4	227.1	237.6			224.9										
12-May-20							244.4		197.9		203.7							
14-May-20						210						173.3						
05-Aug-20	111.3		102.8			149.1	104.8		112.5		111.9							

**ORP (mV) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		111.8		185.7	104			-22.9				86.6						
09-Nov-20	132.4		155.6			226.7	145.4		201.8		30.8							
10-Nov-20		293.3		299.9	200.1			-37.4				277						
15-Dec-20													211.8	-49	172.1		192.1	-96.6
16-Dec-20										132.4						126.2		
08-Feb-21	154.6					129.5	169.4			129.7	83.7	212					155.2	
09-Feb-21		35.1			85.1			-60.3	80.4									-73.2
10-Feb-21			160.5															
11-Feb-21				150.7									151.9	36.8	137.3			
12-Feb-21																100.8		
05-May-21		206.3			207.4			19.5		74.1		251.7						
06-May-21	127		150.3			172.2	168.5		197.6		45.8						200.7	
11-May-21				196									264.2	-7.5	211.4	202.9		-109.1
24-Aug-21					95.3			11.6		52.4				-54.4	69.8	-10.2		-76.1
25-Aug-21				106.1					27.9				105.8				101.3	
26-Aug-21	98.4		88				78.9				58.8							
27-Aug-21		124.6					-192.6					115.2						
10-Nov-21									113.8								117.2	
11-Nov-21	92.4	116.9	195.7	159.8	118.8	115.4	134	-27.9		95.5	184.3	72.5	131.3	-8	164.9	152.8		-77.8
15-Feb-22						216.1			222.1			198.1						
16-Feb-22	190.2	133.4	177.1	157.5	158.5			74.4		56.2	74.3		147.3		165.5	109.3	109.6	-28.9
17-Feb-22								137.2										
17-Mar-22														44				
10-May-22		140.9			148				141.8	48.9		188.7						
11-May-22														-16	57.6	66.9		
12-May-22	89.6					114.3			70				163.9					
17-May-22			159.1	153.2			266.2				156.6						95.1	12.8
04-Aug-22		186.1			199.3			197.3	157.4	168.3		203.1			150.8	148.5		
08-Aug-22						202.1	176.9				161.5		189.9					
09-Aug-22	207.1		212.3	224.7														-130.4
10-Aug-22														133.4			163.3	
22-Nov-22	97.9	105.2			115.3	127.1		112.6	73.9	71.5		122.8		-26.9	83.6	153	158.7	
29-Nov-22			144.4	126.2			143.5				71		105.8					-67.3

**Statistics**

Mean	119.708	144.8042	123.428	157.85	154.3292	135.836	134.128	34.00417	131.06	87.22353	75.88333	173.4	157.58	-4.8125	83.275	51.4	86.3625	-90.3938
Standard Deviation	50.83738	63.48933	55.00394	56.99419	53.67438	83.13692	55.71795	76.36102	55.88464	74.81327	61.01154	63.08991	52.13723	50.45593	78.60888	100.5891	106.7057	45.52477
Median	107.1	144.25	138.8	155.4	155.05	149.1	137.2	16.65	129.5	74.1	67.05	184.25	149.6	-7.75	76.7	54.8	109.4	-89.2
10th Percentile	66.94	55	42.38	99.34	89.98	76.18	84.32	-41.39	71.56	21.78	14.86	89.46	105.61	-51.7	-17.65	-55.05	-66.75	-143.7
90th Percentile	189.64	209.33	188.26	219.93	206.2	206.84	173.9	133.04	200.24	176.62	160.03	247.73	217.04	40.4	168.8	152.9	196.4	-39.75

Note: one-half detection limit utilized in statistical calculations for non-detect results

pH (std. units) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		7.38			7.47	6.7		6.6	7.25									
21-Feb-17	7.41		6.89	6.53			7.21				7.51							
04-Apr-17										7.32					7.81	7.92	6.67	7.75
05-Apr-17													7.2	9.21				
24-May-17	6.87	7.31	6.42	5.99	7.3		6.85	6.48			7.24							
25-May-17							6.53		7.77									
01-Aug-17										7.22					7.85	7.96	7.03	7.64
02-Aug-17	7.08	7.33	6.72		7.2	6.42	7.08	6.62	7.62		7.41							
03-Aug-17				6.13														
08-Aug-17														8.1				
14-Nov-17										7.27				7.22	7.52	7.68	7.33	7.79
15-Nov-17							6.87				7.17							
16-Nov-17	6.8	7.35	6.57	6.03	6.98	6.53		6.64	8.44									
12-Feb-18	7.08	7.48	6.65		7.4	6.65	7.04	6.77	7.62		7.19							
13-Feb-18				6.26														
14-Feb-18										7.44					7.56	7.96	7.54	7.68
21-Feb-18														7.59				
08-May-18	7.16	7.61	6.81		6.9	6.43	7.2	6.48	7.8		7.44							
09-May-18				6.14														
22-Aug-18	7.05	6.88	6.62		7		7.02	6.45	7.43		7.38							
23-Aug-18				6.1		6.41												
07-Nov-18	7.05	7.08			7.01		6.93	6.63	7.41		7.41							
08-Nov-18			6.74	6.3		6.62												
11-Feb-19							7.26		7.9		7.41							
13-Feb-19	7.24	7.25	6.73		7.03			6.74										
14-Feb-19				6.34		6.63												
30-Apr-19						6.57			7.82									
01-May-19	7.07	7.14	6.67	6.4	5.98		7	6.8			7.39							
12-Aug-19		7.38	6.34		6.85			6.7	7.36									
13-Aug-19						6.36	6.96											
14-Aug-19	6.86			5.97							7.12							
09-Sep-19										7.24				7.61	7.61	7.68		7.46
10-Sep-19																	7.28	
18-Nov-19	6.67					6.56			7.45									
19-Nov-19		7.09	6.81	6.34	6.58		7.03	6.37			7.55							
10-Dec-19										7.3				7.8	7.66	7.94	7.09	7.6
11-Dec-19										7								
14-Jan-20										7.37				7.49	7.72	7.92	7.5	7.71
23-Jan-20	7.29					6.82												
27-Jan-20			6.83				7.2											
28-Jan-20									8.16									
11-Feb-20	7.37		6.89	6.45							7.5							
12-Feb-20		7.39			6.92	6.83	7.09	6.91	8			5.66						
11-May-20	7.29	7.49	6.9	6.34	6.88			6.95										
12-May-20							7.21		8.17		7.48							
14-May-20						6.72						5.81						
05-Aug-20	6.22		6.07			6.54	6.23	6.07	7.76		6.53							

**pH (std. units) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		7.31		6.13	6.75			6.65				5.85						
09-Nov-20	7.01		6.76			6.64	7.13		7.76		7.42							
10-Nov-20		7.31		6.21	6.96			6.96				5.62						
15-Dec-20													6.62	7.77	7.7		7.78	7.72
16-Dec-20									7.47							7.69		
08-Feb-21	7.22					6.67	7.19		8.44	7.49	5.61						7.85	
09-Feb-21		7.2			6.92			6.85	8.04									7.57
10-Feb-21			6.82															
11-Feb-21				6.4									6.7	7.58	7.73			
12-Feb-21																7.64		
05-May-21		7.01			6.88			7.13		11.06		5.49						
06-May-21	7.07		6.72			6.5	7.06		7.99		7.34						8.38	
11-May-21				6.3									5.64	7.64	7.6	7.66		7.58
24-Aug-21					6.87			6.89		8.56				7.69	7.63	7.64		7.41
25-Aug-21				6.24					7.69				5.94				7.44	
26-Aug-21	6.96		6.65				6.95				7.19							
27-Aug-21		6.99				6.46						5.9						
10-Nov-21									8.03								7.54	
11-Nov-21	7.08	7.41	6.54	6.28	6.92	6.72	6.75	7.02		8.38	7.24	6.97	6.94	7.52	7.59	7.66		7.59
15-Feb-22						6.69			8.54			6.05						
16-Feb-22	7.1	7.36	6.79	6.38	6.79			7		9.59	7.43		6.81		7.73	7.86	7.63	7.74
17-Feb-22							6.97											
17-Mar-22													7.83					
10-May-22		7.35			6.73			6.92		10.32		5.75						
11-May-22														7.71	7.66	7.72		
12-May-22	7.05					6.56			8.06				5.79					
17-May-22			6.78	6.24			6.99				7.4						7.42	7.54
04-Aug-22		7.32			6.7			7.07	7.81	8.43		6.29			7.62	7.71		
08-Aug-22						6.5	6.97				7.34		6.78					
09-Aug-22	6.97		6.64	6.11														7.57
10-Aug-22														7.81			7.39	
22-Nov-22	7.06	7.36			6.93	6.43		7.07	7.78	8.17		6.78		7.77	7.74	7.73	7.47	
29-Nov-22			6.81	6.26			7.12				7.42		6.72					7.44

**Statistics**

Mean	7.0412	7.2825	6.6868	6.244583	6.914583	6.5796	7.0124	6.779167	7.8264	8.151765	7.333333	5.981667	6.514	7.77125	7.670625	7.773125	7.45875	7.611875
Standard Deviation	0.242286	0.173362	0.189313	0.14584	0.289482	0.127328	0.206766	0.218093	0.320155	1.183497	0.207609	0.470509	0.528755	0.428406	0.089924	0.127107	0.378275	0.114788
Median	7.07	7.325	6.73	6.26	6.92	6.56	7.03	6.785	7.8	7.47	7.405	5.83	6.71	7.7	7.66	7.715	7.455	7.595
10th Percentile	6.824	7.031	6.468	6.051	6.709	6.424	6.858	6.48	7.418	7.232	7.176	5.611	5.775	7.505	7.575	7.65	7.06	7.45
90th Percentile	7.29	7.459	6.866	6.4	7.27	6.72	7.206	7.055	8.166	9.882	7.497	6.731	6.966	7.965	7.775	7.95	7.815	7.745

Note: one-half detection limit utilized in statistical calculations for non-detect results



**Potassium (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						1.28 J			4.84									
21-Feb-17	4.68	2.31	1.18 J	4.5	3.51		4.74	8.96			2.08							
04-Apr-17										2.64					2.52	3.53	18.3	6.64
05-Apr-17													1.79 J	2.65				
24-May-17	5.7	2.6	1.1 J	3.2			5.4				2.2							
25-May-17					1.2 J	1.2 J		7.9	5.4									
01-Aug-17										3.7					2.1	2	36.3	18.8
02-Aug-17	6.1	2.4	1.3 J			0.9 J	5.2		4.2		2.1							
03-Aug-17				2.4	1.5 J			8.2										
08-Aug-17														1.95 J				
14-Nov-17										3				1.9 J	2.2	1.9 J	41.1	14
15-Nov-17							4.8				2.2							
16-Nov-17	4.4	2.1	1.3 J	2.3	1.2 J	0.9 J		8.2	18.7									
12-Feb-18	4		1.3 J			1.1 J	4.7		5.3		2.1							
13-Feb-18		2.2		2 J	1.2 J			8.1										
14-Feb-18										2.7					1.8 J	1.8 J	48.4	8.8
21-Feb-18														1.7 J				
08-May-18	4.08		1.26 J			1.17 J	5.84		4.41		2.12							
09-May-18		2.06		2.33	1.36 J			7.69										
22-Aug-18	3.6		1.1 J				4.3		4.3		2 J							
23-Aug-18		1.9 J		3.3	1.3 J	0.8 J		7.2										
07-Nov-18	3.8						3.6		2.8		2.1							
08-Nov-18		2	1.2 J	3.6	1.9 J	0.9 J		7.7										
11-Feb-19							4.6		4.7		2.1							
13-Feb-19	3.5	2.1	1 J		1.4 J			7.2										
14-Feb-19				3		0.9 J												
30-Apr-19						0.7 J			3.9									
01-May-19	3.3	1.9 J	1 J	2.3	1.4 J		4.3	6.8			2 J							
12-Aug-19		1.74 J	0.959 J		1.21 J			6.32	3.96									
13-Aug-19						0.699 J	3.86											
14-Aug-19	3.21			1.84 J							1.97 J							
09-Sep-19										2.38				1.74 J	1.66 J	1.74 J		4.8
10-Sep-19																		47.3
18-Nov-19	3.1					0.8 J			2.8									
19-Nov-19		2 J	1.3 J	2.3	1.2 J		3.3	6.8			2 J							
10-Dec-19														1.77 J	1.65 J	2.05	46	5.36
11-Dec-19										2.33								
14-Jan-20										2.97				1.74 J	1.57 J	1.55 J	44.6	3.68
23-Jan-20	3.11					0.851 J												
27-Jan-20			1.13 J				4.15											
28-Jan-20									6.41									
11-Feb-20	2.5		1.1 J	2.7							2							
12-Feb-20		7.3			2.2	0.9 J	3.8	5.8	3.6			2.38						
11-May-20	3.1		1.16 J	2.18														
12-May-20		1.92 J			1.29 J		3.62	5.67	4.05		2.09							
14-May-20						0.608 J						1.32 J						

**Potassium (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	3		1.1 J			0.6 J	3.9		3.3		1.8 J							
06-Aug-20		1.8 J		1.7 J	1.2 J			5.5				5.2						
09-Nov-20	3.2		1.3 J			0.8 J	4.1		2.4		1.9 J							
10-Nov-20		1.9 J		1.7 J	1.1 J			6.6				4						
15-Dec-20													2.1	1.7 J	1.6 J		49.5	4.3
16-Dec-20										4.6						1.6 J		
08-Feb-21	2.7					0.8 J	4.8				2						73.8	
09-Feb-21		2 J			1.2 J			5.7	4.6	5.6		2.5						3.3
10-Feb-21			1.2 J															
11-Feb-21				2.2									2.5	1.8 J	1.5 J			
12-Feb-21																1.6 J		
06-May-21	2.69	1.95 J	1.05 J		1.09 J	0.604 J	4.09	5.85	3.51	3.34	1.82 J	2.14					113	
11-May-21				2.61									1.28 J	1.56 J	1.33 J	1.37 J		2.69
24-Aug-21					1.2 J			6.4		4.6				1.7 J	1.5 J	1.5 J		2.3
25-Aug-21				2.9					2.5				1.5 J					43.9
26-Aug-21	3.3		1.2 J				3.6				2 J							
27-Aug-21		1.8 J				0.7 J						1.5 J						
10-Nov-21									4.7								45.9	
11-Nov-21	2.8	2.4	1.4 J	3.2	1.2 J	0.8 J	3	6.1		4	2.1	1.4 J	2.4	1.6 J	1.6 J	1.5 J		2.3
15-Feb-22						0.8 J			6.4			3						
16-Feb-22	2.7	1.8 J	1.1 J	2.6	1.2 J			6.3		3.2	1.9 J		2 J		1.6 J	1.5 J	43	2.6
17-Feb-22							3.3											
17-Mar-22														1.8 J				
10-May-22					1.3 J			5.24										
11-May-22		1.71 J								3.2		2.31		1.67 J	1.5 J	1.43 J		
12-May-22	2.79					0.608 J			3.66				1.18 J					
17-May-22			1.35 J	2.06			3.9				2.1						37.2	2.5
04-Aug-22		1.6 J			1.1 J			5.5	3	3		2.7			1.6 J	1.4 J		
08-Aug-22						0.6 J	3.6				1.8 J		2.4					
09-Aug-22	2.9		1 J	1.8 J														2.4
10-Aug-22														1.7 J				37.7
22-Nov-22	2.3	1.9 J			1.2 J	1 J		5.1	2.1	3.2		2.2		1.8 J	1.6 J	1.7 J	35.2	
29-Nov-22			2	1.8 J			4.6				2.2		1.7 J					2.2

**Statistics**

Mean	3.4624	2.224583	1.20356	2.521667	1.4025	0.8408	4.204	6.70125	4.6216	3.40375	2.028333	2.554167	1.885	1.79875	1.708125	1.760625	47.575	5.416875
Standard Deviation	0.938968	1.107284	0.205473	0.684656	0.514902	0.192638	0.697836	1.092207	3.144519	0.896332	0.118493	1.114666	0.474066	0.247329	0.307598	0.515655	20.66493	4.744169
Median	3.2	1.975	1.18	2.315	1.2	0.8	4.1	6.5	4.05	3.2	2.04	2.345	1.895	1.74	1.6	1.6	44.25	3.49
10th Percentile	2.694	1.758	1	1.8	1.13	0.6056	3.42	5.5	2.62	2.51	1.844	1.41	1.27	1.635	1.5	1.415	35.75	2.3
90th Percentile	4.568	2.4	1.33	3.27	1.78	1.142	5.04	8.17	6	4.6	2.176	3.9	2.41	1.925	2.15	2.025	61.65	11.4

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Sodium (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						41.2			17.3									
21-Feb-17	16.9	10.3	18.8	21.9	8.22		78	19.8			23.4							
04-Apr-17										22					11.3	10.4	64.2	24.6
05-Apr-17													4.02	11.3				
24-May-17	17.9	9.7	17.7	19.4			89.8				22.8							
25-May-17					8.1	41.1		18.5	17									
01-Aug-17										23.9					11.5	10.3	71.4	28.3
02-Aug-17	18.8	10	18.4			39.4	92		16.6		23.9							
03-Aug-17				17.6	8.6			19.2										
08-Aug-17														10.8				
14-Nov-17										22.1				11.4	11.5	10.3	71	28
15-Nov-17							82.6				24.4							
16-Nov-17	16.8	10.1	18.3	16.4	7.8	40.6		21	27.3									
12-Feb-18	16.1		15.9			43.7	95		18		23.8							
13-Feb-18		10		14.6	8.7			20.2										
14-Feb-18										21.9					11.8	10.3	72.9	30
21-Feb-18														10.7				
08-May-18	17.2		16.3			43.8	89		18		24.8							
09-May-18		10.2		18.5	9.62			20.8										
22-Aug-18	15.2		17.3				111	17.1			23.1							
23-Aug-18		9.6		22	8.9	38.3		19.4										
07-Nov-18	15.6						125		16.4		23.9							
08-Nov-18		10.6	16.3	23.6	9.8	39.1		21.8										
11-Feb-19							94.3		17.7		22.9							
13-Feb-19	14.9	10.8	15.2		9.4			20.4										
14-Feb-19				20.9		35.3												
30-Apr-19						31.6			17.1									
01-May-19	15.3	11.5	16.6	17.2	9.9		104	20.2			23							
12-Aug-19		10.9	14.3		9			20	16.8									
13-Aug-19						30.8	91.2											
14-Aug-19	14.5			17							22.3							
09-Sep-19										21.4				11.5	12.1	10.5		25.9
10-Sep-19																	72.9	
18-Nov-19	14.5					32.5			15.8									
19-Nov-19		12	22.2	18	9.2		114	19.6			23.2							
10-Dec-19														11.4	11.7	10.4	80.8	27.7
11-Dec-19										20.1								
14-Jan-20										20.3				11.6	11.6	10.1	84.7	25.5
23-Jan-20	14.3					32.8												
27-Jan-20			13.5				105											
28-Jan-20									20.8									
11-Feb-20	13.8		14.9	20.3							23.1							
12-Feb-20		11.9			9.4	30.3	124	15.4	16.2			76.8						
11-May-20	14.3		13.8	18.6														
12-May-20		12			9.45		104	15.7	17.3		22.8							
14-May-20						28						52.1						

**Sodium (mg/L) Operational Groundwater Monitoring Wells**  
**Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	15		13.2			29.8	111		17.1		23.2							
06-Aug-20		12.1		16.3	9.7			16.8				63.9						
09-Nov-20	14.6		13.7			31	90.3		16.5		22.6							
10-Nov-20		12.1		15.6	9.8			17.5				68						
15-Dec-20													4	11.9	10.8		78.2	26.3
16-Dec-20										21.7						10.9		
08-Feb-21	14.1					35.6	88.8				23.1						79	
09-Feb-21		11.5			9.7			16.2	19.5	20		80.9						24.1
10-Feb-21			14.7															
11-Feb-21				19.1									4	11.7	10.2			
12-Feb-21																10.6		
06-May-21	14.4	11	13.6		9.7	32.8	101	16.1	17.6	14.7	22.5	103					92.8	
11-May-21				19									3.13	10.8	9.51	9.66		24.6
24-Aug-21					9.7			16.5		21.4				11	10.8	10.1		23.7
25-Aug-21				18.7					17.4				3.7				77.1	
26-Aug-21	15.2		15.5				105				23.2							
27-Aug-21		10.7				32.1						58.3						
10-Nov-21								20.5									82.8	
11-Nov-21	14.5	12.2	16.6	20.3	10.3	33.8	123	33.3		20.4	23.6	51.8	3.7	11.3	11.7	10.4		23.6
15-Feb-22						31.6		22.6				152						
16-Feb-22	14.8	10.7	13.8	18.3	10.1			58.6		15.5	22.8		3.7		11.5	10.3	82.3	24.9
17-Feb-22							107											
17-Mar-22														11.2				
10-May-22					12.9			24										
11-May-22		11.8								15.7		146		11.6	11.3	10.4		
12-May-22	15.4					30.2			19.4				3.31					
17-May-22			12.1	17.3			114				23.5						75.1	24.7
04-Aug-22		10.8			9.9			37.1	17.5	18.1		123			11.3	10.1		
08-Aug-22						43.8	105				22.4		3.8					
09-Aug-22	14.3		14.3	15.9														23.1
10-Aug-22														10.8			74.9	
22-Nov-22	13.4	10.7			9.7	67.8		28.4	17.4	17.7		92.1		10.7	10.7	9.8	70	
29-Nov-22			15.3	14.9			91.6				23.6		4.1					24.4

**Statistics**

Mean	15.272	10.96667	15.692	18.39167	9.482917	36.68	101.424	22.35417	18.196	19.80625	23.24583	88.99167	3.746	11.23125	11.20688	10.285	76.88125	25.5875
Standard Deviation	1.325871	0.831273	2.241079	2.30612	0.976424	8.149847	12.86326	9.370211	2.474113	2.70098	0.614307	35.10116	0.317672	0.387675	0.661077	0.295071	6.890401	1.970744
Median	14.9	10.8	15.3	18.4	9.66	33.8	104	19.9	17.4	20.35	23.15	78.85	3.75	11.3	11.4	10.3	76.1	24.8
10th Percentile	14.18	10	13.54	15.69	8.334	30.24	88.88	16.13	16.44	15.6	22.53	52.72	3.292	10.75	10.45	9.95	70.5	23.65
90th Percentile	17.08	12.07	18.36	21.6	10.04	43.76	119.4	31.83	20.68	22.05	23.9	143.7	4.028	11.65	11.75	10.55	83.75	28.15

Note: one-half detection limit utilized in statistical calculations for non-detect results.

Sulfate (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					24.3	142		36.4	23.6									
21-Feb-17	24.4	20.7	56.8	74.4			50.5				46.5							
04-Apr-17										68.6					27	12.7	530	94.7
05-Apr-17													13.5	44.9				
24-May-17	25.5	20.2	55.7	71.6	23.2		57.2	33.8			51							
25-May-17						142			22.1									
01-Aug-17										63.1					25.6	11.2	102	99.9
02-Aug-17	27.5	18.9	61.4		24	127	57.9	37.4	20.9		54.3							
03-Aug-17				62.3														
08-Aug-17													45.1					
14-Nov-17										59.8				39.3	23.8	10.9	235	98.6
15-Nov-17							52.9				48.3							
16-Nov-17	25.5		65.6	48.4	28.2	118		39.4	17.6									
12-Feb-18	23.4	18.4	64.1		23.3	126	59.5	35	19.6		48.4							
13-Feb-18				44.5														
14-Feb-18										49.4					24.8	11.8	217	117
21-Feb-18													36.7					
08-May-18	25.4	17.5	65		24.8	120	57.9	35.6	20.2		47.3							
09-May-18				54.7 J														
22-Aug-18	27.4		67.2				57.8		20		51.8							
23-Aug-18		19.5		78.8	24.9	137		38.2										
07-Nov-18	24.5	17.8			29.9		49.3	33.6	17.8		48.8							
08-Nov-18			62.9	80.6		142												
11-Feb-19							56.2		20.5		53.9							
13-Feb-19	27.5	20.3	69.1		26.2			30.2										
14-Feb-19				96.1		165												
30-Apr-19						126			20.6									
01-May-19	27.3	20.3	67.5	97.8	26		53.1	27.6			49.5							
12-Aug-19		20	62.4		25.9			26.8	18.2									
13-Aug-19						148	51.1											
14-Aug-19	28.1			81.6							50.9							
09-Sep-19										49.6				37.1	24.3	11.6		93.3
10-Sep-19																	228	
18-Nov-19	27.5					176			20.5									
19-Nov-19		21.8	67.9	78.3	25.7		50.7	29.7			52.7							
10-Dec-19										46.1				38.6	26.1	12.8	217	110
14-Jan-20										20.5				38.7	26.2	12.4	236	112
23-Jan-20	26.7					171												
27-Jan-20			74.7				54.2											
28-Jan-20									19.1									
11-Feb-20	28.9		75.4	86.3							51.4							
12-Feb-20		22			24.9	172	59.5	26.3	20.5			14.4						
11-May-20	31.8	20.9	69	78.6	31.2			26.8										
12-May-20							55.5		24.9		52.4							
14-May-20						164						18.5						
05-Aug-20	30.1		66.8			165	53.7		21.3		48.8							

**Sulfate (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		20.6		62.1	26.4			25.2				78.7						
09-Nov-20	31		72			235	59.8		18.5		52.1							
10-Nov-20		21		59.1	26.2			24.8				113						
15-Dec-20													14	38.7	22.2		206	98.6
16-Dec-20										32.8						15.1		
08-Feb-21	28.2					165	55.6			18.8	48.7	55.5					204	
09-Feb-21		19.5			25.4			24.8	19									93.2
10-Feb-21			86.3															
11-Feb-21				71.6									16.6	39.2	21.6			
12-Feb-21																15.5		
05-May-21		18.9			28			28.4		17.8		49.9						
06-May-21	29.7		81.4			137	61		20.8		47.6						185	
11-May-21				74.6									16	38.8	21.7	9.8		92.4
24-Aug-21					26.4				28.5		19.1			38.8	24.4	15.4		90.7
25-Aug-21				69.7					20.7				9.7					197
26-Aug-21	30.4		74.8					62.7			51.9							
27-Aug-21		18.4				145						18.4						
10-Nov-21									18.9								179	
11-Nov-21	27.1	17.9	64.9	70.9	25.7	148	55.5	28.4		16.9	49.6	17.6	11.9	37.3	25.4	14.7		87.5
15-Feb-22						146			18.6			25.7						
16-Feb-22	28.7	18	66.4	75.6	25.3			39.8		16.6	50.1		38.6		25.3	15.2	118	86.6
17-Feb-22							56.5											
17-Mar-22														39.8				
10-May-22		17.8			31.1				26.9		14.2		26.9					
11-May-22														41.5	23.8	15.3		
12-May-22	28.6					136			20.8				13.6					
17-May-22			63.2	69.2			60.8				50.1						183	85.2
04-Aug-22		18.4			24.9			32.9	21.9	27.5		38.6			26.9	15.7		
08-Aug-22						144	58.8				49.9		58					
09-Aug-22	29.3		63.5	69														94.1
10-Aug-22														38.9			185	
22-Nov-22	28.9	18.1			25.3	101		39.8	19.9	23.3		43.7		37.3	25.2	16	163	
29-Nov-22			65.8	56.5			58.1				48.4		20.9					98

**Statistics**

Mean	27.736	19.43043	67.592	71.34583	26.13333	147.92	56.232	31.5125	20.26	34.00625	50.18333	41.74167	21.28	39.41875	24.64375	13.50625	211.5625	96.9875
Standard Deviation	2.12816	1.368621	6.906092	13.18213	2.14368	26.1453	3.59058	5.170259	1.707337	18.93792	2.077764	29.55154	15.24925	2.467717	1.691929	2.056038	92.94512	9.124537
Median	27.5	19.5	66.4	71.6	25.7	144	56.5	29.95	20.5	25.4	50	32.75	15	38.8	25	13.75	200.5	94.4
10th Percentile	24.86	17.82	61.8	55.24	24.09	122.4	50.86	25.53	18.32	16.75	47.81	17.68	11.68	37.2	21.95	11.05	140.5	87.05
90th Percentile	30.28	20.98	75.16	84.89	29.39	171.6	60.4	39.04	22.02	61.45	52.61	76.38	40.54	43.2	26.55	15.6	235.5	111

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Total Dissolved Solids (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					230	458		578	220									
21-Feb-17	395	278	499	526			652				330							
04-Apr-17										317					218	162	930	353
05-Apr-17													153	181				
24-May-17	402	274	465	426	264		680	612			306							
25-May-17						473			218									
01-Aug-17										302					197	147	758	376
02-Aug-17	410	283	477		256	454	712	613	225		321							
03-Aug-17				393														
08-Aug-17														234				
14-Nov-17										309				219	204	169	794	394
15-Nov-17							638				312							
16-Nov-17	379		467	364	249	463		581	168									
17-Nov-17		271																
12-Feb-18	398	278	454		265	508	680	582	220		310							
13-Feb-18				368														
14-Feb-18										314					206	167	772	445
21-Feb-18														211				
08-May-18	408	273	437		320	507	666	597	226		315							
09-May-18				406														
22-Aug-18	401		452				690		217		310							
23-Aug-18		282		552	302	450		580										
07-Nov-18	398	291			354		684	591	219		315							
08-Nov-18			440	643		452												
11-Feb-19							672		216		323							
13-Feb-19	391	293	440		342			592										
14-Feb-19				569		450												
30-Apr-19						396			229									
01-May-19	419	290	422	523	354		665	587			322							
12-Aug-19		321	464		398			616	230									
13-Aug-19						407	681											
14-Aug-19	413			486							314							
09-Sep-19										304				214	218	172		368
10-Sep-19																	748	
18-Nov-19	411					426			231									
19-Nov-19		303	453	454	375		662	579			318							
10-Dec-19										287				230	213	160	779	398
14-Jan-20										142				237	224	175	815	425
23-Jan-20	414					427												
27-Jan-20			461				676											
28-Jan-20									216									
11-Feb-20	382		456	587							325							
12-Feb-20		302			374	404	657	460	230			381						
11-May-20	404	315	447	504	402			467										
12-May-20							662		253		318							
14-May-20						387						228						
05-Aug-20	457		460			390	683		249		335							

**Total Dissolved Solids (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		293		412	383			498				331						
09-Nov-20	419		447			385	643		205		297							
10-Nov-20		309		369	386			506				397						
15-Dec-20													89	217	189		725	350
16-Dec-20										272						175		
08-Feb-21	384					452	666			114	306	409					752	
09-Feb-21		303			362			489	205									345
10-Feb-21			492															
11-Feb-21				476									112	223	173			
12-Feb-21																180		
05-May-21		310			395			440		125		492						
06-May-21	192		473			373	668		221		300						689	
11-May-21				619									167	226	176	75		381
24-Aug-21					391			504		163				217	202	175		374
25-Aug-21				613					227				80				732	
26-Aug-21	404		476				663				312							
27-Aug-21		298				372						232						
10-Nov-21									195								709	
11-Nov-21	391	300	466	526	378	373	655	498		175	314	194	142	214	209	165		361
15-Feb-22						373			172			807						
16-Feb-22	411	306	441	557	391			520		122	309		138		211	168	706	377
17-Feb-22							655											
17-Mar-22														220				
10-May-22		292			412			465		93		627						
11-May-22														234	204	183		
12-May-22	442					350			226				85					
17-May-22			459	509			657				314						724	391
04-Aug-22		281			400			470	191	184		556			204	153		
08-Aug-22						380	639				311		195					
09-Aug-22	395		459	448														343
10-Aug-22														214			716	
22-Nov-22	392	303			426	561		484	222	212		438		228	208	178	677	
29-Nov-22			474	407			640				309		107					408

**Statistics**

Mean	396.48	293.7083	459.24	489.0417	350.375	426.84	665.84	537.875	217.24	214.6875	314.4167	424.3333	126.8	219.9375	203.5	162.75	751.625	380.5625
Standard Deviation	46.00826	13.98595	17.3284	84.84896	58.37794	51.98612	17.58475	58.72731	19.64536	83.82499	8.732332	178.3186	38.42395	13.21347	14.1091	25.32061	60.75291	28.82122
Median	402	293	459	495	374.5	426	665	549	220	198	314	403	125	219.5	205	168.5	740	376.5
10th Percentile	382.8	275.2	440	376.2	258.4	373	641.2	465.6	192.6	118	306	228.4	84.5	212.5	182.5	150	697.5	347.5
90th Percentile	419	309.7	476.6	605.2	401.4	493.4	683.6	607.5	230.6	311.5	324.4	619.9	169.8	234	218	179	804.5	416.5

Note: one-half detection limit utilized in statistical calculations for non-detect results



**Temperature (deg. C) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		9.9			11.4	10.5		11.9	6.1									
21-Feb-17	4.34		7.46	10.65			9.2				10.08							
04-Apr-17										13.1					10.2	10.4	11.6	11.3
05-Apr-17													7.2	8.2				
24-May-17	21.7	14	20	19.4	14		14.5	13.1			18.3							
25-May-17							11.5		10.8									
01-Aug-17										17.2					15.1	14.6	20.1	20
02-Aug-17	20.8	15.5	20.9		14.6	22	16.2	14.3	18.1		19.1							
03-Aug-17				19.8														
08-Aug-17														11.9				
14-Nov-17										8.5				7.7	7.8	8.4	7.4	8
15-Nov-17							10.6				10.3							
16-Nov-17	11.8	11.9	10.2	8.3	12.5	9.2		12.4	7.3									
12-Feb-18	2.5	9.3	6.8		11	5.5	0.1	10.6	7.6		6.9							
13-Feb-18				4.6														
14-Feb-18										9.4					6.1	6.6	7.8	8
21-Feb-18														8.3				
08-May-18	18	12.2	18.8		13.1	14.4	14.2	12.3	14.3		17.4							
09-May-18				17.5														
22-Aug-18	23.4	13.4	19.1		13.9		17.6	12.5	15.4		19.9							
23-Aug-18				16.7			17.4											
07-Nov-18	13	13.1			13.1		9.6	13.2	12		14.2							
08-Nov-18			9.3	9.4		9.4												
11-Feb-19							2.8		7.4		5							
13-Feb-19	7.7	11	7.7		11.6			10										
14-Feb-19				6.9		4												
30-Apr-19						7.8			9.1									
01-May-19	12	10.9	16.3	14.6	12.1		9	10.5			10.6							
12-Aug-19		12.7	21.4		13.7			13.6	15.8									
13-Aug-19						17.6	20.7											
14-Aug-19	17.3			17.3							20.9							
09-Sep-19										13.4				10.2	11.2	13.7		14.1
10-Sep-19																	14	
18-Nov-19	8.7					8.2			7.6									
19-Nov-19		11.3	6.9	8.1	12.5		6.2	11.8			8.1							
10-Dec-19										5.9				7.4	8.1	9	9.5	8.8
11-Dec-19										9.4								
14-Jan-20										3.1				6.3	5.8	6.8	6.8	7.7
23-Jan-20	9.8					7.2												
27-Jan-20			8.2				7.8											
28-Jan-20									9.1									
11-Feb-20	4.3		6.5	8.1							6.6							
12-Feb-20		11.5			12.5	5	5.8	10.8	5.5			3.1						
11-May-20	10	10.3	8.2	11.8	11.7			9.9										
12-May-20							9.5		8.6		11.6							
14-May-20						7.9						11.9						
05-Aug-20	16.8		19.4			16.9	15.6		16.8		16.9							

**Temperature (deg. C) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		12		17.8	13.7			12.3				14.8						
09-Nov-20	18.5		18.3			15.4	13.4		19.8		19.1							
10-Nov-20		13.3		16.1	13.5			14.7				13.7						
15-Dec-20													9.1	7.4	7.7		7.8	9.8
16-Dec-20										10.6						9.2		
08-Feb-21	5.9					6.3	7.1			5.2	7.7	5.2					6	
09-Feb-21		10.5			10.9			11	9.3									8.8
10-Feb-21			6.9															
11-Feb-21				10.8									9.5	8.1	4.3			
12-Feb-21																5.6		
05-May-21		11.3			12.2			10.6		11.5		12.8						
06-May-21	12		12.4			9.2	9.3		11.2		11.4						14.6	
11-May-21				9.7									8.8	7.3	7.8	8.7		9.8
24-Aug-21					14.9			14.5		14				16.6	17.8	17.8		15.1
25-Aug-21				22.2					23.9				17.2				18.7	
26-Aug-21	19		17.2				20.4				19.3							
27-Aug-21		13.3				18.1						21						
10-Nov-21								12.9									12.2	
11-Nov-21	12.6	12.6	12.6	12.8	13.1	10.9	11.7	13.3		11.7	11.4	13.3	8.7	10.6	12.1	9.5		11.5
15-Feb-22						7.6			8.4			5.1						
16-Feb-22	7	10.8	7	5.9	11.1			9.8		7.9	7.5		5.8		5.4	4.4	5.5	8.2
17-Feb-22							9.2											
17-Mar-22													7.8					
10-May-22		11.8			13.1			11.3		12.7		9.8						
11-May-22													10.9	16.4	20.7			
12-May-22	19.7					15			18.9				24.3					
17-May-22			17.1	16.3			11.1				14.3						15.3	13
04-Aug-22		14.2			14.5			13.7	20.7	13.2		17.1			23.2	22.3		
08-Aug-22						21.9	25.2				24.8		20.9					
09-Aug-22	18.9		21.4	21.9														19.3
10-Aug-22														13.8			19.2	
22-Nov-22	9.8	12.4			12.3	7.4		12.8	9.2	11.3		11.6		7.5	10.8	10.1	9.8	
29-Nov-22			8.6	8.8			8.4				7		3.9					8.8

**Statistics**

Mean	13.0216	12.05	13.1464	13.14375	12.79167	11.452	11.408	12.12083	12.232	10.47647	13.26583	11.61667	11.54	9.375	10.6125	11.1125	11.64375	11.3875
Standard Deviation	6.040019	1.480305	5.681167	5.236604	1.168022	5.263484	5.724648	1.502166	5.14107	3.576928	5.58196	5.190697	6.817494	2.795115	5.213172	5.294636	4.864699	3.935967
Median	12	11.95	12.4	12.3	12.8	9.4	9.6	12.3	10.8	11.3	11.5	12.35	8.95	8.15	9.15	9.35	10.7	9.8
10th Percentile	4.964	10.36	6.9	7.26	11.19	5.82	5.96	10.15	7.34	5.62	6.93	5.11	5.61	7.35	5.6	6.1	6.4	8
90th Percentile	20.36	13.82	20.54	19.68	14.35	17.9	19.28	14.12	19.44	13.64	19.72	16.87	21.24	12.85	17.1	19.25	18.95	17.2

Note: one-half detection limit utilized in statistical calculations for non-detect results

**Total Kjeldahl Nitrogen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17					0.34 B	0.12 J		1.05	0.13 J									
21-Feb-17	0.21	0.19 J	0.32	0.43			0.25				0.12 J							
04-Apr-17										0.29 B					0.17 J	0.2 U	1.28	0.2 U
05-Apr-17													0.2 U	0.26 B				
24-May-17	0.2 B	0.21 B	0.24 B	0.33 B	0.93 B		0.39 B	0.76 B			0.26 B							
25-May-17							0.27 B		0.28 B									
01-Aug-17										0.17 BJ					0.15 BJ	0.17 BJ	0.53 B	0.25 B
02-Aug-17	4.69	0.16 J	0.23		0.83	0.12 J	0.3	0.82	0.2		0.16 J							
03-Aug-17				0.37														
08-Aug-17														0.15 J				
14-Nov-17										0.2 U				0.2 U	0.2 U	0.2 U	0.47	0.2 U
15-Nov-17							0.2 U				0.2 U							
16-Nov-17	0.2 U	0.1 J	0.09 J	0.2 U	0.44	0.15 J		0.94	0.1 J									
12-Feb-18	0.1 J	0.2 U	0.13 J		0.11 J	0.2 U	0.17 J	0.79	0.2 U		0.2 U							
13-Feb-18				0.09 J														
14-Feb-18										0.15 J					0.11 J	0.2 U	0.21	0.17 J
21-Feb-18														0.2 U				
08-May-18	0.63	0.34	0.23		0.19 J	0.49	0.24	0.94	0.17 J		0.13 J							
09-May-18				0.35 B														
22-Aug-18	0.1 J	0.36	0.16 J		0.2 U		0.15 J	0.74	0.12 J		0.2 U							
23-Aug-18				0.15 J		0.14 J												
07-Nov-18	0.16 BJ	0.21 B			0.15 BJ		0.2 BJ	1.06	0.1 BJ		0.12 BJ							
08-Nov-18			0.26 B	0.24 B		0.15 BJ												
11-Feb-19							0.14 J		0.2 U		0.14 J							
13-Feb-19	0.14 J	0.35	0.18 J		0.15 J			0.97										
14-Feb-19				0.23		0.2 U												
30-Apr-19						0.2 U			0.23									
01-May-19	0.14 J	0.2 U	0.23 B	0.25 B	0.15 BJ		0.18 J	0.85 B			0.11 J							
12-Aug-19		0.1 J	0.2 U		0.2 U			1.02	0.2 U									
13-Aug-19						0.22	0.2 U											
14-Aug-19	0.1 J			0.18 J							0.2 U							
09-Sep-19										0.2 U				0.2 UJ	0.2 U	0.2 U		0.2 U
10-Sep-19																	0.18 J	
18-Nov-19	0.11 J					0.2 U			0.2 U									
19-Nov-19		0.2 U	0.2 J	0.15 J	0.2 U		0.2 U	0.96			0.2 U							
10-Dec-19										0.2 U				0.2 UJ	0.2 U	0.2 U	0.2 U	0.2 U
14-Jan-20										0.29				0.2 U	0.2 U	0.2 U	0.15 J	0.14 J
23-Jan-20	0.2 U					0.2 U												
27-Jan-20			0.2 U				0.2 U											
28-Jan-20									0.2 U									
11-Feb-20	0.2 U		0.15 J	0.21							0.2 U							
12-Feb-20		0.2 U			0.69	0.2 U	0.13 J	0.57	0.2 U			0.2 U						
11-May-20	0.2 U	0.22	0.2 U	0.2 U	0.31			0.47										
12-May-20							0.49		0.2 U		0.2 U							
14-May-20						0.2 U						0.2 U						
05-Aug-20	0.2 U		0.2 U			0.2 U	0.2 U		0.2 U		0.2 U							

**Total Kjeldahl Nitrogen (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		0.17 J		0.22	0.2 U			0.59				0.26						
09-Nov-20	0.19 J		0.2 U			0.2 U	0.16 J		0.2 U		0.2 U							
10-Nov-20		0.2 U		0.2 U	0.2 U			0.62				0.46						
15-Dec-20													0.29	0.2 U	0.2 U		0.2 U	0.2 U
16-Dec-20										0.53						0.2 U		
08-Feb-21	0.2					0.24	0.26			0.3	0.21	0.36					0.21	
09-Feb-21		0.28			0.18 J			0.68	0.26									0.27
10-Feb-21			0.2 U															
11-Feb-21				0.2 U									0.2 U	0.2 U	0.2 U			
12-Feb-21																0.2 U		
05-May-21		0.16 J			0.2 U			1.25		0.23		0.16 J						
06-May-21	0.2 U		0.2 U			0.2 U	0.17 J		0.2 U		0.2 U						0.2 U	
11-May-21				0.24									0.31	0.2 U	0.2	0.2 U		0.17 J
24-Aug-21					0.19 J			0.63		0.2 U				0.2 U	0.2 U	0.2 U		0.15 J
25-Aug-21				0.2					0.2 U				0.3				0.15 J	
26-Aug-21	0.18 J		0.29				0.2 U				0.2 U							
27-Aug-21		0.2 U				0.2 U						0.18 J						
10-Nov-21								0.2 U									0.2 U	
11-Nov-21	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.54		0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U		0.2 U
15-Feb-22						0.2 U		0.2 U				0.2 U						
16-Feb-22	0.2 U	0.2 U	0.18 J	0.2	0.2 U			0.71		0.2 U	0.2 U		0.33		0.2 U	0.2 U	0.2 U	0.19 J
17-Feb-22							0.16 J											
17-Mar-22														0.2 U				
10-May-22		0.2 U			0.2 U			0.26		0.2 U		0.16 J						
11-May-22														0.2 U	0.2 U	0.2 U		
12-May-22	0.32					0.2 U		0.2 U					0.34					
17-May-22			0.2 U	0.29			0.2 U				0.2 U						0.2 U	0.2 U
04-Aug-22		0.2 U			0.2 U			0.5	0.2 U	0.2 U		0.15 J			0.2 U	0.2 U		
08-Aug-22						0.2 U	0.22 B				0.2 U		0.2 B					
09-Aug-22	0.19 J		0.18 J	0.18 J														0.2 U
10-Aug-22														0.2 U			0.18 J	
22-Nov-22	0.2 U	0.2 U			0.2 U	0.2 U		0.35	0.2 U	0.2 U		0.26		0.2 U	0.2 U	0.2 U	0.2 U	
29-Nov-22			0.27	0.2 U			0.15 J				0.2 U		0.17 J					0.2 U

**Statistics**

Mean	0.3424	0.164583	0.1696	0.204583	0.24	0.14	0.1824	0.752917	0.1276	0.17875	0.11875	0.199167	0.224	0.113125	0.114375	0.104375	0.25375	0.14
Standard Deviation	0.912644	0.088169	0.072023	0.096413	0.242003	0.087178	0.097779	0.244157	0.054794	0.121703	0.039707	0.115401	0.101017	0.041105	0.030761	0.0175	0.303092	0.056451
Median	0.11	0.1	0.16	0.2	0.13	0.1	0.16	0.75	0.1	0.1	0.1	0.16	0.245	0.1	0.1	0.1	0.15	0.1
10th Percentile	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.479	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
90th Percentile	0.276	0.322	0.266	0.344	0.615	0.232	0.284	1.041	0.218	0.295	0.154	0.35	0.331	0.125	0.16	0.1	0.5	0.22

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Total Organic Compounds (TOC) (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		2.1			1 J	2.9		6.7	2									
21-Feb-17	2.6		4.8	5.1			1.8				0.6 J							
04-Apr-17										0.53 J					0.36 J	0.34 J	16	0.63 J
05-Apr-17													0.67 J	0.46 J				
24-May-17	1.2	0.07 J	2.3	2.5	3.4		1.4	2.8			0.2 J							
25-May-17						0.5 J			0.2 J									
01-Aug-17										0.5 J					0.2 J	0.3 J	5.3	1.2
02-Aug-17	1.2	0.3 J	2.3		3.8	0.6 J	1.6	3.4	0.3 J		0.3 J							
03-Aug-17				2.2														
08-Aug-17														0.4 J				
14-Nov-17										0.4 J				0.09 J	1 U	1 U	4.6	0.5 J
15-Nov-17							1.2				0.2 J							
16-Nov-17	1.1		2.7	2.3	1.7	0.5 J		5.8	0.4 J									
12-Feb-18	1.5	0.4 BJ	2.8		0.6 J	0.6 BJ	1.8	4	0.6 J		0.5 J							
13-Feb-18				2.3														
14-Feb-18										0.4 J					0.3 J	0.5 J	3.1	0.5 J
21-Feb-18														0.3 J				
08-May-18	1.5	1.6	2.1		0.6 J	0.7 J	1.6	4.3	0.4 J		0.4 J							
09-May-18				2.9														
22-Aug-18	1.5 B	1.6 B	2.6		0.8 BJ		1.9 B	4	0.8 BJ		0.6 BJ							
23-Aug-18				3.8		0.8 BJ												
07-Nov-18	1.2	1.5			0.8 J		2.2	4.9	0.4 J		0.5 J							
08-Nov-18			3	4.7		0.7 J												
11-Feb-19							1.4 B		0.6 BJ		0.5 BJ							
13-Feb-19	1.4 B	1.6 B	2.5 B		0.9 BJ			3.8 B										
14-Feb-19				4.2		0.8 BJ												
30-Apr-19						0.5 J			1 U									
01-May-19	1.4	0.8 J	2.4	4.4	1.1		1.6	4.5			1 U							
12-Aug-19		1 U	2		0.6 J			3.5	1 U									
13-Aug-19						0.5 J	1.3											
14-Aug-19	1.3			3.2							1 U							
09-Sep-19										1 U				0.5 J	1 U	1 U		1 U
10-Sep-19																	2.4	
18-Nov-19	1.1					0.6 J			1 U									
19-Nov-19		0.6 J	2	3.5	0.7 J		1.6	4.7			1 U							
10-Dec-19										1 U				1 U	1 U	0.9 J	1.7	1 U
14-Jan-20										1.8				1 U	1 U	1 U	1.9	1 U
23-Jan-20	1.3					0.6 J												
27-Jan-20			2.5				1.4											
28-Jan-20									1 U									
11-Feb-20	1.1		2.6	3.7							1 U							
12-Feb-20		0.7 J			4.5	0.6 J	1.6	3	0.6 J			1						
11-May-20	1.4	0.5 J	2.4	3.3	2.5			2										
12-May-20							1.7		1 U		1 U							
14-May-20						1 U						1.2						
05-Aug-20	1.6		2.4			0.6 J	1.7		1 U		1 U							

**Total Organic Compounds (TOC) (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
06-Aug-20		0.7 J		2.7	1.3			3				2.2						
09-Nov-20	1.3		1.8			0.5 J	1.3		1 U		0.5 J							
10-Nov-20		1 U		1.8	0.7 J			2.1										
15-Dec-20													1.5	1 U	0.6 J		1.7	0.7 J
16-Dec-20										2.1						1 U		
08-Feb-21	1.7					0.7 J	1.5			0.7 J	0.6 J	1.9					1.8	
09-Feb-21		0.6 J			1.1			3.6	0.6 J									0.5 J
10-Feb-21			2.9															
11-Feb-21				2.6									0.8 J	1 U	1 U			
12-Feb-21																1 U		
05-May-21		0.6 J			1			7.8		1.2		2.2						
06-May-21	1.6		2.7			0.8 J	1.6		0.7 J		0.5 J						1.5	
11-May-21				3.8									1.5	0.6 J	0.6 J	0.5 J		1 J
24-Aug-21					0.8 J			3.2		0.8 J				1 U	0.5 J	1 U		0.5 J
25-Aug-21				3.6					0.5 J				1.9					1.6
26-Aug-21	1.4		2.9					1.9			0.6 J							
27-Aug-21		0.7 J				0.7 J						2.6						
10-Nov-21									1 U								1.1	
11-Nov-21	1 J	1 U	2	3.2	1 J	0.6 J	1.5	2.2		0.8 J	1 U	1.7	1.2	1 U	1 U	1 U		1 U
15-Feb-22						0.9 J				0.9 J		1.5						
16-Feb-22	1.1	0.7 J	2.2	3.1	1.1			2.3		0.8 J	0.5 J		1.1		1 U	0.5 J	1.1	0.6 J
17-Feb-22							1.3											
17-Mar-22														0.5 J				
10-May-22		1 U			1 U			1.4		1 U		0.8 J						
11-May-22														1 U	1 U	1 U		
12-May-22	1					1.8			1 U				0.7 J					
17-May-22			1.8	8.9			1 J				1 U						1	1 U
04-Aug-22		0.5 J			1.2			2.4	1 U	0.5 J		3.2			1 U	1 U		
08-Aug-22						0.8 J	2				0.6 J		1.1					
09-Aug-22	1.7		2.7	3														0.7 J
10-Aug-22														0.6 J				2.8
22-Nov-22	0.9 J	1 U			1 U	0.9 J		1.6	1 U	1 U		3.7		1 U	1 U	2.4	0.6 J	
29-Nov-22			2.2	1.7			0.9 J				1 U		0.7 J					1 U

**Statistics**

Mean	1.364	0.785652	2.504	3.4375	1.341667	0.788	1.552	3.625	0.58	0.783125	0.483333	2.083333	1.117	0.465625	0.4725	0.62125	3.0125	0.614375
Standard Deviation	0.340196	0.5147	0.586998	1.455667	1.088244	0.511794	0.300167	1.57349	0.327872	0.50255	0.109014	0.910378	0.416601	0.121324	0.10247	0.489923	3.692131	0.20617
Median	1.3	0.6	2.4	3.2	1	0.6	1.6	3.45	0.5	0.515	0.5	2.05	1.1	0.5	0.5	0.5	1.75	0.5
10th Percentile	1.04	0.42	2	2.23	0.6	0.5	1.24	2.03	0.4	0.45	0.33	1.02	0.697	0.35	0.33	0.42	1.05	0.5
90th Percentile	1.66	1.6	2.9	4.61	3.13	0.9	1.9	5.53	0.76	1.5	0.6	3.18	1.54	0.55	0.55	0.7	4.95	0.85

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Turbidity (NTU) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17		10			186	13.4		72	3.54									
21-Feb-17	7.06		4.08	74.3			12.9				1.68							
04-Apr-17										23					5.09	79.2	147	4.46
05-Apr-17													10.8	8.46				
24-May-17	1.98	1.81	18.9	20.4			47.9	42.7			22.8							
25-May-17					16.1	13.4			3.97									
01-Aug-17										14.3					3.12	2.41	4.65	3.96
02-Aug-17	2.12	10.2	3.48		46.6	1.47	48.7	49.6	2.08		2.13							
03-Aug-17				37.5														
08-Aug-17														5.53				
14-Nov-17										10.9				0.6	10.9	1.2	3.1	0.84
15-Nov-17							11.5				2.66							
16-Nov-17	3.95	4.08	5.51	3.41	17.1	0.87		23.2	2.51									
12-Feb-18	2.19		5.79			3.63	39.1		3.05		3.19							
13-Feb-18		4.43		11.5	9.04			15.3										
14-Feb-18										14.8					2.52	6.64	6.02	39.7
21-Feb-18														2.83				
08-May-18	6.04	26.6	8.31		65	5.58	47.6	33.8	1.52		4.42							
09-May-18				13.2														
22-Aug-18	4.22		4.11				15.2		1.68		2.77							
23-Aug-18		4.21		10.7	12.1	0.58		16.6										
07-Nov-18	2.33	6.18			22.5		15.8	9.65	1.91		9.83							
08-Nov-18		2.24	5.72	5.96	5.26	3.12		10.5										
11-Feb-19							10.1		1.27		7.02							
13-Feb-19	1.83	6.03	4.48		1.37			9.01										
14-Feb-19				2.42		1.01												
30-Apr-19						0.71			2.54									
01-May-19	2.08	10	4.76	4.69	6.82		47.8	12.5			3.27							
12-Aug-19			3.7						2.36									
13-Aug-19		6.24			8.22	0.97	13.6	13.5										
14-Aug-19	3.47			3.09							12							
09-Sep-19										8.22				0.5	2.3	0.99		4.75
10-Sep-19																	13.6	
18-Nov-19	5.52					1.32			4.14									
19-Nov-19		4.77	3.81	11	4.71		7.62	19.7			2.8							
10-Dec-19										6.69				0.46	2.03	3	3.27	13.6
11-Dec-19										200								
14-Jan-20										12.1				0.45	1.43	5.59	5.55	13.3
23-Jan-20	3.34					1.71												
27-Jan-20			9.24				19.7											
28-Jan-20									3.22									
11-Feb-20	3.54		6.6	16.1							11.5							
12-Feb-20		3.98			5.2	2.8	23.4	19	3.51			2.17						
11-May-20	3.83		9.78	4.28														
12-May-20		5.03			4.63		10.1	16.1	1.36		17.6							
14-May-20						1.21						1.12						

**Turbidity (NTU) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
05-Aug-20	3.94		4.45			1.62	27.9		0.5		11							
06-Aug-20		2.32		3.83	1.63			9.57				36.7						
09-Nov-20	12.6		7.5			1.16	15.3		0.53		8.5							
10-Nov-20		2.31		7.04	2.98			21.6				3.7						
15-Dec-20													35	3.41	7.44		4.51	5.71
16-Dec-20										9.55						1.5		
08-Feb-21	2.47					1.83	37.4				2.71						3.25	
09-Feb-21		6.61			2.72			7.36	0.66	5.8		2.2						3.07
10-Feb-21			7.08															
11-Feb-21				2.94									31.8	0.39	2.35			
12-Feb-21																3.13		
06-May-21	3.92	4.91	3.84		6.17	0.92	38	15.5	0.57	5.41	3.51	1.07					3.8	
11-May-21				7.42									25.6	0.48	1.71	4.1		2.03
24-Aug-21					3.88			13.3		7.49				0.71	1.41	3.99		8.2
25-Aug-21				9.76					0.49				15.6					4.05
26-Aug-21	3.38		8.08				15.3				5.01							
27-Aug-21		2.59				2.13						1.02						
10-Nov-21									0.86								4.71	
11-Nov-21	2.22	23.6	12.1	18.1	11.1	3.24	7.37	7.27		11.3	18.6	7.66	28.1	0.77	1.81	1.12		3.86
15-Feb-22						0.54			0.42			14.8						
16-Feb-22	3.17	1.4	9.32	8.27	2.83			68		18.5	2.24		29.3		5.66	11	5.38	2.14
17-Feb-22							10											
17-Mar-22														3.73				
10-May-22		2.26			4.64			27.7		8.49		4.57						
11-May-22														0.52	1.11	2.62		
12-May-22	3.04					1.48			0.48				35.3					
17-May-22			16.4	2.81			27				7.1						2.16	3.72
04-Aug-22		3.56			3.85			15.1	0.42	2.53		5.09			13.2	12.3		
08-Aug-22						0.81	15.1				10.1		36.6					
09-Aug-22	2.54		3.57	6.91														1.35
10-Aug-22														0.53			3.54	
22-Nov-22	1.54	11.2			3.81	0.02		12.2	0.02	6.4		3.83		1.73	10.3	23.1	7.23	
29-Nov-22			39.4	7.58			24.8				19.3		19.2					4.45

**Statistics**

Mean	3.6928	6.6624	8.4004	12.21708	18.1704	2.6212	23.5676	22.4304	1.7444	21.49882	7.989167	6.994167	26.73	1.94375	4.52375	10.11813	13.86375	7.19625
Standard Deviation	2.293257	6.221444	7.56477	15.31847	37.91048	3.460664	14.19722	17.75001	1.276317	46.28193	6.269913	10.11626	8.876066	2.328083	3.89437	19.29763	35.59964	9.439412
Median	3.34	4.77	5.79	7.5	5.26	1.47	15.8	15.5	1.52	9.55	6.015	3.765	28.7	0.655	2.435	3.56	4.58	4.205
10th Percentile	2.02	2.248	3.744	2.985	2.764	0.632	10.04	9.234	0.444	5.644	2.366	1.075	15.12	0.455	1.42	1.16	3.175	1.69
90th Percentile	5.832	10.8	14.68	19.71	36.96	4.8	47.72	46.84	3.528	20.3	18.3	14.086	35.43	4.63	10.6	17.7	10.415	13.45

Note: one-half detection limit utilized in statistical calculations for non-detect results.



**Vanadium (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date_Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.05 U			0.05 U									
21-Feb-17	0.05 U	0.05 U	0.05 U	0.008 J	0.0131 J		0.05 U	0.005 J			0.05 U							
04-Apr-17										0.0014 J					0.001 J	0.0065 J	0.0045 J	0.05 U
05-Apr-17													0.05 U	0.003 J				
08-Aug-17														0.05 U				
08-May-18	0.05 U		0.05 U			0.05 U	0.007 J		0.05 U		0.05 U							
09-May-18		0.05 U		0.05 U	0.05 U			0.05 U										
12-Aug-19		0.05 U	0.05 U		0.05 U			0.05 U	0.05 U									
13-Aug-19						0.05 U	0.05 U											
14-Aug-19	0.05 U			0.05 U							0.05 U							
09-Sep-19										0.05 U				0.05 U	0.05 U	0.05 U		0.05 U
10-Sep-19																	0.05 U	
10-Dec-19														0.0007 J	0.05 U	0.05 U	0.05 U	0.0008 J
11-Dec-19										0.05 U								
14-Jan-20										0.0014 J				0.05 U	0.05 U	0.05 U	0.05 U	0.05 U
23-Jan-20	0.05 U					0.05 U												
27-Jan-20			0.05 U				0.0018 J											
28-Jan-20									0.05 U									
12-Feb-20											0.05 U							
11-May-20	0.0008 J		0.0008 J	0.0007 J														
12-May-20		0.05 U			0.05 U		0.0013 J	0.0011 J	0.05 U		0.0008 J							
14-May-20						0.05 U						0.05 U						
06-May-21	0.05 U	0.05 U	0.05 U		0.05 U	0.05 U	0.0028 J	0.001 J	0.05 U	0.0028 J	0.05 U	0.05 U					0.05 U	
11-May-21				0.05 U									0.0025 J	0.05 U	0.05 U	0.05 U		0.05 U
10-May-22					0.05 U			0.0014 J										
11-May-22		0.05 U								0.0028 J		0.05 U		0.05 U	0.05 U	0.05 U		
12-May-22	0.05 U					0.05 U			0.05 U				0.0016 J					
17-May-22			0.0008 J	0.05 U			0.0049 J				0.05 U						0.05 U	0.05 U

**Statistics**

Mean	0.021543	0.025	0.018086	0.018117	0.023017	0.025	0.009686	0.00975	0.025	0.009733	0.020967	0.025	0.0097	0.018386	0.021	0.021917	0.021583	0.020967
Standard Deviation	0.009147	3.8E-18	0.011808	0.010911	0.004858	3.74743E-18	0.010639	0.011906	3.74743E-18	0.011842	0.00988	0	0.013258	0.011316	0.009798	0.007553	0.008369	0.00988
Median	0.025	0.025	0.025	0.025	0.025	0.025	0.0049	0.0032	0.025	0.0028	0.025	0.025	0.0025	0.025	0.025	0.025	0.025	0.025
10th Percentile	0.01532	0.025	0.0008	0.00435	0.01905	0.025	0.0016	0.00105	0.025	0.0014	0.0129	0.025	0.00178	0.00208	0.013	0.01575	0.01475	0.0129
90th Percentile	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.025	0.0205	0.025	0.025	0.025	0.025	0.025

Note: one-half detection limit utilized in statistical calculations for non-detect results.

**Zinc (mg/L) Operational Groundwater Monitoring Wells  
Hakes C&D Landfill, Campbell, New York**

Date Sampled	MW-CR	MW-D	MW-E	MW-F	MW-GR	MW-H	MW-J	MW-N	MW-O	MW-O(BR)	MW-P	MW-QR	MW-R(BR)	MW-S(BR)	MW-T(BR)	MW-U(BR)	MW-V	MW-V(BR)
20-Feb-17						0.0153 J			0.0214									
21-Feb-17	0.0037 J	0.0142 J	0.0045 J	0.017 J	0.0222		0.023	0.011 J			0.0061 J							
04-Apr-17										0.0069 J					0.0027 J	0.0094 J	0.013 J	0.0019 J
05-Apr-17													0.0056 J	0.02 U				
08-Aug-17														0.02 U				
08-May-18	0.02 U		0.02 U			0.02 U	0.0107 J		0.02 U		0.02 U							
09-May-18		0.02 U		0.02 U	0.02 U			0.02 U										
12-Aug-19		0.02 U	0.02 U		0.02 U			0.02 U	0.02 U									
13-Aug-19						0.02 U	0.02 U											
14-Aug-19	0.02 U			0.02 U							0.02 U							
09-Sep-19										0.02 U				0.02 U	0.02 U	0.02 U		0.02 U
10-Sep-19																	0.02 U	
10-Dec-19														0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
11-Dec-19										0.02 U								
14-Jan-20										0.02 U				0.02 U	0.02 U	0.02 U	0.02 U	0.02 U
23-Jan-20	0.02 U					0.02 U												
27-Jan-20			0.02 U				0.02 U											
28-Jan-20									0.02 U									
12-Feb-20												0.138						
11-May-20	0.02 U		0.02 U	0.02 U														
12-May-20		0.02 U			0.02 U		0.02 U	0.02 U	0.02 U		0.02 U							
14-May-20						0.02 U						0.0839						
06-May-21	0.02 U	0.02 U	0.02 U		0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.0214					0.02 U	
11-May-21				0.02 U									0.02 U	0.02 U	0.02 U	0.02 U		0.02 U
10-May-22					0.02 U			0.036										
11-May-22		0.02 U								0.02 U		0.0125 J		0.0027 J	0.02 U	0.02 U		
12-May-22	0.0106 J					0.0043 J			0.02 U				0.0226					
17-May-22			0.0038 J	0.0381			0.0088 J				0.02 U						0.0057 J	0.02 U

**Statistics**

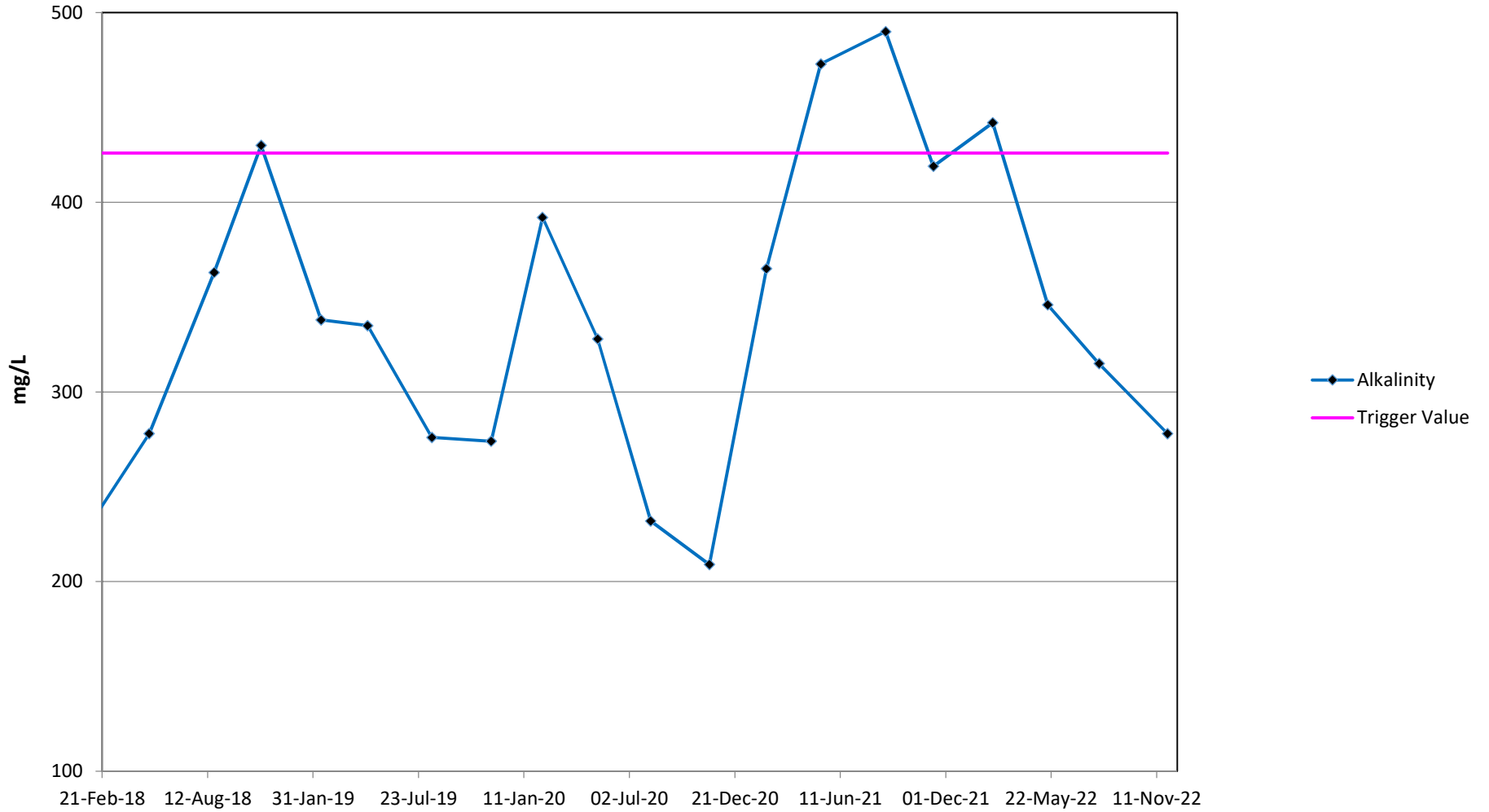
Mean	0.009186	0.0107	0.008329	0.01585	0.012033	0.009943	0.011786	0.0145	0.011629	0.009483	0.00935	0.06395	0.012733	0.008957	0.008783	0.0099	0.009783	0.00865
Standard Deviation	0.002429	0.001715	0.002862	0.011254	0.004981	0.003177	0.004977	0.01054	0.004309	0.001266	0.001592	0.058706	0.008823	0.002759	0.00298	0.000245	0.002333	0.003307
Median	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.05265	0.01	0.01	0.01	0.01	0.01	0.01
10th Percentile	0.00748	0.01	0.00422	0.01	0.01	0.00772	0.00952	0.01	0.01	0.00845	0.00805	0.01517	0.00648	0.00708	0.00635	0.0097	0.00785	0.00595
90th Percentile	0.01024	0.0121	0.01	0.02755	0.0161	0.01212	0.01562	0.0235	0.01456	0.01	0.01	0.12177	0.02008	0.01	0.01	0.01	0.0115	0.01

Note: one-half detection limit utilized in statistical calculations for non-detect results

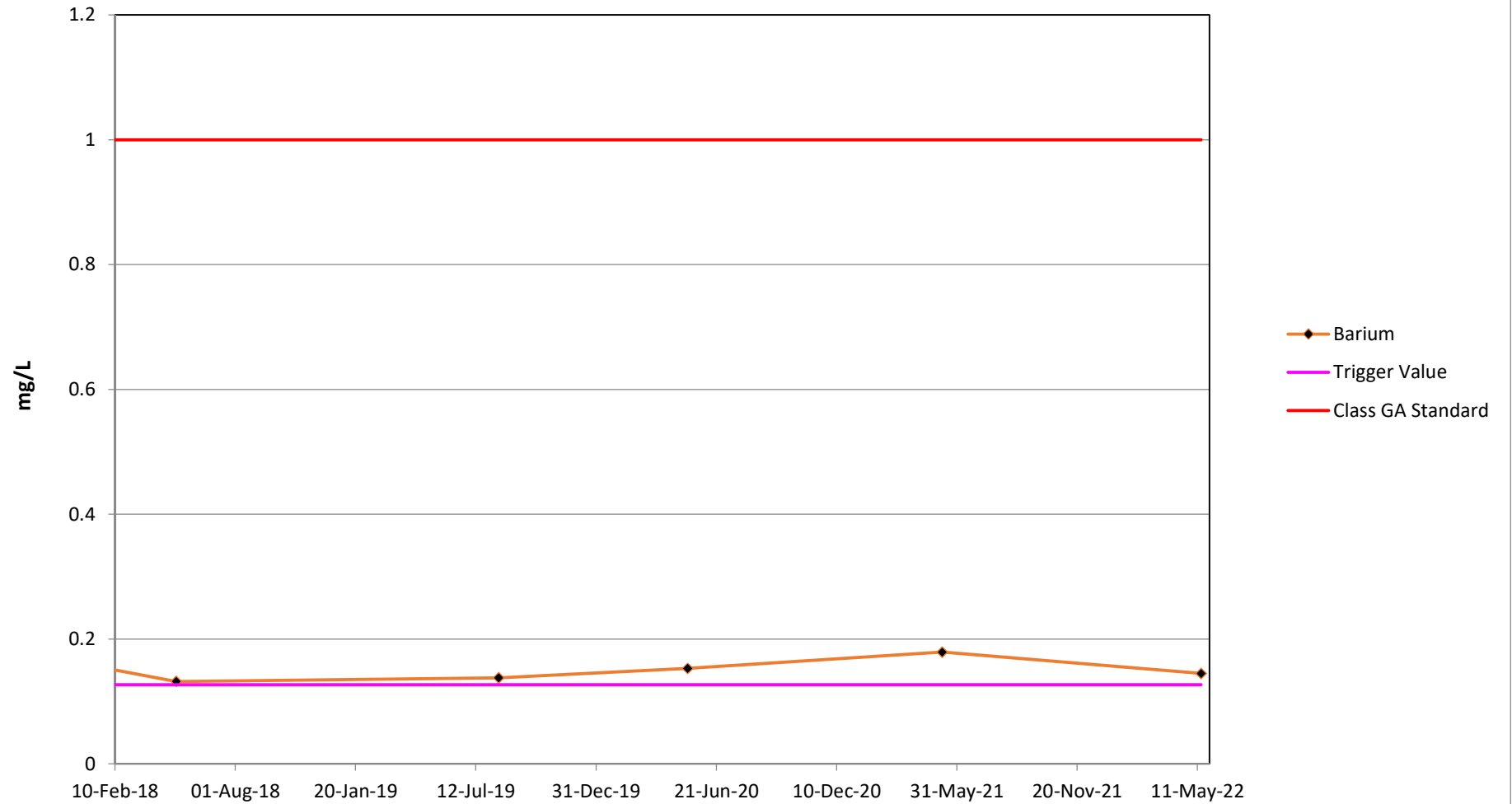
# **Appendix D**

## **Groundwater Time Trend Graphs**

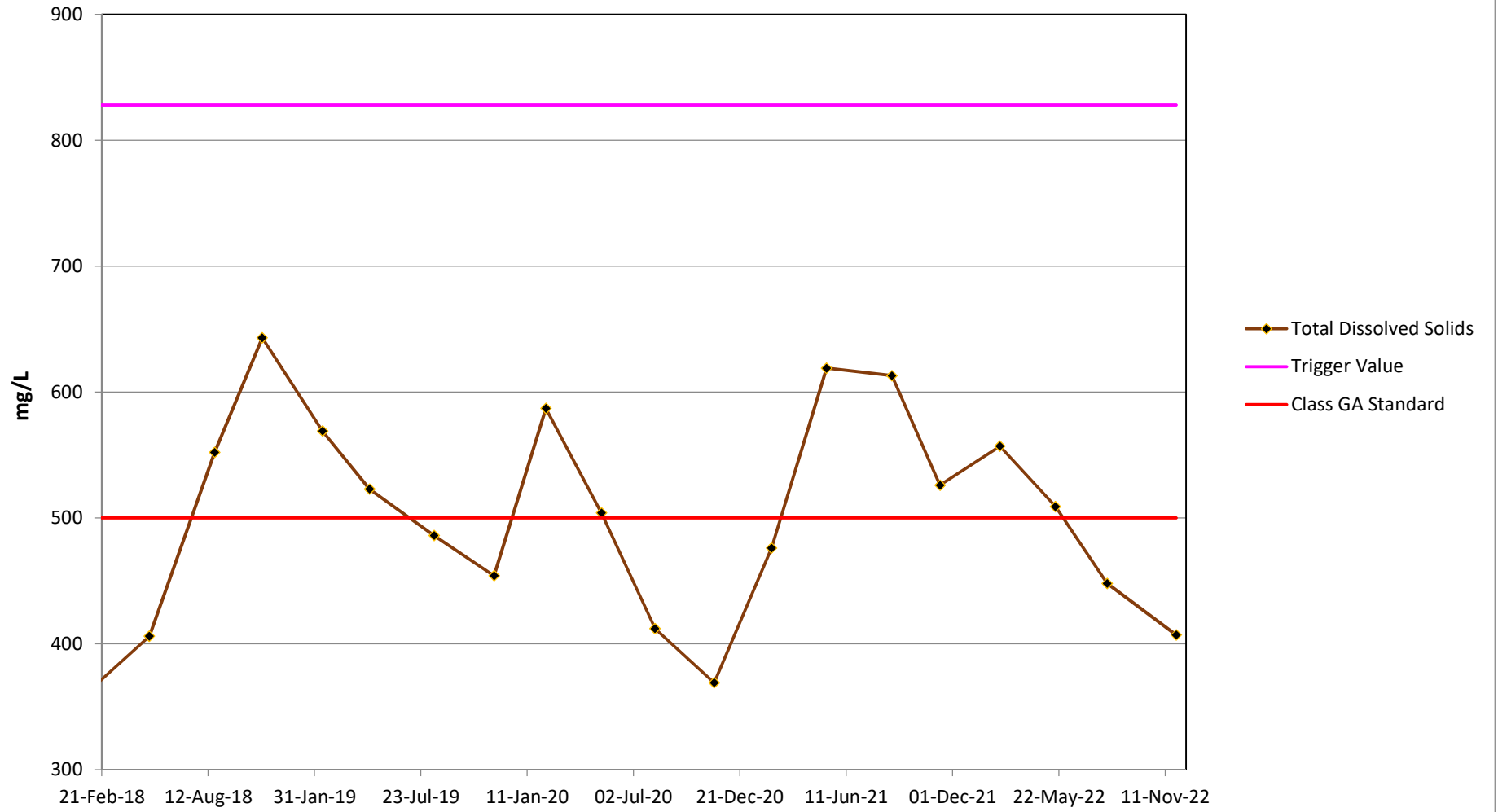
# MW-F ALKALINITY



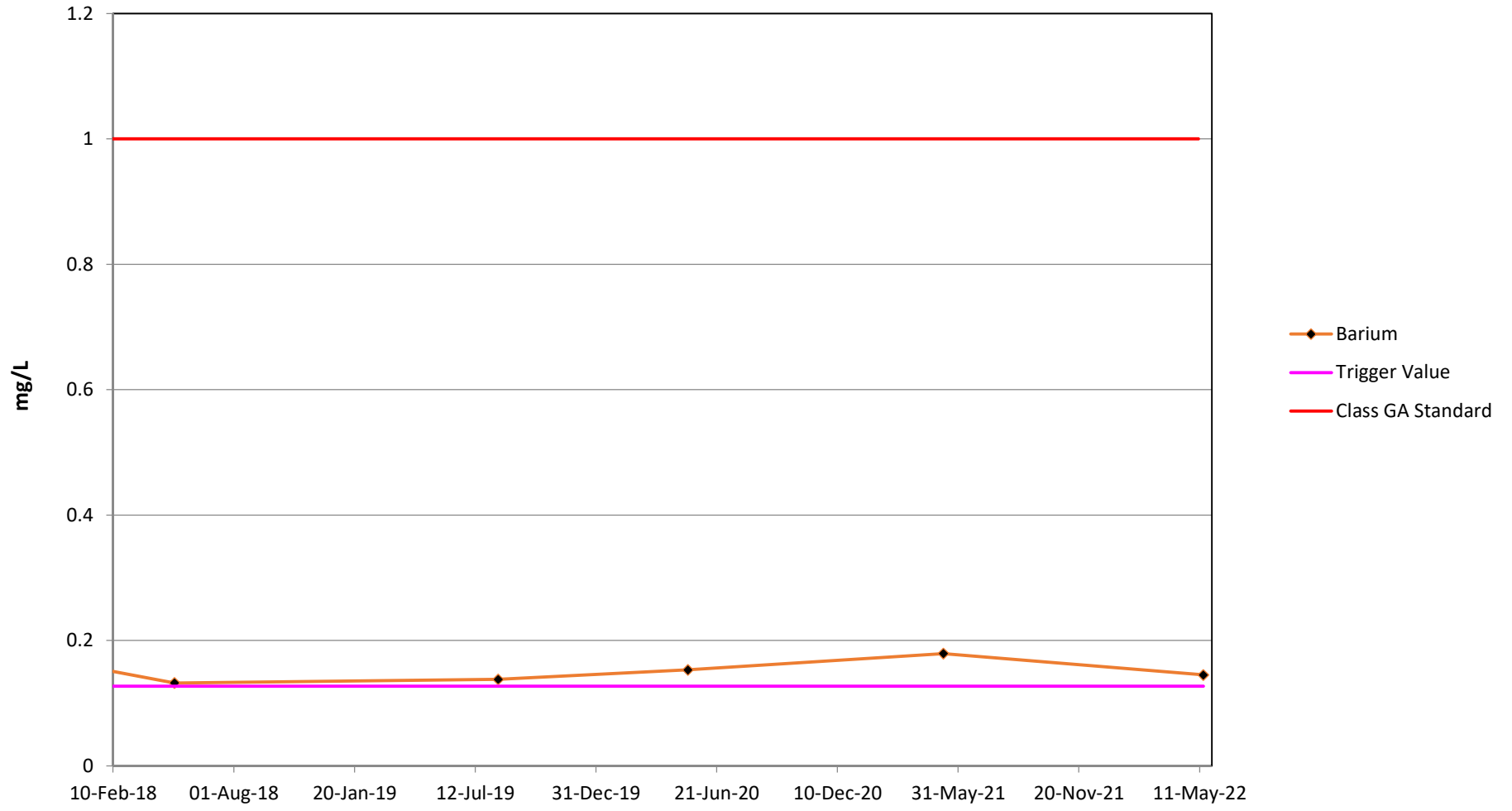
# MW-F BARIUM



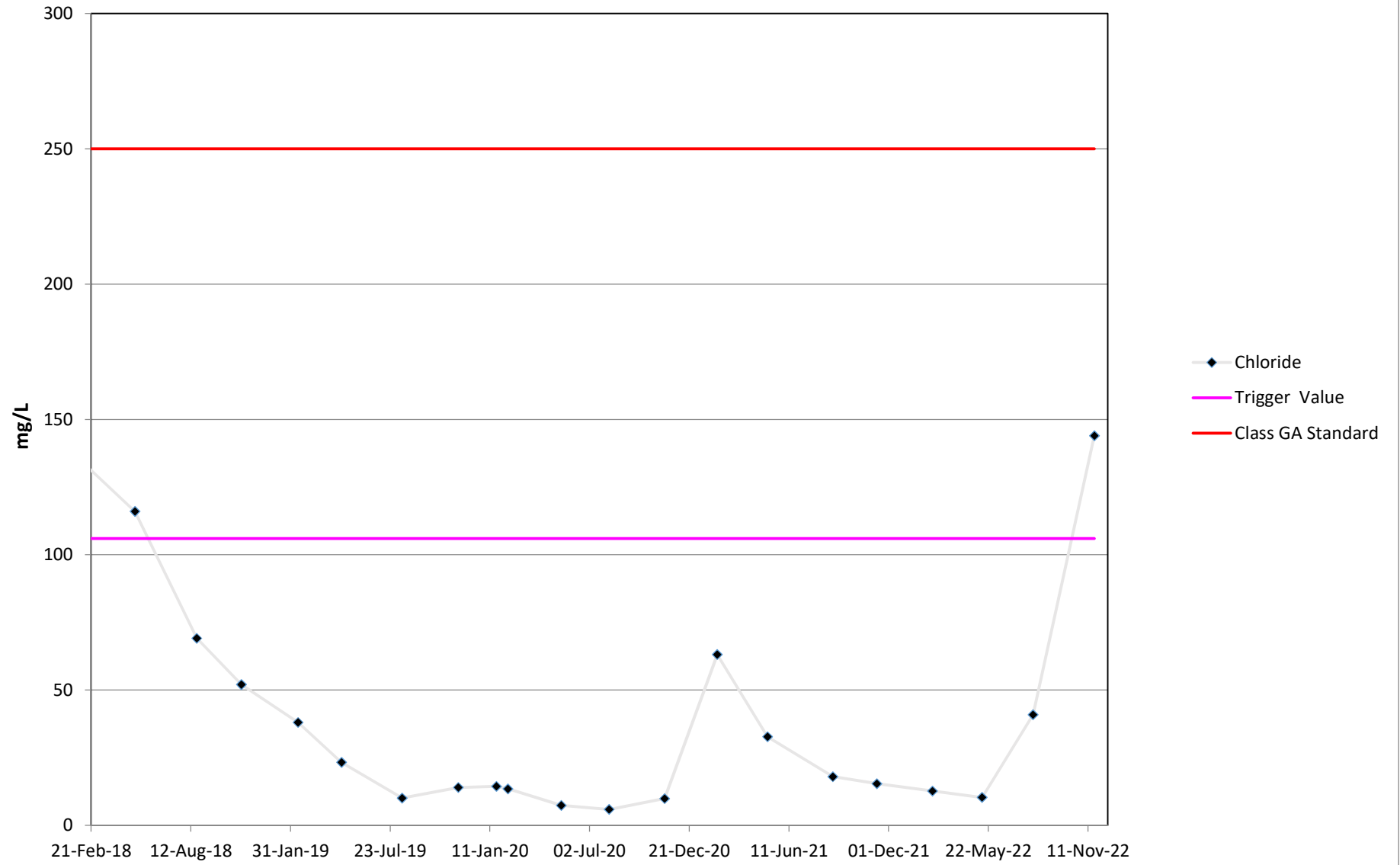
# MW-F TDS



# MW-GR BARIUM

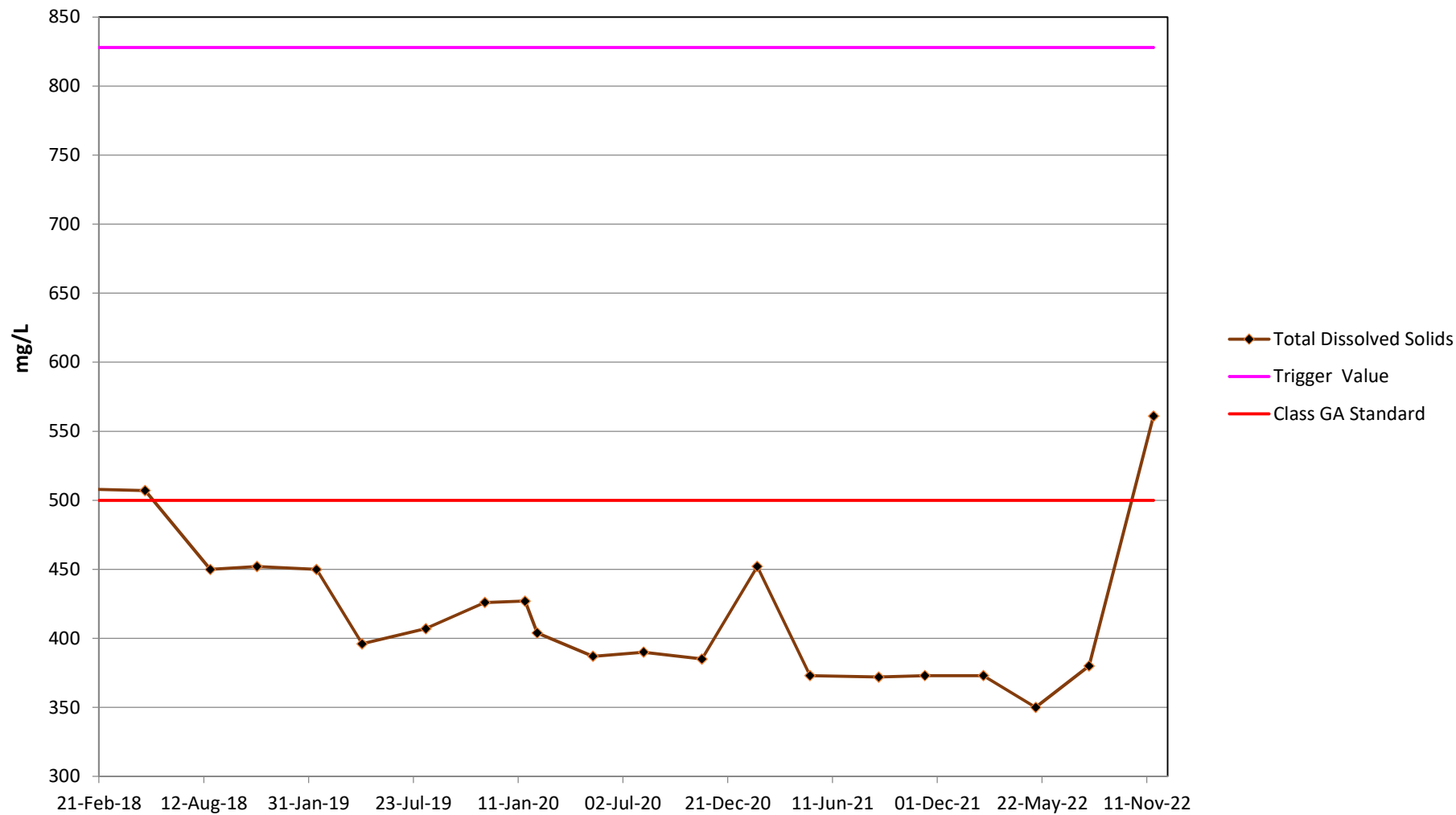


# MW-H CHLORIDE

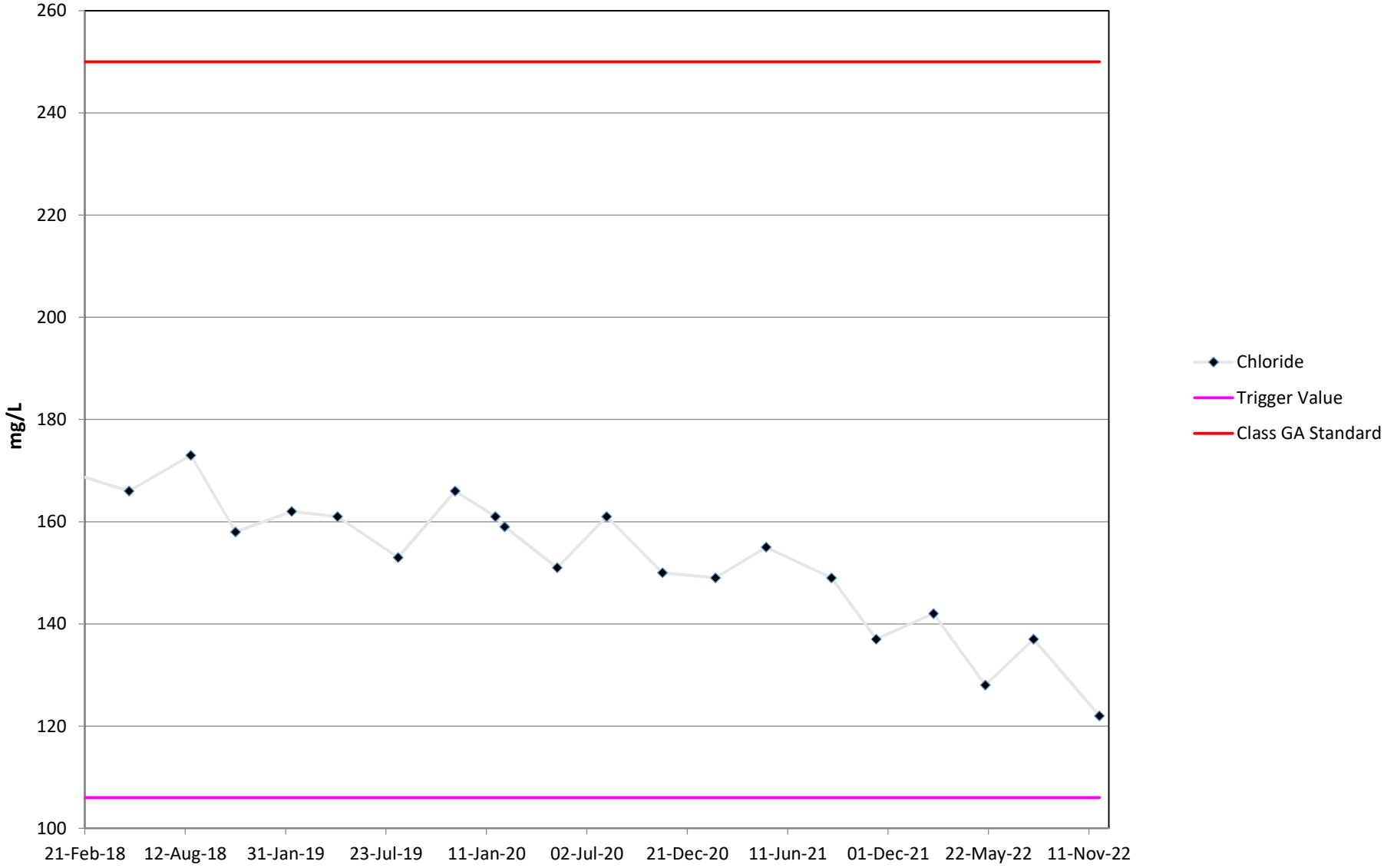




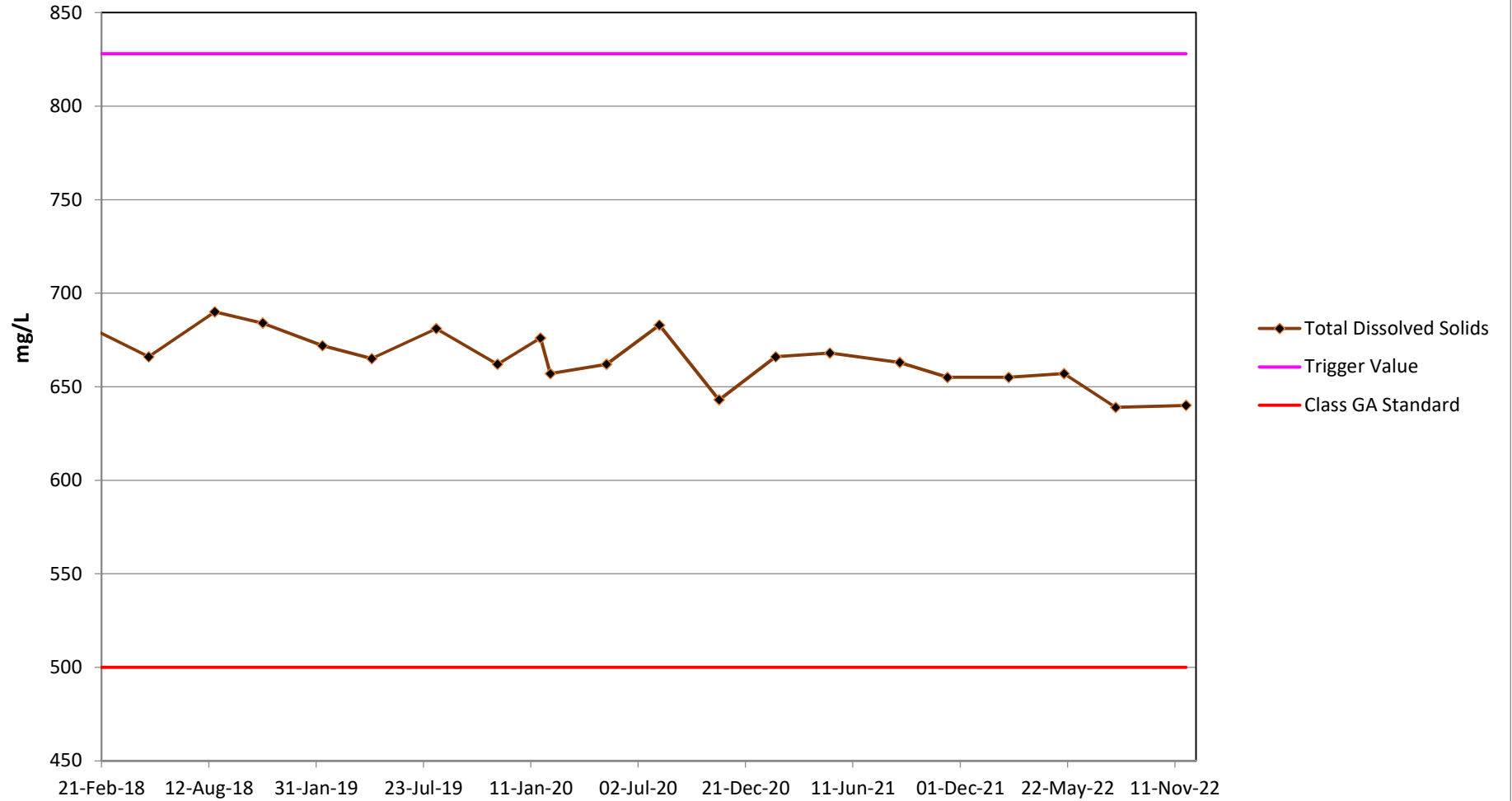
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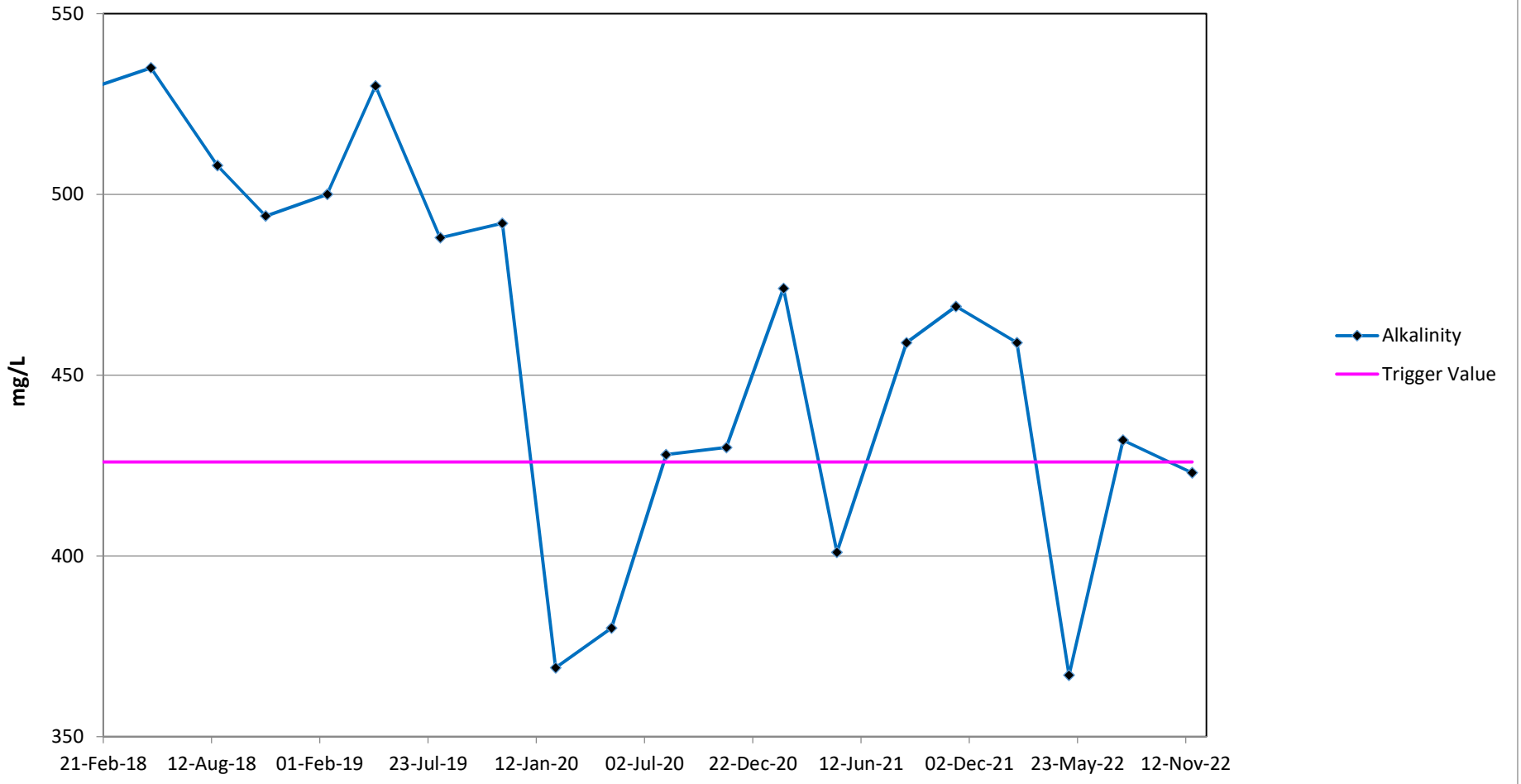
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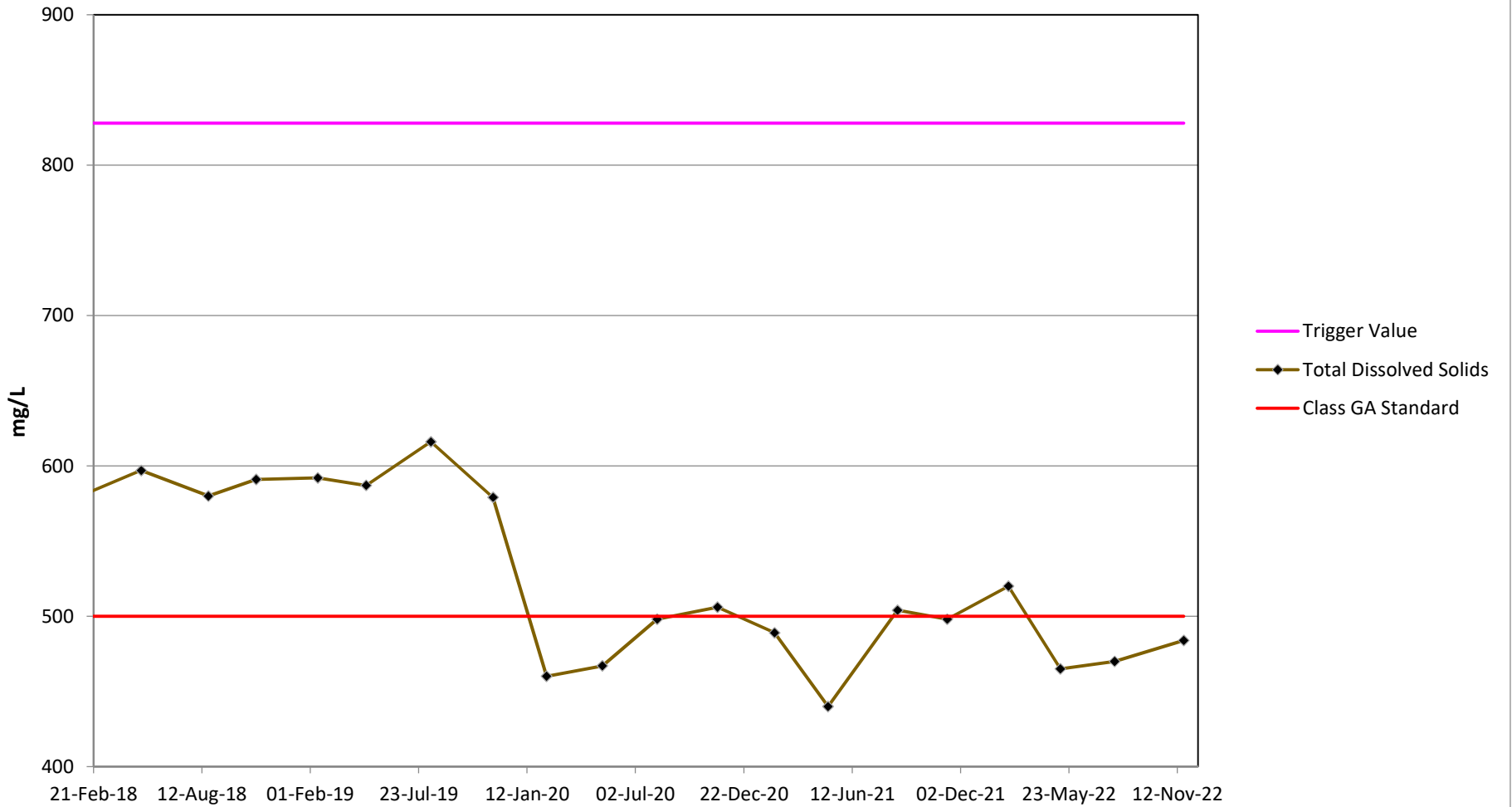
# MW-J TDS



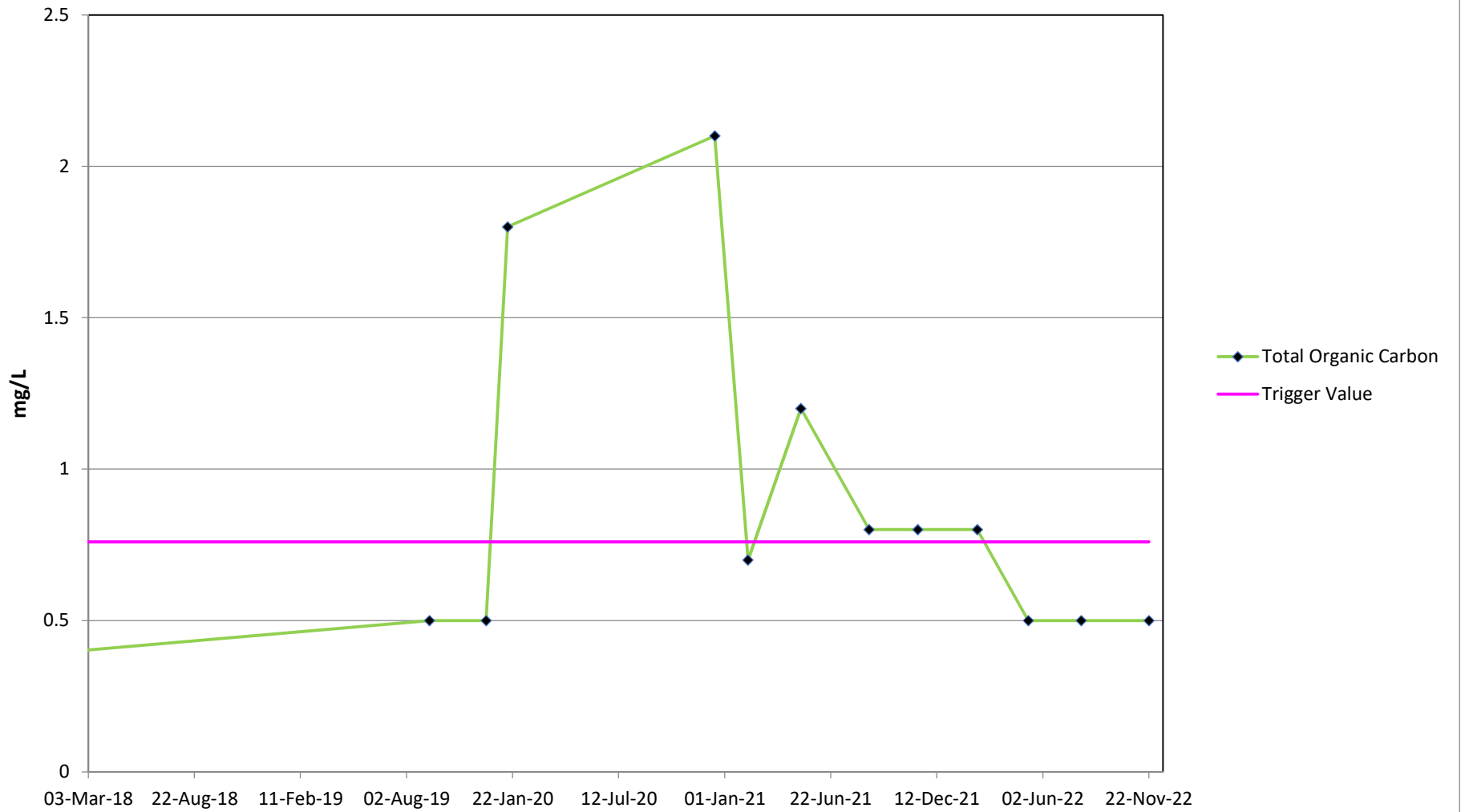
# MW-N ALKALINITY



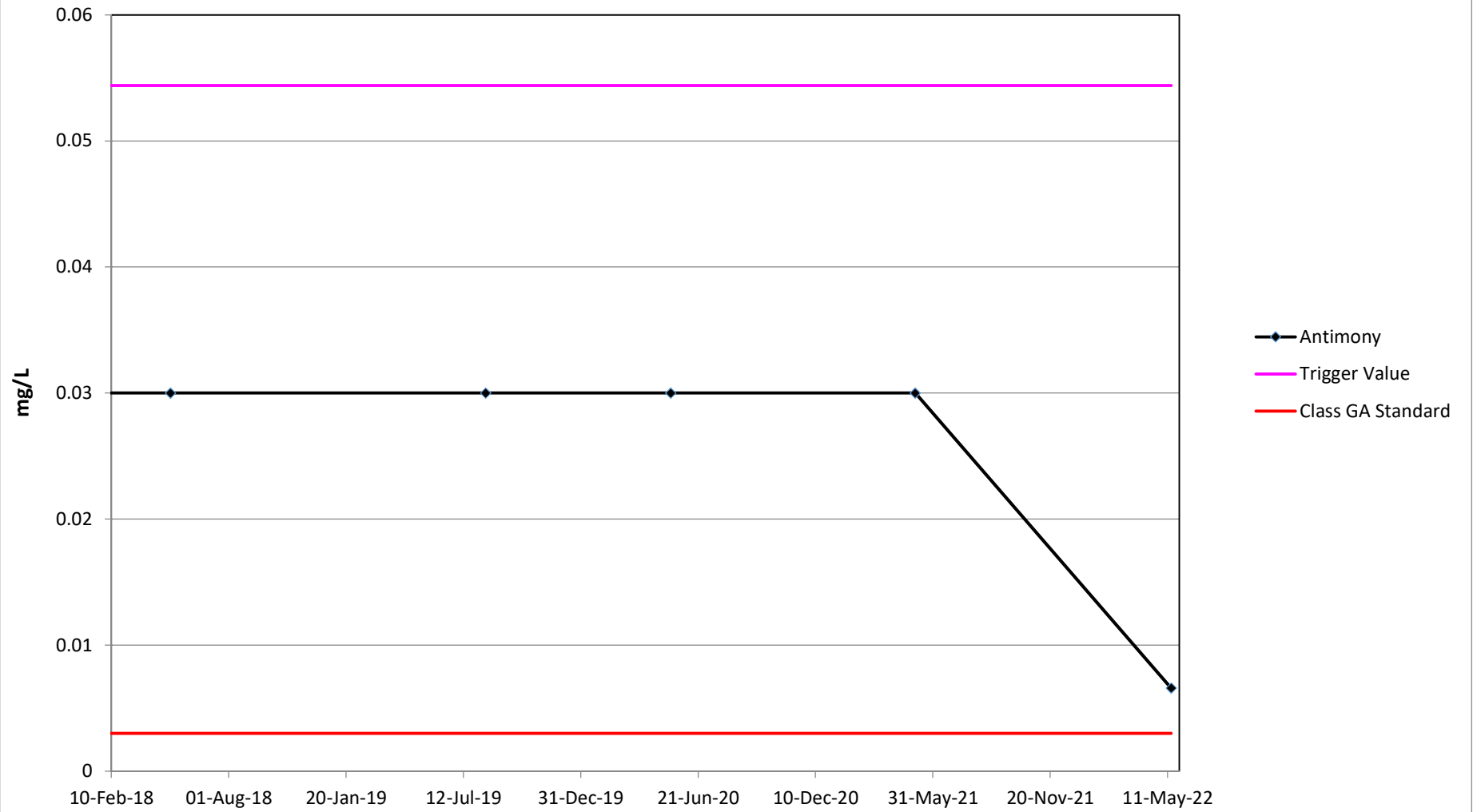
# MW-N TDS



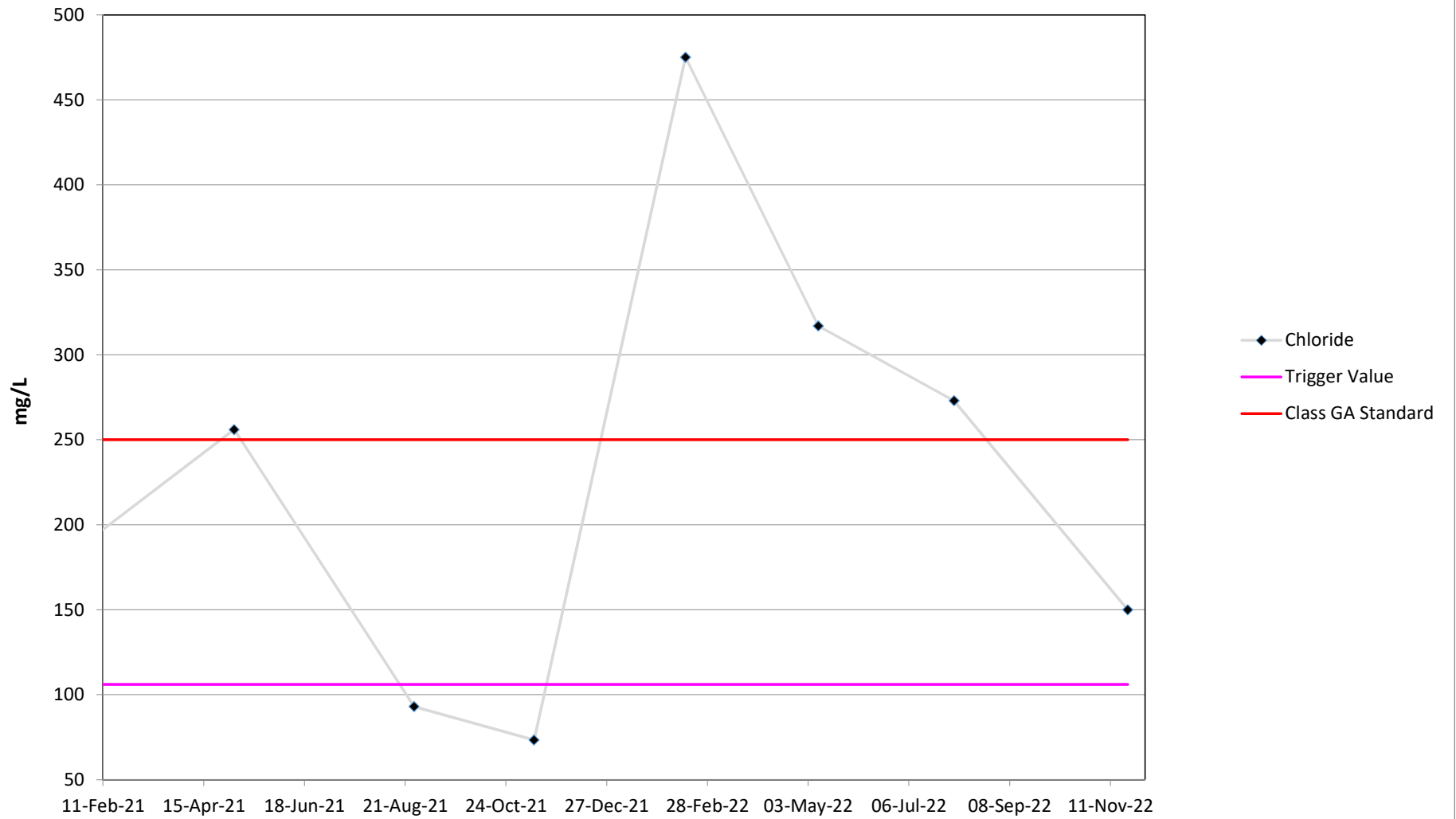
# MW-O(BR) TOC



# MW-P ANTIMONY

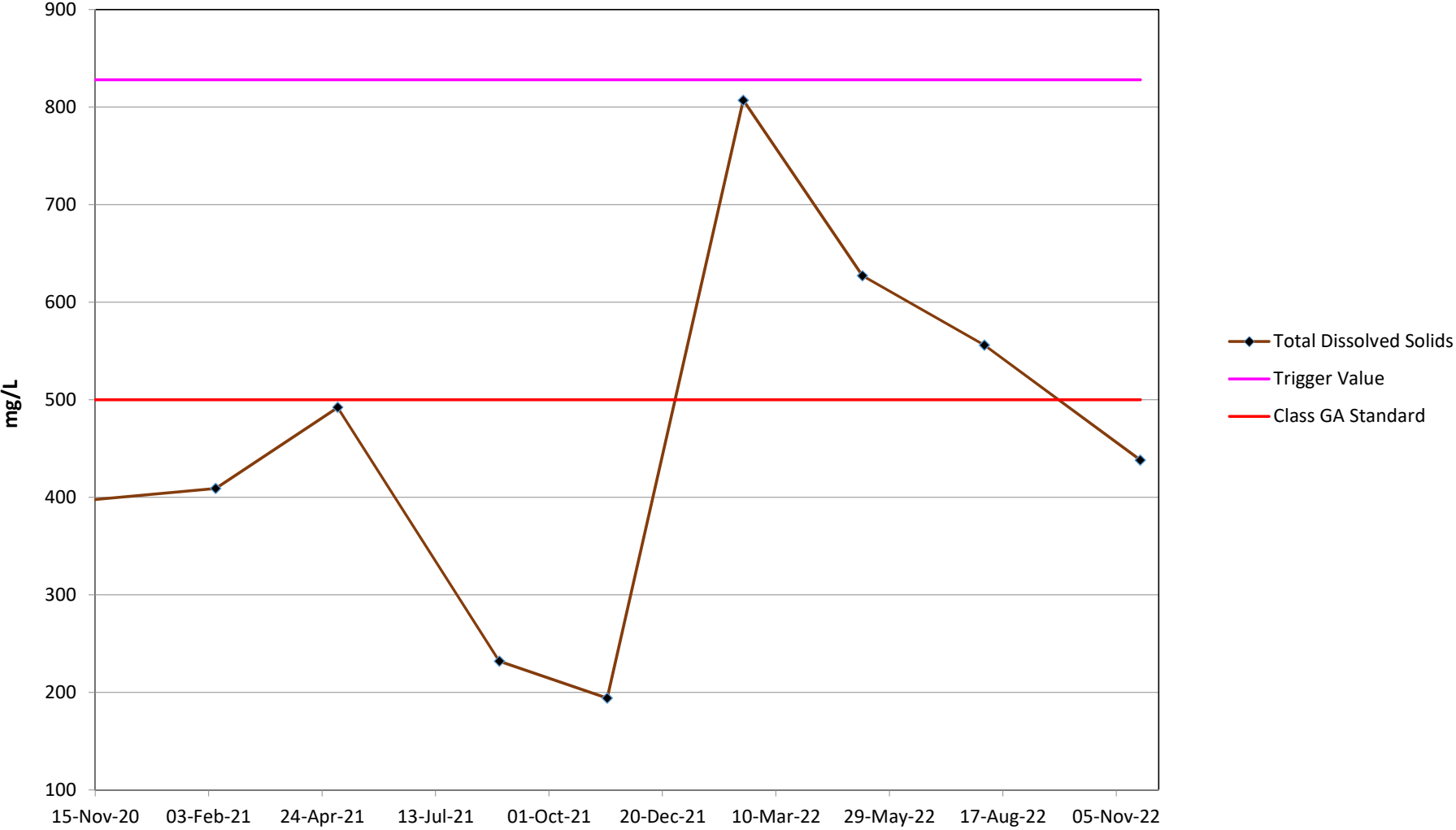


# MW-QR CHLORIDE

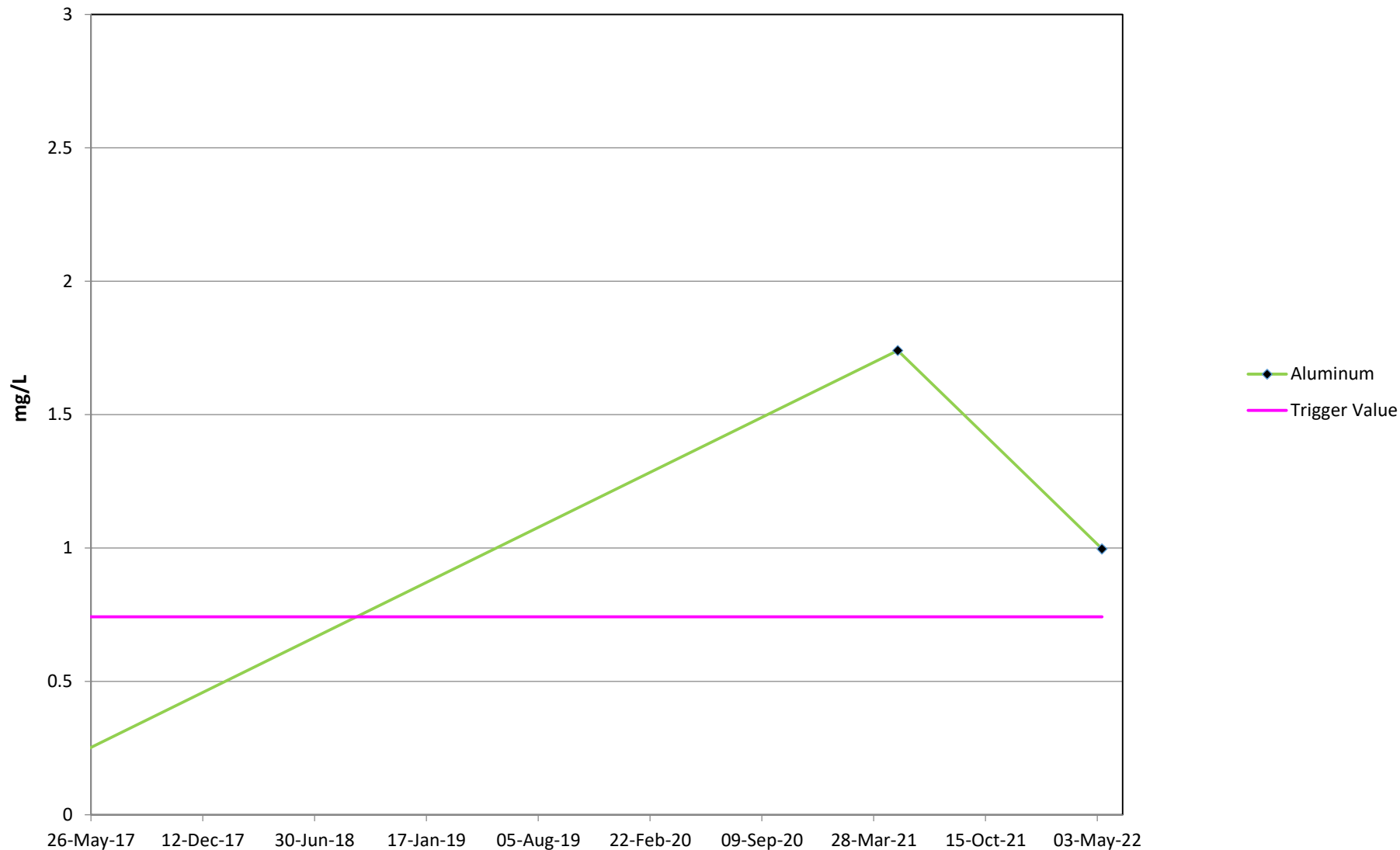




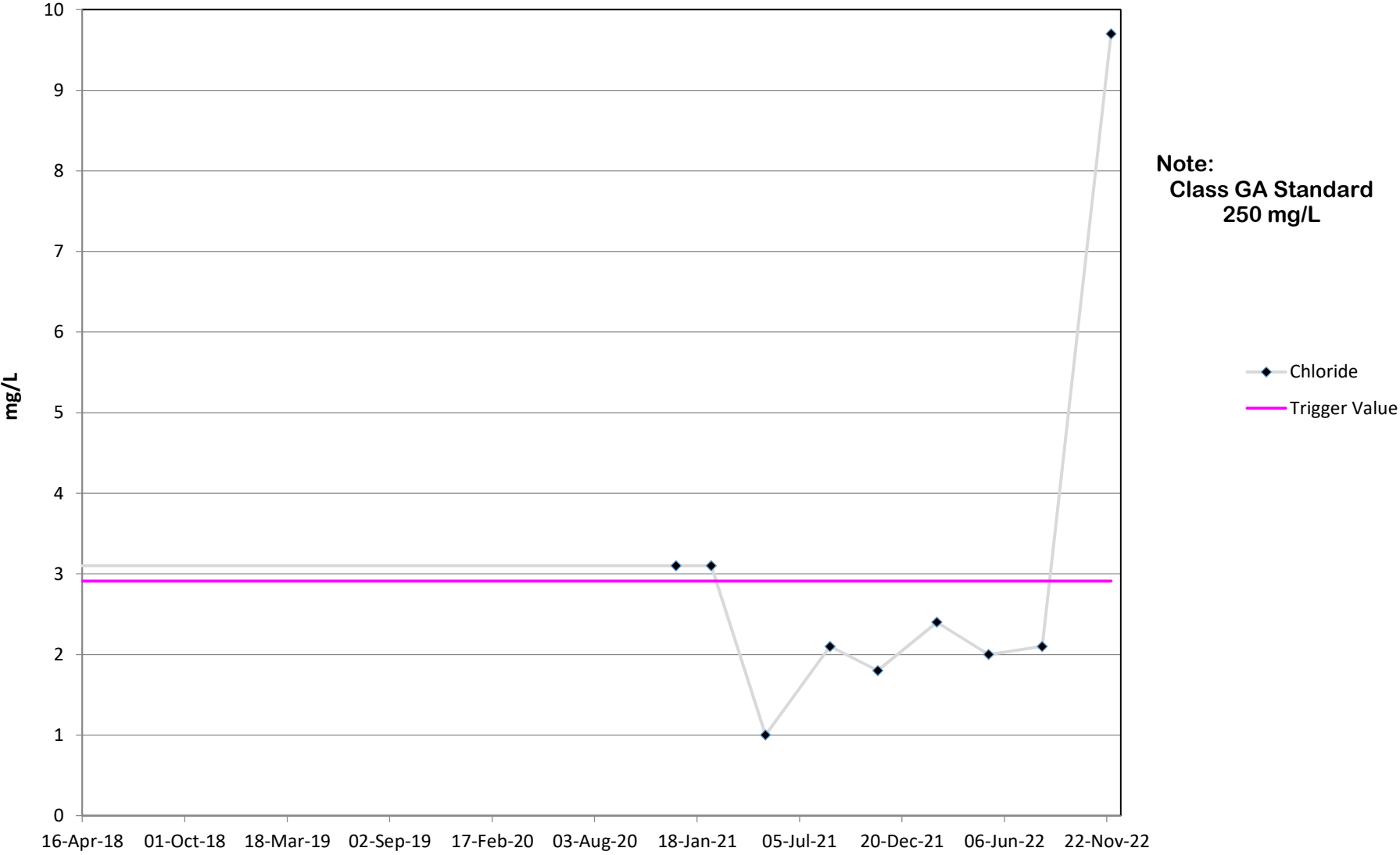
# MW-QR TDS



# MW-R(BR) ALUMINUM



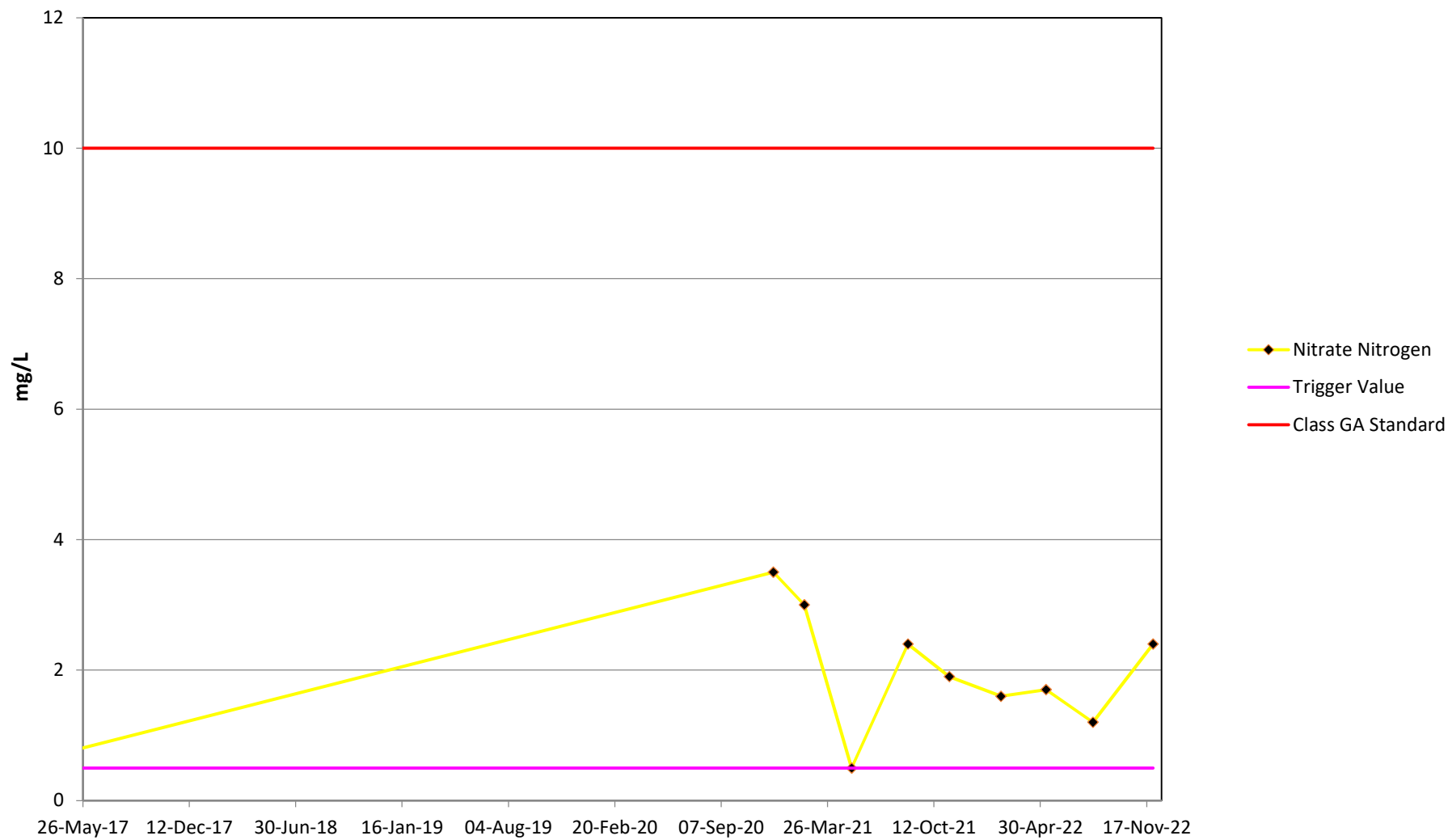
# MW-R(BR) CHLORIDE



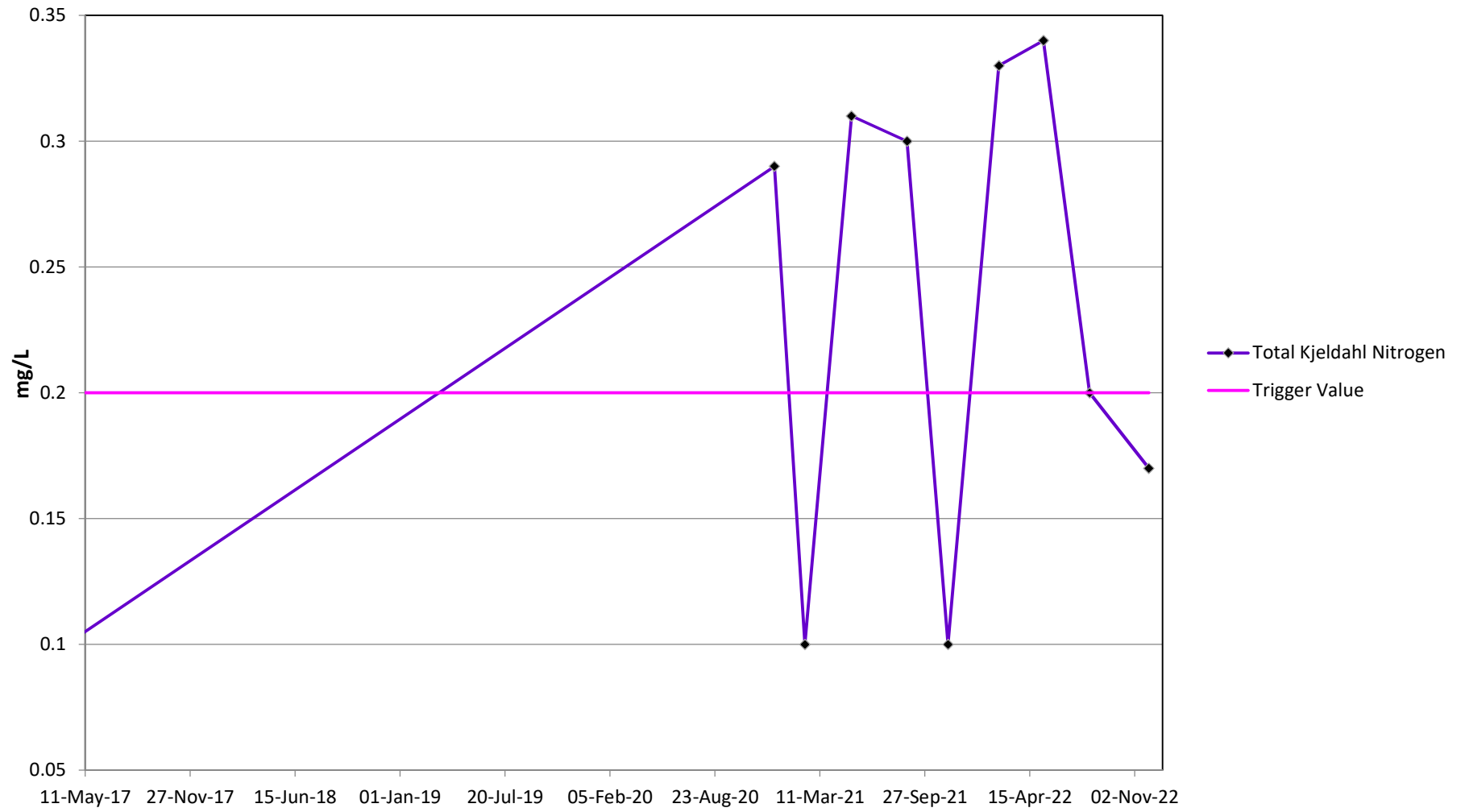
Note:  
Class GA Standard  
250 mg/L

◆ Chloride  
— Trigger Value

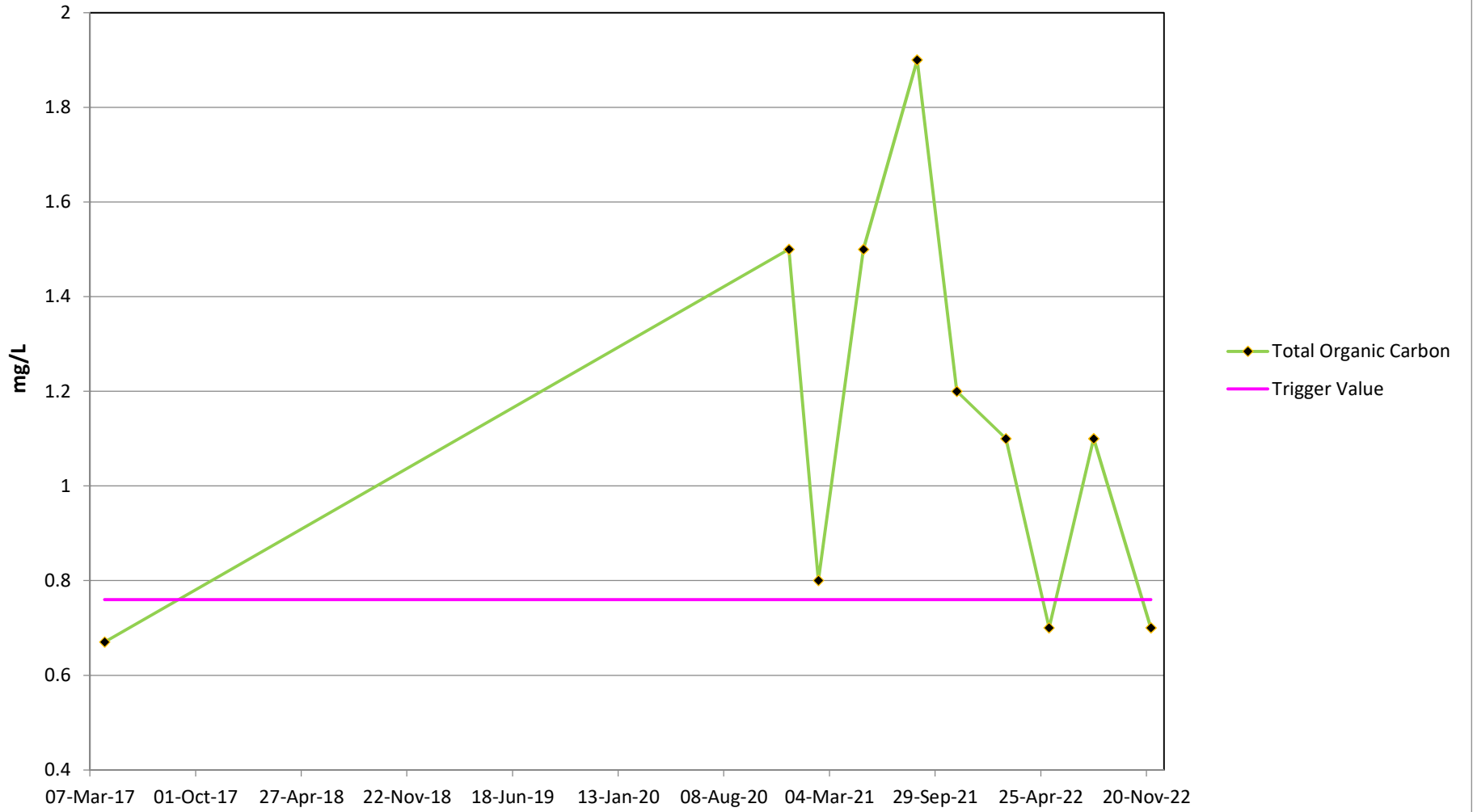
# MW-R(BR) NITRATE NITROGEN



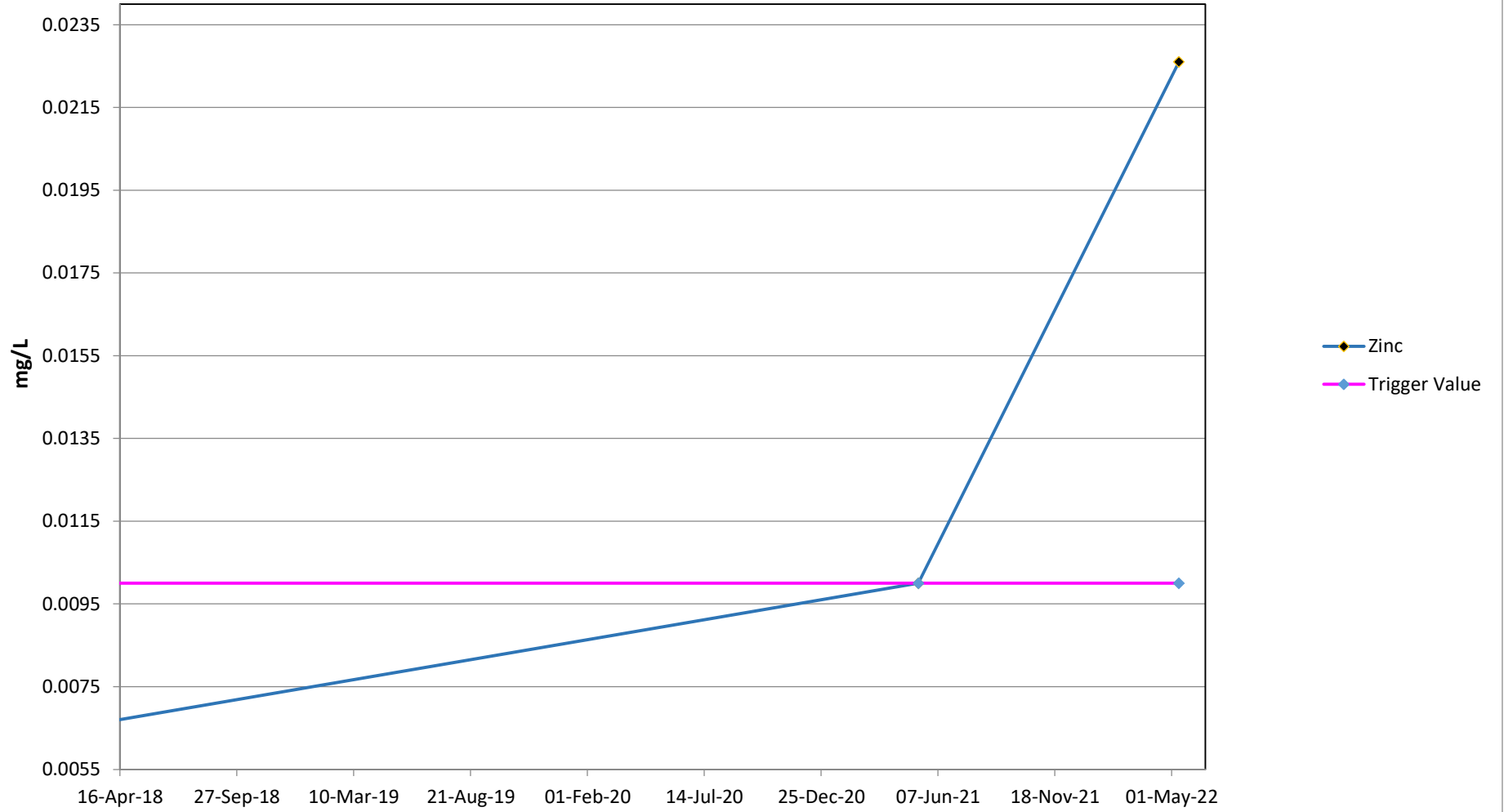
# MW-R(BR) TKN



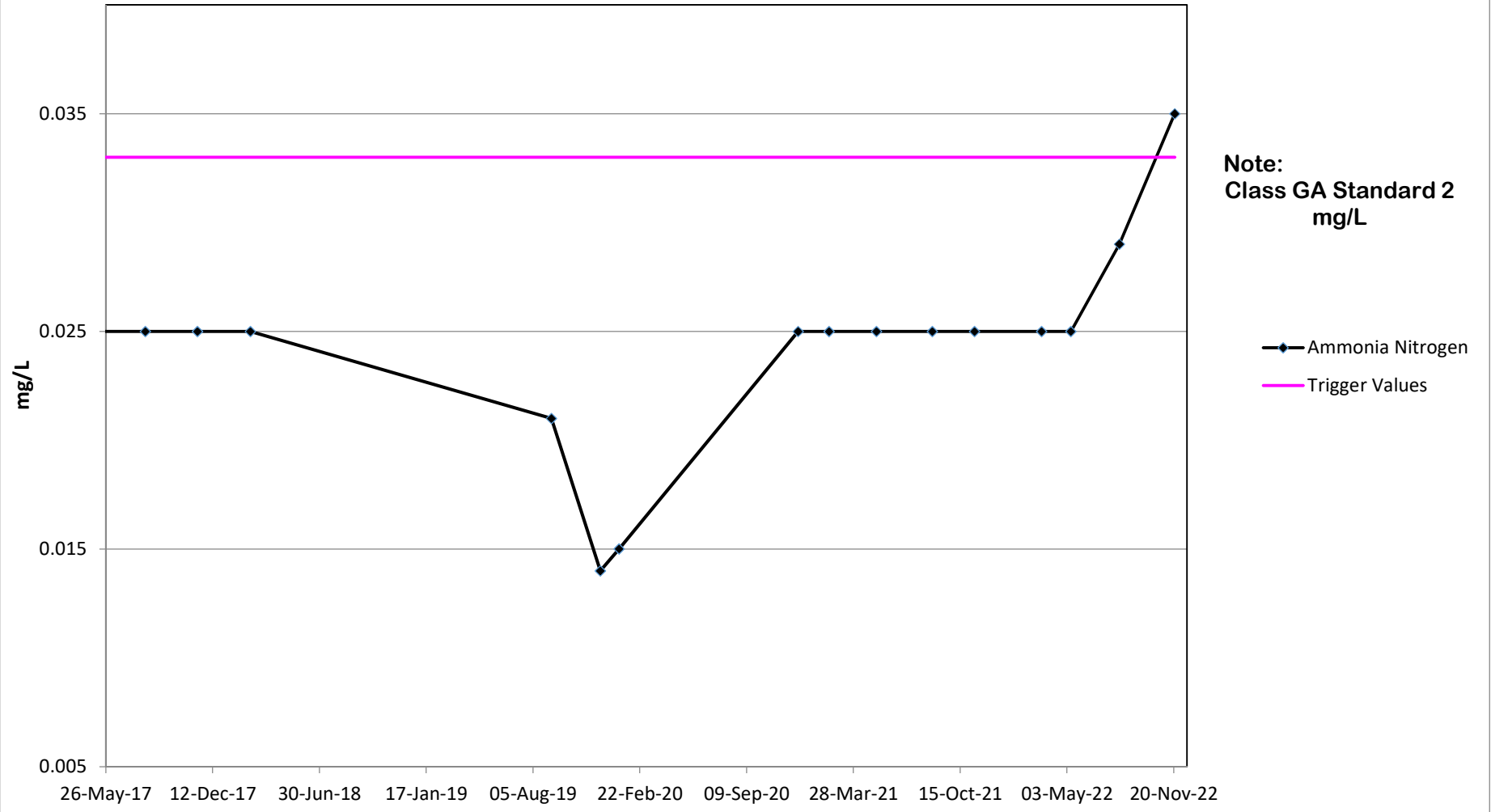
# MW-R(BR) TOC



# MW-R(BR) ZINC

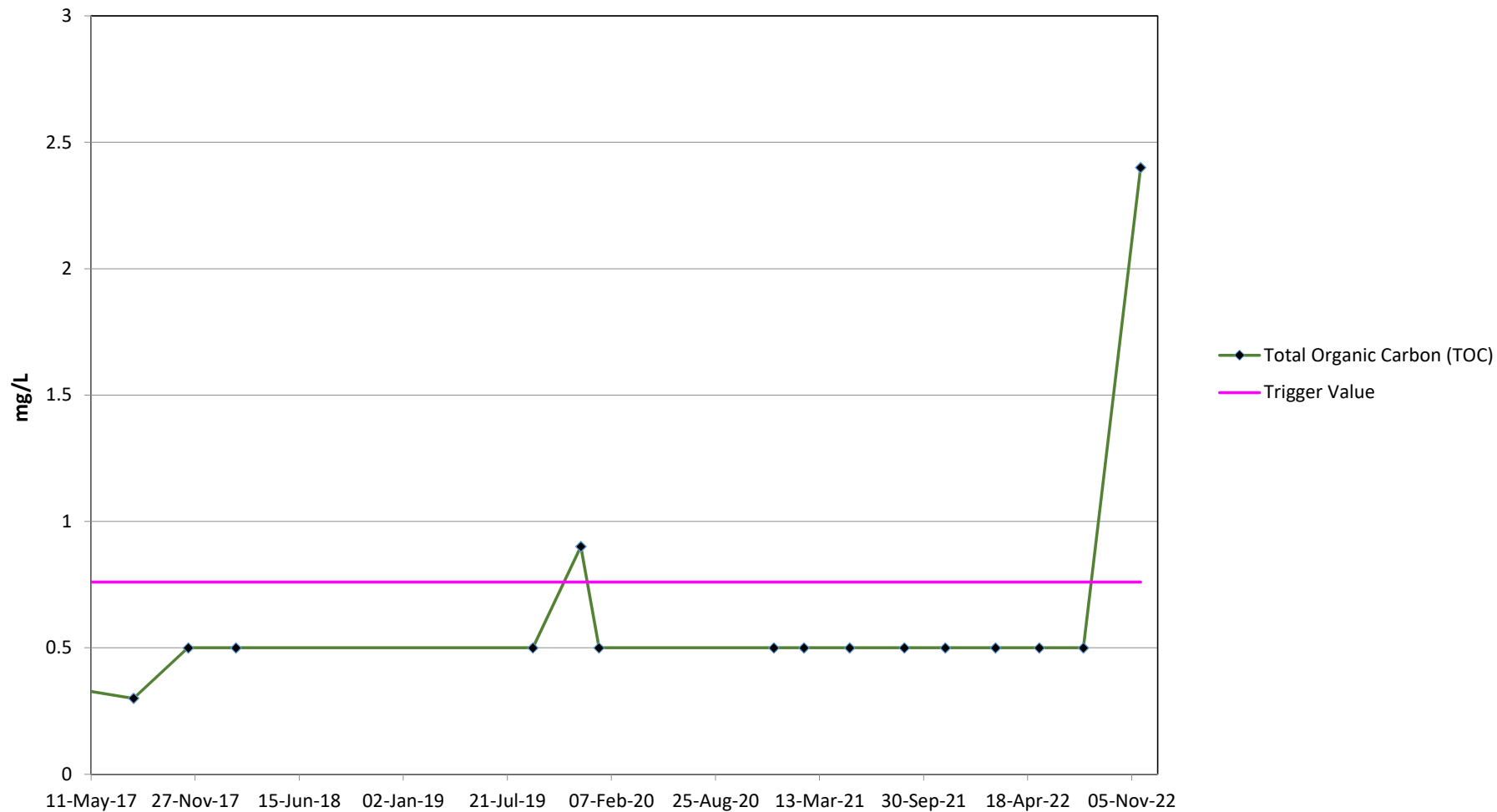


# MW-S (BR) AMMONIA NITROGEN

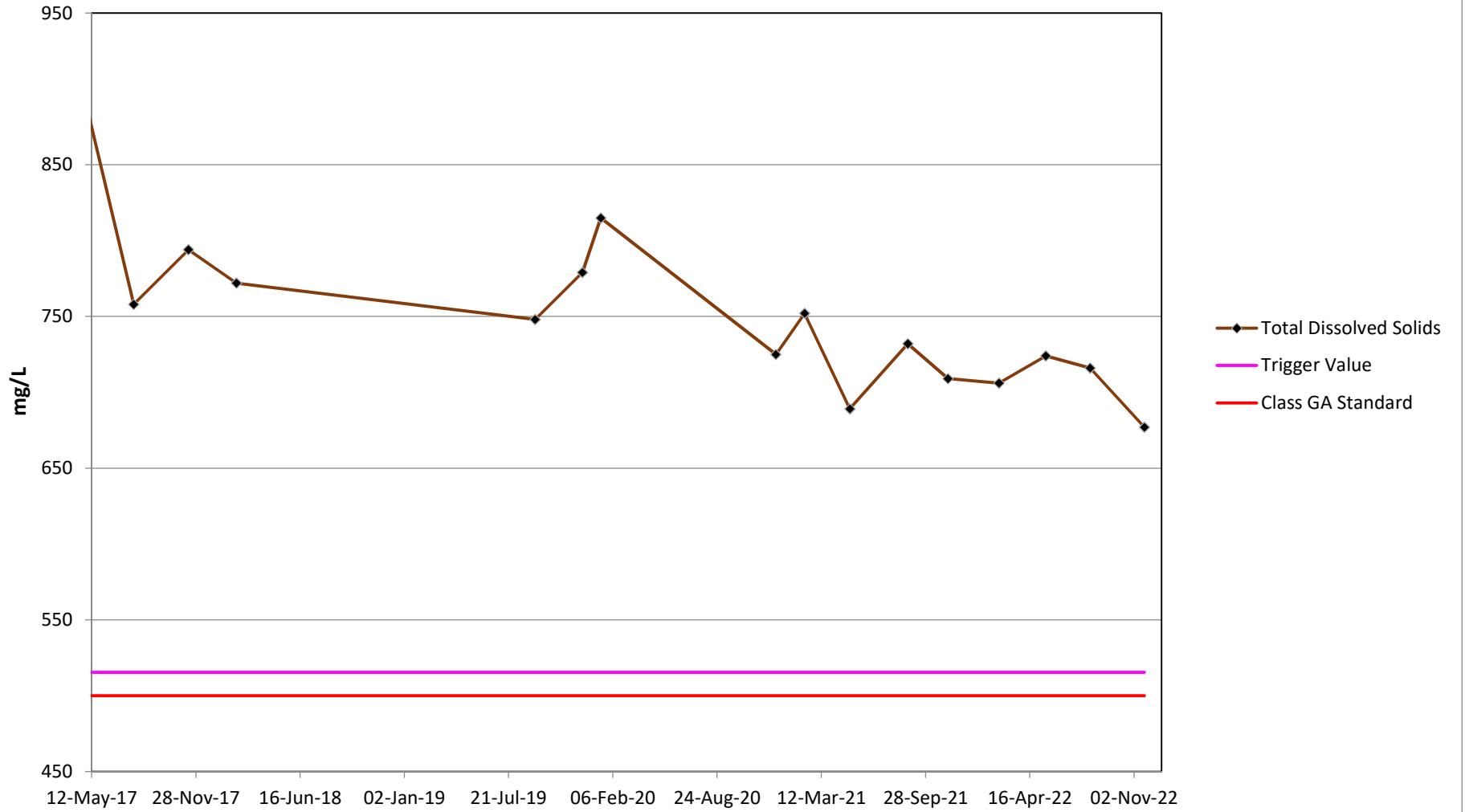




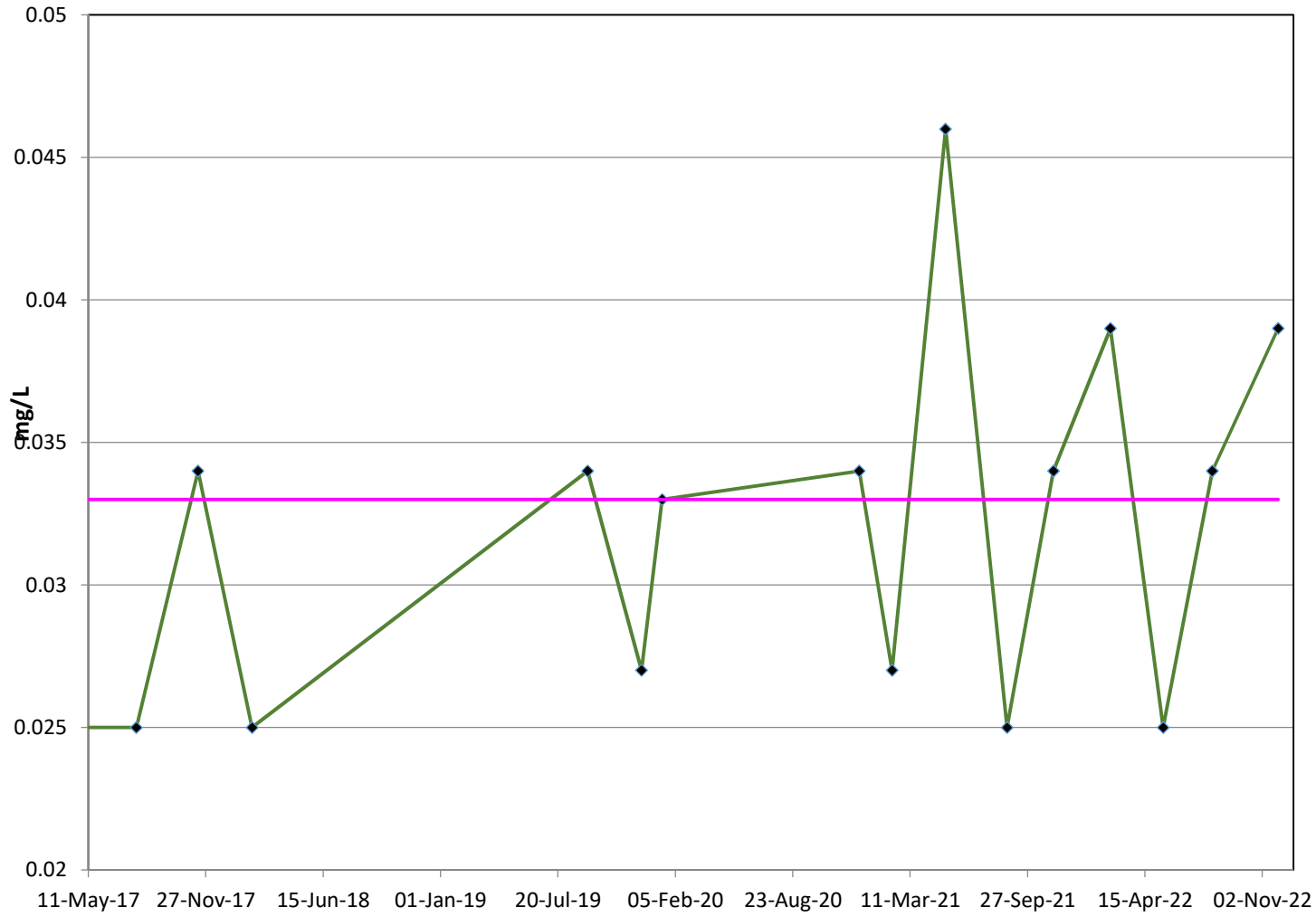
# MW-U(BR) TOC



# MW-V TDS



# MW-V(BR) AMMONIA NITROGEN



Note:  
Class GA Standard 2  
mg/L

◆ Ammonia Nitrogen  
— Trigger Value

**ATTACHMENT 3 – WASTE ORIGIN**

RpOrgWs.rpt

Origin: All

**HAKES C & D LANDFILL**  
**Origin/Material Report**

Transactions from 01/01/2022 through 12/31/2022  
Inbound Tickets Only  
Third Party and Intercompany Customers  
Recycle and Disposal Material  
Material Summary

Tons

**BR - BRONX, NY**

**PRCD - PROC. CONSTRUCTION DEBRIS**  
*694 tickets and 694 transactions*

27,199.76

**TPCD - TIPPER C&D**  
*37 tickets and 37 transactions*

1,442.77

**BR - BRONX, NY**

*731 tickets and 772 transactions*

---

28,642.53

**BRA - BRADFORD,PA**

**CD - CONSTRUCTION DEBRIS**  
*8 tickets and 8 transactions*

35.18

**BRA - BRADFORD,PA**  
*8 tickets and 8 transactions*

---

35.18

**BRIDGEPORT - BRIDGEPORT, CT**

**CD - CONSTRUCTION DEBRIS**  
*12 tickets and 12 transactions*

381.32

**BRIDGEPORT - BRIDGEPORT, CT**  
*12 tickets and 12 transactions*

---

381.32

**BROOME - BROOME, NY**

**CD - CONSTRUCTION DEBRIS**  
*5 tickets and 5 transactions*

82.64

**BROOME - BROOME, NY**  
*5 tickets and 5 transactions*

---

82.64

**CHEMUNG - CHEMUNG, NY**

**CD - CONSTRUCTION DEBRIS** 2,529.10  
*511 tickets and 511 transactions*

**CHEMUNG - CHEMUNG, NY**

**TI - VEHICLE TIRES** 0.00  
*1 ticket and 1 transaction*

**TT - TRAILER TIRES** 0.00  
*1 ticket and 1 transaction*

**ICCD - INTERCOMPANY CONSTRUCTION DEBR** 304.84  
*27 tickets and 27 transactions*

---

**CHEMUNG - CHEMUNG, NY** 2,833.94  
*538 tickets and 559 transactions*

**CORT - CORTLAND, NY**

**CD - CONSTRUCTION DEBRIS** 80.09  
*6 tickets and 6 transactions*

---

**CORT - CORTLAND, NY** 80.09  
*6 tickets and 6 transactions*

**DELAWARE - DELAWARE, NY**

**CD - CONSTRUCTION DEBRIS** 48.03  
*2 tickets and 2 transactions*

---

**DELAWARE - DELAWARE, NY** 75.74  
*3 tickets and 3 transactions*

**FAIRFIELD - FAIRFIELD, CT**

**CD - CONSTRUCTION DEBRIS** 4,390.05  
*154 tickets and 154 transactions*

---

**FAIRFIELD - FAIRFIELD, CT** 4,390.05  
*154 tickets and 156 transactions*

**FRK - FRANKLIN, MA**

**CD - CONSTRUCTION DEBRIS** 7.09  
*1 ticket and 1 transaction*

---

**FRK - FRANKLIN, MA** 7.09  
*1 ticket and 1 transaction*

**HAM - HAMPDEN, MA**

**CD - CONSTRUCTION DEBRIS** 89.81  
*3 tickets and 3 transactions*

---

**HAM - HAMPDEN, MA** 89.81  
*3 tickets and 3 transactions*

**HART - HARTFORD, CT**

**CD - CONSTRUCTION DEBRIS** 20.31  
*3 tickets and 3 transactions*

**HART - HARTFORD, CT**

*3 tickets and 4 transactions* 20.31

**HSHIRE - HAMPSHIRE, MA**

**CD - CONSTRUCTION DEBRIS** 95.08  
*5 tickets and 5 transactions*

**HSHIRE - HAMPSHIRE, MA**

*5 tickets and 5 transactions* 95.08

**JEFFERSON - JEFFERSON, NY**

**CD - CONSTRUCTION DEBRIS** 17.00  
*1 ticket and 1 transaction*

**JEFFERSON - JEFFERSON, NY**

*1 ticket and 1 transaction* 17.00

**KINGS - KINGS, NY**

**KINGS - KINGS, NY**

**CD - CONSTRUCTION DEBRIS** 245.66  
*7 tickets and 7 transactions*

**PRCD - PROC. CONSTRUCTION DEBRIS** 45,346.41  
*1,218 tickets and 1,218 transactions*

**KINGS - KINGS, NY**

*1,562 tickets and 1,616 transactions* 58,337.98

**LITCHFIELD - LITCHFIELD, CT**

**CD - CONSTRUCTION DEBRIS** 8.04  
*1 ticket and 1 transaction*

**LITCHFIELD - LITCHFIELD, CT**

*1 ticket and 2 transactions* 8.04

**LIVING - LIVINGSTON, NY**

**CD - CONSTRUCTION DEBRIS** 3.18  
*1 ticket and 1 transaction*

**LIVING - LIVINGSTON, NY**

*1 ticket and 1 transaction* 3.18

**LYNN - LYNN MA**

**CD - CONSTRUCTION DEBRIS** 684.11  
*19 tickets and 19 transactions*

**LYNN - LYNN MA**

*19 tickets and 19 transactions* 684.11

<b>MIDDLESEX - MIDDLESEX, MA</b>	
<b>MIDDLESEX - MIDDLESEX, MA</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	9.75
<i>1 ticket and 1 transaction</i>	
<b>MIDDLESEX - MIDDLESEX, MA</b>	9.75
<i>1 ticket and 1 transaction</i>	
<b>NA - NOT APPLICABLE</b>	
<b>AS - NON-FRIABLE ASBESTOS C&amp;D</b>	97.23
<i>3 tickets and 3 transactions</i>	
<b>CD - CONSTRUCTION DEBRIS</b>	177.45
<i>8 tickets and 8 transactions</i>	
<b>NA - NOT APPLICABLE</b>	274.68
<i>11 tickets and 11 transactions</i>	
<b>NEW HAVEN - NEW HAVEN, CT</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	970.42
<i>46 tickets and 46 transactions</i>	
<b>NEW HAVEN - NEW HAVEN, CT</b>	970.42
<i>46 tickets and 46 transactions</i>	
<b>ONONDAGA - ONONDAGA,NY</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	26.02
<i>6 tickets and 6 transactions</i>	
<b>ONONDAGA - ONONDAGA,NY</b>	26.02
<i>6 tickets and 6 transactions</i>	
<b>ONTARIO - ONTARIO,NY</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	24.34
<i>7 tickets and 7 transactions</i>	
<b>ONTARIO - ONTARIO,NY</b>	24.34
<i>7 tickets and 8 transactions</i>	
<b>PALM - PALMER, MA</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	147.42
<i>6 tickets and 6 transactions</i>	
<b>PALM - PALMER, MA</b>	147.42
<i>6 tickets and 6 transactions</i>	
<b>PLY - PLYMOUTH,MA</b>	
<b>CD - CONSTRUCTION DEBRIS</b>	3,905.85
<i>168 tickets and 168 transactions</i>	
<b>TPCD - TIPPER C&amp;D</b>	27.41
<i>1 ticket and 1 transaction</i>	
<b>PLY - PLYMOUTH,MA</b>	3,933.26
<i>169 tickets and 171 transactions</i>	



**QU - QUEENS, NY**

**PRCD - PROC. CONSTRUCTION DEBRIS** 9,063.44  
*244 tickets and 244 transactions*

**QU - QUEENS, NY** 9,063.44  
*244 tickets and 256 transactions*

---

**ROCK - ROCKLAND, NY**

**CD - CONSTRUCTION DEBRIS** 155.54  
*5 tickets and 5 transactions*

**PRCD - PROC. CONSTRUCTION DEBRIS** 30.84  
*1 ticket and 1 transaction*

**ROCK - ROCKLAND, NY** 186.38  
*6 tickets and 6 transactions*

---

**SCHUYLAR - SCHUYLER, NY**

**SCHUYLAR - SCHUYLER, NY**

**CD - CONSTRUCTION DEBRIS** 2,469.07  
*272 tickets and 272 transactions*

**TPCD - TIPPER C&D** 54.70  
*3 tickets and 3 transactions*

**SCHUYLAR - SCHUYLER, NY** 2,523.77  
*275 tickets and 283 transactions*

---

**SENECA - SENECA, NY**

**CD - CONSTRUCTION DEBRIS** 117.78  
*18 tickets and 18 transactions*

**SENECA - SENECA, NY** 117.78  
*18 tickets and 19 transactions*

---

**SPRING - SPRINGFIELD, MA**

**CD - CONSTRUCTION DEBRIS** 96.84  
*5 tickets and 5 transactions*

**SPRING - SPRINGFIELD, MA** 96.84  
*5 tickets and 5 transactions*

---

**STEUBEN - STEUBEN, NY**

**CD - CONSTRUCTION DEBRIS** 5,168.78  
*785 tickets and 785 transactions*

**ICCD - INTERCOMPANY CONSTRUCTION DEBR** 40.94  
*4 tickets and 4 transactions*

**STEUBEN - STEUBEN, NY** 5,209.72  
*789 tickets and 797 transactions*

---

**SUL - SULLIVAN,NY**

**CD - CONSTRUCTION DEBRIS** 190.02  
*7 tickets and 7 transactions*

**PRCD - PROC. CONSTRUCTION DEBRIS** 37.46  
*1 ticket and 1 transaction*

**SUL - SULLIVAN,NY** 

---

 314.95  
*11 tickets and 12 transactions*

**TIOGA, NY - TIOGA, NY**

**CD - CONSTRUCTION DEBRIS** 150.69  
*33 tickets and 33 transactions*

**TIOGA, NY - TIOGA, NY** 

---

 150.69  
*33 tickets and 33 transactions*

**TIOGA - TIOGA, PA**

**CD - CONSTRUCTION DEBRIS** 48.25  
*8 tickets and 8 transactions*

**ICCD - INTERCOMPANY CONSTRUCTION DEBR** 41.35  
*5 tickets and 5 transactions*

**TIOGA - TIOGA, PA** 

---

 89.60  
*13 tickets and 13 transactions*

**TOLL - TOLLAND, CT**

**CD - CONSTRUCTION DEBRIS** 7.42  
*1 ticket and 1 transaction*

**TOLL - TOLLAND, CT** 

---

 7.42  
*1 ticket and 2 transactions*

**TOMPKINS - TOMPKINS,NY**

**CD - CONSTRUCTION DEBRIS** 1,230.96  
*218 tickets and 218 transactions*

**ICCD - INTERCOMPANY CONSTRUCTION DEBR** 8,981.21  
*269 tickets and 269 transactions*

**TPCD - TIPPER C&D** 70.18  
*2 tickets and 2 transactions*

**TOMPKINS - TOMPKINS,NY** 

---

 10,282.35  
*489 tickets and 500 transactions*

**WESTCHES - WESTCHESTER,NY**

**CD - CONSTRUCTION DEBRIS** 1,519.39  
*44 tickets and 44 transactions*

**PRCD - PROC. CONSTRUCTION DEBRIS** 103,207.05  
*2,814 tickets and 2,814 transactions*

**TPCD - TIPPER C&D** 13,658.51  
*375 tickets and 375 transactions*

**WESTCHES - WESTCHESTER,NY** 

---

 118,384.95  
*3,233 tickets and 3,269 transactions*

**WORCESTER - WORCESTER,MA**

**AS - NON-FRIABLE ASBESTOS C&D** 42.27  
*1 ticket and 1 transaction*

**CD - CONSTRUCTION DEBRIS** 113.40  
*5 tickets and 5 transactions*

**WORCESTER - WORCESTER,MA** 

---

155.67  
*6 tickets and 6 transactions*

**YATES - YATES, NY**

**CD - CONSTRUCTION DEBRIS** 251.45  
*53 tickets and 53 transactions*

**YATES - YATES, NY**

**TI - VEHICLE TIRES** 0.00  
*1 ticket and 1 transaction*

**YATES - YATES, NY** 

---

251.45  
*53 tickets and 54 transactions*

**Report Grand Totals** 

---

248,004.99

*8,475 tickets and 8,677 transactions*

**End of Report**

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**ATTACHMENT 4 – COST ESTIMATES AND  
FINANCIAL ASSURANCE INFORMATION**

**NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION**

Division of Materials Management, Region 8  
6274 East Avon-Lima Road, Avon, NY 14414-9516  
P: (585) 226-5411 | F: (585) 226-2909  
[www.dec.ny.gov](http://www.dec.ny.gov)

SENT VIA E-MAIL ([larry.shilling@casella.com](mailto:larry.shilling@casella.com))

June 30, 2022

Mr. Larry Shilling  
Hakes C&D Disposal, Inc.  
4376 Manning Ridge Road  
Painted Post, NY 14870

Dear Mr. Shilling:

Re: Hakes C&D Debris Landfill  
Financial Assurance Evaluation – Cell 9B Construction

I reviewed the financial assurance evaluation prepared by McMahon & Mann Consulting Engineering and Geology, PC submitted under cover of letter dated June 17, 2022 and the revision submitted via e-mail dated June 23, 2022. The estimated costs of closure, post-closure care, and custodial care are hereby approved.

Prior to the placement of waste within the above-referenced landfill cell, Casella will need to provide the Department with an executed original surety bond rider or other form of financial assurance acceptable to the Department in the amount of \$9,813,050.97 (includes landfill closure and post-closure) along with an updated Standby Trust Agreement.

Please disregard my letter dated June 24, 2022. Should you have any questions, feel free to call me at (585) 226-5410 or e-mail [mark.amann@dec.ny.gov](mailto:mark.amann@dec.ny.gov).

Sincerely,



Mark Amann, PE

Ec: G. MacLean – NYSDEC  
B. Zielinski – NYSDEC  
C. Plank – Casella  
S. Logan – McMahon & Mann

**FINANCIAL ASSURANCE EVALUATION**

**HAKES C&D LANDFILL EXPANSION  
TOWN OF CAMPBELL, NEW YORK**

## **FINANCIAL ASSURANCE EVALUATION**

### **HAKES C&D LANDFILL EXPANSION TOWN OF CAMPBELL, NEW YORK**

Financial assurance information was prepared and submitted with the 6 NYCRR Part 360 Solid Waste Management Permit Modification Application (Part 1 Introduction and Administrative Information) dated May 2019. It included cost estimates for closure, post-closure care and custodial care for the existing landfill (Cells 1-8) and the proposed Northern Expansion (Cell 9A through 9C).

According to 360.22(b)(3)(ii), annual cost estimate adjustments that account for inflation and changes in facility conditions must be submitted annually to the DEC for review and approval. In addition, Special Condition 9 requires that prior to commencing operation of Cell 9, the permittee must amend its financial assurance provided to the DEC, or establish new financial assurance, in accordance with all the requirements of 6 NYCRR Part 360.22.

The financial assurance estimate provided in the Part 360 application is updated to reflect conditions following the 2022 construction season (Cells 1 through Cell 9B constructed and operational). The following are the updated closure, post-closure, custodial care, and corrective measures cost estimates.

### **CLOSURE COST ESTIMATE**

#### **Requirement:**

The closure cost estimate must equal the cost to close the greatest number of landfill cells which, at any given point during the lifetime of the facility, have received waste but have not undergone final closure. According to Section 360.22(b)(2)(i):

- The closure cost estimates must include or reflect the design, materials, equipment, labor, administration, and quality assurance for closure in accordance with the facility-specific closure plan.
- The closure cost estimate for a landfill's preliminary closure plan must include the costs of developing final closure, post closure care and custodial care plans as well as the costs to prepare engineering drawings and specifications, bidding documents, and other construction-related documents.
- The closure cost estimate must not incorporate any salvage value that may be realized with the sale of materials, facility structures or equipment, land, or other assets associated with the facility at the time of closure.

Closure Cost Estimate:

The closure cost is estimated based on current site conditions and assuming Cell 9B is constructed to its proposed limits. The permitted landfill (Cells 1 through 9A) covers approximately 65.2 acres. Cell 9B will encompass an additional 6.6 acres making the total footprint of the landfill approximately 71.8 acres (this two-dimensional area equates to 75.0 acres when slopes are considered). Twenty-one (21) acres has received final cover leaving approximately 54.0 acres requiring final cover.

Figure 1 shows the conceptual final cover plan for Cells 1 through 9B. The estimate assumes that the gas collection and transfer system will be installed while the facility is accepting waste.

The landfill closure will consist of the following components in ascending order:

- A geocomposite/geotextile gas venting layer,
- A geosynthetic clay liner (not required on slopes equal to or greater than 25 percent),
- A geomembrane liner,
- A geocomposite drainage layer,
- A barrier protection layer, and
- A 6-inch topsoil layer.

Attachment 1 includes the closure cost estimate including quantities and costs for each component of the final cover system. The unit costs are based on construction costs from final cover and cell construction at this facility. The estimate also includes costs to prepare final closure, post closure care, and custodial care plans including preparation of engineering drawings and specifications, bidding documents, and other construction related documents. In addition, as required by Section 360.22(b)(2)(v), the total cost estimate has been increased by a contingency factor of 5 percent.

The closure cost is estimated to be approximately \$7,591,000 (present value).

**POST-CLOSURE CARE COST ESTIMATE**

Hakes will operate under the post-closure care period requirements until it can be demonstrated to the NYSDEC that the threat to public health and the environment has been reduced to a level where environmental monitoring and maintenance can be reduced. During the post-closure care period the operational requirements of Section 363-9.6(a)(1) will be followed.

Requirement:

The post-closure care cost estimate should include an estimate of the anticipated length of the post-closure care period considering the types of wastes disposed and the criteria provided in Section 363-9.6(a). In addition, post-closure operational, monitoring, and



maintenance costs should consider costs to replace system components, if necessary, based on their predicted service life.

The landfill only accepts construction and demolition debris as defined by Section 360.2(b)(61). In addition, the environmental monitoring at the facility since 1998 (year Casella purchased) has not indicated any issues with the landfill liner system. Considering these factors, it is expected that the post-closure care period will be 30 years or less.

Cost Estimate:

Attachment 2 includes the post-closure cost estimate for a 30-year period following closure of the landfill, although it is expected that this time frame may be less due to the nature of the waste. The cost estimate is based on meeting the post-closure care requirements in Section 363-9.6(a), specifically 363-9.6(a)(1)(i) through 363-9.6(a)(1)(x).

The post-closure cost is estimated to be approximately \$2,222,200 (present value)

**CUSTODIAL CARE COST ESTIMATE**

Requirement:

The custodial care cost estimate (Section 360.22(b)(2)(iii)) must account for conducting custodial care after the landfill concludes post-closure care activities. This includes annual and periodic costs, as well as replacement costs of landfill components that reach their predicted service life as described in the custodial care plan.

Cost Estimate:

Attachment 3 includes the custodial care cost estimate. The custodial care period is assumed to begin 30-years after closure and extend another 20-years. The cost estimate is based on meeting the custodial care cost operating requirements in Section 363-9.6(b), specifically 363-9.6(b)(1)(i) through 363-9.6(b)(1)(vii).

The custodial care cost is estimated to be approximately \$79,800 (present value).

**CORRECTIVE MEASURES COST ESTIMATE**

Requirement:

The corrective measures cost estimate, per Section 360.22(b)(2)(iv) must account for the total costs of corrective measures as described in the corrective measures work plan for the entire corrective measures period as described in Subpart 363-10.

Cost Estimate:

This pertains to measures necessary to address situations where a trigger value is exceeded as defined by the regulations. Currently there are no corrective measures

required and none are expected. Therefore, no costs are considered for corrective measures at this time.

FIGURE 1



OPERATIONAL AREA  
(71.8 AC. - 2D)  
(75.0 AC. - 3D)

SLOPES BETWEEN  
4%-25%  
(12.5 AC. - 2D)

MANNING RIDGE ROAD

CELLS 1-9A

CELL 9B

CAPPED AREA  
(21.0 AC.)

MAINTENANCE  
BUILDING

SLOPES GREATER THAN 25%  
(59.3 AC. - 2D)

JUNE 2022



**McMahon & Mann**  
Consulting Engineering and Geology, P.C.  
2495 Main Street, Suite 432  
Buffalo, NY 14214  
(716) 834-8932  
www.mmce.net

HAKES C&D LANDFILL  
FINANCIAL ASSURANCE

STEBEN COUNTY

NEW YORK

SITE PLAN

DWG. NO. 98047-1414

FIGURE 1

# ATTACHMENT 1

Closure Cost Estimate

**HAKES C&D LANDFILL  
CLOSURE COST ESTIMATE  
CELLS 1THROUGH 9B**

Estimate Date: June 2022

Final Cover System Component	Layer Thickness (feet)	Estimated Quantity	Unit	Unit Price <sup>(1)</sup> (\$)	Cost
<b>Final Cover Area (Requiring Final Cover)<sup>2</sup></b>					
Final Cover Area (slope between 4% - 25%)		12.5	acres		
Final Cover Area (slope > 25%)		41.5	acres		
<b>Earthwork Components</b>					
Mobilization (capping completed in 10 acre increments)		6	LS	30,000.00	\$180,000
Erosion Control		54.0	acres	2,000.00	\$108,000
Subgrade Preparation		54.0	acres	1,000.00	\$54,000
<b>Barrier Protection Layer (Processing &amp; Placement)</b>					
Lower 6-inches (2-inch minus material)	0.5	43,560	cy	15.00	\$653,400
Upper 12-inches (6-inch minus material)	1.0	87,120	cy	13.00	\$1,132,560
Permanent Topsoil and Seeding		54.0	acres	6,350.00	\$342,900
Final Cover Drainage System		54.0	acres	2,500.00	\$135,000
<b>Geosynthetics</b>					
<b>Gas Venting Layer (Alternating Layers)</b>					
Geocomposite		1,176,120	ft <sup>2</sup>	0.53	\$623,344
Geotextile		1,176,120	ft <sup>2</sup>	0.38	\$446,926
40 mil Textured LDPE		2,352,240	ft <sup>2</sup>	0.50	\$1,176,120
Drainage Geocomposite		2,352,240	ft <sup>2</sup>	0.53	\$1,246,687
Geosynthetic Clay Liner		544,500	ft <sup>2</sup>	0.67	\$364,815
<b>Plan Preparation</b>					
Closure Plan		1	each	50,000.00	\$50,000
Post-Closure Plan		1	each	50,000.00	\$50,000
Custodial Care Plan		1	each	50,000.00	\$50,000
Design/Specifications/CQA/Surveying (Assume 10 percent of construction cost)					\$646,375
Contingency (5 percent Cost Estimate) <sup>(3)</sup>					\$330,688
				<b>Total =</b>	<b>\$7,590,814</b>

Notes:

1. Unit prices are based on costs for construction of Capping Event #2 and Cell 8 Construction at the Hakes Facility. Cost is for supply and install.
2. The estimated area represents the three dimensional area of the final cover of Cells 1 through 9B minus the area of Capping Event #1 and #2.
3. The Contingency includes everything except the Design/Specifications/CQA/Surveying estimate cost.

# ATTACHMENT 2

Post-Closure Cost Estimate

**HAKES C&D LANDFILL  
POST CLOSURE COST ESTIMATE  
CELLS 1 THROUGH 9B**

Estimate Date: June 2022

**1. Maintenance (Section 363-9.6(a)(1)(i) through (iii)):**

Maintenance of all slopes, vegetation, drainage structures, etc	\$	5,000.00
Maintenance of the integrity and effectiveness of the final cover	\$	2,500.00
Annual Mowing	\$	5,500.00
<b>Total Annual:</b>		<b>\$ 13,000.00</b>

**2. Environmental Monitoring (Section 363-9.6(a)(1)(iv)(a) through (c)):**

Explosive gas monitoring - Not required at this site	\$	-
Environmental Monitoring (Annual Baseline and Quarterly Routine)	\$	65,000.00
Environmental Monitoring Location Maintenance (wells, etc)	\$	1,000.00
Record keeping and reporting	\$	1,500.00
<b>Total Annual:</b>		<b>\$ 67,500.00</b>

**3. Leachate System Maintenance (Section 363-9.6(a)(1)(v)):**

Leachate Controls and Pump Maintenance	\$	2,000.00
Leachate Line and Tank Cleaning	\$	17,000.00
Evaluation of liner performance	\$	500.00
Leachate Sampling and Analysis (included with Environmental Monitoring)	\$	-
<b>Total Annual:</b>		<b>\$ 19,500.00</b>

**3. Gas Collection System (Section 363-9.6(a)(1)(vi)):**

Gas Collection System Maintenance and Operation	\$	5,000.00
<b>Total Annual:</b>		<b>\$ 5,000.00</b>

**4. Inspections (Section 363-9.6(a)(1)(vii)):**

Quarterly Inspections	\$	4,000.00
Inspection after seismic event or major rainfall	\$	500.00
<b>Total Annual:</b>		<b>\$ 4,500.00</b>

**5. Annual Report (Section 363-9.6(a)(1)(ix) through (x)):**

Annual Report - results of maintenance, monitoring, and inspections	\$	1,250.00
Annual Report - environmental and facility monitoring	\$	4,500.00
<b>Total Annual:</b>		<b>\$ 5,750.00</b>

**6. Leachate Collection and Treatment (Section 363-9.6(a)(1)(v)):**

Year 1 - Projected Leachate Production:			
100 gallons/acre/day x	71.80 acres x	365 days/yr	2,620,700.00 gal/yr
Year 2 - Projected Leachate Production:			
70 gallons/acre/day x	71.80 acres x	365 days/yr	1,834,490.00 gal/yr
Year 3 - Projected Leachate Production:			
50 gallons/acre/day x	71.80 acres x	365 days/yr	1,310,350.00 gal/yr
Year 4 - Projected Leachate Production:			
30 gallons/acre/day x	71.80 acres x	365 days/yr	786,210.00 gal/yr
Year 5 - Projected Leachate Production:			
20 gallons/acre/day x	71.80 acres x	365 days/yr	524,140.00 gal/yr
Year 6 through 10 - Projected Leachate Production:			
10 gallons/acre/day x	71.80 acres x	1825 days/ 5yr	1,310,350.00 gal
Year 11 through 30 - Projected Leachate Production:			
5 gallons/acre/day x	71.80 acres x	7300 days/ 20 yr	2,620,700.00 gal
Leachate Transportation and Treatment (years 1-5)			
7,075,890.00 gallons x	\$ 0.080 /gallon		\$ 566,071.20



Leachate Transportation and Treatment (years 6-10)			
1,310,350.00	gallons x	\$ 0.080 / gallon	\$ 104,828.00
Leachate Transportation and Treatment (years 11-30)			
2,620,700.00	gallons x	\$ 0.080 / gallon	\$ 209,656.00

**Total Annual Costs for Post - Closure Care on Cells 1 through 9:**

Years 1 - 5:			
Maintenance <sup>1</sup>		\$	13,000.00
Environmental Monitoring <sup>2</sup>		\$	67,500.00
Leachate Collection System		\$	19,500.00
Gas Collection System		\$	5,000.00
Inspections		\$	4,500.00
Annual Report		\$	5,750.00
Leachate Transportation and Treatment (average)	\$566,071.20 / 5 years	\$	113,214.24
		<b>Total Annual: \$</b>	<b>228,464.24</b>
Years 6 - 10:			
Maintenance <sup>1</sup>		\$	6,500.00
Environmental Monitoring <sup>2</sup>		\$	33,750.00
Leachate Collection System		\$	19,500.00
Gas Collection System		\$	3,750.00
Inspections		\$	4,500.00
Annual Report		\$	5,750.00
Leachate Transportation and Treatment (average)	\$104,828.00 / 5 years	\$	20,965.60
		<b>Total Annual: \$</b>	<b>94,715.60</b>
Years 11 - 30:			
Maintenance <sup>1</sup>		\$	3,250.00
Environmental Monitoring <sup>2</sup>		\$	16,875.00
Leachate Collection System		\$	19,500.00
Gas Collection System		\$	2,812.50
Inspections		\$	4,500.00
Annual Report		\$	5,750.00
Leachate Transportation and Treatment (average)	\$209,656.00 / 20 years	\$	10,482.80
		<b>Total Annual: \$</b>	<b>63,170.30</b>

Note:

- Maintenance costs are projected to remain steady for the first five years following closure and then reduce an additional 50% for years 6 - 10 and then reduce an additional 50% for years 11 - 30.
- Environmental Monitoring costs are projected to remain steady for the first five years following closure and then reduce an additional 50% for years 6 - 10 and then reduce an additional 50% for years 11 - 30.

**7. Present Worth of Post Closure Costs:**

Assume Interest (i) = 4.5 %  
 Assume Inflation (a) = 2.0 %

Given annual contributions to determine present worth assuming 4.5% interest on money earned and 2.0% inflation rate.

$(P/A, 2.5\%, 5YR) \times \text{ANNUAL COST YEARS 1-5} + (P/A, 2.5\%, 5YR) \times \text{ANNUAL COST YEARS 6 - 10} \times (P/F, 2.5\%, 5YR) + (P/A, 2.5\%, 20YR) \times \text{ANNUAL COST YEARS 11 - 30} \times (P/F, 2.5\%, 10YR)$

$(P/A, 2.5\%, 5YR) = 4.6466$   
 $(P/A, 2.5\%, 20YR) = 15.6144$   
 $(P/F, 2.5\%, 5YR) = 0.8842$   
 $(P/F, 2.5\%, 10YR) = 0.7822$

**Present Worth = \$ 2,222,236.97**

# ATTACHMENT 3

Custodial Care Cost Estimate

**HAKES C&D LANDFILL  
CUSTODIAL COST ESTIMATE  
CELLS 1 THROUGH 9B**

---

Estimate Date: June 2022

**1. Maintenance (Section 363-9.6(b)(1)(i) through (iii)):**

Maintenance of all slopes, vegetation, drainage structures, etc	\$	1,500.00
Maintenance of the integrity and effectiveness of the final cover	\$	1,000.00
Mowing (Assumed every 5 years)	\$	1,000.00
<b>Total Annual:</b>	<b>\$</b>	<b>3,500.00</b>

**2. Environmental Monitoring (Section 363-9.6(b)(1)(iv)(a) through (b)):**

Baseline Monitoring every 5 years	\$	1,000.00
Record keeping and reporting every 5 years	\$	1,000.00
<b>Total Annual:</b>	<b>\$</b>	<b>2,000.00</b>

**3. Gas Collection System (Section 363-9.6(b)(1)(v)):**

Gas Collection System Maintenance and Operation - Assumed not necessary for C&D Waste	\$	-
<b>Total Annual:</b>	<b>\$</b>	<b>-</b>

**4. Inspections (Section 363-9.6(b)(1)(vi)):**

Annual Inspections	\$	1,000.00
Inspection after seismic event or major rainfall	\$	500.00
<b>Total Annual:</b>	<b>\$</b>	<b>1,500.00</b>

**5. Annual Report (Section 363-9.6(b)(1)(vii)):**

Annual Report - results of maintenance, monitoring, and inspections	\$	1,500.00
<b>Total Annual:</b>	<b>\$</b>	<b>1,500.00</b>

**6. Leachate Collection and Treatment:**

Year 31 through 50 - Projected Leachate Production:			
1 gallons/acre/day x	71.80	acres x	7300 days/20 yr
			524,140.00 gal
Leachate Transportation and Treatment (years 31-50)			
524,140.00 gallons x	\$ 0.080 /gallon		\$ 41,931.20

**Total Annual Costs for Custodial Care on Cells 1 through 9:**

Years 31 through 50		
Maintenance	\$	3,500.00
Environmental Monitoring	\$	2,000.00
Gas Collection System	\$	-
Inspections	\$	1,500.00
Annual Report	\$	1,500.00
Leachate Transportation and Treatment (average)	\$ 41,931.20 / 20 years	\$ 2,096.56
<b>Total Annual:</b>	<b>\$</b>	<b>10,596.56</b>

**7. Present Worth of Custodial Care Costs:**

Assume Interest (i) = 4.5 %  
Assume Inflation (a) = 2.0 %

Given annual contributions to determine present worth assuming 4.5% interest on money earned and 2.0% inflation rate.

(P/F, 2.5%,30YR) X ANNUAL COST YEARS 31-50 X (P/A, 2.5%, 20YR)

(P/A, 2.5%, 20YR) = 15.6144  
(P/F, 2.5%, 30YR) = 0.4821

**Present Worth = \$ 79,759.48**

**ATTACHMENT 5 – ADDITIONAL PERMIT REPORTING REQUIREMENTS**

**SPECIAL CONDITION 53: Annual reports shall be submitted to both the Region 8 Regional Materials Management Engineer, 6274 East Avon-Lima Road, Avon, NY 14414 and the Central Office no later than March 1 of each year for the previous calendar year of operation. The reports shall be in accordance with the requirements of 6 NYCRR Part 360.19(k)(3) and include the following information:**

- (a) Complaints received and how the facility responded in accordance with the Odor Control Plan;**
- (b) An evaluation of all water and leachate quality data collected throughout the year. The Department may request at any time that this information be provided in a computer-compatible format to be specified by the Department;**
- (c) Evaluations of the landfill gas collection and control system, monitoring system, and monitoring data collected throughout the year. A description of proposed and/or actual changes to the landfill gas collection and control system, monitoring system, and monitoring plan shall be included;**
- (d) A completed copy of the Radiation Monitor Alarm Record form for each instance in which the radiation detector alarms due to an incoming load of waste.**

Responses:

- (a) Please see Attachment 6 (Complaint Log).
- (b) Refer to Attachment 2 (Annual Environmental Monitoring Report). Computer-compatible formats are available upon request.
- (c) Quarterly hydrogen sulfide (H<sub>2</sub>S) surface emissions monitoring was conducted on March 9, June 20, September 14, and November 15, 2022. The scans were conducted along the perimeter of the landfill, along a grid pattern on the landfill, and where visual observations indicated elevated concentrations of landfill gas, such as distressed vegetation and cracks or seeps in the cover. H<sub>2</sub>S concentrations greater than 10 ppmv were not detected during any of the quarterly events. Reports were submitted on April 19, July 13, September 30, and December 2, 2022.

Two horizontal gas collectors (designated GH-10 and GH-11) were installed in 2022. Lateral collection pipes were installed to connect the two horizontal collectors to the existing gas collection system. The sulfur treatment system commenced operation in November 2019 and has been operating to remove H<sub>2</sub>S from the landfill gas prior to combustion in the existing utility flare.

The gas collection and control system is functioning properly as of December 31, 2022. Hakes is currently evaluating proposed expansion project to the system for 2023.

- (d) The radiation detectors did not go off in 2022.

**ATTACHMENT 6 – COMPLAINT RECORDS**

# COMPLAINT RECORD FORM- HAKES LANDFILL

**-THIS SECTION COMPLETED BY HAKES PERSONNEL MANAGING COMPLAINT-**

## Complaint Log:

Complaint received by the following method:  Landfill Office Phone  Email  NYDEC  
 Text  In Person  Other: Cell Phone

Date Complaint Received: 1/28/2022 Time Complaint was Received: 11:52  AM  PM

Hakes Manager Contacted Regarding this Complaint: YES

Date/Time Manager Received Reported Complaint: Date: 1/28/2022 Time: 11:52  AM  PM

## Complaint Information:

Name of Person Filing Complaint: Tom Austin

Address: Town of Campbell

Telephone number: 607-527-3339

Nature of complaint:  Odor  Noise  Litter  Dust  Traffic  Other

For Traffic Complaints - Name of Company: LJ Firewood License#: \_\_\_\_\_  
Road/Route: \_\_\_\_\_

Direction traveling  South  Truck type  tractor trailer  straight/dump trailer

For Odor Complaints; Time odor was detected: \_\_\_\_\_  AM  PM

For Odor Complaints; Duration odor was detected: \_\_\_\_\_  AM  PM

For Odor Complaints; Complainant's Description of Odor Type: \_\_\_\_\_

*Note: This should be description of the odor in their own words (i.e. fishy, chemical/solvent, septic, putrid etc.) Avoid them identifying outright as gas, sludge, leachate or garbage unless their description specifically suggests that.*

For Odor Complaints; Complainants Description of Intensity & Presence: *do not use numeric scale; description should be: Very Faint, Faint, Distinct/easily noticeable, Strong, Very strong and a presence as fleeting, intermittent to consistent*

Is the odor being detected at the caller's residence?  Yes  No

Additional Description of the Event by Complainant: Truck didn't stop at the stop sign.

Customer was called and talked to about the driver. Next delivery in the driver will be held onsite for 1 hour.

Return call requested?  Yes  No, Site visit requested?  Yes  No, Property Access Granted?  Yes  No

## Weather Data at Time of Complaint:

Source of Weather Data: Snow

Weather Description: Temperature: 19 °F. Bar. Press. (in-Hg): 30.123 Precipitation: 0

Wind direction & speed: From the West @ 0-7 mph.



General conditions: (Sunny, Cloudy, Fog etc.) Cloudy / Snow

Person Filling This Form: Charles Plank

**-THIS SECTION COMPLETED BY RESPONSE PERSONNEL-**

Name of Responder(s): Telephone Follow Up: \_\_\_\_\_ Site Visit: \_\_\_\_\_

Return Telephone Call Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Summary of Telephone Call: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Site Response Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO \_\_\_\_\_ Name of Complainant/Contactee: \_\_\_\_\_

Summary of Visit & Communication: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Odor Responder Observations:**

Was an Odor Detected;  YES  NO Time: \_\_\_\_\_  AM  PM

Responder's Description of Odor Type: \_\_\_\_\_

*Note: This should be description of the odor in their own words (i.e. fishy, chemical, septic, putrid etc.)*

Responder's Description of Odor Intensity using N-Butanol Scale:  NONE  1  2  3  4  5  6  7-8

0 = No Detectable Odor

1 = Very Faint

2-3 = Faint

3-4 = Distinct, easily noticeable

5-6 = Consistently Detectable Strong Distinguishable Odor

7-8 = Very Strong

Responder's Description of Odor Character/Description

- Garbage/Rotten
- Sludge/Septic
- Landfill Gas/Rotten Eggs
- Leachate
- Barnyard/Manure
- Chemical/Solvent
- None of above

Additional Description: \_\_\_\_\_  
\_\_\_\_\_

**Weather Observations at Time of Response at the Odor Complaint Location:**

Weather Description: Temperature: \_\_\_\_\_°F. Precipitation: \_\_\_\_\_

Wind direction & speed: From the \_\_\_\_\_ @ \_\_\_\_\_ mph.

General conditions: (Sunny, Cloudy, Fog etc.) \_\_\_\_\_

**Weather Data at Time of Response From Weather Station**

Weather Data Source: Hakes Weather Station

Weather Description: Temperature: 19°F. Bar. Press.(in-Hg): 30.123 Precipitation: 0

Wind direction & speed: From the West @ 0-7 mph.

General conditions: (Sunny, Cloudy, Fog etc.) Cloudy / Snow

**Other Responder Comments Pertaining to Response:**

\_\_\_\_\_  
\_\_\_\_\_

Signature of Responder: 

Date: 1/28/2022

# COMPLAINT RECORD FORM- HAKES LANDFILL

**-THIS SECTION COMPLETED BY HAKES PERSONNEL MANAGING COMPLAINT-**

## Complaint Log:

Complaint received by the following method:  Landfill Office Phone  Email  NYDEC  
 Text  In Person  Other: Cell Phone

Date Complaint Received: 4/25/2022 Time Complaint was Received: 1:00  AM  PM

Hakes Manager Contacted Regarding this Complaint: YES

Date/Time Manager Received Reported Complaint: Date: 4/25/2022 Time: 1:00  AM  PM

## Complaint Information:

Name of Person Filing Complaint: Tom Austin

Address: Town of Campbell

Telephone number: 607-527-3339

Nature of complaint:  Odor  Noise  Litter  Dust  Traffic  Other

For Traffic Complaints - Name of Company: Bridgewater License#: \_\_\_\_\_  
Road/Route: \_\_\_\_\_

Direction traveling South Truck type  tractor trailer  straight/dump trailer

For Odor Complaints; Time odor was detected: \_\_\_\_\_  AM  PM

For Odor Complaints; Duration odor was detected: \_\_\_\_\_  AM  PM

For Odor Complaints; Complainant's Description of Odor Type: \_\_\_\_\_

*Note: This should be description of the odor in their own words (i.e. fishy, chemical/solvent, septic, putrid etc.) Avoid them identifying outright as gas, sludge, leachate or garbage unless their description specifically suggests that.*

For Odor Complaints; Complainants Description of Intensity & Presence: *do not use numeric scale; description should be: Very Faint, Faint, Distinct/easily noticeable, Strong, Very strong and a presence as fleeting, intermittent to consistent*

Is the odor being detected at the caller's residence?  Yes  No

Additional Description of the Event by Complainant: Truck Driving to fast and didn't stop at the stop sign.

Customer was called, Next time driver comes in he will be held for 1 hour.

Return call requested?  Yes  No, Site visit requested?  Yes  No, Property Access Granted?  Yes  No

## Weather Data at Time of Complaint:

Source of Weather Data: Cloudy

Weather Description: Temperature: 74 °F. Bar. Press. (in-Hg): \_\_\_\_\_ Precipitation: 0

Wind direction & speed: From the \_\_\_\_\_ @ \_\_\_\_\_ mph.

General conditions: (Sunny, Cloudy, Fog etc.) \_\_\_\_\_

Person Filling This Form: Charles Plank

**-THIS SECTION COMPLETED BY RESPONSE PERSONNEL-**

Name of Responder(s): Telephone Follow Up: \_\_\_\_\_ Site Visit: \_\_\_\_\_

Return Telephone Call Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Summary of Telephone Call: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Site Response Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO \_\_\_\_\_ Name of Complainant/Contactee: \_\_\_\_\_

Summary of Visit & Communication: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

**Odor Responder Observations:**

Was an Odor Detected;  YES  NO Time: \_\_\_\_\_  AM  PM

Responder's Description of Odor Type: \_\_\_\_\_

*Note: This should be description of the odor in their own words (i.e. fishy, chemical, septic, putrid etc.)*

Responder's Description of Odor Intensity using N-Butanol Scale:  NONE  1  2  3  4  5  6  7-8

0 = No Detectable Odor

1 = Very Faint

2-3 = Faint

3-4 = Distinct, easily noticeable

5-6 = Consistently Detectable Strong Distinguishable Odor

7-8 = Very Strong

Responder's Description of Odor Character/Description

- Garbage/Rotten
- Sludge/Septic
- Landfill Gas/Rotten Eggs
- Leachate
- Barnyard/Manure
- Chemical/Solvent
- None of above

Additional Description: \_\_\_\_\_  
\_\_\_\_\_

**Weather Observations at Time of Response at the Odor Complaint Location:**

Weather Description: Temperature: \_\_\_\_\_°F. Precipitation: \_\_\_\_\_

Wind direction & speed: From the \_\_\_\_\_ @ \_\_\_\_\_ mph.

General conditions: (Sunny, Cloudy, Fog etc.) \_\_\_\_\_

**Weather Data at Time of Response From Weather Station**

Weather Data Source: \_\_\_\_\_

Weather Description: Temperature: \_\_\_\_\_°F. Bar. Press.(in-Hg): \_\_\_\_\_ Precipitation: \_\_\_\_\_

Wind direction & speed: From the \_\_\_\_\_ @ \_\_\_\_\_ mph.

General conditions: (Sunny, Cloudy, Fog etc.) \_\_\_\_\_

**Other Responder Comments Pertaining to Response:**

\_\_\_\_\_  
\_\_\_\_\_

Signature of Responder: \_\_\_\_\_



Date: 4/25/2022

# COMPLAINT RECORD FORM- HAKES LANDFILL

**-THIS SECTION COMPLETED BY HAKES PERSONNEL MANAGING COMPLAINT-**

## Complaint Log:

Complaint received by the following method:  Landfill Office Phone  Email  NYDEC  
 Text  In Person  Other: CELL PHONE

Date Complaint Received: 8/25/2022 Time Complaint was Received: 8:42  AM  PM

Hakes Manager Contacted Regarding this Complaint: YES

Date/Time Manager Received Reported Complaint: Date: 8/25/2022 Time: 8:42  AM  PM

## Complaint Information:

Name of Person Filing Complaint: Maggie Franzen

Address: 4381 W. Hill Rd. Painted Post, NY 14870

Telephone number: 607-368-5671

Nature of complaint:  Odor  Noise  Litter  Dust  Traffic  Other

For Traffic Complaints - Name of Company: \_\_\_\_\_ License#: \_\_\_\_\_  
Road/Route: \_\_\_\_\_

Direction traveling \_\_\_\_\_ Truck type  tractor trailer  straight/dump trailer

For Odor Complaints; Time odor was detected: 8:42  AM  PM

For Odor Complaints, Duration odor was detected: \_\_\_\_\_  AM  PM

For Odor Complaints; Complainant's Description of Odor Type: Landfill Odors

*Note: This should be description of the odor in their own words (i.e. fishy, chemical/solvent, septic, putrid etc.) Avoid them identifying outright as gas, sludge, leachate or garbage unless their description specifically suggests that.*

For Odor Complaints; Complainants Description of Intensity & Presence: *do not use numeric scale; description should be: Very Faint, Faint, Distinct/easily noticeable, Strong, Very strong and a presence as fleeting, intermittent to consistent*

Is the odor being detected at the caller's residence?  Yes  No

Additional Description of the Event by Complainant: Maggie states the odor is very bad and her cat doesn't even want to go outside.

Return call requested?  Yes  No, Site visit requested?  Yes  No, Property Access Granted?  Yes  No

## Weather Data at Time of Complaint:

Source of Weather Data: Hakes Weather Station

Weather Description: Temperature: 66 °F. Bar. Press. (in-Hg): 30.032 Precipitation: 0

Wind direction & speed: From the East @ 1 mph.

General conditions: (Sunny, Cloudy, Fog etc.) Cloudy

Person Filling This Form: Charles Plank

**-THIS SECTION COMPLETED BY RESPONSE PERSONNEL-**

Name of Responder(s): Telephone Follow Up: \_\_\_\_\_ Site Visit: Charles Plank

Return Telephone Call Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO Date: 8/25/2022 Time: 8:42  AM  PM

Summary of Telephone Call: Maggie Franzen called Thursday morning 8/25/2022 at 8:42 am in the morning. She states the odors are very strong at their residents and cannot even go outside and something needs to be done. She has been noticing odors for the past week.

Response Completed?  YES  NO Date: 8/25/2022 Time: 9:00  AM  PM

Contact Made?  YES  NO \_\_\_\_\_ Name of Complainant/Contactee: \_\_\_\_\_

Summary of Visit & Communication: Same as above

**Odor Responder Observations:**

Was an Odor Detected;  YES  NO Time: 9:05  AM  PM

Responder's Description of Odor Type: NONE

*Note: This should be description of the odor in their own words (i.e. fishy, chemical, septic, putrid etc.)*

Responder's Description of Odor Intensity using N-Butanol Scale:  NONE  1  2  3  4  5  6  7-8

0 = No Detectable Odor

1 = Very Faint

2-3 = Faint

3-4 = Distinct, easily noticeable

5-6 = Consistently Detectable Strong Distinguishable Odor

7-8 = Very Strong

Responder's Description of Odor Character/Description

- Garbage/Rotten
- Sludge/Septic
- Landfill Gas/Rotten Eggs
- Leachate
- Barnyard/Manure
- Chemical/Solvent
- None of above

Additional Description: I Charles Plank completed an odor check down Manning Ridge, Woodcock Rd, Thomas Rd and did not notice any odors on my travels.

**Weather Observations at Time of Response at the Odor Complaint Location:**

Weather Description: Temperature: 66 °F. Precipitation: 0

Wind direction & speed: From the East @ 1 mph.

General conditions: (Sunny, Cloudy, Fog etc.)

Cloudy

**Weather Data at Time of Response From Weather Station**

Weather Data Source:    Hakes Weather Station   

Weather Description: Temperature:    66   °F. Bar. Press.(in-Hg):    30.032    Precipitation:    0   

Wind direction & speed: From the    East    @    1    mph.

General conditions: (Sunny, Cloudy, Fog etc.)

   Cloudy   

**Other Responder Comments Pertaining to Response:**

\_\_\_\_\_

\_\_\_\_\_

Signature of Responder:    Shanks [Signature]   

Date:    8/25/22



# COMPLAINT RECORD FORM- HAKES LANDFILL

**-THIS SECTION COMPLETED BY HAKES PERSONNEL MANAGING COMPLAINT-**

## Complaint Log:

Complaint received by the following method:  Landfill Office Phone  Email  NYDEC  
 Text  In Person **X Other: CELL PHONE**

**Date Complaint Received:** 8/27/2022 **Time Complaint was Received:** 6:02  AM x PM

Hakes Manager Contacted Regarding this Complaint: YES

**Date/Time Manager Received Reported Complaint:** **Date:** 8/27/2022 **Time:** 6:02  AM x PM

## Complaint Information:

Name of Person Filing Complaint: Dave Franzen

Address: 4381 W. Hill Rd. Painted Post, NY 14870

Telephone number: 607-368-2110

**Nature of complaint:** **X Odor**  Noise  Litter  Dust  Traffic  Other

For Traffic Complaints - Name of Company: \_\_\_\_\_ License#: \_\_\_\_\_  
Road/Route: \_\_\_\_\_

Direction traveling \_\_\_\_\_ Truck type  tractor trailer  straight/dump trailer

**For Odor Complaints; Time odor was detected:** 6:02  AM x PM

For Odor Complaints, Duration odor was detected: \_\_\_\_\_  AM  PM

**For Odor Complaints; Complainant's Description of Odor Type:** Landfill Odors

*Note: This should be description of the odor in their own words (i.e. fishy, chemical/solvent, septic, putrid etc.) Avoid them identifying outright as gas, sludge, leachate or garbage unless their description specifically suggests that.*

For Odor Complaints; Complainants Description of Intensity & Presence: *do not use numeric scale; description should be: Very Faint, Faint, Distinct/easily noticeable, Strong, Very strong and a presence as fleeting, intermittent to consistent*

**Is the odor being detected at the caller's residence?** **X Yes**  No

**Additional Description of the Event by Complainant:** Text Message from Dave Franzen: It stinks over here, you need to look into this and report back to me..

**Return call requested?**  Yes **X No**, **Site visit requested?**  Yes **X No**, **Property Access Granted?**  Yes **X No**

## Weather Data at Time of Complaint:

Source of Weather Data: Hakes Weather Station

Weather Description: Temperature: 72 °F. Bar. Press. (in-Hg): 30.012 Precipitation: 0

Wind direction & speed: From the WNW @ 0-4 mph.

General conditions: (Sunny, Cloudy, Fog etc.) Cloudy

Person Filling This Form: Charles Plank

**-THIS SECTION COMPLETED BY RESPONSE PERSONNEL-**

Name of Responder(s): Telephone Follow Up: \_\_\_\_\_ Site Visit: Charles Plank

Return Telephone Call Completed?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Contact Made?  YES  NO Date: \_\_\_\_\_ Time: \_\_\_\_\_  AM  PM

Summary of Telephone Call: Tried calling and no response

Response Completed?  YES  NO Date: 8/29/2022 Time: 10:00  AM  PM

Contact Made?  YES  NO \_\_\_\_\_ Name of Complainant/Contactee: \_\_\_\_\_

Summary of Visit & Communication: \_\_\_\_\_

**Odor Responder Observations:**

Was an Odor Detected;  YES  NO Time: 10:00  AM  PM

Responder's Description of Odor Type: NONE

*Note: This should be description of the odor in their own words (i.e. fishy, chemical, septic, putrid etc.)*

Responder's Description of Odor Intensity using N-Butanol Scale:  NONE  1  2  3  4  5  6  7-8

0 = No Detectable Odor

1 = Very Faint

2-3 = Faint

3-4 = Distinct, easily noticeable

5-6 = Consistently Detectable Strong Distinguishable Odor

7-8 = Very Strong

Responder's Description of Odor Character/Description

- Garbage/Rotten
- Sludge/Septic
- Landfill Gas/Rotten Eggs
- Leachate
- Barnyard/Manure
- Chemical/Solvent
- None of above

Additional Description: I Charles Plank completed an odor check down Manning Ridge, Woodcock Rd, Thomas Rd and did not notice any odors on my travels 8/29/2022.

**Weather Observations at Time of Response at the Odor Complaint Location:**

Weather Description: Temperature: 72 °F. Precipitation: 0

Wind direction & speed: From the WNW @ 0-4 mph.

General conditions: (Sunny, Cloudy, Fog etc.)

Cloudy

**Weather Data at Time of Response From Weather Station**

Weather Data Source: Hakes Weather Station

Weather Description: Temperature: 72 °F. Bar. Press.(in-Hg): 30.032 Precipitation: 0

Wind direction & speed: From the WNW @ 0-4 mph.

General conditions: (Sunny, Cloudy, Fog etc.)

Cloudy

**Other Responder Comments Pertaining to Response:**

\_\_\_\_\_  
\_\_\_\_\_

Signature of Responder: Frankes [Signature]

Date: 8/29/22