# DES Waste Management Division 29 Hazen Drive; PO Box 95 Concord, NH 03302-0095

April 2017 Groundwater Monitoring Data Submittal: PFAS Results

Durham Landfill
Durham Point Road
Durham, NH 03824
NHDES Site #: 199006011
Project Type: Existing Landfill or Landfill
Closure
Project Number: 0002115

Prepared For:
Town of Durham
100 Stone Quarry Drive
Durham, NH 03824
Phone Number (603) 868-5578
RP Contact Name: Ms. April Talon, P.E.
RP Contact Email: atalon@ci.durham.nh.us



Prepared By: Stantec Consulting Services Inc. 5 Dartmouth Drive, Suite 200

Auburn, NH 03032 Phone Number: (603) 669-8672

Contact Name: Mr. Donald Moore Contact Email: Donald.moore2@stantec.com

Date of Report: October 10, 2018

# **Groundwater Monitoring Report Cover Sheet**

Site Name: Durham Landfill

Town: Durham

Permit #: GWP 199006011-D-004

Type of Submittal (Check all that apply)

Periodic Summary Report (year): 2017

X Data Submittal (month and year per Condition #7 of Permit): April 2017

Check each box where the answer to any of the following questions is "YES"

### **Sampling Results**

X During the most recent monitoring event, were any <u>new</u> compounds detected at any sampling point?

Well/Compound:

MW-1U/PFBS, PFHPA, PFHXS, PFHXA, PFPEA, PFOS, PFOA;

MW-1L/PFBS, PFHXS, PFHXA, PFPEA, PFOA;

MW-2/PFHPA, PFHXS, PFHXA, PFPEA, PFOS, PFOA;

MW-3U/PFBS, PFHPA, PFHXS, PFHXA, PFPEA, PFOS, PFOA;

MW-3L/PFBS, PFHPA, PFHXS, PFHXA, PFPEA, PFOS, PFOA;

W-1/ PFBS. PFBA. PFHPA. PFHXS. PFHXA. PFPEA. PFOS. PFOA:

Are there any detections of contamination in drinking water that is untreated prior to use?

Well/Compound:

- □ Do compounds detected exceed AGQS?
- Was free product detected for the first time in any monitoring point?
  - □ Surface Water (*visible sheen*)
  - □ Groundwater (1/8" or greater thickness)
    Location/Thickness:

### **Contaminant Trends**

Do sampling results show an increasing concentration trend in any source area monitoring well?

Well/Compound:

Do sampling results indicate an AGQS violation in any of the GMZ boundary wells? Well/Compound:

### Recommendations

 Does the report include any recommendations requiring DES action? (Do not check this box if the only recommendation is to continue with existing permit conditions.)

This form is to be completed for groundwater monitoring data submittals and periodic summary reports submitted to the New Hampshire Department of Environmental Services Waste Management Division.



### Stantec Consulting Services Inc.

5 Dartmouth Drive, Suite 200, Auburn, NH 03032 Tel: (603) 669-8672, Fax: (603) 669-7636

October 10, 2018 File 191710274

Attention: Groundwater Management Permits Coordinator

Waste Management Division New Hampshire Department of Environmental Services 29 Hazen Drive, PO. Box 95 Concord, NH 03302-0095

RE: April 2017 Groundwater Monitoring Data Submittal: PFAS Results Durham Municipal Landfill, Durham Point Road, Durham, NH NHDES No. 199006011, Project #2115

Dear Sir or Madam:

Stantec Consulting Services (Stantec) is pleased to submit, on behalf of the Town of Durham, the results of the water quality sampling conducted at the Durham Municipal Landfill on April 27, 2017. The site location is shown on Figure 1 (attached). Groundwater samples were collected in accordance with the New Hampshire Department of Environmental Services (NHDES) letter, dated November 22, 2016, which requested Responsible Parties (RPs) with landfills, hazardous substance release sites, fire training areas, and lagoons to sample for per- and polyfluoroalkyl substances (PFAS), in addition to their list of Groundwater Management Permit (GMP) parameters, as an initial screening for these chemicals.

Results from the GMP (No GWP-199006011-D-004) required April 2017 sampling event were submitted to NHDES separately in Stantec's report entitled April 2017 Water Quality Summary and 2017 Biennial Water Quality Summary dated August 24, 2017.

Stantec collected samples for PFAS from five downgradient wells (MW-1U, MW-1L, MW-2, MW-3U, MW-3L) and the on-site potable well (W-1) in accordance with the NHDES Standard Operating Procedure (SOP) #HWRB-21. Locations of the sampling points are shown on the attached Figure 2. 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 investigations1.

The PFAS samples were placed in an ice chest (separate from the GMP samples) to maintain a temperature of 4°C and were transported to Eurofins Spectrum Analytical, Inc. of Agawam, Massachusetts, a State of New Hampshire-certified laboratory for analysis. Chain of custody

<sup>&</sup>lt;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)



protocols were maintained, and copies of these forms are provided in the laboratory report attached to this letter.

### **April 2017 PFAS Results**

Laboratory results for PFAS are presented in Table 1 and are summarized below.

- At MW-1U, concentrations of seven of the nine isomers were reported above laboratory reporting limits. The level of perfluoro-octanesulfonic acid (PFOS) was reported at 13 nanograms per liter (ng/L) and perfluorooctanoic acid (PFOA) was reported at 5 ng/L. Both concentrations are below their applicable AGQS of 70 ng/L. The sum, or total of PFOS + PFOA (18 ng/L) was also below the AGQS of 70 ng/L for the sum of these two isomers. The other detected isomers do not have related AGQS.
- At MW-1U, concentrations of five of the nine isomers were reported above laboratory reporting limits. PFOS was not detected above its laboratory reporting limit; PFOA was detected below its AGQS at 3 ng/L; and the total of PFOS + PFOA was detected below AGQS at 3 ng/L.
- At MW-2, concentrations of six of the nine isomers were reported above laboratory reporting limits. PFOS was detected below its AGQS at 12 ng/L; PFOA was detected below its AGQS at 5 ng/L; and the total of PFOS + PFOA was detected below AGQS at 17 ng/L.
- At MW-3U, concentrations of seven of the nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below their AGQS at 22 ng/L and 24 ng/L, respectively. The total of PFOS + PFOA was also detected below its AGQS at 46 ng/L.
- At MW-3L, concentrations of seven of the nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below AGQS at 12 ng/L and 13 ng/L, respectively. The total of PFOS + PFOA was detected below its AGQS at 25 ng/L.
- At W-1, concentrations of eight of the nine isomers were reported above laboratory reporting limits. PFOS and PFOA were detected below their AGQS at 21 ng/L and 16 ng/L, respectively. The total of PFOS + PFOA was detected below its AGQS at 37 ng/L.
- No PFAS isomers were detected in the Field Blank.



Although detectable levels of PFAS were reported in the sampled wells, it is recommended that no further testing be conducted due to the concentrations being below AGQS.

Sincerely,

STANTEC CONSULTING SERVICES INC.

Donald F. Moore, P.G. Associate/Hydrogeologist Phone: (603) 206-7561

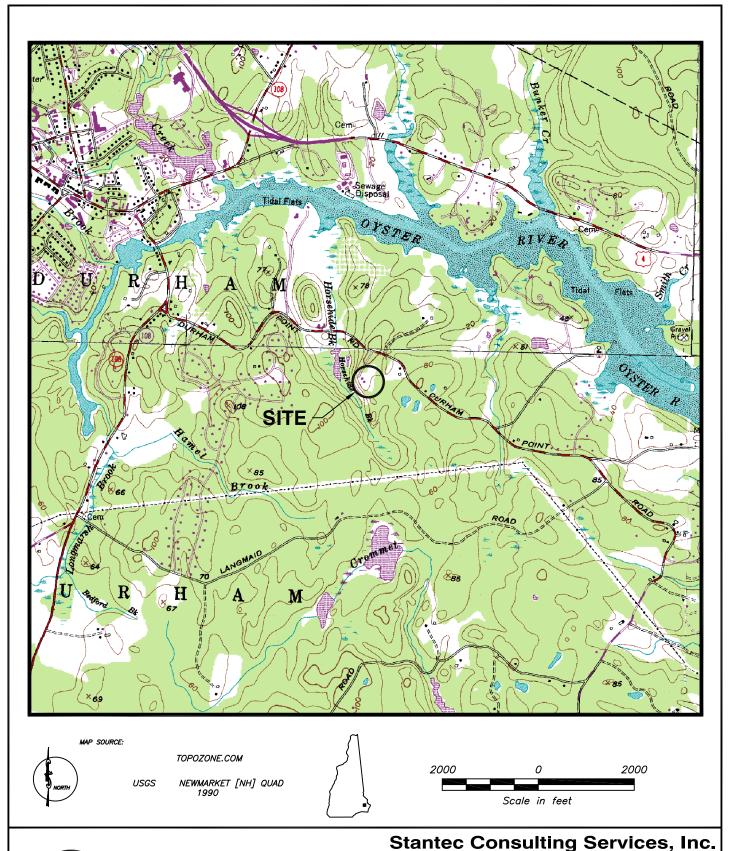
Donald.moore2@stantec.com

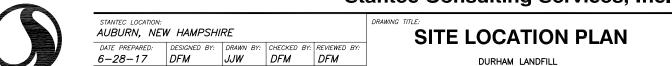
Attachments: Figures 1 and 2

Table 1

Laboratory Data Report April 2017 PFAS Sampling Event

Cc: April Talon, P.E., Town of Durham





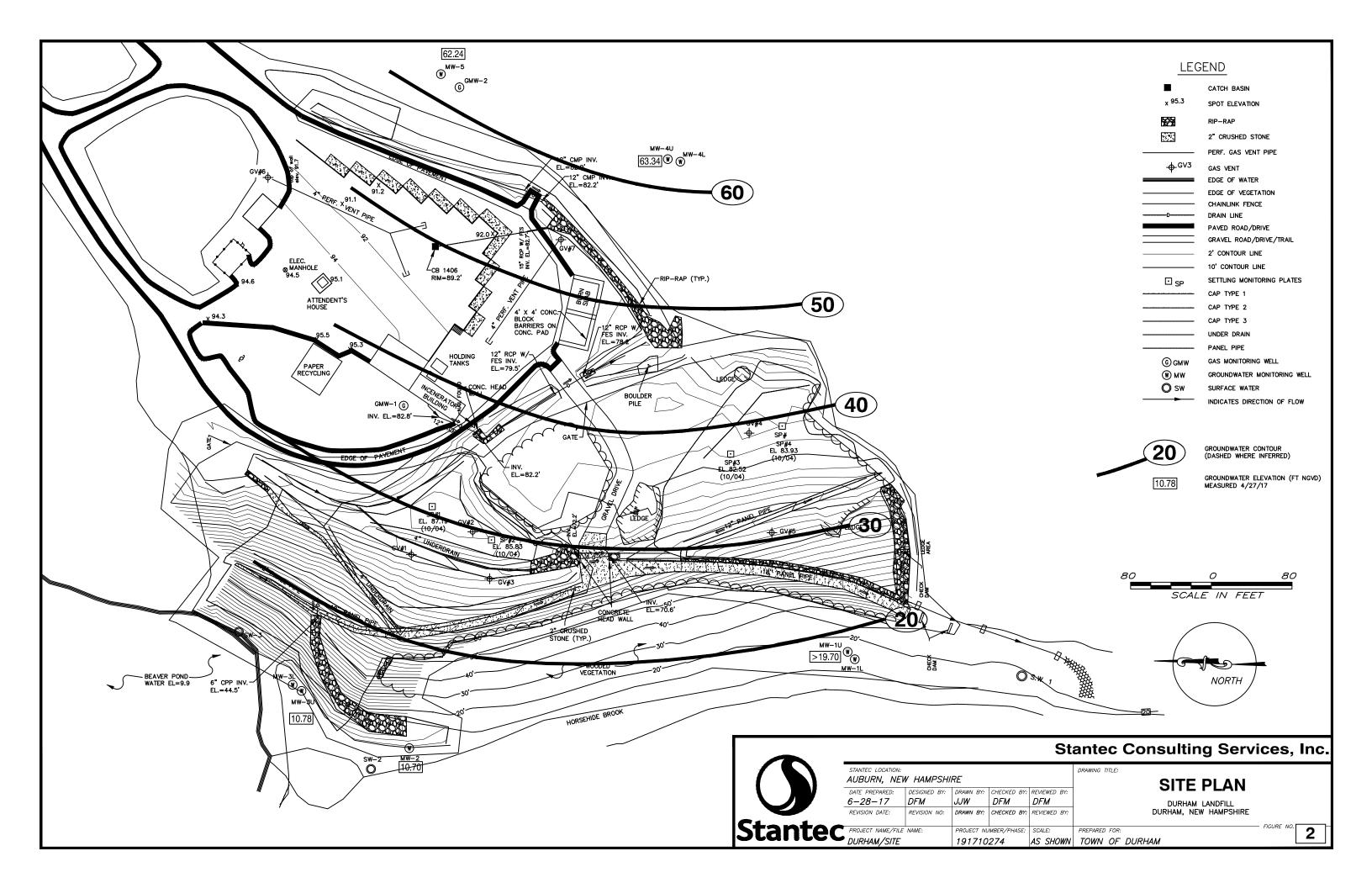
1:24000

REVISION DATE: REVISION NO: DRAWN BY: CHECKED BY: REVIEWED BY: Stantec PROJECT NAME/FILE NAME: PROJECT NUMBER/PHASE: SCALE: PREPARED FOR:

191710274

DURHAM LANDFILL DURHAM, NEW HAMPSHIRE

FIGURE NO. TOWN OF DURHAM



### TABLE 1

## Summary of Groundwater Analytical Results: PFAS Data Closed Durham Municipal landfill April 27, 2017

|           |                                      |       |               |          |          |          | Sample ID |          |          |                |
|-----------|--------------------------------------|-------|---------------|----------|----------|----------|-----------|----------|----------|----------------|
|           | Analyte/Method                       | Units | NHDES<br>AGQS | MW-1U    | MW-1L    | MW-2     | MW-3U     | MW-3L    | W-1      | Field<br>Blank |
|           | Date                                 |       |               | 04/17/17 | 04/17/17 | 04/17/17 | 04/17/17  | 04/17/17 | 04/17/17 | 04/17/17       |
| PFAS By   | Isotope Dilution (MWs/SWs)           |       |               |          |          |          |           |          |          |                |
| Cas No    |                                      |       |               |          |          |          |           |          |          |                |
| 375-73.5  | Perfluorobutanesulfonate (PFBS)      | ng/L  | NS            | 4        | 7        | < 3      | 7         | 7        | 10       | < 3            |
| 375-22-4  | Perfluorobutanoic acid (PFBA)        | ng/L  | NS            | < 10     | < 10     | < 10     | < 10      | < 10     | 12       | < 10           |
| 375-85-9  | Perfluoroheptanoic acid (PFHPA)      | ng/L  | NS            | 4        | < 2      | 3        | 10        | 7        | 12       | < 2            |
| 375-46-4  | Perfluorohexanesulfonate (PFHXS)     | ng/L  | NS            | 14       | 16       | 7        | 20        | 18       | 20       | < 3            |
| 307-24.4  | Perfluorohexanoic acid (PFHXA)       | ng/L  | NS            | 5        | 3        | 4        | 16        | 14       | 22       | < 2            |
| 375-95-1  | Perfluoronanoic acid (PFNA)          | ng/L  | NS            | < 2      | < 2      | < 2      | < 2       | < 2      | < 2      | < 2            |
| 2706-90-3 | Perfluoropentanoic acid (PFPEA)      | ng/L  | NS            | 8        | 4        | 6        | 17        | 15       | 22       | < 2            |
| 1763-23-1 | Perfluoro-octanesulfonic acid (PFOS) | ng/L  | 70            | 13       | < 6      | 12       | 22        | 12       | 21       | < 6            |
| 335-67-1  | Perfluorooctanoic acid (PFOA)        | ng/L  | 70            | 5        | 3        | 5        | 24        | 13       | 16       | < 2            |
|           |                                      |       |               |          |          |          |           |          |          |                |
|           | Total PFOS + PFOA                    | ng/L  | 70            | 18       | 3        | 17       | 46        | 25       | 37       | 0              |
|           | Total PFAS                           | ng/L  | NS            | 53       | 33       | 37       | 116       | 86       | 135      | 0              |

### Notes:

PFAS = Per- and Polyfluoroalkyl Substances

ng/L = Nanograms per liter (parts per trillion)

NS = No standard

AGQS = Ambient Groundwater Quality Standards, Env-Or 603.03 (eff. 6/1/15)

**Bold** = Concentration exceeds NHDES AGQS or WQC

Checked by: KMC 06-29-2017



|   | Final Report   |
|---|----------------|
| V | Revised Report |

Report Date: 30-May-17 11:34

# Laboratory Report SC34056

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:

Christina White Laboratory Director

Christina a. White

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 16 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 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: SC34056

**Project:** Durham Landfill - Durham, NH

**Project Number:** 191710274

| <b>Laboratory ID</b> | Client Sample ID | <u>Matrix</u> | <b>Date Sampled</b> | <b>Date Received</b> |
|----------------------|------------------|---------------|---------------------|----------------------|
| SC34056-01           | MW-1U            | Ground Water  | 27-Apr-17 10:50     | 28-Apr-17 18:25      |
| SC34056-02           | MW-1L            | Ground Water  | 27-Apr-17 11:15     | 28-Apr-17 18:25      |
| SC34056-03           | MW-2             | Ground Water  | 27-Apr-17 12:20     | 28-Apr-17 18:25      |
| SC34056-04           | MW-3U            | Ground Water  | 27-Apr-17 13:15     | 28-Apr-17 18:25      |
| SC34056-05           | MW-3L            | Ground Water  | 27-Apr-17 13:45     | 28-Apr-17 18:25      |
| SC34056-06           | W-1              | Ground Water  | 27-Apr-17 14:45     | 28-Apr-17 18:25      |
| SC34056-07           | Field-Blank      | Ground Water  | 27-Apr-17 11:25     | 28-Apr-17 18:25      |

### **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 3.8 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of  $\pm 1.0$  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.

### May 30, 2017 Report Revision Case Narrartive:

This report has been revised to include the analyte list as requested on the chain of custody.

There is no relevant protocol-specific QC and/or performance standards non-conformances to report.

30-May-17 11:34 Page 3 of 16

# **Sample Acceptance Check Form**

| Client:     | Stantec Consulting Services - Auburn, NH |
|-------------|--|
| Project:    | Durham Landfill - Durham, NH / 191710274 |
| Work Order: | SC34056                                  |

4/28/2017

Sample(s) received on:

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

|  | <b>Yes</b>   | No           | N/A          |
|--|--------------|--------------|--------------|
| Were custody seals present?  |              | $\checkmark$ |              |
| Were custody seals intact?   |              |              | $\checkmark$ |
| Were samples received at a temperature of $\leq 6^{\circ}$ C?  | $\checkmark$ |              |              |
| Were samples cooled on ice upon transfer to laboratory representative?   | $\checkmark$ |              |              |
| Were sample containers received intact?  | $\checkmark$ |              |              |
| Were samples properly labeled (labels affixed to sample containers and include sample ID, site location, and/or project number and the collection date)?   | <b>✓</b>     |              |              |
| Were samples accompanied by a Chain of Custody document?   | $\checkmark$ |              |              |
| 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? | <b>√</b>     |              |              |
| Did sample container labels agree with Chain of Custody document?  | $\checkmark$ |              |              |
| Were samples received within method-specific holding times?  | $\checkmark$ |              |              |

# **Summary of Hits**

| Lab ID: | SC34056-01 | Client ID: | MW-1U |
|---------|------------|------------|-------|
|---------|------------|------------|-------|

| 4 4    |   | 3                | ng/l  | EPA 537 modified  |
|--------|---|------------------|---|---|
|        |   |                  |   |   |
| 1.4    |   | 2                | ng/l  | EPA 537 modified  |
| 14     |   | 3                | ng/l  | EPA 537 modified  |
| 5      |   | 2                | ng/l  | EPA 537 modified  |
| 13     |   | 6                | ng/l  | EPA 537 modified  |
| 5      |   | 2                | ng/l  | EPA 537 modified  |
| 8      |   | 2                | ng/l  | EPA 537 modified  |
|        |   | Client ID: MW-1L |   |   |
| Result | Flag  | Reporting Limit  | Units   | Analytical Method   |
| 7      |   | 3                | ng/l  | EPA 537 modified  |
| 16     |   | 3                | ng/l  | EPA 537 modified  |
| 3      |   | 2                | ng/l  | EPA 537 modified  |
| 3      |   | 2                | ng/l  | EPA 537 modified  |
| 4      |   | 2                | ng/l  | EPA 537 modified  |
|        |   | Client ID: MW-2  |   |   |
| Result | Flag  | Reporting Limit  | Units   | Analytical Method   |
| 3      |   | 2                | ng/l  | EPA 537 modified  |
| 7      |   | 3                | ng/l  | EPA 537 modified  |
| 4      |   | 2                | ng/l  | EPA 537 modified  |
| 12     |   | 6                | ng/l  | EPA 537 modified  |
| 5      |   | 2                | ng/l  | EPA 537 modified  |
| 6      |   | 2                | ng/l  | EPA 537 modified  |
|        |   | Client ID: MW-3U |   |   |
| Result | Flag  | Reporting Limit  | Units   | Analytical Method   |
| 7      |   | 3                | ng/l  | EPA 537 modified  |
| 10     |   | 2                | ng/l  | EPA 537 modified  |
| 20     |   | 3                | ng/l  | EPA 537 modified  |
| 16     |   | 2                | ng/l  | EPA 537 modified  |
| 22     |   | 6                | ng/l  | EPA 537 modified  |
| 24     |   | 2                | ng/l  | EPA 537 modified  |
| 17     |   | 2                | ng/l  | EPA 537 modified  |
|        | 5 8  Result  7 16 3 3 4  Result  3 7 4 12 5 6  Result  7 10 20 16 22 24 | 5 8              | Sesult       Client ID:       MW-1L         Result       Flag       Reporting Limit         7       3         16       3         3       2         3       2         4       2         Result       Flag       Reporting Limit         3       2         7       3         4       2         12       6         5       2         6       2         Client ID:       MW-3U         Result       Flag       Reporting Limit         7       3         10       2         20       3         16       2         22       6         24       2 | 5       2       ng/l         8       2       ng/l         Client ID: MW-1L         Result       Flag       Reporting Limit       Units         7       3       ng/l         16       3       ng/l         3       2       ng/l         4       2       ng/l         4       2       ng/l         7       3       ng/l         4       2       ng/l         7       3       ng/l         4       2       ng/l         5       2       ng/l         5       2       ng/l         6       2       ng/l         5       2       ng/l         6       2       ng/l         10       2       ng/l         20       3       ng/l         16       2       ng/l         22       ng/l         6       ng/l         16       2       ng/l         24       2       ng/l         24       2       ng/l         16       2       ng/l         16       2       ng/ |

30-May-17 11:34 Page 5 of 16

Lab ID: SC34056-05 Client ID: MW-3L

| Parameter   | Result                     | Flag | Reporting Limit        | Units                        | Analytical Method  |
|---|----------------------------|------|------------------------|------------------------------|--|
| Perfluorobutanesulfonate  | 7                          |      | 3                      | ng/l                         | EPA 537 modified   |
| Perfluoroheptanoic acid   | 7                          |      | 2                      | ng/l                         | EPA 537 modified   |
| Perfluorohexanesulfonate  | 18                         |      | 3                      | ng/l                         | EPA 537 modified   |
| Perfluorohexanoic acid  | 14                         |      | 2                      | ng/l                         | EPA 537 modified   |
| Perfluoro-octanesulfonate   | 12                         |      | 6                      | ng/l                         | EPA 537 modified   |
| Perfluorooctanoic acid  | 13                         |      | 2                      | ng/l                         | EPA 537 modified   |
| Perfluoropentanoic Acid   | 15                         |      | 2                      | ng/l                         | EPA 537 modified   |
| <b>Lab ID:</b> SC34056-06   |                            |      | Client ID: W-1         |                              |  |
|   |                            |      |                        |                              |  |
| Parameter   | Result                     | Flag | Reporting Limit        | Units                        | Analytical Method  |
| Parameter Perfluorobutanesulfonate  | Result                     | Flag | Reporting Limit        | Units<br>ng/l                | Analytical Method  EPA 537 modified  |
|   |                            | Flag |                        |                              |  |
| Perfluorobutanesulfonate  | 10                         | Flag | 3                      | ng/l                         | EPA 537 modified   |
| Perfluorobutanesulfonate Perfluorobutanoic Acid   | 10<br>12                   | Flag | 3 10                   | ng/l<br>ng/l                 | EPA 537 modified<br>EPA 537 modified   |
| Perfluorobutanesulfonate Perfluorobutanoic Acid Perfluoroheptanoic acid   | 10<br>12<br>12             | Flag | 3<br>10<br>2           | ng/l<br>ng/l<br>ng/l         | EPA 537 modified<br>EPA 537 modified<br>EPA 537 modified                             |
| Perfluorobutanesulfonate Perfluorobutanoic Acid Perfluoroheptanoic acid Perfluorohexanesulfonate                        | 10<br>12<br>12<br>20       | Flag | 3<br>10<br>2<br>3      | ng/l<br>ng/l<br>ng/l<br>ng/l | EPA 537 modified<br>EPA 537 modified<br>EPA 537 modified<br>EPA 537 modified         |
| Perfluorobutanesulfonate Perfluorobutanoic Acid Perfluoroheptanoic acid Perfluorohexanesulfonate Perfluorohexanoic acid | 10<br>12<br>12<br>20<br>22 | Flag | 3<br>10<br>2<br>3<br>2 | ng/l<br>ng/l<br>ng/l<br>ng/l | EPA 537 modified |

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.

30-May-17 11:34 Page 6 of 16

| Sample Identification MW-1U SC34056-01 |                                    |                |              | Client Project # 191710274 |       | <u>Matrix</u><br>Ground Water |          | Collection Date/Time<br>27-Apr-17 10:50 |                     | Received<br>28-Apr-17 |         |          |       |
|--|------------------------------------|----------------|--------------|----------------------------|-------|-------------------------------|----------|---|---------------------|-----------------------|---------|----------|-------|
| CAS No.                                | Analyte(s)                         | Result         | Flag         | Units                      | *RDL  | MDL                           | Dilution | Method Ref.                             | Prepared            | Analyzed              | Analyst | Batch    | Cert. |
| Subcontra                              | cted Analyses                      |                |              |                            |       |                               |          |   |                     |                       |         |          |       |
|  | acted Analyses<br>by method Method |                |              |                            |       |                               |          |   |                     |                       |         |          |       |
| Analysis pe                            | erformed by Eurofins Lancast       | ter Laboratori | es Environme | ntal - M-PA                | 0     |                               |          |   |                     |                       |         |          |       |
| 375-73-5                               | Perfluorobutanesulfonate           | 4              |              | ng/l                       | 3     | 8.0                           | 1        | EPA 537<br>modified                     | 08-May-1<br>7 13:05 | 14-May-1<br>7 00:57   | M-PA0   | 17128002 | 2     |
| 375-22-4                               | Perfluorobutanoic Acid             | < 10           |              | ng/l                       | 10    | 3                             | 1        |   | "                   | "                     | "       | "        |       |
| 375-85-9                               | Perfluoroheptanoic acid            | 4              |              | ng/l                       | 2     | 0.5                           | 1        | ·                                       | "                   | "                     | "       | "        |       |
| 355-46-4                               | Perfluorohexanesulfonate           | 14             |              | ng/l                       | 3     | 1                             | 1        |   | "                   | "                     | "       | "        |       |
| 307-24-4                               | Perfluorohexanoic acid             | 5              |              | ng/l                       | 2     | 0.6                           | 1        |   | "                   | "                     | "       | "        |       |
| 375-95-1                               | Perfluorononanoic acid             | < 2            |              | ng/l                       | 2     | 0.6                           | 1        |   | "                   | "                     | "       | "        |       |
| 1763-23-1                              | Perfluoro-octanesulfonate          | 13             |              | ng/l                       | 6     | 2                             | 1        |   | "                   | "                     | "       | "        |       |
| 335-67-1                               | Perfluorooctanoic acid             | 5              |              | ng/l                       | 2     | 0.6                           | 1        |   | "                   | "                     | "       | "        |       |
| 2706-90-3                              | Perfluoropentanoic Acid            | 8              |              | ng/l                       | 2     | 0.5                           | 1        | "                                       | "                   | "                     | "       | "        |       |
| Surrogate i                            | recoveries:                        |                |              |                            |       |                               |          |   |                     |                       |         |          |       |
| 375-73-5L                              | 13C3-PFBS                          | 89             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 355-46-4L                              | 13C3-PFHxS                         | 73             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 375-22-4L                              | 13C4-PFBA                          | 73             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 375-85-9L                              | 13C4-PFHpA                         | 76             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 307-24-4L                              | 13C5-PFHxA                         | 78             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 2706-90-3L                             | 13C5-PFPeA                         | 84             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 335-67-1L                              | 13C8-PFOA                          | 76             |              |                            | 70-13 | 80 %                          |          |   | "                   | "                     | "       | "        |       |
| 1763-23-1L                             | 13C8-PFOS                          | 80             |              |                            | 70-13 | 80 %                          |          | II .                                    | "                   | "                     | "       | "        |       |
| 375-95-1L                              | 13C9-PFNA                          | 83             |              |                            | 70-13 | 80 %                          |          | "                                       | "                   | "                     |         | "        |       |

30-May-17 11:34 Page 7 of 16

| Sample Identification MW-1L SC34056-02 |                                    |                |              | <u>Client Project #</u> 191710274 |       | <u>Matrix</u><br>Ground Wa |          | Collection Date/Time<br>27-Apr-17 11:15 |                     |                     | Received<br>28-Apr-17 |          |          |
|--|------------------------------------|----------------|--------------|-----------------------------------|-------|----------------------------|----------|---|---------------------|---------------------|-----------------------|----------|----------|
| CAS No.                                | Analyte(s)                         | Result         | Flag         | Units                             | *RDL  | MDL                        | Dilution | Method Ref.                             | Prepared            | Analyzed            | Analyst               | Batch    | Cert.    |
| Subcontra                              | acted Analyses                     |                |              |                                   |       |                            |          |   |                     |                     |                       |          |          |
|  | acted Analyses<br>by method Method |                |              |                                   |       |                            |          |   |                     |                     |                       |          |          |
| Analysis p                             | erformed by Eurofins Lancast       | er Laboratorie | es Environme | ntal - M-PA                       | 0     |                            |          |   |                     |                     |                       |          |          |
| 375-73-5                               | Perfluorobutanesulfonate           | 7              |              | ng/l                              | 3     | 8.0                        | 1        | EPA 537<br>modified                     | 08-May-1<br>7 13:05 | 14-May-1<br>7 01:59 | M-PA0                 | 17128002 | <u> </u> |
| 375-22-4                               | Perfluorobutanoic Acid             | < 10           |              | ng/l                              | 10    | 3                          | 1        | "                                       | "                   | "                   | "                     | "        |          |
| 375-85-9                               | Perfluoroheptanoic acid            | < 2            |              | ng/l                              | 2     | 0.5                        | 1        | "                                       | "                   | "                   | "                     | "        |          |
| 355-46-4                               | Perfluorohexanesulfonate           | 16             |              | ng/l                              | 3     | 1                          | 1        | II .                                    | "                   | "                   | "                     | "        |          |
| 307-24-4                               | Perfluorohexanoic acid             | 3              |              | ng/l                              | 2     | 0.6                        | 1        | II .                                    | "                   | "                   | "                     | "        |          |
| 375-95-1                               | Perfluorononanoic acid             | < 2            |              | ng/l                              | 2     | 0.6                        | 1        | II .                                    | "                   | "                   | "                     | "        |          |
| 1763-23-1                              | Perfluoro-octanesulfonate          | < 6            |              | ng/l                              | 6     | 2                          | 1        | · ·                                     | "                   | "                   | "                     | "        |          |
| 335-67-1                               | Perfluorooctanoic acid             | 3              |              | ng/l                              | 2     | 0.6                        | 1        | II .                                    | "                   | "                   | "                     | "        |          |
| 2706-90-3                              | Perfluoropentanoic Acid            | 4              |              | ng/l                              | 2     | 0.5                        | 1        | "                                       | "                   | "                   | "                     | "        |          |
| Surrogate                              | recoveries:                        |                |              |                                   |       |                            |          |   |                     |                     |                       |          |          |
| 375-73-5L                              | 13C3-PFBS                          | 70             |              |                                   | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 355-46-4L                              | 13C3-PFHxS                         | 61             |              |                                   | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 375-22-4L                              | 13C4-PFBA                          | 68             |              |                                   | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 375-85-9L                              | 13C4-PFHpA                         | 69             |              |                                   | 70-13 | 30 %                       |          | II .                                    | "                   | "                   | "                     | "        |          |
| 307-24-4L                              | 13C5-PFHxA                         | 65             |              |                                   | 70-13 | 30 %                       |          | II .                                    | "                   | "                   | "                     | "        |          |
| 2706-90-3L                             | 13C5-PFPeA                         | 70             |              |                                   | 70-13 | 30 %                       |          | II .                                    | "                   | "                   | "                     | "        |          |
| 335-67-1L                              | 13C8-PFOA                          | 67             |              |                                   | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 1763-23-1L                             | 13C8-PFOS                          | 70             |              |                                   | 70-13 | 30 %                       |          | · ·                                     | "                   |                     | "                     |          |          |
| 375-95-1L                              | 13C9-PFNA                          | 69             |              |                                   | 70-13 | 30 %                       |          |   | "                   | "                   |                       | "        |          |

30-May-17 11:34 Page 8 of 16

| Sample Identification  MW-2 SC34056-03 |                                    | Client Project # 191710274 |              | <u>Matrix</u><br>Ground Water |       | Collection Date/Time<br>27-Apr-17 12:20 |          | Received<br>28-Apr-17 |                     |                     |         |          |       |
|--|------------------------------------|----------------------------|--------------|-------------------------------|-------|---|----------|-----------------------|---------------------|---------------------|---------|----------|-------|
| CAS No.                                | Analyte(s)                         | Result                     | Flag         | Units                         | *RDL  | MDL                                     | Dilution | Method Ref.           | Prepared            | Analyzed            | Analyst | Batch    | Cert. |
| Subcontra                              | cted Analyses                      |                            |              |                               |       |   |          |                       |                     |                     |         |          |       |
|  | acted Analyses<br>by method Method |                            |              |                               |       |   |          |                       |                     |                     |         |          |       |
| Analysis pe                            | erformed by Eurofins Lancast       | er Laboratorie             | es Environme | ntal - M-PA                   | 0     |   |          |                       |                     |                     |         |          |       |
| 375-73-5                               | Perfluorobutanesulfonate           | < 3                        |              | ng/l                          | 3     | 8.0                                     | 1        | EPA 537<br>modified   | 08-May-1<br>7 13:05 | 14-May-1<br>7 02:19 | M-PA0   | 17128002 | ?     |
| 375-22-4                               | Perfluorobutanoic Acid             | < 10                       |              | ng/l                          | 10    | 3                                       | 1        | "                     | "                   | "                   | "       | "        |       |
| 375-85-9                               | Perfluoroheptanoic acid            | 3                          |              | ng/l                          | 2     | 0.5                                     | 1        | "                     | "                   | "                   | "       | "        |       |
| 355-46-4                               | Perfluorohexanesulfonate           | 7                          |              | ng/l                          | 3     | 1                                       | 1        | "                     | "                   | "                   | "       | "        |       |
| 307-24-4                               | Perfluorohexanoic acid             | 4                          |              | ng/l                          | 2     | 0.6                                     | 1        | "                     | "                   | "                   | "       | "        |       |
| 375-95-1                               | Perfluorononanoic acid             | < 2                        |              | ng/l                          | 2     | 0.6                                     | 1        | "                     | "                   | "                   | "       | "        |       |
| 1763-23-1                              | Perfluoro-octanesulfonate          | 12                         |              | ng/l                          | 6     | 2                                       | 1        | "                     | "                   | "                   | "       | "        |       |
| 335-67-1                               | Perfluorooctanoic acid             | 5                          |              | ng/l                          | 2     | 0.6                                     | 1        | "                     | "                   | "                   | "       | "        |       |
| 2706-90-3                              | Perfluoropentanoic Acid            | 6                          |              | ng/l                          | 2     | 0.5                                     | 1        | "                     | "                   | "                   | "       | "        |       |
| Surrogate i                            | recoveries:                        |                            |              |                               |       |   |          |                       |                     |                     |         |          |       |
| 375-73-5L                              | 13C3-PFBS                          | 75                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       |          |       |
| 355-46-4L                              | 13C3-PFHxS                         | 68                         |              |                               | 70-13 | 30 %                                    |          |                       | u                   | "                   | "       | "        |       |
| 375-22-4L                              | 13C4-PFBA                          | 64                         |              |                               | 70-13 | 30 %                                    |          |                       | u                   | "                   | "       | "        |       |
| 375-85-9L                              | 13C4-PFHpA                         | 72                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       |          |       |
| 307-24-4L                              | 13C5-PFHxA                         | 68                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       |          |       |
| 2706-90-3L                             | 13C5-PFPeA                         | 71                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       |          |       |
| 335-67-1L                              | 13C8-PFOA                          | 69                         |              |                               | 70-13 | 30 %                                    |          | ·                     | u u                 | "                   | "       | "        |       |
| 1763-23-1L                             | 13C8-PFOS                          | 64                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       | "        |       |
| 375-95-1L                              | 13C9-PFNA                          | 72                         |              |                               | 70-13 | 30 %                                    |          | "                     | "                   | "                   | "       |          |       |

30-May-17 11:34 Page 9 of 16

| Sample Identification MW-3U SC34056-04 |                                    |               |              | Client Project # 191710274 |       | <u>Matrix</u><br>Ground Wa | ·        | Collection Date/Time<br>27-Apr-17 13:15 |                     |                     | Received<br>28-Apr-17 |          |          |
|--|------------------------------------|---------------|--------------|----------------------------|-------|----------------------------|----------|---|---------------------|---------------------|-----------------------|----------|----------|
| CAS No.                                | Analyte(s)                         | Result        | Flag         | Units                      | *RDL  | MDL                        | Dilution | Method Ref.                             | Prepared            | Analyzed            | Analyst               | Batch    | Cert.    |
| Subcontra                              | cted Analyses                      |               |              |                            |       |                            |          |   |                     |                     |                       |          |          |
|  | acted Analyses<br>by method Method |               |              |                            |       |                            |          |   |                     |                     |                       |          |          |
| Analysis pe                            | erformed by Eurofins Lancast       | er Laboratori | es Environme | ntal - M-PA                | 0     |                            |          |   |                     |                     |                       |          |          |
| 375-73-5                               | Perfluorobutanesulfonate           | 7             |              | ng/l                       | 3     | 0.8                        | 1        | EPA 537<br>modified                     | 08-May-1<br>7 13:05 | 14-May-1<br>7 02:40 | M-PA0                 | 17128002 | <u> </u> |
| 375-22-4                               | Perfluorobutanoic Acid             | < 10          |              | ng/l                       | 10    | 3                          | 1        | "                                       | "                   | "                   | "                     | "        |          |
| 375-85-9                               | Perfluoroheptanoic acid            | 10            |              | ng/l                       | 2     | 0.5                        | 1        | "                                       | "                   | "                   | "                     | "        |          |
| 355-46-4                               | Perfluorohexanesulfonate           | 20            |              | ng/l                       | 3     | 1                          | 1        |   | "                   |                     | "                     | "        |          |
| 307-24-4                               | Perfluorohexanoic acid             | 16            |              | ng/l                       | 2     | 0.6                        | 1        |   | "                   |                     | "                     | "        |          |
| 375-95-1                               | Perfluorononanoic acid             | < 2           |              | ng/l                       | 2     | 0.6                        | 1        |   | "                   |                     | "                     | "        |          |
| 1763-23-1                              | Perfluoro-octanesulfonate          | 22            |              | ng/l                       | 6     | 2                          | 1        |   | u                   | ·                   | "                     | "        |          |
| 335-67-1                               | Perfluorooctanoic acid             | 24            |              | ng/l                       | 2     | 0.6                        | 1        |   | "                   |                     | "                     | "        |          |
| 2706-90-3                              | Perfluoropentanoic Acid            | 17            |              | ng/l                       | 2     | 0.5                        | 1        | "                                       | "                   | "                   | "                     | "        |          |
| Surrogate                              | recoveries:                        |               |              |                            |       |                            |          |   |                     |                     |                       |          |          |
| 375-73-5L                              | 13C3-PFBS                          | 84            |              |                            | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 355-46-4L                              | 13C3-PFHxS                         | 56            |              |                            | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 375-22-4L                              | 13C4-PFBA                          | 63            |              |                            | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     | "        |          |
| 375-85-9L                              | 13C4-PFHpA                         | 59            |              |                            | 70-13 | 30 %                       |          |   | "                   |                     | "                     | "        |          |
| 307-24-4L                              | 13C5-PFHxA                         | 58            |              |                            | 70-13 | 30 %                       |          |   | u                   | ·                   | "                     | "        |          |
| 2706-90-3L                             | 13C5-PFPeA                         | 76            |              |                            | 70-13 | 30 %                       |          |   | u                   | ·                   | "                     | "        |          |
| 335-67-1L                              | 13C8-PFOA                          | 61            |              |                            | 70-13 | 30 %                       |          | II .                                    | u u                 | ıı.                 | "                     | "        |          |
| 1763-23-1L                             | 13C8-PFOS                          | 61            |              |                            | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     |          |          |
| 375-95-1L                              | 13C9-PFNA                          | 68            |              |                            | 70-13 | 30 %                       |          | "                                       | "                   | "                   | "                     |          |          |

30-May-17 11:34 Page 10 of 16

| Sample Identification MW-3L SC34056-05 |                                    |               |              | Client Project # 191710274 |       |      | <u>Matrix</u><br>Ground Wa | ·                   | Collection Date/Time<br>27-Apr-17 13:45 |                     |         | Received<br>28-Apr-17 |       |  |  |
|--|------------------------------------|---------------|--------------|----------------------------|-------|------|----------------------------|---------------------|---|---------------------|---------|-----------------------|-------|--|--|
| CAS No.                                | Analyte(s)                         | Result        | Flag         | Units                      | *RDL  | MDL  | Dilution                   | Method Ref.         | Prepared                                | Analyzed            | Analyst | Batch                 | Cert. |  |  |
| Subcontra                              | cted Analyses                      |               |              |                            |       |      |                            |                     |   |                     |         |                       |       |  |  |
|  | ncted Analyses<br>by method Method |               |              |                            |       |      |                            |                     |   |                     |         |                       |       |  |  |
| Analysis pe                            | erformed by Eurofins Lancast       | er Laboratori | es Environme | ntal - M-PA                | 0     |      |                            |                     |   |                     |         |                       |       |  |  |
| 375-73-5                               | Perfluorobutanesulfonate           | 7             |              | ng/l                       | 3     | 8.0  | 1                          | EPA 537<br>modified | 08-May-1<br>7 13:05                     | 14-May-1<br>7 03:00 | M-PA0   | 17128002              | 2     |  |  |
| 375-22-4                               | Perfluorobutanoic Acid             | < 10          |              | ng/l                       | 10    | 3    | 1                          | "                   | "                                       | "                   | "       | "                     |       |  |  |
| 375-85-9                               | Perfluoroheptanoic acid            | 7             |              | ng/l                       | 2     | 0.5  | 1                          | "                   | "                                       | "                   | "       | "                     |       |  |  |
| 355-46-4                               | Perfluorohexanesulfonate           | 18            |              | ng/l                       | 3     | 1    | 1                          |                     | "                                       | "                   | "       | "                     |       |  |  |
| 307-24-4                               | Perfluorohexanoic acid             | 14            |              | ng/l                       | 2     | 0.6  | 1                          |                     | "                                       | "                   | "       | "                     |       |  |  |
| 375-95-1                               | Perfluorononanoic acid             | < 2           |              | ng/l                       | 2     | 0.6  | 1                          |                     | u                                       | "                   | "       | "                     |       |  |  |
| 1763-23-1                              | Perfluoro-octanesulfonate          | 12            |              | ng/l                       | 6     | 2    | 1                          |                     | u                                       | "                   | "       | "                     |       |  |  |
| 335-67-1                               | Perfluorooctanoic acid             | 13            |              | ng/l                       | 2     | 0.6  | 1                          |                     | u                                       | "                   | "       | "                     |       |  |  |
| 2706-90-3                              | Perfluoropentanoic Acid            | 15            |              | ng/l                       | 2     | 0.5  | 1                          | "                   | "                                       | "                   | "       | "                     |       |  |  |
| Surrogate r                            | recoveries:                        |               |              |                            |       |      |                            |                     |   |                     |         |                       |       |  |  |
| 375-73-5L                              | 13C3-PFBS                          | 90            |              |                            | 70-13 | 30 % |                            | "                   | "                                       | "                   | "       |                       |       |  |  |
| 355-46-4L                              | 13C3-PFHxS                         | 62            |              |                            | 70-13 | 30 % |                            |                     | u                                       | "                   | "       | "                     |       |  |  |
| 375-22-4L                              | 13C4-PFBA                          | 66            |              |                            | 70-13 | 30 % |                            |                     | u                                       | "                   | "       | "                     |       |  |  |
| 375-85-9L                              | 13C4-PFHpA                         | 69            |              |                            | 70-13 | 30 % |                            |                     | u                                       | "                   | "       | "                     |       |  |  |
| 307-24-4L                              | 13C5-PFHxA                         | 65            |              |                            | 70-13 | 30 % |                            |                     | u                                       | "                   | "       | "                     |       |  |  |
| 2706-90-3L                             | 13C5-PFPeA                         | 84            |              |                            | 70-13 | 30 % |                            | "                   | "                                       | "                   | "       |                       |       |  |  |
| 335-67-1L                              | 13C8-PFOA                          | 70            |              |                            | 70-13 | 30 % |                            | II .                | u u                                     | "                   | "       | "                     |       |  |  |
| 1763-23-1L                             | 13C8-PFOS                          | 71            |              |                            | 70-13 | 30 % |                            | "                   | "                                       | "                   | "       | "                     |       |  |  |
| 375-95-1L                              | 13C9-PFNA                          | 73            |              |                            | 70-13 | 30 % |                            | "                   | "                                       | "                   | "       |                       |       |  |  |

30-May-17 11:34 Page 11 of 16

| Sample Identification W-1 SC34056-06 |                                    |                |             | <u>Client Project #</u> 191710274 |       |      | <u>Matrix</u><br>Ground Wa | ·                   | ection Date<br>7-Apr-17 14 | Received<br>28-Apr-17 |         |          |       |
|--------------------------------------|------------------------------------|----------------|-------------|-----------------------------------|-------|------|----------------------------|---------------------|----------------------------|-----------------------|---------|----------|-------|
| CAS No.                              | Analyte(s)                         | Result         | Flag        | Units                             | *RDL  | MDL  | Dilution                   | Method Ref.         | Prepared                   | Analyzed              | Analyst | Batch    | Cert. |
| Subcontra                            | cted Analyses                      |                |             |                                   |       |      |                            |                     |                            |                       |         |          |       |
|                                      | acted Analyses<br>by method Method |                |             |                                   |       |      |                            |                     |                            |                       |         |          |       |
| Analysis pe                          | erformed by Eurofins Lancast       | er Laboratorie | s Environme | ntal - M-PA                       | 0     |      |                            |                     |                            |                       |         |          |       |
| 375-73-5                             | Perfluorobutanesulfonate           | 10             |             | ng/l                              | 3     | 8.0  | 1                          | EPA 537<br>modified | 08-May-1<br>7 13:05        | 14-May-1<br>7 03:21   | M-PA0   | 17128002 | ?     |
| 375-22-4                             | Perfluorobutanoic Acid             | 12             |             | ng/l                              | 10    | 3    | 1                          | "                   | "                          | "                     | "       | "        |       |
| 375-85-9                             | Perfluoroheptanoic acid            | 12             |             | ng/l                              | 2     | 0.5  | 1                          | "                   | "                          | "                     | "       | "        |       |
| 355-46-4                             | Perfluorohexanesulfonate           | 20             |             | ng/l                              | 3     | 1    | 1                          | "                   | "                          | "                     | "       | "        |       |
| 307-24-4                             | Perfluorohexanoic acid             | 22             |             | ng/l                              | 2     | 0.6  | 1                          | "                   | "                          | "                     | "       | "        |       |
| 375-95-1                             | Perfluorononanoic acid             | < 2            |             | ng/l                              | 2     | 0.6  | 1                          |                     | u                          | "                     | "       | "        |       |
| 1763-23-1                            | Perfluoro-octanesulfonate          | 21             |             | ng/l                              | 6     | 2    | 1                          |                     | u                          | "                     | "       | "        |       |
| 335-67-1                             | Perfluorooctanoic acid             | 16             |             | ng/l                              | 2     | 0.6  | 1                          |                     | u                          | "                     | "       | "        |       |
| 2706-90-3                            | Perfluoropentanoic Acid            | 22             |             | ng/l                              | 2     | 0.5  | 1                          | "                   | "                          | "                     | "       | "        |       |
| Surrogate i                          | recoveries:                        |                |             |                                   |       |      |                            |                     |                            |                       |         |          |       |
| 375-73-5L                            | 13C3-PFBS                          | 100            |             |                                   | 70-13 | 30 % |                            | "                   | "                          | "                     | "       | "        |       |
| 355-46-4L                            | 13C3-PFHxS                         | 52             |             |                                   | 70-13 | 30 % |                            | "                   | "                          | "                     | "       | "        |       |
| 375-22-4L                            | 13C4-PFBA                          | 59             |             |                                   | 70-13 | 30 % |                            | "                   | "                          | "                     | "       | "        |       |
| 375-85-9L                            | 13C4-PFHpA                         | 56             |             |                                   | 70-13 | 30 % |                            |                     | u                          | "                     | "       | "        |       |
| 307-24-4L                            | 13C5-PFHxA                         | 51             |             |                                   | 70-13 | 30 % |                            |                     | u                          | "                     | "       | "        |       |
| 2706-90-3L                           | 13C5-PFPeA                         | 83             |             |                                   | 70-13 | 30 % |                            |                     | u                          | "                     | "       | "        |       |
| 335-67-1L                            | 13C8-PFOA                          | 54             |             |                                   | 70-13 | 30 % |                            | ·                   | u u                        | "                     | "       | "        |       |
| 1763-23-1L                           | 13C8-PFOS                          | 62             |             |                                   | 70-13 | 30 % |                            | "                   | "                          | "                     | "       | "        |       |
| 375-95-1L                            | 13C9-PFNA                          | 66             |             |                                   | 70-13 | 30 % |                            | "                   | "                          | "                     | "       |          |       |

30-May-17 11:34 Page 12 of 16

| Sample Identification Field-Blank SC34056-07 |                                    |                |              |             | <u>Project #</u><br>10274 |      | <u>Matrix</u><br>Ground Wa |                     | Collection Date/Time 27-Apr-17 11:25 |                     |         |          |       |
|--|------------------------------------|----------------|--------------|-------------|---------------------------|------|----------------------------|---------------------|--------------------------------------|---------------------|---------|----------|-------|
| CAS No.                                      | Analyte(s)                         | Result         | Flag         | Units       | *RDL                      | MDL  | Dilution                   | Method Ref.         | Prepared                             | Analyzed            | Analyst | Batch    | Cert. |
| Subcontra                                    | cted Analyses                      |                |              |             |                           |      |                            |                     |                                      |                     |         |          |       |
|  | acted Analyses<br>by method Method |                |              |             |                           |      |                            |                     |                                      |                     |         |          |       |
| Analysis pe                                  | erformed by Eurofins Lancast       | er Laboratorie | es Environme | ıtal - M-PA | 0                         |      |                            |                     |                                      |                     |         |          |       |
| 375-73-5                                     | Perfluorobutanesulfonate           | < 3            |              | ng/l        | 3                         | 8.0  | 1                          | EPA 537<br>modified | 08-May-1<br>7 13:05                  | 14-May-1<br>7 03:41 | M-PA0   | 17128002 | )     |
| 375-22-4                                     | Perfluorobutanoic Acid             | < 10           |              | ng/l        | 10                        | 3    | 1                          | "                   | "                                    | "                   | "       | "        |       |
| 375-85-9                                     | Perfluoroheptanoic acid            | < 2            |              | ng/l        | 2                         | 0.5  | 1                          | II .                | "                                    | "                   | "       | "        |       |
| 355-46-4                                     | Perfluorohexanesulfonate           | < 3            |              | ng/l        | 3                         | 1    | 1                          | II .                | "                                    | "                   | "       | "        |       |
| 307-24-4                                     | Perfluorohexanoic acid             | < 2            |              | ng/l        | 2                         | 0.6  | 1                          | II .                | "                                    | "                   | "       | "        |       |
| 375-95-1                                     | Perfluorononanoic acid             | < 2            |              | ng/l        | 2                         | 0.6  | 1                          | н                   | "                                    | u u                 | "       | "        |       |
| 1763-23-1                                    | Perfluoro-octanesulfonate          | < 6            |              | ng/l        | 6                         | 2    | 1                          | II .                | "                                    | "                   | "       | "        |       |
| 335-67-1                                     | Perfluorooctanoic acid             | < 2            |              | ng/l        | 2                         | 0.6  | 1                          | н                   | "                                    | u u                 | "       | "        |       |
| 2706-90-3                                    | Perfluoropentanoic Acid            | < 2            |              | ng/l        | 2                         | 0.5  | 1                          | u                   | "                                    | "                   | "       | "        |       |
| Surrogate i                                  | recoveries:                        |                |              |             |                           |      |                            |                     |                                      |                     |         |          |       |
| 375-73-5L                                    | 13C3-PFBS                          | 76             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 355-46-4L                                    | 13C3-PFHxS                         | 65             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 375-22-4L                                    | 13C4-PFBA                          | 72             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 375-85-9L                                    | 13C4-PFHpA                         | 70             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 307-24-4L                                    | 13C5-PFHxA                         | 71             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 2706-90-3L                                   | 13C5-PFPeA                         | 76             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 335-67-1L                                    | 13C8-PFOA                          | 70             |              |             | 70-13                     | 30 % |                            | "                   | "                                    | "                   | "       | "        |       |
| 1763-23-1L                                   | 13C8-PFOS                          | 70             |              |             | 70-13                     | 30 % |                            | н                   | "                                    | "                   | "       | "        |       |
| 375-95-1L                                    | 13C9-PFNA                          | 86             |              |             | 70-13                     | 30 % |                            |                     | "                                    | "                   | "       | "        |       |

30-May-17 11:34 Page 13 of 16

# **Subcontracted Analyses - Quality Control**

| analyte(s)                | Result | Flag | Units | *RDL | Spike<br>Level | Source<br>Result | %REC      | %REC<br>Limits   | RPD             | RPI<br>Lim |
|---------------------------|--------|------|-------|------|----------------|------------------|-----------|------------------|-----------------|------------|
| CPA 537 modified          |        |      |       |      |                |                  |           |                  |                 |            |
| Satch 17128002 - Method   |        |      |       |      |                |                  |           |                  |                 |            |
| Blank (BLK1280B)          |        |      |       |      | Pre            | epared: 08-      | May-17 An | alyzed: 14-N     | //ay-17         |            |
| Perfluorohexanesulfonate  | < 3    |      | ng/l  | 3    |                |                  |           | -                |                 |            |
| Perfluoropentanoic Acid   | < 2    |      | ng/l  | 2    |                |                  |           | -                |                 |            |
| Perfluorooctanoic acid    | < 2    |      | ng/l  | 2    |                |                  |           | _                |                 |            |
| Perfluoro-octanesulfonate | < 6    |      | ng/l  | 6    |                |                  |           | _                |                 |            |
| Perfluorohexanoic acid    | < 2    |      | ng/l  | 2    |                |                  |           | _                |                 |            |
| Perfluoroheptanoic acid   | < 2    |      | ng/l  | 2    |                |                  |           | _                |                 |            |
| Perfluorobutanoic Acid    | < 10   |      | ng/l  | 10   |                |                  |           | _                |                 |            |
| Perfluorobutanesulfonate  | < 3    |      | ng/l  | 3    |                |                  |           | _                |                 |            |
| Perfluorononanoic acid    | < 2    |      | ng/l  | 2    |                |                  |           | -                |                 |            |
| Surrogate: 13C4-PFBA      | 7      |      | ng/l  |      | 10             |                  | 65        | 70-130           |                 |            |
| Surrogate: 13C3-PFBS      | 7      |      | ng/l  |      | 10             |                  | 67        | 70-130           |                 |            |
| Surrogate: 13C3-PFHxS     | 6      |      | ng/l  |      | 10             |                  | 62        | 70-130           |                 |            |
| Surrogate: 13C9-PFNA      | 8      |      | ng/l  |      | 10             |                  | 76        | 70-130<br>70-130 |                 |            |
| Surrogate: 13C4-PFHpA     | 7      |      | ng/l  |      | 10             |                  | 66        | 70-130<br>70-130 |                 |            |
| Surrogate: 13C5-PFHxA     | 7      |      | ng/l  |      | 10             |                  | 66        | 70-130<br>70-130 |                 |            |
| Surrogate: 13C5-PFPeA     | 7      |      | -     |      | 10             |                  | 65        | 70-130<br>70-130 |                 |            |
| <u>.</u>                  | 7      |      | ng/l  |      | 10             |                  | 67        | 70-130<br>70-130 |                 |            |
| Surrogate: 13C8-PFOA      |        |      | ng/l  |      |                |                  |           |                  |                 |            |
| Surrogate: 13C8-PFOS      | 7      |      | ng/l  |      | 10             |                  | 69        | 70-130           |                 |            |
| LCS (LCS1282Q)            |        |      |       |      |                | epared: 08-      | -         | alyzed: 13-N     | /lay-1/         |            |
| Perfluorooctanoic acid    | 210    |      | ng/l  | 2    | 200            |                  | 104       | 70-130           |                 |            |
| Perfluoropentanoic Acid   | 200    |      | ng/l  | 2    | 200            |                  | 101       | 70-130           |                 |            |
| Perfluorobutanoic Acid    | 200    |      | ng/l  | 10   | 200            |                  | 100       | 70-130           |                 |            |
| Perfluoroheptanoic acid   | 200    |      | ng/l  | 2    | 200            |                  | 102       | 70-130           |                 |            |
| Perfluorohexanesulfonate  | 190    |      | ng/l  | 3    | 190            |                  | 100       | 70-130           |                 |            |
| Perfluorohexanoic acid    | 200    |      | ng/l  | 2    | 200            |                  | 101       | 70-130           |                 |            |
| Perfluorononanoic acid    | 200    |      | ng/l  | 2    | 200            |                  | 99        | 70-130           |                 |            |
| Perfluoro-octanesulfonate | 190    |      | ng/l  | 6    | 190            |                  | 98        | 70-130           |                 |            |
| Perfluorobutanesulfonate  | 190    |      | ng/l  | 3    | 180            |                  | 105       | 70-130           |                 |            |
| Surrogate: 13C5-PFPeA     | 7      |      | ng/l  |      | 10             |                  | 73        | 70-130           |                 |            |
| Surrogate: 13C3-PFBS      | 7      |      | ng/l  |      | 10             |                  | 71        | 70-130           |                 |            |
| Surrogate: 13C3-PFHxS     | 7      |      | ng/l  |      | 10             |                  | 67        | 70-130           |                 |            |
| Surrogate: 13C4-PFBA      | 7      |      | ng/l  |      | 10             |                  | 68        | 70-130           |                 |            |
| Surrogate: 13C5-PFHxA     | 7      |      | ng/l  |      | 10             |                  | 68        | 70-130           |                 |            |
| Surrogate: 13C8-PFOA      | 7      |      | ng/l  |      | 10             |                  | 66        | 70-130           |                 |            |
| Surrogate: 13C8-PFOS      | 7      |      | ng/l  |      | 10             |                  | 70        | 70-130           |                 |            |
| Surrogate: 13C9-PFNA      | 7      |      | ng/l  |      | 10             |                  | 71        | 70-130           |                 |            |
| Surrogate: 13C4-PFHpA     | 7      |      | ng/l  |      | 10             |                  | 66        | 70-130           |                 |            |
| LCSD (LCS1282Y)           |        |      |       |      | Pre            | epared: 08-      | May-17 An | alyzed: 13-N     | <i>l</i> lay-17 |            |
| Perfluorobutanesulfonate  | 180    |      | ng/l  | 3    | 180            |                  | 100       | 70-130           | 5               | 30         |
| Perfluorobutanoic Acid    | 200    |      | ng/l  | 10   | 200            |                  | 99        | 70-130           | 1               | 30         |
| Perfluoroheptanoic acid   | 200    |      | ng/l  | 2    | 200            |                  | 99        | 70-130           | 3               | 30         |
| Perfluorohexanesulfonate  | 180    |      | ng/l  | 3    | 190            |                  | 96        | 70-130           | 5               | 30         |
| Perfluorohexanoic acid    | 220    |      | ng/l  | 2    | 200            |                  | 110       | 70-130           | 8               | 30         |
| Perfluorononanoic acid    | 200    |      | ng/l  | 2    | 200            |                  | 98        | 70-130           | 1               | 30         |
| Perfluoro-octanesulfonate | 190    |      | ng/l  | 6    | 190            |                  | 98        | 70-130           | 0               | 30         |
| Perfluorooctanoic acid    | 180    |      | ng/l  | 2    | 200            |                  | 91        | 70-130           | 13              | 30         |
| Perfluoropentanoic Acid   | 190    |      | ng/l  | 2    | 200            |                  | 96        | 70-130           | 4               | 30         |
| Surrogate: 13C8-PFOA      | 7      |      | ng/l  |      | 10             |                  | 72        | 70-130           |                 |            |
| Surrogate: 13C8-PFOS      | 8      |      | ng/l  |      | 10             |                  | 72<br>80  | 70-130<br>70-130 |                 |            |

# **Subcontracted Analyses - Quality Control**

| analyte(s)                | Result | Flag | Units | *RDL | Spike<br>Level | Source<br>Result | %REC     | %REC<br>Limits | RPD     | RPD<br>Limi |
|---------------------------|--------|------|-------|------|----------------|------------------|----------|----------------|---------|-------------|
| CPA 537 modified          |        |      |       |      |                |                  |          |                |         |             |
| Batch 17128002 - Method   |        |      |       |      |                |                  |          |                |         |             |
| LCSD (LCS1282Y)           |        |      |       |      | Pre            | epared: 08-      | May-17 A | nalyzed: 13-N  | /lay-17 |             |
| Surrogate: 13C5-PFPeA     | 7      |      | ng/l  |      | 10             |                  | 74       | 70-130         |         |             |
| Surrogate: 13C3-PFBS      | 7      |      | ng/l  |      | 10             |                  | 75       | 70-130         |         |             |
| Surrogate: 13C9-PFNA      | 9      |      | ng/l  |      | 10             |                  | 86       | 70-130         |         |             |
| Surrogate: 13C4-PFHpA     | 7      |      | ng/l  |      | 10             |                  | 68       | 70-130         |         |             |
| Surrogate: 13C4-PFBA      | 7      |      | ng/l  |      | 10             |                  | 68       | 70-130         |         |             |
| Surrogate: 13C3-PFHxS     | 7      |      | ng/l  |      | 10             |                  | 70       | 70-130         |         |             |
| Surrogate: 13C5-PFHxA     | 6      |      | ng/l  |      | 10             |                  | 63       | 70-130         |         |             |
| Matrix Spike (P969319R)   |        |      |       |      | Pre            | epared: 08-      | May-17 A | nalyzed: 13-N  | /lay-17 |             |
| Perfluoropentanoic Acid   | 230    |      | ng/l  | 2    | 200            | 8                | 109      | 70-130         |         |             |
| Perfluorooctanoic acid    | 220    |      | ng/l  | 2    | 200            | 5                | 108      | 70-130         |         |             |
| Perfluoro-octanesulfonate | 230    |      | ng/l  | 6    | 190            | 13               | 114      | 70-130         |         |             |
| Perfluorononanoic acid    | 230    |      | ng/l  | 2    | 200            | 0.7              | 116      | 70-130         |         |             |
| Perfluorohexanoic acid    | 240    |      | ng/l  | 2    | 200            | 5                | 120      | 70-130         |         |             |
| Perfluorohexanesulfonate  | 220    |      | ng/l  | 3    | 190            | 14               | 107      | 70-130         |         |             |
| Perfluoroheptanoic acid   | 220    |      | ng/l  | 2    | 200            | 4                | 107      | 70-130         |         |             |
| Perfluorobutanoic Acid    | 220    |      | ng/l  | 10   | 200            | 4                | 110      | 70-130         |         |             |
| Perfluorobutanesulfonate  | 200    |      | ng/l  | 3    | 180            | 4                | 113      | 70-130         |         |             |
| Surrogate: 13C5-PFPeA     | 8      |      | ng/l  |      | 10             |                  | 77       | 70-130         |         |             |
| Surrogate: 13C9-PFNA      | 7      |      | ng/l  |      | 10             |                  | 71       | 70-130         |         |             |
| Surrogate: 13C3-PFBS      | 8      |      | ng/l  |      | 10             |                  | 84       | 70-130         |         |             |
| Surrogate: 13C8-PFOA      | 6      |      | ng/l  |      | 10             |                  | 58       | 70-130         |         |             |
| Surrogate: 13C5-PFHxA     | 5      |      | ng/l  |      | 10             |                  | 54       | 70-130         |         |             |
| Surrogate: 13C4-PFHpA     | 6      |      | ng/l  |      | 10             |                  | 62       | 70-130         |         |             |
| Surrogate: 13C4-PFBA      | 6      |      | ng/l  |      | 10             |                  | 65       | 70-130         |         |             |
| Surrogate: 13C3-PFHxS     | 6      |      | ng/l  |      | 10             |                  | 58       | 70-130         |         |             |
| Surrogate: 13C8-PFOS      | 7      |      | ng/l  |      | 10             |                  | 66       | 70-130         |         |             |

### **Notes and Definitions**

dry Sample results reported on a dry weight basis

NR Not Reported

RPD Relative Percent Difference

<u>Laboratory Control Sample (LCS)</u>: 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.

<u>Matrix Spike</u>: 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.

<u>Method Blank</u>: 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.

<u>Surrogate</u>: 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.

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

30-May-17 11:34 Page 16 of 16

# Environmental Analysis Request/Chain of Custody For Eurofins Lancaster Laboratories Environmental use only \$234056 54 COC # 526752

eurofins

| NYSDEC Category A or B MA MCP   | Type III (Reduced non-CLP) NJ DKQP                     | Type I (EPA Level 3  Equivalent/non-CLP)  Type VI (Raw D | E-mail address: DONA 10, MOUN 20 51 | (Rush TAT is subject to laboratory approval and surcharge.)  Date results are needed: | Turnaround Time (TAT) Requested (please circle) Standard Rush |   | 7 | FIEID-Blank  | W-     | mw - 3L | 1    | mw - 2         | mw-11 | MW-10       | •           | Sample Identification | State where samples were collected: For Compliance: | Dampler WARD | DON MOUNE  | DULHAM L.F/ 191710274                  | SI HIN IE    | STATES BETWEEN SECTION | Client Information | Environmental |
|---|--|--|-------------------------------------|---|---|---|---|--------------|--------|---------|------|----------------|-------|-------------|-------------|-----------------------|---|--------------|--|--|--------------|------------------------|--------------------|---------------|
| CT RCP  | TX TRRP-13   | (circle if required) Type VI (Raw Data Only)             | STANTELICON                         |   | d (please circle) Rush  | 4 |   | 5211 LI-22th | 5 th 1 | 1345    | 1315 | 1220           | 2=15  | 427-17 1050 | Date Time   | Collected             | No 🗆  | Quote #:     | P.O. #:  | PWSID #:                               |              | Acct. #:               | _                  | Acct. #       |
| Site<br>(If yes,  |  | Relinquished by  | Relinquished by                     | Relinquished by   | Relinquished by   |   |   | *            | ×      | *       | ×    | *              | ×     | ×           | Gra         | ab<br>mpo             | site  |              |  |  |              |                        |                    | Group #       |
| Site-Specific QC (MS/MSD/Dup)? yes, indicate QC sample and submit triplica                              | EDD Required? If yes, format:                          | by   | бу                                  |   | in Henrende   |   |   | las ito      | *      | ×       | ×    | >              | х.    | ×           | So          | il _                  | Potal<br>NPD  |              | ] Gr   | Tissu<br>ound<br>urface                | e [          | 3                      | Matrix             |               |
| /IS/MS  | uired?   |  | 7                                   | 1/2   | nd  |   |   | -            |        |         | - >  |                | - 1   | 1           | lace to the | ner:                  |   |              |  |  |              |                        |                    | Sam           |
| Site-Specific QC (MS/MSD/Dup)? Yes No (If yes, indicate QC sample and submit triplicate sample volume.) | Yes No   | Date Time  | Date Time                           | Date  | Date 4/21/17  |   |   | *            | -      | 7 ×     | -    | 2 x            | 2 X   | 7 ×         | -           | HDE                   | of Co   |              | ers<br>PFC   | :5                                     | 0            | Preserv                | Analysis           | Sample #      |
| Temperature u   | Relinquished by Commercial Carrier:  UPS FedEx Other _ | Received by  | Received by                         | Roceived by   | Received by   |   |   |              |        |         |      |                |       |             |             |                       |   |              |  |  |              | Preservation Codes     | Analysis Requested |               |
| Temperature upon receipt <i>ICCL</i> °C   | nmercial Carrier:                                      | Date Time  | Date Time                           | Date Time 0 0 0   | Date Time   |   |   |              |        | 15%     | K1   | High turbidity |       |             |             |                       | SZI ATONX   | Remarks      | <b>N</b> =HNO <sub>3</sub> <b>B</b> =NaOH * <b>S</b> =H <sub>2</sub> SO <sub>4</sub> <b>O</b> =Other | Preservation Codes H=HCl T=Thiosulfate | SCR#: 205/63 |                        | For Lab Use Only   |               |

The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client. 3, 8/0/3,8 7044 0216

# **Batch Summary**

### 17128002

<u>Subcontracted Analyses</u>

BLK1280B

LCS1282Q

LCS1282Y

P969319R

SC34056-01 (MW-1U)

SC34056-02 (MW-1L)

SC34056-03 (MW-2)

SC34056-04 (MW-3U)

SC34056-05 (MW-3L)

SC34056-06 (W-1)

SC34056-07 (Field-Blank)