



**Stantec Consulting Services Inc.**  
5 Dartmouth Drive, Suite 200, Auburn, NH 03032  
Tel: (603) 669-8672, Fax: (603) 669-7636

January 28, 2019  
File 191710274

**Attention: Ms. April Talon, P.E., Town Engineer**

Durham Public Works  
100 Stone Quarry Drive  
Durham, NH 03824

**RE: November 2018 Water Quality Sampling Results  
Durham Municipal Landfill, Durham Point Road, Durham, NH  
NHDES No. 199006011**

Dear Ms. Talon:

Stantec Consulting Services Inc. (Stantec) is pleased to present the results of the regular sampling and monitoring conducted at the Durham Municipal Landfill (the Site) on November 14, 2018. Groundwater samples were collected in accordance with the New Hampshire Department of Environmental Services (NHDES) Groundwater Management Permit #GWP-199006011-D-005 (the Permit), which was issued on September 28, 2018, and with email correspondence from NHDES requesting that a confirmatory round of samples be collected from select wells for per- and polyfluoroalkyl substances (PFAS). Although the Permit requires that sampling be conducted in October of each year (as well as April), due to the timing of the email correspondence and subsequent Town of Durham authorization, the groundwater sampling event was delayed until November 14, 2018.

The Site location is shown on Figure 1. Locations of the sampling points are shown on Figure 2. Field collected data for this sampling episode are presented in Table 1. Laboratory results for landfill indicator constituents for this sampling event are presented in Table 2. Laboratory results for VOCs for this sampling event are presented in Table 3. The laboratory report for this event is also attached.

A copy of this report is also being forwarded to the NHDES Groundwater Permits Coordinator via upload to their OneStop database.

## **SAMPLING AND MONITORING PROCEDURES**

Stantec personnel conducted the monitoring and sampling event on November 14, 2018. Sampling locations specified in the Permit included eight of the nine Site monitoring wells (MW-1U, MW-1L, MW-2, MW-3U, MW-3L, MW-4L, MW-4U, and MW-5) and three surface water locations (SW-1, SW-2, and SW-3) specified in the Permit. Samples from the on-site non-potable water supply well, W-1, were not collected due to renovations of the on-site building and plumbing that required the well to be off-line.



Water levels were measured in all monitoring wells prior to sampling. All wells were then purged of three times their standing water column volume using either polyethylene tubing and a peristaltic pump or high-density polyethylene tubing and a Delrin® foot valve (Waterra® inertial pump). These purging procedures were employed to ensure that formation water was being sampled, not stagnant water in the well casing. After each well was purged, a sample was collected for field analysis for specific conductance (micromhos per centimeter or  $\mu\text{mhos/cm}$ ), temperature (degrees Celsius or  $^{\circ}\text{C}$ ), and pH (standard units or SU). Surface water samples were collected as “grab” samples. Field parameters were also monitored at each surface water location.

Sample aliquots were then collected in laboratory-provided bottles using the dedicated equipment employed to purge the wells. In accordance with the NHDES Standard Operating Procedure (SOP) #HWRB-21, samples for PFAS were collected first from each sampled well. The Permit-required samples were then collected using the same dedicated tubing. Analytical tests required by the Permit for November 2018 included landfill indicator constituents (chloride, nitrate, total Kjeldahl nitrogen (TKN), sodium, iron, and manganese) for all sampled locations.

Samples from four wells (MW-2, MW-3U, MW-3L, and MW-5) were collected for PFAS in accordance with the NHDES Standard Operating Procedure (SOP) #HWRB-21. For quality assurance/quality control (QA/QC) purposes, a field blank was also collected and analyzed for PFAS. The PFAS samples were analyzed by modified EPA Method 537 (isotope dilution method). The PFAS isomers reported include the list of nine compounds recommended by the NHDES as the minimum analytes for PFAS investigations.<sup>1</sup>

Samples collected for metals analysis from overburden wells (MW-1U, MW-2, MW-3U, MW-4U, and MW-5) were field-filtered with 0.45-micron filters and were analyzed for dissolved metals. Samples collected for metals analysis from bedrock wells (MW-1L, MW-3L, and MW-4L) and from the three surface water locations were not field-filtered, and therefore, were analyzed for total metals. Samples for TKN analysis were preserved with sulfuric acid to a pH of less than 2.

The PFAS samples and the GMP samples were placed in separate ice chests to maintain a temperature of  $4^{\circ}\text{C}$  and were transported to Eurofins Spectrum Analytical, Inc. of Agawam, Massachusetts, a State of New Hampshire-certified laboratory for analysis. Chain of custody protocols were maintained, and copies of these forms are provided in the laboratory reports attached to this letter.

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<sup>1</sup> List of PFAS isomers analyzed included perfluorononanoic acid (PFNA), perfluorooctanoic acid (PFOA), perfluoroheptanoic acid (PFHPA), perfluorohexanoic acid (PFHXA), perfluoropentanoic acid (PFPEA), perfluorobutanoic acid (PFBA), perfluorooctanesulfonic acid (PFOS), perfluorohexanesulfonic acid (PFHXS), and perfluorobutanesulfonic acid (PFBS)



## November 2018 Water Quality Results

Field parameter results are presented in Table 1.

- Relatively low levels of specific conductance (SC) were measured at MW-1U (267  $\mu\text{mhos/cm}$ ) and MW-1L (158  $\mu\text{mhos/cm}$ ). At the remaining six wells SC levels were higher and ranged from 606  $\mu\text{mhos/cm}$  at MW-2 to 1,758  $\mu\text{mhos/cm}$  at MW-3L. SC levels were measured at the three surface water locations SW-1, SW-2, and SW-3 at 55  $\mu\text{mhos/cm}$ , 112  $\mu\text{mhos/cm}$ , and 127  $\mu\text{mhos/cm}$ , respectively.

Laboratory results for landfill indicator constituents are presented in Table 2.

- The Secondary Maximum Contaminant Level (SMCL) established by the US Environmental Protection Agency (USEPA) for chloride (250 milligrams per liter or mg/L) was exceeded at MW-3L (392 mg/L), MW-4U (277 mg/L), MW-4L (327 mg/L), and MW-5 (371 mg/L).
- The SMCL for iron (0.3 mg/L) was exceeded at three of the four bedrock wells: MW-1L (39.1 mg/L), MW-3L (1.37 mg/L), and MW-4L (6.02 mg/L). The State of New Hampshire Surface Water Quality Criteria (SWQC) for iron (0.3 mg/L) was exceeded at SW-1 (0.771 mg/L), SW-2 (0.710 mg/L), and SW-3 (20.7 mg/L).
- The State of New Hampshire Ambient Groundwater Quality Standard (AGQS) for nitrate (10 mg/L) was not exceeded at any of well locations. The SWQC for nitrate (10 mg/L) was not exceeded at any of the surface water locations.
- The AGQS for manganese (0.84 mg/L) was not exceeded at any of well locations. The SWQC for manganese (0.05 mg/L) was exceeded at SW-3 (2.70 mg/L).

Results from the November 2018 PFAS sampling event along with the April 2017 PFAS results are presented in Table 3. The results of the November 2018 event are described below.

- At MW-2, all nine isomers were reported above laboratory reporting limits. The level of perfluoro-octanesulfonic acid (PFOS) was detected at 41 ng/L, which is below the AGQS of 70 ng/L. Perfluorooctanoic acid (PFOA) was detected at 16 ng/L, which is also below the AGQS of 70 ng/L. The total of PFOS + PFOA (57 ng/L) was detected below the AQQS of 70 ng/L. The November 2018 levels show an increase from the April 2017 levels.
- At MW-3U, all nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below their AGQS at 22 ng/L and 28 ng/L, respectively. The total of PFOS + PFOA, at 50 ng/L, was also detected below its AGQS. The November 2018 levels show an increase from the April 2017 levels
- At MW-3L, concentrations of eight of the nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below AGQS at 10 ng/L and 13 ng/L, respectively. The



total of PFOS + PFOA was detected below its AGQS at 23 ng/L. The November 2018 levels show a slight decrease from the April 2017 levels.

- At MW-5U, concentrations of seven of the nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below AGQS at 13 ng/L and 10 ng/L, respectively. The total of PFOS + PFOA was detected below its AGQS at 23 ng/L. Samples were not collected in April 2017, so no comparison can be made.
- No PFAS isomers were detected in the Field Blank.

Although detectable levels of PFAS were reported in the sampled wells, due to the concentrations being below AGQS it is recommended that no further testing of site monitoring wells be conducted during the current GMP period. However, the on-site water well (W-1) should be sampled (after building renovations are complete) for PFAS in either April or October 2019 to monitor trends in PFAS concentrations in the well. The next sampling and monitoring event is scheduled for April 2019.

If you have any questions or comments, please do not hesitate to call the undersigned at (603) 669-8672.

Sincerely,

**STANTEC CONSULTING SERVICES INC.**

A handwritten signature in black ink that reads "Donald F. Moore".

Donald F. Moore, P.G.  
Associate/Hydrogeologist

c: NHDES Groundwater Permits Coordinator

Attachments: Figures 1 and 2  
Tables 1, 2, and 3  
Laboratory Analytical Reports



MAP SOURCE:

TOPOZONE.COM

USGS NEWMARKET [NH] QUAD  
1990



2000 0 2000



Scale in feet

## Stantec Consulting Services, Inc.



**Stantec**

STANTEC LOCATION:  
AUBURN, NEW HAMPSHIRE

DATE PREPARED: 6-28-17	DESIGNED BY: DFM	DRAWN BY: JJW	CHECKED BY: DFM	REVIEWED BY: DFM
REVISION DATE:	REVISION NO:	DRAWN BY:	CHECKED BY:	REVIEWED BY:

PROJECT NAME/FILE NAME:  
DURHAM/SITE

PROJECT NUMBER/PHASE:  
191710274

SCALE:  
1:24000

DRAWING TITLE:

## SITE LOCATION PLAN

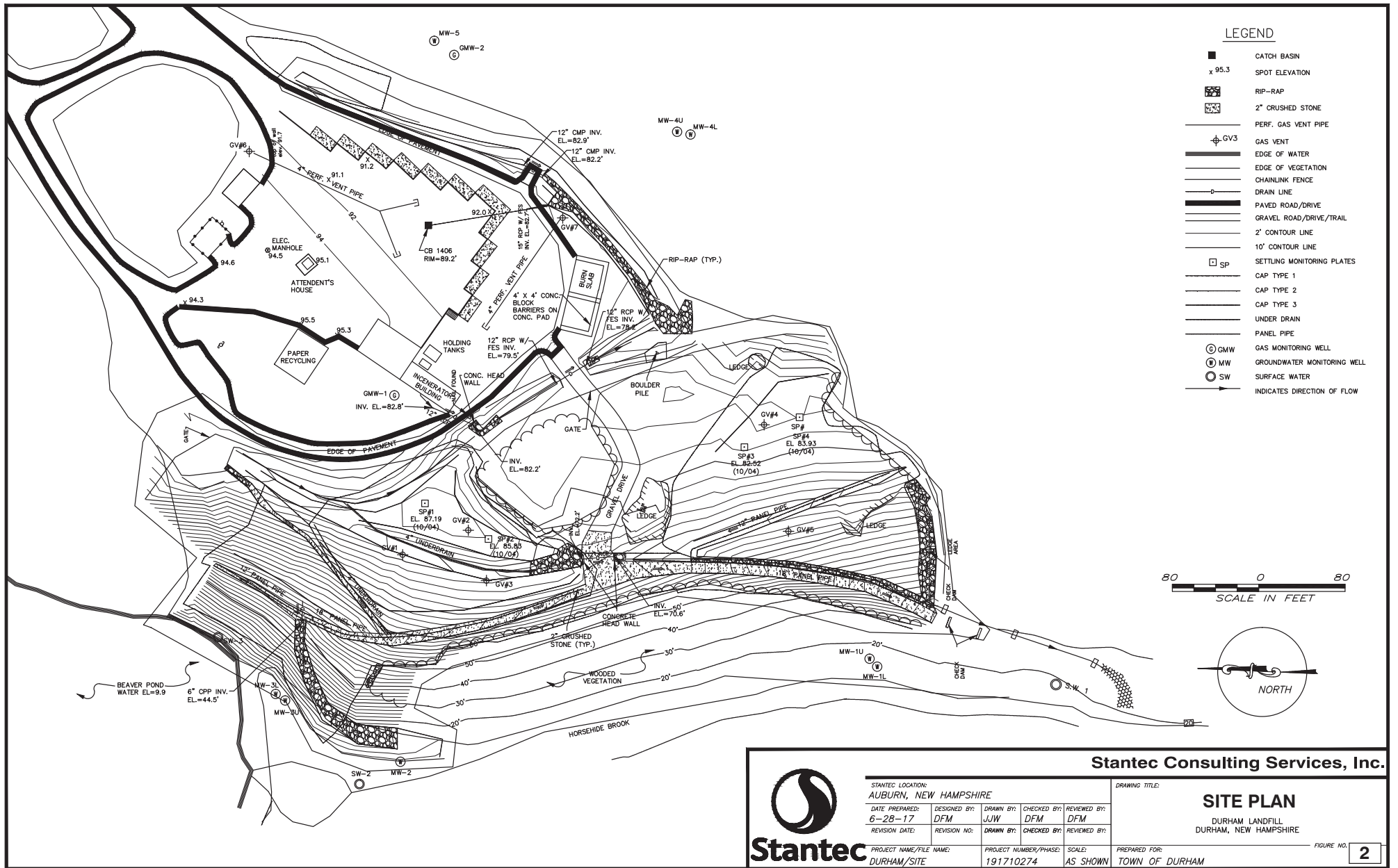
DURHAM LANDFILL  
DURHAM, NEW HAMPSHIRE

PREPARED FOR:  
TOWN OF DURHAM

FIGURE NO.

1





**TABLE 1**

FIELD COLLECTED DATA  
DURHAM, N.H. LANDFILL  
November 14, 2018

SAMPLE ID	DEPTH TO WATER <sup>1</sup>	MEASURING POINT ELEVATION <sup>2</sup>	GROUNDWATER ELEVATION <sup>2</sup>	SPECIFIC CONDUCTANCE <sup>3</sup> (µmhos/cm)	TEMPERATURE °C	pH (SU)
MW-1U	Flowing	19.70	>19.70	267	8.9	6.71
MW-1L	Flowing	19.70	>18.69	158	8.2	7.00
MW-2 <sup>4</sup>	Flowing	12.32	>12.32	606	8.1	6.57
MW-3U <sup>4</sup>	2.53	14.93	12.40	1,142	10.4	6.35
MW-3L <sup>4</sup>	Flowing	13.55	>13.55	1,758	10.4	6.99
MW-4U <sup>1</sup>	2.81	66.81	64.00	1,017	10.2	5.77
MW-4L <sup>1</sup>	1.80	65.55	63.75	1,178	9.9	5.78
MW-5 <sup>4</sup>	3.44	66.30	62.86	1,392	10.0	5.87
W-1 <sup>5</sup>	NM	NA	NA	NS	NS	NS
SW-1	NM	NA	NA	55	4.6	7.33
SW-2	NM	NA	NA	112	4.5	7.05
SW-3	NM	NA	NA	127	2.9	7.32

NOTES:

<sup>1</sup> feet below Top of PVC

<sup>2</sup> feet NGVD (national geodetic vertical datum)

<sup>3</sup> specific conductance compensated to 25 degrees Celsius

<sup>4</sup> depth to water in feet below top of protective casing

<sup>5</sup> manhole cover was covered with landscaping (bark mulch, flowers, etc.) - no depth to water measurement made

NA: Not Applicable

NM: Not Measured. No surveyed Measuring Point.

NS: Not Sampled. On-site building undergoing renovations so W-1 off- Checked by: DFM 1/16/2019

µmhos/cm = micromhos per centimeter

°C = degrees Centigrade

SU = standard units

**TABLE 2**  
**LANDFILL INDICATOR CONSTITUENTS**  
**TOWN OF DURHAM LANDFILL**  
**GMP #GWP-199006011-D-0004**  
**November 14, 2018**

Sample Location	Chloride (mg/L)	Nitrate (mg/L)	TKN (mg/L)	Sodium (mg/L)	Iron (mg/L)	Manganese (mg/L)
AGQS	NRS	10	NRS	NRS	NRS	0.84
SMCL	250	NRS	NRS	250	0.3	NRS
SWQC	230	10	NRS	NRS	0.3	0.05
MW-1U	12.8	0.603	0.17	11.3	< 0.250	0.0831
MW-1L	19.6	< 0.100	0.13	4.71	<b>39.1</b>	0.110
MW-2	70.0	1.08	0.16	33.6	< 0.250	< 0.0080
MW-3U	163	2.90	0.33	113	< 0.250	< 0.0080
MW-3L	<b>392</b>	1.89	0.22	144	<b>1.37</b>	0.176
MW-4U	<b>277</b>	< 0.100	0.31	138	< 0.250	0.0289
MW-4L	<b>327</b>	< 0.100	0.34	124	<b>6.02</b>	0.263
MW-5	<b>371</b>	0.839	0.37	191	< 0.250	0.0487
W-1	NS	NS	NS	NS	NS	NS
SW-1	5.50	< 0.100	0.29	3.20	<b>0.771</b>	0.0334
SW-2	6.40	0.104	0.24	4.46	<b>0.710</b>	0.0366
SW-3	10.8	0.341	5.01	8.44	<b>20.7</b>	<b>2.70</b>

NOTES:

AGQS = Ambient Groundwater Quality Standards, from Env-Or 600 Contaminated Site Management (revised 9/1/18)

SMCL = Secondary Maximum Contaminant Level (SMCL)

SWQC = Surface Water Quality Criteria, from Env-Wq 1700, Surface Water Quality Regulations

NRS = No regulatory standard

mg/L = milligrams per liter

NS = Not sampled

Values in **Bold** exceed Standards

Checked by: DFM 1/16/2019



**TABLE 3**  
 Summary of Groundwater Analytical Results: PFAS Data  
 Closed Durham Municipal landfill  
 April 2017 and November 2018

Analyte/Method	Units	NHDES AGQS	Sample ID																
			MW-1U	MW-1U	MW-1L	MW-1L	MW-2	MW-2	MW-3U	MW-3U	MW-3L	MW-3L	MW-5U	MW-5U	W-1	W-1	Field Blank	Field Blank	
			04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17	11/14/18	04/17/17
<b>PFAS By Isotope Dilution (MWs/SWs)</b>																			
<b>Cas No</b>																			
375-73.5	Perfluorobutanesulfonate (PFBS)	ng/L	NRS	4	NS	7	NS	< 3	5.7	7	7.6	7	5.5	NS	4.4	10	NS	< 3	< 0.86
375-22-4	Perfluorobutanoic acid (PFBA)	ng/L	NRS	< 10	NS	< 10	NS	< 10	5.0	< 10	8.3	< 10	5.4	NS	< 7.5	12	NS	< 10	< 5.1
375-85-9	Perfluoroheptanoic acid (PFHPA)	ng/L	NRS	4	NS	< 2	NS	3	9.4	10	9.9	7	5.6	NS	2.3	12	NS	< 2	< 0.86
375-46-4	Perfluorohexanesulfonate (PFHXS)	ng/L	NRS	14	NS	16	NS	7	26	20	21	18	14	NS	17	20	NS	< 3	< 1.7
307-24.4	Perfluorohexanoic acid (PFHXA)	ng/L	NRS	5	NS	3	NS	4	14	16	17	14	9.8	NS	2.6	22	NS	< 2	< 1.7
375-95-1	Perfluoronanoic acid (PFNA)	ng/L	NRS	< 2	NS	< 2	NS	< 2	0.64	< 2	0.66	< 2	< 2.5	NS	0.60	< 2	NS	< 2	< 1.7
2706-90-3	Perfluoropentanoic acid (PFPEA)	ng/L	NRS	8	NS	4	NS	6	15	17	19	15	9.9	NS	< 7.5	22	NS	< 2	< 5.1
1763-23-1	Perfluoro-octanesulfonic acid (PFOS)	ng/L	70	13	NS	< 6	NS	12	41	22	22	12	10	NS	13	21	NS	< 6	< 1.7
335-67-1	Perfluorooctanoic acid (PFOA)	ng/L	70	5	NS	3	NS	5	16	24	28	13	13	NS	10	16	NS	< 2	< 0.86
	Total PFOS + PFOA	ng/L	70	18	NS	3	NS	17	57	46	50	25	23	NS	23	37	NS	0	0
	Total PFAS	ng/L	NRS	53	NS	33	NS	37	132.74	116	133.46	86	73.2	NS	49.9	135	NS	0	0

**Notes:**

PFAS = Per- and Polyfluoroalkyl Substances  
 ng/L = Nanograms per liter (parts per trillion)  
 NRS = No regulatory standard  
 AGQS = Ambient Groundwater Quality Standards, Env-Or 603.03 (eff. 9/1/18)  
**Bold** = Concentration exceeds NHDES AGQS  
 Checked by: DFM 01-16-2019

NS = Not sampled



## Laboratory Report SC51979

Stantec Consulting Services  
5 Dartmouth Drive, Suite 101  
Auburn, NH 03032  
Attn: Don Moore

Project: Durham Landfill - Durham, NH  
Project #: 191710274

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.  
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87936  
Maine # MA138  
New Hampshire # 2972/2538  
New Jersey # MA011  
New York # 11393  
Pennsylvania # 68-04426/68-02924  
Rhode Island # LAO00348  
USDA # P330-15-00375  
Vermont # VT-11393



Authorized by:  
Rebecca Merz  
Quality Services Manager

A handwritten signature in black ink that reads 'Rebecca Merz'.

Eurofins Spectrum Analytical holds primary NELAC certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 21 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

*Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

## Sample Summary

**Work Order:** SC51979  
**Project:** Durham Landfill - Durham, NH  
**Project Number:** 191710274

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC51979-01	MW-5U	Ground Water	14-Nov-18 09:45	15-Nov-18 16:45
SC51979-02	MW-4U	Ground Water	14-Nov-18 10:10	15-Nov-18 16:45
SC51979-03	MW-4L	Ground Water	14-Nov-18 10:30	15-Nov-18 16:45
SC51979-04	SW-3	Surface Water	14-Nov-18 11:25	15-Nov-18 16:45
SC51979-05	SW-2	Surface Water	14-Nov-18 11:45	15-Nov-18 16:45
SC51979-06	SW-1	Surface Water	14-Nov-18 12:10	15-Nov-18 16:45
SC51979-07	MW-3U	Ground Water	14-Nov-18 13:15	15-Nov-18 16:45
SC51979-08	MW-3L	Ground Water	14-Nov-18 13:35	15-Nov-18 16:45
SC51979-09	MW-2	Ground Water	14-Nov-18 13:50	15-Nov-18 16:45
SC51979-10	MW-1U	Ground Water	14-Nov-18 14:05	15-Nov-18 16:45
SC51979-11	MW-1L	Ground Water	14-Nov-18 14:15	15-Nov-18 16:45

**CASE NARRATIVE:**

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as “<” (less than) the reporting limit in this report.

The samples were received 1.9 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**E351.1**

**Laboratory Control Samples:**

CB96986-LCS

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TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.

Nitrogen Tot Kjeldahl

CB96986-BLK

---

TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.

Nitrogen Tot Kjeldahl

CB96986-DUP

---

TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.

Nitrogen Tot Kjeldahl

CB96986-MS

---

TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.

Nitrogen Tot Kjeldahl

**EPA 200.7**

**Spikes:**

1815292-MS1                      *Source: SC51979-01*

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The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.

Sodium

1815292-MS2                      *Source: SC51979-02*

---

The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.

Sodium

**EPA 300.0**

**Laboratory Control Samples:**

1815120 SRM

---

**EPA 300.0**

**Laboratory Control Samples:**

1815120 SRM

---

Chloride percent recovery 111 (90-110) is outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

MW-1L

**Samples:**

SC51979-01                    *MW-5U*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SC51979-02                    *MW-4U*

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Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SC51979-03                    *MW-4L*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SC51979-07                    *MW-3U*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SC51979-08                    *MW-3L*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride

SC51979-09                    *MW-2*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Chloride



## Sample Acceptance Check Form

Client: Stantec Consulting Services - Auburn, NH  
 Project: Durham Landfill - Durham, NH / 191710274  
 Work Order: SC51979  
 Sample(s) received on: 11/15/2018

*The following outlines the condition of samples for the attached Chain of Custody upon receipt.*

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Summary of Hits

**Lab ID:** SC51979-01

**Client ID:** MW-5U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.37		0.10	mg/L	E351.1
Manganese (dissolved)	0.0487		0.0080	mg/l	EPA 200.7
Sodium (dissolved)	191		1.50	mg/l	EPA 200.7
Chloride	371	GS1, D15.0		mg/l	EPA 300.0
Nitrate as N	0.839		0.100	mg/l	EPA 300.0

**Lab ID:** SC51979-02

**Client ID:** MW-4U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.31		0.10	mg/L	E351.1
Manganese (dissolved)	0.0289		0.0080	mg/l	EPA 200.7
Sodium (dissolved)	138		1.50	mg/l	EPA 200.7
Chloride	277	D, GS111.0		mg/l	EPA 300.0

**Lab ID:** SC51979-03

**Client ID:** MW-4L

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.34		0.10	mg/L	E351.1
Iron	6.02		0.125	mg/l	EPA 200.7
Manganese	0.263		0.0040	mg/l	EPA 200.7
Sodium	124		0.750	mg/l	EPA 200.7
Chloride	327	D, GS113.0		mg/l	EPA 300.0

**Lab ID:** SC51979-04

**Client ID:** SW-3

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	5.01		0.10	mg/L	E351.1
Iron	20.7		0.125	mg/l	EPA 200.7
Manganese	2.70		0.0040	mg/l	EPA 200.7
Sodium	8.44		0.750	mg/l	EPA 200.7
Chloride	10.8		1.00	mg/l	EPA 300.0
Nitrate as N	0.341		0.100	mg/l	EPA 300.0

**Lab ID:** SC51979-05

**Client ID:** SW-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.24		0.10	mg/L	E351.1
Iron	0.710		0.125	mg/l	EPA 200.7
Manganese	0.0366		0.0040	mg/l	EPA 200.7
Sodium	4.46		0.750	mg/l	EPA 200.7
Chloride	6.40		1.00	mg/l	EPA 300.0
Nitrate as N	0.104		0.100	mg/l	EPA 300.0

Lab ID: SC51979-06

Client ID: SW-1

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.29		0.10	mg/L	E351.1
Iron	0.771		0.125	mg/l	EPA 200.7
Manganese	0.0334		0.0040	mg/l	EPA 200.7
Sodium	3.20		0.750	mg/l	EPA 200.7
Chloride	5.50		1.00	mg/l	EPA 300.0

Lab ID: SC51979-07

Client ID: MW-3U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.33		0.10	mg/L	E351.1
Sodium (dissolved)	113		1.50	mg/l	EPA 200.7
Chloride	163	D, GS	17.00	mg/l	EPA 300.0
Nitrate as N	2.90		0.100	mg/l	EPA 300.0

Lab ID: SC51979-08

Client ID: MW-3L

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.22		0.10	mg/L	E351.1
Iron	1.37		0.125	mg/l	EPA 200.7
Manganese	0.176		0.0040	mg/l	EPA 200.7
Sodium	144		0.750	mg/l	EPA 200.7
Chloride	392	D, GS	116.0	mg/l	EPA 300.0
Nitrate as N	1.89		0.100	mg/l	EPA 300.0

Lab ID: SC51979-09

Client ID: MW-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.16		0.10	mg/L	E351.1
Sodium (dissolved)	33.6		1.50	mg/l	EPA 200.7
Chloride	70.0	GS1, D3	3.00	mg/l	EPA 300.0
Nitrate as N	1.08		0.100	mg/l	EPA 300.0

Lab ID: SC51979-10

Client ID: MW-1U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.17		0.10	mg/L	E351.1
Manganese (dissolved)	0.0831		0.0080	mg/l	EPA 200.7
Sodium (dissolved)	11.3		1.50	mg/l	EPA 200.7
Chloride	12.8		1.00	mg/l	EPA 300.0
Nitrate as N	0.603		0.100	mg/l	EPA 300.0

Lab ID: SC51979-11

Client ID: MW-1L

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Nitrogen Tot Kjeldahl	0.13		0.10	mg/L	E351.1
Iron	39.1		0.125	mg/l	EPA 200.7
Manganese	0.110		0.0040	mg/l	EPA 200.7
Sodium	4.71		0.750	mg/l	EPA 200.7
Chloride	19.6		1.00	mg/l	EPA 300.0

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*Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.*

Sample Identification

MW-5U  
SC51979-01

Client Project #  
191710274

Matrix  
Ground Water

Collection Date/Time  
14-Nov-18 09:45

Received  
15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Soluble Metals by EPA 200/6000 Series Methods**

Prepared by method General Prep-Metal

	Filtration	Field Filtered		N/A			1	EPA 200.7/3005A/6010			KT	1815127	
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**Soluble Metals by EPA 200 Series Methods**

7439-89-6	Iron	< 0.250		mg/l	0.250	0.0201	1	EPA 200.7	26-Nov-18	26-Nov-18	SC/TBC	1815292	X
7439-96-5	Manganese	0.0487		mg/l	0.0080	0.0006	1	"	"	"	"	"	X
7440-23-5	Sodium	191		mg/l	1.50	0.248	1	"	"	"	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	371	GS1, D	mg/l	15.0	1.49	15	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	0.839		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	15-Nov-18 22:16	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.37		mg/L	0.10	0.10	1	E351.1	14-Nov-18 09:45	20-Nov-18 09:04	CT007	456885A	
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Sample Identification

MW-4U  
SC51979-02

Client Project #  
191710274

Matrix  
Ground Water

Collection Date/Time  
14-Nov-18 10:10

Received  
15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Soluble Metals by EPA 200/6000 Series Methods**

Prepared by method General Prep-Metal

	Filtration	Field Filtered		N/A			1	EPA 200.7/3005A/6010			KT	1815127	
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**Soluble Metals by EPA 200 Series Methods**

7439-89-6	Iron	< 0.250		mg/l	0.250	0.0201	1	EPA 200.7	26-Nov-18	26-Nov-18	SC/TBC	1815292	X
7439-96-5	Manganese	0.0289		mg/l	0.0080	0.0006	1	"	"	"	"	"	X
7440-23-5	Sodium	138		mg/l	1.50	0.248	1	"	"	"	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	277	D, GS1	mg/l	11.0	1.09	11	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	15-Nov-18 22:32	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.31		mg/L	0.10	0.10	1	E351.1	14-Nov-18 10:10	20-Nov-18 09:05	CT007	456885A	
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Sample Identification

<b>MW-4L</b>	<u>Client Project #</u>	<u>Matrix</u>	<u>Collection Date/Time</u>	<u>Received</u>
SC51979-03	191710274	Ground Water	14-Nov-18 10:30	15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

Preservation	<b>Field Preserved; pH&lt;2 confirmed</b>	N/A					1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	<b>6.02</b>		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	<b>0.263</b>		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	<b>124</b>		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	<b>327</b>	D, GS1	mg/l	13.0	1.29	13	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	15-Nov-18 22:48	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

Nitrogen Tot Kjeldahl	<b>0.34</b>	mg/L			0.10	0.10	1	E351.1	14-Nov-18 10:30	20-Nov-18 09:06	CT007	456885A	
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Sample Identification

<b>SW-3</b>	<u>Client Project #</u>	<u>Matrix</u>	<u>Collection Date/Time</u>	<u>Received</u>
SC51979-04	191710274	Surface Water	14-Nov-18 11:25	15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

Preservation	<b>Field Preserved; pH&lt;2 confirmed</b>	N/A					1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	<b>20.7</b>		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	<b>2.70</b>		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	<b>8.44</b>		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	<b>10.8</b>		mg/l	1.00	0.0994	1	EPA 300.0	15-Nov-18	15-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	<b>0.341</b>		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	15-Nov-18 23:04	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

Nitrogen Tot Kjeldahl	<b>5.01</b>	mg/L			0.10	0.10	1	E351.1	14-Nov-18 11:25	20-Nov-18 09:07	CT007	456885A	
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Sample Identification

SW-2	Client Project #	Matrix	Collection Date/Time	Received
SC51979-05	191710274	Surface Water	14-Nov-18 11:45	15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

Preservation	Field Preserved; pH<2 confirmed	N/A					1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	0.710		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	0.0366		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	4.46		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	6.40		mg/l	1.00	0.0994	1	EPA 300.0	15-Nov-18	15-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	0.104		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	15-Nov-18 23:20	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

Nitrogen Tot Kjeldahl	0.24	mg/L			0.10	0.10	1	E351.1	14-Nov-18 11:45	20-Nov-18 09:10	CT007	456885A	
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Sample Identification

SW-1	Client Project #	Matrix	Collection Date/Time	Received
SC51979-06	191710274	Surface Water	14-Nov-18 12:10	15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

Preservation	Field Preserved; pH<2 confirmed	N/A					1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	0.771		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	0.0334		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	3.20		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	5.50		mg/l	1.00	0.0994	1	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	16-Nov-18 00:08	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

Nitrogen Tot Kjeldahl	0.29	mg/L			0.10	0.10	1	E351.1	14-Nov-18 12:10	20-Nov-18 09:11	CT007	456885A	
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Sample Identification

MW-3U Client Project # 191710274 Matrix Ground Water Collection Date/Time 14-Nov-18 13:15 Received 15-Nov-18  
 SC51979-07

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Soluble Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

	Filtration	Field Filtered		N/A			1	EPA 200.7/3005A/6010			KT	1815127	
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**Soluble Metals by EPA 200 Series Methods**

7439-89-6	Iron	< 0.250		mg/l	0.250	0.0201	1	EPA 200.7	26-Nov-18	26-Nov-18	SC/TBC	1815292	X
7439-96-5	Manganese	< 0.0080		mg/l	0.0080	0.0006	1	"	"	"	"	"	X
7440-23-5	Sodium	113		mg/l	1.50	0.248	1	"	"	"	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	163	D, GS1	mg/l	7.00	0.696	7	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	2.90		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	16-Nov-18 00:24	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.33		mg/L	0.10	0.10	1	E351.1	14-Nov-18 13:15	20-Nov-18 09:12	CT007	456885A	
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Sample Identification

MW-3L Client Project # 191710274 Matrix Ground Water Collection Date/Time 14-Nov-18 13:35 Received 15-Nov-18  
 SC51979-08

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

	Preservation	Field Preserved; pH<2 confirmed		N/A			1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	1.37		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	0.176		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	144		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	392	D, GS1	mg/l	16.0	1.59	16	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	1.89		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	16-Nov-18 00:40	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.22		mg/L	0.10	0.10	1	E351.1	14-Nov-18 13:35	20-Nov-18 09:13	CT007	456885A	
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Sample Identification

MW-2 Client Project # 191710274 Matrix Ground Water Collection Date/Time 14-Nov-18 13:50 Received 15-Nov-18  
 SC51979-09

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Soluble Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

	Filtration	Field Filtered		N/A			1	EPA 200.7/3005A/6010			KT	1815127	
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**Soluble Metals by EPA 200 Series Methods**

7439-89-6	Iron	< 0.250		mg/l	0.250	0.0201	1	EPA 200.7	26-Nov-18	26-Nov-18	SC/TBC	1815292	X
7439-96-5	Manganese	< 0.0080		mg/l	0.0080	0.0006	1	"	"	"	"	"	X
7440-23-5	Sodium	33.6		mg/l	1.50	0.248	1	"	"	"	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	70.0	GS1, D	mg/l	3.00	0.298	3	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	1.08		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	16-Nov-18 00:56	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.16		mg/L	0.10	0.10	1	E351.1	14-Nov-18 13:50	20-Nov-18 09:14	CT007	456885A	
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Sample Identification

MW-1U Client Project # 191710274 Matrix Ground Water Collection Date/Time 14-Nov-18 14:05 Received 15-Nov-18  
 SC51979-10

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Soluble Metals by EPA 200/6000 Series Methods**  
 Prepared by method General Prep-Metal

	Filtration	Field Filtered		N/A			1	EPA 200.7/3005A/6010			KT	1815127	
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**Soluble Metals by EPA 200 Series Methods**

7439-89-6	Iron	< 0.250		mg/l	0.250	0.0201	1	EPA 200.7	26-Nov-18	26-Nov-18	SC/TBC	1815292	X
7439-96-5	Manganese	0.0831		mg/l	0.0080	0.0006	1	"	"	"	"	"	X
7440-23-5	Sodium	11.3		mg/l	1.50	0.248	1	"	"	"	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	12.8		mg/l	1.00	0.0994	1	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815124	X
14797-55-8	Nitrate as N	0.603		mg/l	0.100	0.007	1	"	15-Nov-18 17:21	16-Nov-18 01:12	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007

	Nitrogen Tot Kjeldahl	0.17		mg/L	0.10	0.10	1	E351.1	14-Nov-18 14:05	20-Nov-18 09:15	CT007	456885A	
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Sample Identification

MW-1L  
SC51979-11

Client Project #  
191710274

Matrix  
Ground Water

Collection Date/Time  
14-Nov-18 14:15

Received  
15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Total Metals by EPA 200/6000 Series Methods**

Prepared by method General Prep-Metal

Preservation		<b>Field Preserved; pH&lt;2 confirmed</b>		N/A			1	EPA 200/6000 methods	15-Nov-18		KT	1815128	
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**Total Metals by EPA 200 Series Methods**

7439-89-6	Iron	<b>39.1</b>		mg/l	0.125	0.0100	1	EPA 200.7	21-Nov-18	03-Dec-18	SC/TBC	1815289	X
7439-96-5	Manganese	<b>0.110</b>		mg/l	0.0040	0.0003	1	"	"	27-Nov-18	"	"	X
7440-23-5	Sodium	<b>4.71</b>		mg/l	0.750	0.124	1	"	"	29-Nov-18	"	"	X

**General Chemistry Parameters**

16887-00-6	Chloride	<b>19.6</b>		mg/l	1.00	0.0994	1	EPA 300.0	15-Nov-18	16-Nov-18	TN	1815120	X
14797-55-8	Nitrate as N	< 0.100		mg/l	0.100	0.007	1	"	15-Nov-18 16:26	16-Nov-18 01:28	"	"	X

**Subcontracted Analyses**

Prepared by method E351.1

*Analysis performed by Phoenix Environmental Labs, Inc. \* - CT007*

Nitrogen Tot Kjeldahl		<b>0.13</b>		mg/L	0.10	0.10	1	E351.1	14-Nov-18 14:15	20-Nov-18 09:16	CT007	456885A	
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**Total Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 200.7</u></b>										
<b>Batch 1815289 - EPA 200 Series</b>										
<b><u>Blank (1815289-BLK1)</u></b>					<u>Prepared: 21-Nov-18 Analyzed: 27-Nov-18</u>					
Manganese	< 0.0040		mg/l	0.0040						
Iron	< 0.125		mg/l	0.125						
Sodium	< 0.750		mg/l	0.750						
<b><u>LCS (1815289-BS1)</u></b>					<u>Prepared: 21-Nov-18 Analyzed: 29-Nov-18</u>					
Sodium	<b>5.81</b>		mg/l	0.750	6.25		93	85-115		
Manganese	<b>1.31</b>		mg/l	0.0040	1.25		105	85-115		
Iron	<b>1.36</b>		mg/l	0.125	1.25		108	85-115		

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**Soluble Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 200.7</u></b>										
<b>Batch 1815292 - EPA 200 Series</b>										
<b><u>Blank (1815292-BLK1)</u></b>					<u>Prepared &amp; Analyzed: 26-Nov-18</u>					
Sodium	< 1.50		mg/l	1.50						
Manganese	< 0.0080		mg/l	0.0080						
Iron	< 0.250		mg/l	0.250						
<b><u>LCS (1815292-BS1)</u></b>					<u>Prepared &amp; Analyzed: 26-Nov-18</u>					
Manganese	<b>5.01</b>		mg/l	0.0080	5.00		100	85-115		
Iron	<b>10.7</b>		mg/l	0.250	10.0		107	85-115		
Sodium	<b>10.8</b>		mg/l	1.50	10.0		108	85-115		
<b><u>Duplicate (1815292-DUP1)</u></b>					<u>Source: SC51979-01</u> <u>Prepared &amp; Analyzed: 26-Nov-18</u>					
Iron	< 0.250		mg/l	0.250		BRL				20
Sodium	<b>197</b>		mg/l	1.50		191			3	20
Manganese	<b>0.0500</b>		mg/l	0.0080		0.0487			3	20
<b><u>Matrix Spike (1815292-MS1)</u></b>					<u>Source: SC51979-01</u> <u>Prepared &amp; Analyzed: 26-Nov-18</u>					
Sodium	<b>183</b>	QM2	mg/l	1.50	12.5	191	-64	70-130		
Manganese	<b>2.74</b>		mg/l	0.0080	2.50	0.0487	108	70-130		
Iron	<b>2.74</b>		mg/l	0.250	2.50	BRL	110	70-130		
<b><u>Matrix Spike (1815292-MS2)</u></b>					<u>Source: SC51979-02</u> <u>Prepared &amp; Analyzed: 26-Nov-18</u>					
Manganese	<b>2.72</b>		mg/l	0.0080	2.50	0.0289	108	70-130		
Sodium	<b>143</b>	QM2	mg/l	1.50	12.5	138	42	70-130		
Iron	<b>2.81</b>		mg/l	0.250	2.50	BRL	113	70-130		

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**General Chemistry Parameters - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 300.0</u></b>										
<b>Batch 1815120 - General Preparation</b>										
<b><u>Blank (1815120-BLK1)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	< 1.00		mg/l	1.00						
Nitrate as N	< 0.100		mg/l	0.100						
<b><u>LCS (1815120-BS1)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.97		mg/l	0.100	2.00		98	90-110		
<b><u>Calibration Blank (1815120-CCB1)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	0.202		mg/l							
Nitrate as N	-0.00900		mg/l							
<b><u>Calibration Blank (1815120-CCB2)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	0.204		mg/l							
Nitrate as N	-0.0120		mg/l							
<b><u>Calibration Blank (1815120-CCB3)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	0.206		mg/l							
Nitrate as N	-0.0120		mg/l							
<b><u>Calibration Blank (1815120-CCB4)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.199		mg/l							
Nitrate as N	-0.0130		mg/l							
<b><u>Calibration Blank (1815120-CCB5)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.203		mg/l							
Nitrate as N	-0.0110		mg/l							
<b><u>Calibration Check (1815120-CCV1)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	20.1		mg/l	1.00	20.0		101	90-110		
Nitrate as N	1.93		mg/l	0.100	2.00		96	90-110		
<b><u>Calibration Check (1815120-CCV2)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	2.00		mg/l	0.100	2.00		100	90-110		
<b><u>Calibration Check (1815120-CCV3)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.98		mg/l	0.100	2.00		99	90-110		
<b><u>Calibration Check (1815120-CCV4)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.5		mg/l	1.00	20.0		102	90-110		
Nitrate as N	2.00		mg/l	0.100	2.00		100	90-110		
<b><u>Calibration Check (1815120-CCV5)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.96		mg/l	0.100	2.00		98	90-110		
<b><u>Reference (1815120-SRM1)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	27.6	QM9	mg/l	1.00	25.0		111	90-110		
Nitrate as N	2.72		mg/l	0.100	2.50		109	90-110		
<b>Batch 1815124 - General Preparation</b>										
<b><u>Blank (1815124-BLK1)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	< 1.00		mg/l	1.00						
Nitrate as N	< 0.100		mg/l	0.100						
<b><u>LCS (1815124-BS1)</u></b>										
					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.3		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.95		mg/l	0.100	2.00		97	90-110		
<b><u>Calibration Blank (1815124-CCB1)</u></b>										
					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	0.204		mg/l							
Nitrate as N	-0.0120		mg/l							

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**General Chemistry Parameters - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 300.0</u></b>										
<b>Batch 1815124 - General Preparation</b>										
<b><u>Calibration Blank (1815124-CCB2)</u></b>					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	0.206		mg/l							
Nitrate as N	-0.0120		mg/l							
<b><u>Calibration Blank (1815124-CCB3)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.199		mg/l							
Nitrate as N	-0.0130		mg/l							
<b><u>Calibration Blank (1815124-CCB4)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.203		mg/l							
Nitrate as N	-0.0110		mg/l							
<b><u>Calibration Blank (1815124-CCB5)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.198		mg/l							
Nitrate as N	-0.0130		mg/l							
<b><u>Calibration Blank (1815124-CCB6)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.200		mg/l							
Nitrate as N	-0.0110		mg/l							
<b><u>Calibration Blank (1815124-CCB7)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	0.212		mg/l							
Nitrate as N	-0.0120		mg/l							
<b><u>Calibration Check (1815124-CCV1)</u></b>					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	2.00		mg/l	0.100	2.00		100	90-110		
<b><u>Calibration Check (1815124-CCV2)</u></b>					<u>Prepared &amp; Analyzed: 15-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.98		mg/l	0.100	2.00		99	90-110		
<b><u>Calibration Check (1815124-CCV3)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.5		mg/l	1.00	20.0		102	90-110		
Nitrate as N	2.00		mg/l	0.100	2.00		100	90-110		
<b><u>Calibration Check (1815124-CCV4)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.96		mg/l	0.100	2.00		98	90-110		
<b><u>Calibration Check (1815124-CCV5)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.4		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.99		mg/l	0.100	2.00		100	90-110		
<b><u>Calibration Check (1815124-CCV6)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.3		mg/l	1.00	20.0		102	90-110		
Nitrate as N	1.94		mg/l	0.100	2.00		97	90-110		
<b><u>Calibration Check (1815124-CCV7)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	20.5		mg/l	1.00	20.0		103	90-110		
Nitrate as N	2.00		mg/l	0.100	2.00		100	90-110		
<b><u>Duplicate (1815124-DUP1)</u></b>					<b><u>Source: SC51979-05</u></b>		<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>			
Chloride	6.30		mg/l	1.00		6.40			2	20
Nitrate as N	0.101		mg/l	0.100		0.104			3	20
<b><u>Matrix Spike (1815124-MS1)</u></b>					<b><u>Source: SC51979-05</u></b>		<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>			
Chloride	14.1		mg/l	1.00	8.00	6.40	96	90-110		
Nitrate as N	0.885		mg/l	0.100	0.800	0.104	98	90-110		
<b><u>Matrix Spike Dup (1815124-MSD1)</u></b>					<b><u>Source: SC51979-05</u></b>		<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>			
Chloride	14.2		mg/l	1.00	8.00	6.40	97	90-110	0.5	20
Nitrate as N	0.897		mg/l	0.100	0.800	0.104	99	90-110	1	20
<b><u>Reference (1815124-SRM1)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Chloride	27.6		mg/l	1.00	25.0		110	90-110		

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**General Chemistry Parameters - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 300.0</u></b>										
<b>Batch 1815124 - General Preparation</b>										
<b><u>Reference (1815124-SRM1)</u></b>					<u>Prepared: 15-Nov-18 Analyzed: 16-Nov-18</u>					
Nitrate as N	2.68		mg/l	0.100	2.50		107	90-110		

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**Subcontracted Analyses - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>E351.1</u></b>										
<b>Batch 456885A - E351.1</b>										
<b><u>BLK (CB96986-BLK)</u></b>										
Nitrogen Tot Kjeldahl	< 0.10	c1	mg/L	0.10				BRL -		
<b><u>DUP (CB96986-DUP)</u></b>										
Nitrogen Tot Kjeldahl	0.76	c1	mg/L	0.10				-	1.3	20
<b><u>LCS (CB96986-LCS)</u></b>										
Nitrogen Tot Kjeldahl	4.200	c1	mg/L	0.10	4.06		103	85-115		20
<b><u>MS (CB96986-MS)</u></b>										
Nitrogen Tot Kjeldahl	2.770	c1	mg/L	0.10	2		101	75-125		20

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## Notes and Definitions

c1	TKN is reported as Organic Nitrogen in the Blank, LCS, DUP and MS.
D	Data reported from a dilution
GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
QM2	The RPD and/or percent recovery for this QC spike sample cannot be accurately calculated due to the high concentration of analyte inherent in the sample.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.



Spectrum Analytical

# CHAIN OF CUSTODY RECORD

Page 1 of 2

### Special Handling:

- Standard TAT - 7 to 10 business days
- Rush TAT - Date Needed: \_\_\_\_\_
- All TATs subject to laboratory approval
- Min. 24-hr notification needed for rushes
- Samples disposed after 30 days unless otherwise instructed.

Report To: Stantec  
5 Danforth Drive  
Suite 200  
Arbun, NH 03032

Telephone #: \_\_\_\_\_  
 Project Mgr: Donald Moore

Invoice To: Same

P.O. No.: MSA dated 3/1/2017 Quote #: \_\_\_\_\_

Project No: 191710274

Site Name: Durham LF

Location: Durham State: NH

Sampler(s): B Blive / Stantec

F=Field Filtered 1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
 7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=Deionized Water 10=H<sub>3</sub>PO<sub>4</sub> 11=\_\_\_\_\_ 12=\_\_\_\_\_

### List Preservative Code below:

3	4					
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### QA/QC Reporting Notes:

\* additional charges may apply

- MA DEP MCP CAM Report?  Yes  No  
 CT DPH RCP Report?  Yes  No
- Standard  No QC  
 DQA\*
- ASP A\*  ASP B\*  
 NJ Reduced\*  NJ Full\*  
 Tier II\*  Tier IV\*
- Other: NHDES  
 State-specific reporting standards:

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water  
 O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas

X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

### Containers

### Analysis

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Cl, NO <sub>3</sub>	TKN	Fe, Mn, Ni	Check if chlorinated
<u>SC51979.01</u>	<u>MW-5U</u>	<u>11/14/18</u>	<u>0945</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X<sub>F</sub></u>	<input type="checkbox"/>
<u>02</u>	<u>MW-4U</u>	<u>11/14/18</u>	<u>1010</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>Y</u>	<u>Y</u>	<u>X<sub>F</sub></u>	<input type="checkbox"/>
<u>03</u>	<u>MW-4L</u>	<u>11/14/18</u>	<u>1030</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<input type="checkbox"/>
<u>04</u>	<u>SW-3</u>	<u>11/14/18</u>	<u>1125</u>	<u>G</u>	<u>SW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<input type="checkbox"/>
<u>05</u>	<u>SW-2</u>	<u>11/14/18</u>	<u>1145</u>	<u>G</u>	<u>SW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<input type="checkbox"/>
<u>06</u>	<u>SW-1</u>	<u>11/14/18</u>	<u>1210</u>	<u>G</u>	<u>SW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<input type="checkbox"/>
<u>07</u>	<u>MW-3U</u>	<u>11/14/18</u>	<u>1315</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X<sub>F</sub></u>	<input type="checkbox"/>
<u>08</u>	<u>MW-3L</u>	<u>11/14/18</u>	<u>1335</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X</u>	<input type="checkbox"/>
<u>09</u>	<u>MW-2</u>	<u>11/14/18</u>	<u>1350</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X<sub>F</sub></u>	<input type="checkbox"/>
<u>10</u>	<u>MW-1U</u>	<u>11/14/18</u>	<u>1405</u>	<u>G</u>	<u>GW</u>				<u>3</u>	<u>X</u>	<u>X</u>	<u>X<sub>F</sub></u>	<input type="checkbox"/>

Relinquished by:

Received by:

Date:

Time:

Temp °C

B Blive / Stantec  
DBM

[Signature]

11-15-18

1222

Observed

1.9

Correction Factor

0

Corrected

1.9

IR ID #

1

- EDD format: \_\_\_\_\_
- E-mail to: \_\_\_\_\_

- Condition upon receipt: Custody Seals:  Present  Intact  Broken
- Ambient  Iced  Refrigerated  DI VOA Frozen  Soil Jar Frozen





Spectrum Analytical

# CHAIN OF CUSTODY RECORD

Page 2 of 2

### Special Handling:

Standard TAT - 7 to 10 business days

Rush TAT - Date Needed: \_\_\_\_\_

All TATs subject to laboratory approval  
Min. 24-hr notification needed for rushes  
Samples disposed after 30 days unless otherwise instructed.

Report To: Stantec  
5 Dartmouth Drive  
Suite 200  
Auburn, NH 03032

Invoice To: Same

Project No: 191710274

Site Name: Durham LF

Location: Durham State: NH

Sampler(s): B Blue / Stantec

F=Field Filtered 1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=Deionized Water 10=H<sub>3</sub>PO<sub>4</sub> 11=\_\_\_\_\_ 12=\_\_\_\_\_

### List Preservative Code below:

3 4

### QA/QC Reporting Notes:

\* additional charges may apply

MA DEP MCP CAM Report?  Yes  No  
CT DPH RCP Report?  Yes  No

Standard  No QC

DQA\*

ASP A\*

ASP B\*

NJ Reduced\*

NJ Full\*

Tier II\*

Tier IV\*

Other: NADES  
State-specific reporting standards:

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water  
O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas  
X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

### Containers

### Analysis

G= Grab

C=Compsite

Type

Matrix

# of VOA Vials

# of Amber Glass

# of Clear Glass

# of Plastic

Cl, NO<sub>3</sub>

TKN

Fe, Mn, Na

Check if chlorinated

SCS1979-11

MW-1L

11/14/18

1415

G

GW

3

X

X

X

Relinquished by:

Received by:

Date:

Time:

Temp °C

[Signature] / Stantec

[Signature]

11-15-18

1222

Observed

1.9

Correction Factor

0

Corrected

1.9

IR ID #

EDD format:

E-mail to:

Condition upon receipt: Custody Seals:  Present  Intact  Broken

Ambient  Iced  Refrigerated  DI VOA Frozen  Soil Jar Frozen

## Batch Summary

### **1815120**

#### General Chemistry Parameters

1815120-BLK1  
1815120-BS1  
1815120-CCB1  
1815120-CCB2  
1815120-CCB3  
1815120-CCB4  
1815120-CCB5  
1815120-CCV1  
1815120-CCV2  
1815120-CCV3  
1815120-CCV4  
1815120-CCV5  
1815120-SRM1  
SC51979-11 (MW-1L)

### **1815124**

#### General Chemistry Parameters

1815124-BLK1  
1815124-BS1  
1815124-CCB1  
1815124-CCB2  
1815124-CCB3  
1815124-CCB4  
1815124-CCB5  
1815124-CCB6  
1815124-CCB7  
1815124-CCV1  
1815124-CCV2  
1815124-CCV3  
1815124-CCV4  
1815124-CCV5  
1815124-CCV6  
1815124-CCV7  
1815124-DUP1  
1815124-MS1  
1815124-MSD1  
1815124-SRM1  
SC51979-01 (MW-5U)  
SC51979-02 (MW-4U)  
SC51979-03 (MW-4L)  
SC51979-04 (SW-3)  
SC51979-05 (SW-2)  
SC51979-06 (SW-1)  
SC51979-07 (MW-3U)  
SC51979-08 (MW-3L)  
SC51979-09 (MW-2)  
SC51979-10 (MW-1U)

### **1815127**

#### Soluble Metals by EPA 200/6000 Series Methods

SC51979-01 (MW-5U)  
SC51979-02 (MW-4U)  
SC51979-07 (MW-3U)  
SC51979-09 (MW-2)  
SC51979-10 (MW-1U)

### **1815128**

#### Total Metals by EPA 200/6000 Series Methods

SC51979-03 (MW-4L)  
SC51979-04 (SW-3)  
SC51979-05 (SW-2)  
SC51979-06 (SW-1)  
SC51979-08 (MW-3L)  
SC51979-11 (MW-1L)

### **1815289**

#### Total Metals by EPA 200 Series Methods

1815289-BLK1  
1815289-BS1  
SC51979-03 (MW-4L)  
SC51979-04 (SW-3)  
SC51979-05 (SW-2)  
SC51979-06 (SW-1)  
SC51979-08 (MW-3L)  
SC51979-11 (MW-1L)

### **1815292**

#### Soluble Metals by EPA 200 Series Methods

1815292-BLK1  
1815292-BS1  
1815292-DUP1  
1815292-MS1  
1815292-MS2  
SC51979-01 (MW-5U)  
SC51979-02 (MW-4U)  
SC51979-07 (MW-3U)  
SC51979-09 (MW-2)  
SC51979-10 (MW-1U)



**456885A**

*Subcontracted Analyses*

CB96986-BLK

CB96986-DUP

CB96986-LCS

CB96986-MS

SC51979-01 (MW-5U)

SC51979-02 (MW-4U)

SC51979-03 (MW-4L)

SC51979-04 (SW-3)

SC51979-05 (SW-2)

SC51979-06 (SW-1)

SC51979-07 (MW-3U)

SC51979-08 (MW-3L)

SC51979-09 (MW-2)

SC51979-10 (MW-1U)

SC51979-11 (MW-1L)



## Laboratory Report SC51991

Stantec Consulting Services  
5 Dartmouth Drive, Suite 101  
Auburn, NH 03032  
Attn: Don Moore

Project: Durham Landfill - Durham, NH  
Project #: 191710274

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.  
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87936  
Maine # MA138  
New Hampshire # 2972/2538  
New Jersey # MA011  
New York # 11393  
Pennsylvania # 68-04426/68-02924  
Rhode Island # LAO00348  
USDA # P330-15-00375  
Vermont # VT-11393



Authorized by:  
Rebecca Merz  
Quality Services Manager



Eurofins Spectrum Analytical holds primary NELAC certification in the State of New York for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of New York does not offer certification for all analytes. Please refer to our website for specific certification holdings in each state.

Please note that this report contains 13 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Eurofins Spectrum Analytical, Inc.

*Eurofins Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Eurofins Spectrum Analytical, Inc. is currently accredited for the specific method or analyte indicated. Please refer to our Quality web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Eurofins Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey, Pennsylvania and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (PA-68-04426).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

## Sample Summary

**Work Order:** SC51991  
**Project:** Durham Landfill - Durham, NH  
**Project Number:** 191710274

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SC51991-01	MW-5U	Ground Water	14-Nov-18 09:45	15-Nov-18 16:40
SC51991-02	MW-3U	Ground Water	14-Nov-18 13:15	15-Nov-18 16:40
SC51991-03	FB	Deionized Water	14-Nov-18 13:25	15-Nov-18 16:40
SC51991-04	MW-3L	Ground Water	14-Nov-18 13:35	15-Nov-18 16:40
SC51991-05	MW-2	Ground Water	14-Nov-18 13:50	15-Nov-18 16:40

**CASE NARRATIVE:**

Data has been reported to the RDL. This report excludes estimated concentrations detected below the RDL and above the MDL (J-Flag).

All non-detects and all results below the reporting limit are reported as "<" (less than) the reporting limit in this report.

The samples were received 1.1 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 1.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group. If method or program required MS/MSD/Dup were not performed, sufficient sample was not provided to the laboratory.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**EPA 537 modified**

**Laboratory Control Samples:**

LCS3231Q

---

Estimated value

Perfluorobutanoic acid

Perfluoropentanoic acid

**Samples:**

SC51991-01            *MW-5U*

---

Estimated value

Perfluorononanoic acid

SC51991-02            *MW-3U*

---

Estimated value

Perfluorononanoic acid

SC51991-04            *MW-3L*

---

Estimated value

Perfluorobutanoic acid

SC51991-05            *MW-2*

---

Estimated value

Perfluorobutanoic acid

Perfluorononanoic acid

## Sample Acceptance Check Form

Client: Stantec Consulting Services - Auburn, NH  
Project: Durham Landfill - Durham, NH / 191710274  
Work Order: SC51991  
Sample(s) received on: 11/15/2018

*The following outlines the condition of samples for the attached Chain of Custody upon receipt.*

	<u>Yes</u>	<u>No</u>	<u>N/A</u>
Were custody seals present?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Were custody seals intact?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Were samples received at a temperature of $\leq 6^{\circ}\text{C}$ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples refrigerated upon transfer to laboratory representative?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were sample containers received intact?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples accompanied by a Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Does Chain of Custody document include proper, full, and complete documentation, which shall include sample ID, site location, and/or project number, date and time of collection, collector's name, preservation type, sample matrix and any special remarks concerning the sample?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Did sample container labels agree with Chain of Custody document?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Were samples received within method-specific holding times?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

### Summary of Hits

Lab ID: SC51991-01

Client ID: MW-5U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Perfluorobutanesulfonate	4.4		1.2	ng/l	EPA 537 modified
Perfluoroheptanoic acid	2.3		1.2	ng/l	EPA 537 modified
Perfluorohexanesulfonate	17		2.5	ng/l	EPA 537 modified
Perfluorohexanoic acid	2.6		2.5	ng/l	EPA 537 modified
Perfluorononanoic acid	0.60	J.	2.5	ng/l	EPA 537 modified
perfluoro-octanesulfonic acid	13		2.5	ng/l	EPA 537 modified
Perfluorooctanoic acid	10		1.2	ng/l	EPA 537 modified

Lab ID: SC51991-02

Client ID: MW-3U

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Perfluorobutanesulfonate	7.6		1.2	ng/l	EPA 537 modified
Perfluorobutanoic acid	8.3		7.5	ng/l	EPA 537 modified
Perfluoroheptanoic acid	9.9		1.2	ng/l	EPA 537 modified
Perfluorohexanesulfonate	21		2.5	ng/l	EPA 537 modified
Perfluorohexanoic acid	17		2.5	ng/l	EPA 537 modified
Perfluorononanoic acid	0.66	J.	2.5	ng/l	EPA 537 modified
perfluoro-octanesulfonic acid	22		2.5	ng/l	EPA 537 modified
Perfluorooctanoic acid	28		1.2	ng/l	EPA 537 modified
Perfluoropentanoic acid	19		7.5	ng/l	EPA 537 modified

Lab ID: SC51991-04

Client ID: MW-3L

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Perfluorobutanesulfonate	5.5		1.2	ng/l	EPA 537 modified
Perfluorobutanoic acid	5.4	J.	7.5	ng/l	EPA 537 modified
Perfluoroheptanoic acid	5.6		1.2	ng/l	EPA 537 modified
Perfluorohexanesulfonate	14		2.5	ng/l	EPA 537 modified
Perfluorohexanoic acid	9.8		2.5	ng/l	EPA 537 modified
perfluoro-octanesulfonic acid	10		2.5	ng/l	EPA 537 modified
Perfluorooctanoic acid	13		1.2	ng/l	EPA 537 modified
Perfluoropentanoic acid	9.9		7.5	ng/l	EPA 537 modified

Lab ID: SC51991-05

Client ID: MW-2

Parameter	Result	Flag	Reporting Limit	Units	Analytical Method
Perfluorobutanesulfonate	5.7		1.2	ng/l	EPA 537 modified
Perfluorobutanoic acid	5.0	J.	7.5	ng/l	EPA 537 modified
Perfluoroheptanoic acid	9.4		1.2	ng/l	EPA 537 modified
Perfluorohexanesulfonate	26		2.5	ng/l	EPA 537 modified
Perfluorohexanoic acid	14		2.5	ng/l	EPA 537 modified
Perfluorononanoic acid	0.64	J.	2.5	ng/l	EPA 537 modified
perfluoro-octanesulfonic acid	41		2.5	ng/l	EPA 537 modified
Perfluorooctanoic acid	16		1.2	ng/l	EPA 537 modified
Perfluoropentanoic acid	15		7.5	ng/l	EPA 537 modified

*This laboratory report is not valid without an authorized signature on the cover page.*

*Please note that because there are no reporting limits associated with hazardous waste characterizations or micro analyses, this summary does not include hits from these analyses if included in this work order.*



Sample IdentificationMW-5U  
SC51991-01Client Project #  
191710274Matrix  
Ground WaterCollection Date/Time  
14-Nov-18 09:45Received  
15-Nov-18

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>MDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
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**Subcontracted Analyses**Subcontracted AnalysesPrepared by method METHOD*Analysis performed by Eurofins Lancaster Laboratories Environmental - 273017*

375-73-5	Perfluorobutanesulfonate	4.4		ng/l	1.2	0.37	1	EPA 537 modified	19-Nov-18 08:15	20-Nov-18 11:50	273017	18323001	
375-22-4	Perfluorobutanoic acid	< 7.5		ng/l	7.5	2.5	1	"	"	"	"	"	"
375-85-9	Perfluoroheptanoic acid	2.3		ng/l	1.2	0.50	1	"	"	"	"	"	"
355-46-4	Perfluorohexanesulfonate	17		ng/l	2.5	0.50	1	"	"	"	"	"	"
307-24-4	Perfluorohexanoic acid	2.6		ng/l	2.5	0.50	1	"	"	"	"	"	"
375-95-1	Perfluorononanoic acid	0.60	J.	ng/l	2.5	0.50	1	"	"	"	"	"	"
1763-23-1	perfluoro-octanesulfonic acid	13		ng/l	2.5	0.50	1	"	"	"	"	"	"
335-67-1	Perfluorooctanoic acid	10		ng/l	1.2	0.37	1	"	"	"	"	"	"
2706-90-3	Perfluoropentanoic acid	< 7.5		ng/l	7.5	2.5	1	"	"	"	"	"	"

Surrogate recoveries:

375-73-5L	13C3-PFBS	138			26-148 %			"	"	"	"	"	"
355-46-4L	13C3-PFHxS	85			34-126 %			"	"	"	"	"	"
375-22-4L	13C4-PFBA	100			33-123 %			"	"	"	"	"	"
375-85-9L	13C4-PFHpA	64			35-126 %			"	"	"	"	"	"
307-24-4L	13C5-PFHxA	85			35-138 %			"	"	"	"	"	"
2706-90-3L	13C5-PFPeA	118			31-157 %			"	"	"	"	"	"
335-67-1L	13C8-PFOA	99			48-122 %			"	"	"	"	"	"
1763-23-1L	13C8-PFOS	97			50-121 %			"	"	"	"	"	"
375-95-1L	13C9-PFNA	104			41-144 %			"	"	"	"	"	"

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Sample Identification

MW-3U  
SC51991-02

Client Project #  
191710274

Matrix  
Ground Water

Collection Date/Time  
14-Nov-18 13:15

Received  
15-Nov-18

CAS No.	Analyte(s)	Result	Flag	Units	*RDL	MDL	Dilution	Method Ref.	Prepared	Analyzed	Analyst	Batch	Cert.
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**Subcontracted Analyses**

Subcontracted Analyses

Prepared by method METHOD

*Analysis performed by Eurofins Lancaster Laboratories Environmental - 273017*

375-73-5	Perfluorobutanesulfonate	7.6		ng/l	1.2	0.37	1	EPA 537 modified	19-Nov-18 08:15	20-Nov-18 11:59	273017	18323001	
375-22-4	Perfluorobutanoic acid	8.3		ng/l	7.5	2.5	1	"	"	"	"	"	"
375-85-9	Perfluoroheptanoic acid	9.9		ng/l	1.2	0.50	1	"	"	"	"	"	"
355-46-4	Perfluorohexanesulfonate	21		ng/l	2.5	0.50	1	"	"	"	"	"	"
307-24-4	Perfluorohexanoic acid	17		ng/l	2.5	0.50	1	"	"	"	"	"	"
375-95-1	Perfluorononanoic acid	0.66	J.	ng/l	2.5	0.50	1	"	"	"	"	"	"
1763-23-1	perfluoro-octanesulfonic acid	22		ng/l	2.5	0.50	1	"	"	"	"	"	"
335-67-1	Perfluorooctanoic acid	28		ng/l	1.2	0.37	1	"	"	"	"	"	"
2706-90-3	Perfluoropentanoic acid	19		ng/l	7.5	2.5	1	"	"	"	"	"	"

*Surrogate recoveries:*

375-73-5L	13C3-PFBS	99			26-148 %			"	"	"	"	"	"
355-46-4L	13C3-PFHxS	70			34-126 %			"	"	"	"	"	"
375-22-4L	13C4-PFBA	80			33-123 %			"	"	"	"	"	"
375-85-9L	13C4-PFHpA	55			35-126 %			"	"	"	"	"	"
307-24-4L	13C5-PFHxA	73			35-138 %			"	"	"	"	"	"
2706-90-3L	13C5-PFPeA	93			31-157 %			"	"	"	"	"	"
335-67-1L	13C8-PFOA	81			48-122 %			"	"	"	"	"	"
1763-23-1L	13C8-PFOS	76			50-121 %			"	"	"	"	"	"
375-95-1L	13C9-PFNA	78			41-144 %			"	"	"	"	"	"

*This laboratory report is not valid without an authorized signature on the cover page.*

Sample Identification

FB

SC51991-03

Client Project #

191710274

Matrix

Deionized Water

Collection Date/Time

14-Nov-18 13:25

Received

15-Nov-18

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	------------	-----------------	--------------------	-----------------	-----------------	----------------	--------------	--------------

**Subcontracted Analyses**Subcontracted AnalysesPrepared by method METHOD*Analysis performed by Eurofins Lancaster Laboratories Environmental - 273017*

375-73-5	Perfluorobutanesulfonate	< 0.86		ng/l	0.86	0.26	1	EPA 537 modified	19-Nov-18 08:15	20-Nov-18 12:08	273017	18323001	
375-22-4	Perfluorobutanoic acid	< 5.1		ng/l	5.1	1.7	1	"	"	"	"	"	"
375-85-9	Perfluoroheptanoic acid	< 0.86		ng/l	0.86	0.34	1	"	"	"	"	"	"
355-46-4	Perfluorohexanesulfonate	< 1.7		ng/l	1.7	0.34	1	"	"	"	"	"	"
307-24-4	Perfluorohexanoic acid	< 1.7		ng/l	1.7	0.34	1	"	"	"	"	"	"
375-95-1	Perfluorononanoic acid	< 1.7		ng/l	1.7	0.34	1	"	"	"	"	"	"
1763-23-1	perfluoro-octanesulfonic acid	< 1.7		ng/l	1.7	0.34	1	"	"	"	"	"	"
335-67-1	Perfluorooctanoic acid	< 0.86		ng/l	0.86	0.26	1	"	"	"	"	"	"
2706-90-3	Perfluoropentanoic acid	< 5.1		ng/l	5.1	1.7	1	"	"	"	"	"	"

Surrogate recoveries:

375-73-5L	13C3-PFBS	76			26-148 %			"	"	"	"	"	"
355-46-4L	13C3-PFHxS	66			34-126 %			"	"	"	"	"	"
375-22-4L	13C4-PFBA	89			33-123 %			"	"	"	"	"	"
375-85-9L	13C4-PFHpA	48			35-126 %			"	"	"	"	"	"
307-24-4L	13C5-PFHxA	87			35-138 %			"	"	"	"	"	"
2706-90-3L	13C5-PFPeA	80			31-157 %			"	"	"	"	"	"
335-67-1L	13C8-PFOA	85			48-122 %			"	"	"	"	"	"
1763-23-1L	13C8-PFOS	82			50-121 %			"	"	"	"	"	"
375-95-1L	13C9-PFNA	91			41-144 %			"	"	"	"	"	"

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Sample IdentificationMW-3L  
SC51991-04Client Project #  
191710274Matrix  
Ground WaterCollection Date/Time  
14-Nov-18 13:35Received  
15-Nov-18

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	------------	-----------------	--------------------	-----------------	-----------------	----------------	--------------	--------------

**Subcontracted Analyses**Subcontracted AnalysesPrepared by method METHOD*Analysis performed by Eurofins Lancaster Laboratories Environmental - 273017*

375-73-5	Perfluorobutanesulfonate	5.5		ng/l	1.2	0.37	1	EPA 537 modified	19-Nov-18 08:15	20-Nov-18 12:26	273017	18323001	
375-22-4	Perfluorobutanoic acid	5.4	J.	ng/l	7.5	2.5	1	"	"	"	"	"	"
375-85-9	Perfluoroheptanoic acid	5.6		ng/l	1.2	0.50	1	"	"	"	"	"	"
355-46-4	Perfluorohexanesulfonate	14		ng/l	2.5	0.50	1	"	"	"	"	"	"
307-24-4	Perfluorohexanoic acid	9.8		ng/l	2.5	0.50	1	"	"	"	"	"	"
375-95-1	Perfluorononanoic acid	< 2.5		ng/l	2.5	0.50	1	"	"	"	"	"	"
1763-23-1	perfluoro-octanesulfonic acid	10		ng/l	2.5	0.50	1	"	"	"	"	"	"
335-67-1	Perfluorooctanoic acid	13		ng/l	1.2	0.37	1	"	"	"	"	"	"
2706-90-3	Perfluoropentanoic acid	9.9		ng/l	7.5	2.5	1	"	"	"	"	"	"

Surrogate recoveries:

375-73-5L	13C3-PFBS	103			26-148 %			"	"	"	"	"	"
355-46-4L	13C3-PFHxS	70			34-126 %			"	"	"	"	"	"
375-22-4L	13C4-PFBA	83			33-123 %			"	"	"	"	"	"
375-85-9L	13C4-PFHpA	55			35-126 %			"	"	"	"	"	"
307-24-4L	13C5-PFHxA	74			35-138 %			"	"	"	"	"	"
2706-90-3L	13C5-PFPeA	90			31-157 %			"	"	"	"	"	"
335-67-1L	13C8-PFOA	84			48-122 %			"	"	"	"	"	"
1763-23-1L	13C8-PFOS	84			50-121 %			"	"	"	"	"	"
375-95-1L	13C9-PFNA	85			41-144 %			"	"	"	"	"	"

*This laboratory report is not valid without an authorized signature on the cover page.*

Sample IdentificationMW-2  
SC51991-05Client Project #  
191710274Matrix  
Ground WaterCollection Date/Time  
14-Nov-18 13:50Received  
15-Nov-18

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>MDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
----------------	-------------------	---------------	-------------	--------------	-------------	------------	-----------------	--------------------	-----------------	-----------------	----------------	--------------	--------------

**Subcontracted Analyses**Subcontracted AnalysesPrepared by method METHOD*Analysis performed by Eurofins Lancaster Laboratories Environmental - 273017*

375-73-5	Perfluorobutanesulfonate	5.7		ng/l	1.2	0.37	1	EPA 537 modified	19-Nov-18 08:15	20-Nov-18 12:35	273017	18323001	
375-22-4	Perfluorobutanoic acid	5.0	J.	ng/l	7.5	2.5	1	"	"	"	"	"	"
375-85-9	Perfluoroheptanoic acid	9.4		ng/l	1.2	0.50	1	"	"	"	"	"	"
355-46-4	Perfluorohexanesulfonate	26		ng/l	2.5	0.50	1	"	"	"	"	"	"
307-24-4	Perfluorohexanoic acid	14		ng/l	2.5	0.50	1	"	"	"	"	"	"
375-95-1	Perfluorononanoic acid	0.64	J.	ng/l	2.5	0.50	1	"	"	"	"	"	"
1763-23-1	perfluoro-octanesulfonic acid	41		ng/l	2.5	0.50	1	"	"	"	"	"	"
335-67-1	Perfluorooctanoic acid	16		ng/l	1.2	0.37	1	"	"	"	"	"	"
2706-90-3	Perfluoropentanoic acid	15		ng/l	7.5	2.5	1	"	"	"	"	"	"

Surrogate recoveries:

375-73-5L	13C3-PFBS	98			26-148 %			"	"	"	"	"	"
355-46-4L	13C3-PFHxS	73			34-126 %			"	"	"	"	"	"
375-22-4L	13C4-PFBA	90			33-123 %			"	"	"	"	"	"
375-85-9L	13C4-PFHpA	58			35-126 %			"	"	"	"	"	"
307-24-4L	13C5-PFHxA	82			35-138 %			"	"	"	"	"	"
2706-90-3L	13C5-PFPeA	99			31-157 %			"	"	"	"	"	"
335-67-1L	13C8-PFOA	92			48-122 %			"	"	"	"	"	"
1763-23-1L	13C8-PFOS	88			50-121 %			"	"	"	"	"	"
375-95-1L	13C9-PFNA	96			41-144 %			"	"	"	"	"	"

*This laboratory report is not valid without an authorized signature on the cover page.*

**Subcontracted Analyses - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b><u>EPA 537 modified</u></b>										
<b>Batch 18323001 - METHOD</b>										
<b><u>Blank (BLK3230B)</u></b>						<b><u>Prepared: 19-Nov-18 Analyzed: 20-Nov-18</u></b>				
Perfluoropentanoic acid	< 6.0		ng/l	6.0				-		
Perfluorobutanesulfonate	< 1.0		ng/l	1.0				-		
Perfluorobutanoic acid	< 6.0		ng/l	6.0				-		
Perfluoroheptanoic acid	< 1.0		ng/l	1.0				-		
Perfluorohexanesulfonate	< 2.0		ng/l	2.0				-		
Perfluorohexanoic acid	< 2.0		ng/l	2.0				-		
Perfluorononanoic acid	< 2.0		ng/l	2.0				-		
perfluoro-octanesulfonic acid	< 2.0		ng/l	2.0				-		
Perfluorooctanoic acid	< 1.0		ng/l	1.0				-		
<hr/>										
Surrogate: 13C3-PFHxS	13		ng/l		19		69	34-126		
Surrogate: 13C4-PFBA	19		ng/l		20		93	33-123		
Surrogate: 13C4-PFHpA	11		ng/l		20		53	35-126		
Surrogate: 13C5-PFHxA	18		ng/l		20		88	35-138		
Surrogate: 13C5-PFPeA	17		ng/l		20		85	31-157		
Surrogate: 13C8-PFOA	19		ng/l		20		96	48-122		
Surrogate: 13C8-PFOS	18		ng/l		19		92	50-121		
Surrogate: 13C9-PFNA	20		ng/l		20		102	41-144		
Surrogate: 13C3-PFBS	14		ng/l		19		76	26-148		
<b><u>LCS (LCS3231Q)</u></b>						<b><u>Prepared: 19-Nov-18 Analyzed: 20-Nov-18</u></b>				
Perfluoroheptanoic acid	4.8		ng/l	1.0	5.4		88	76-140		
Perfluorooctanoic acid	5.0		ng/l	1.0	5.4		91	72-138		
perfluoro-octanesulfonic acid	4.5		ng/l	2.0	5.2		87	67-138		
Perfluorononanoic acid	4.6		ng/l	2.0	5.4		84	72-148		
Perfluorohexanesulfonate	4.3		ng/l	2.0	5.1		83	71-131		
Perfluorobutanoic acid	4.9	J.	ng/l	6.0	5.4		91	74-142		
Perfluorobutanesulfonate	5.3		ng/l	1.0	4.8		110	73-128		
Perfluoropentanoic acid	4.6	J.	ng/l	6.0	5.4		85	74-134		
Perfluorohexanoic acid	5.0		ng/l	2.0	5.4		92	75-135		
<hr/>										
Surrogate: 13C3-PFBS	14		ng/l		19		77	26-148		
Surrogate: 13C9-PFNA	20		ng/l		20		98	41-144		
Surrogate: 13C3-PFHxS	17		ng/l		19		89	34-126		
Surrogate: 13C4-PFBA	18		ng/l		20		90	33-123		
Surrogate: 13C4-PFHpA	19		ng/l		20		97	35-126		
Surrogate: 13C5-PFHxA	17		ng/l		20		87	35-138		
Surrogate: 13C5-PFPeA	17		ng/l		20		85	31-157		
Surrogate: 13C8-PFOA	19		ng/l		20		95	48-122		
Surrogate: 13C8-PFOS	17		ng/l		19		87	50-121		

*This laboratory report is not valid without an authorized signature on the cover page.*

## Notes and Definitions

J.	Estimated value
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic intervals. Concentrations, intervals, and criteria are method specific.





Spectrum Analytical

# CHAIN OF CUSTODY RECORD

Page 1 of 1

SCS199101 Boy

### Special Handling:

- Standard TAT - 7 to 10 business days
- Rush TAT - Date Needed: \_\_\_\_\_
- All TATs subject to laboratory approval
- Min. 24-hr notification needed for rushes
- Samples disposed after 30 days unless otherwise instructed.

Report To: Starter  
5 Dextmore Th Drive  
Avon, NH 03032

Invoice To: Same

Project No: 191710274

Site Name: Durham LF

Location: Durham

Sampler(s): B Blade / Starter

State: NH

Telephone #: \_\_\_\_\_

Project Mgr: DAVID MOORE

P.O. No.: MSA Data 3/1/2017 Quote #: \_\_\_\_\_

F=Field Filtered 1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid

7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=Deionized Water 10=H<sub>3</sub>PO<sub>4</sub> 11=TRIZMA 12= \_\_\_\_\_

DW=Drinking Water GW=Groundwater SW=Surface Water WW=Waste Water

O=Oil SO=Soil SL=Sludge A=Indoor/Ambient Air SG=Soil Gas

X1= \_\_\_\_\_ X2= \_\_\_\_\_ X3= \_\_\_\_\_

G=Grab C=Composite

Lab ID:	Sample ID:	Date:	Time:	Type	Matrix	Containers				Analysis	Check if chlorinated	QA/QC Reporting Notes: * additional charges may apply
						# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic			
SCS199101	MW-SV	11/14/18	0945	G	Grv					X		
	MW-3U	11/14/18	1315	G	Grv					X		
	FB	11/14/18	1325	G	D1					X		
	MW-3L	11/14/18	1335	G	Grv					X		
	MW-2	11/14/18	1350	G	Grv					X		

Requisitioned by: [Signature]

Received by: [Signature]

Date: 11-15-18 Time: 12:22

Date: 11/15/18 Time: 16:46

Temp. °C: 1.1

Observed: 1.1

Correction Factor: 8

Condition upon receipt:  Ambient  Iced  Refrigerated  DI VOA Frozen  Soil In Frozen

Custody Seals:  Present  Intact  Broken

Condition upon receipt:  Ambient  Iced  Refrigerated  DI VOA Frozen  Soil In Frozen



## Batch Summary

### 18323001

#### *Subcontracted Analyses*

BLK3230B

LCS3231Q

SC51991-01 (MW-5U)

SC51991-02 (MW-3U)

SC51991-03 (FB)

SC51991-04 (MW-3L)

SC51991-05 (MW-2)



## Moore, Donald

---

**From:** O'Rourke, James <James.ORourke@des.nh.gov>  
**Sent:** Monday, October 22, 2018 1:49 PM  
**To:** Moore, Donald  
**Cc:** April Talon; Rydel, Paul  
**Subject:** RE: NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Hello Don,

Thank you for your follow up message. Yes as you suggest I think we should take the opportunity to confirm the results of the April 2017 initial monitoring round and resample this fall. Please conduct a confirmatory round of sampling for PFAS at MW-3U, MW-3L, MW-2, and W-1. We recommend sampling an upgradient monitoring well location as well. Also please confirm with the Town that W-1 is not used for consumptive purposes. If the sampling event cannot be coordinated for the month of October a one-time extension to sample during November is permitted.

The results of the sampling event should be included with the normal data transmittal and include an evaluation of the results and recommendations for future monitoring, Permit modifications, or other actions. As you have done with the first round please also upload the results to the Environmental Monitoring Database (EMD).

NHDES appreciates the efforts of the Town to comply with the sampling requirements associated with our evaluation of this emerging contaminant. I will upload this email to the OneStop Database to inform the project record.

Regards,  
Jamie

**James W. O'Rourke, P.G.**  
Waste Management Division  
New Hampshire Department of Environmental Services  
P.O. Box 95, 29 Hazen Drive  
Concord, New Hampshire 03302-0095  
Phone: 603-271-2909 Fax: 603-271-2181  
Email: [James.ORourke@des.nh.gov](mailto:James.ORourke@des.nh.gov)

---

**From:** Moore, Donald [mailto:Donald.Moore2@stantec.com]  
**Sent:** Monday, October 22, 2018 10:33 AM  
**To:** O'Rourke, James  
**Cc:** April Talon; Rydel, Paul  
**Subject:** RE: NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Jamie,

Just wondering if you've had time to review this April 2017 PFAS data submittal, make any recommendations for sampling or re-sampling at Durham LF this Oct. The GMP does call for sampling in October, but I'm sure we could push it into November.

**Donald Moore**

Associate, Hydrogeologist

Direct: 603 206-7561  
Mobile: 603 498-3244  
Fax: 603 669-7636  
Donald.Moore2@stantec.com

Stantec  
5 Dartmouth Drive Suite 200  
Auburn NH 03032-3984 US



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**From:** Moore, Donald  
**Sent:** Wednesday, October 10, 2018 1:30 PM  
**To:** O'Rourke, James <James.ORourke@des.nh.gov>  
**Cc:** April Talon <atalon@ci.durham.nh.us>; Rydel, Paul <Paul.Rydel@des.nh.gov>  
**Subject:** RE: NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Jamie,

As requested here is Data Submittal for the April 2017 PFAS results from Durham Landfill. I uploaded this to OneStop, and figured emailing it to you would be just as easy.

Let us know what you think.

Don

**Donald Moore**

Associate, Hydrogeologist

Direct: 603 206-7561  
Mobile: 603 498-3244  
Fax: 603 669-7636  
Donald.Moore2@stantec.com

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**From:** O'Rourke, James <[James.ORourke@des.nh.gov](mailto:James.ORourke@des.nh.gov)>  
**Sent:** Tuesday, October 2, 2018 8:53 AM  
**To:** Moore, Donald <[Donald.Moore2@stantec.com](mailto:Donald.Moore2@stantec.com)>  
**Cc:** April Talon <atalon@ci.durham.nh.us>; Rydel, Paul <[Paul.Rydel@des.nh.gov](mailto:Paul.Rydel@des.nh.gov)>  
**Subject:** RE: NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Hello Don,

Thank you for the update. At this time the upload of data to the Environmental Monitoring Database (EMD) does not count as an official submittal of data (or trigger notification to a site manager that data has been submitted). I have located the data for the landfill in the EMD so I can confirm it was uploaded successfully. The laboratory report, as the official copy of the analyses, is required to be submitted through the NHDES Onestop database, or as a hard copy through

the mail; the same process as a Permit data transmittal. This allows an official copy of the lab report to be contained in the Onestop database project record.

Please submit the PFAS laboratory report as a typical data transmittal (with cover sheets). At that time I can update the project record to reflect that the initial screening for PFAS has been accomplished at the landfill. Please include any recommendations you may have for follow-up or confirmation sampling. For future reference any sampling data conducted at a site should be included in the Periodic Summary Reports and discussed as part of the site conceptual model.

Regards,  
Jamie

**James W. O'Rourke, P.G.**  
Waste Management Division  
New Hampshire Department of Environmental Services  
P.O. Box 95, 29 Hazen Drive  
Concord, New Hampshire 03302-0095  
Phone: 603-271-2909 Fax: 603-271-2181  
Email: [James.ORourke@des.nh.gov](mailto:James.ORourke@des.nh.gov)

---

**From:** Moore, Donald [<mailto:Donald.Moore2@stantec.com>]  
**Sent:** Friday, September 28, 2018 12:41 PM  
**To:** O'Rourke, James  
**Cc:** April Talon; Birmingham, Linda; Rydel, Paul; Kenison, Karlee  
**Subject:** FW: NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Jamie,

I've reviewed the attached Groundwater Management Permit for the Closed Durham Municipal Landfill.

Specifically the cover page, which discusses not receiving results from an initial PFAS screening. Stantec collected samples for PFAS in April 2017 from downgradient wells (MW-1U, MW-1L, MW-2, MW-3U, MW-3L) and the on-site potable well (W-1).

This was the first PFAS event I managed, so I did not include the results with the usual Data Submittal. I kept the PFAS separate and just uploaded the PFAS Electronic Data Deliverable (EDD) results to the NHDES' Environmental Monitoring Database (EMD) in October 2017.

Maybe that EDD upload just did not land where you could review results? I also attach the tabulated results if that helps with additional conclusions/recommendations.

Please advise

**Donald Moore**  
Associate, Hydrogeologist  
Direct: 603 206-7561  
Mobile: 603 498-3244  
Fax: 603 669-7636  
[Donald.Moore2@stantec.com](mailto:Donald.Moore2@stantec.com)

Stantec  
5 Dartmouth Drive Suite 200  
Auburn NH 03032-3984 US



**From:** Newton, Lisa <[Lisa.Newton@des.nh.gov](mailto:Lisa.Newton@des.nh.gov)>

**Sent:** Friday, September 28, 2018 12:07 PM

**To:** April Talon ([atalon@ci.durham.nh.us](mailto:atalon@ci.durham.nh.us)) <[atalon@ci.durham.nh.us](mailto:atalon@ci.durham.nh.us)>

**Cc:** Moore, Donald <[Donald.Moore2@stantec.com](mailto:Donald.Moore2@stantec.com)>; Birmingham, Linda <[Linda.Birmingham@des.nh.gov](mailto:Linda.Birmingham@des.nh.gov)>; Rydel, Paul <[Paul.Rydel@des.nh.gov](mailto:Paul.Rydel@des.nh.gov)>; Kenison, Karlee <[Karlee.Kenison@des.nh.gov](mailto:Karlee.Kenison@des.nh.gov)>; O'Rourke, James <[James.ORourke@des.nh.gov](mailto:James.ORourke@des.nh.gov)>

**Subject:** NHDES Correspondence | Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham

Dear Ms. Talon:

Please find attached the Groundwater Management Permit Renewal (GWP-199006011-D-005) concerning DES Site #199006011, Closed Durham Municipal Landfill, Durham Point Road, Durham. If you have any questions regarding this document, you may contact James O'Rourke.

Thank you,

Lisa Newton, Secretary II  
Department of Environmental Services  
Waste Management Division  
29 Hazen Drive, PO Box 95  
Concord, NH 03302-0095  
Phone (603) 271-2988  
Email: [lisa.newton@des.nh.gov](mailto:lisa.newton@des.nh.gov)

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