Emerging Compounds Groundwater Sampling Work Plan

Hartsdale Village Square LLC
Aristocrat Cleaners
Site Number: C360111

July 23, 2018

Submitted To:

New York State Department of Environmental Conservation
Division of Environmental Remediation
Remedial Bureau C
625 Broadway, 11th Floor
Albany, New York 12233-7014
Attn: Mr. Wayne Mizerak

Prepared For:

Hartsdale Village Square 2 LLC
2916 8th Avenue, Suite 3C
New York, New York 10039

Prepared By:

EnviroTrac Ltd.
5 Old Dock Road
Yaphank, NY 11980

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Emerging Compounds Groundwater Sampling Work Plan

Hartsdale Village Square LLC

Aristocrat Cleaners

Site Number C360111

"I Peter C. Breen, PG certify that I am currently a Qualified Environmental Professional as defined in 6 NYCRR Part 375 and that this Emerging Compounds Groundwater Sampling Work Plan was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10)."

Peter C. Breen, PG
Senior Project Manager

7/23/18
Date

EnviroTrac
Environmental Services

1.0 INTRODUCTION

Hartsdale Village Square LLC – Aristocrat Cleaners (Site #C360111), as a Volunteer, entered into a Brownfield Cleanup Agreement (BCA) with the New York State Department of Environmental Conservation (NYSDEC) in January 2010 to investigate and remediate a 0.1-acre property (Site) located in the Hamlet of Hartsdale, Town of Greenburg, New York. The Site is located in the County of Westchester, New York and is identified as Block 8211 and Lot 8 on Greenburgh Tax Map #21.8211-6 **(Figure 1-1).**

The Site was remediated to commercial use and will continue to be used for its current purposes. A Certificate of Completion (COC) was granted by the NYSDEC in 2014.

The NYSDEC requested the submittal of a work plan pertaining to the testing of site groundwater for 1,4-dioxane and per- and polyfluoroalkyl substances (PFAS) in correspondence to Mr. Kenneth Shin dated June 21, 2018.

1.1 Work Plan Overview

The following information is provided herein:

- Proposed locations for groundwater sampling and rationale for their selection;
- Groundwater sampling procedures;
- A presentation of analytical and quality assurance information;
- A discussion of data validation and reporting of results; and
- A proposed implementation schedule.

2.0 PROPOSED SAMPLING LOCATIONS AND RATIONALE

The NYSDEC is undertaking a Statewide evaluation of remediation sites to better understand the risk posed to New Yorkers by 1,4-dioxane and PFAS. PFAS have historically not been evaluated at remediation sites, and 1,4-dioxane has not been evaluated at the levels that are now thought to represent a health concern. This initiative is being undertaken as a result of these "emerging contaminants" having been found in a number of drinking water supplies in New York. Accordingly, the NYSDEC is requiring the testing site groundwater for these chemicals. To accommodate this requirement, the NYSDEC requested that a select number of existing monitoring wells, representative of the potential of the Site to be a source of these emerging contaminants, must be sampled and recommended that at least one of these wells should be upgradient of the Site.

Figure 2-1 shows the locations of existing wells that were installed during the BCP investigation. Samples will be collected at MW-4 and MW-8 to assess groundwater quality migrating onto the Site and that migrating off-site. **Table 2-1** provides a summary of historic water level monitoring data and well construction information.

3.0 SAMPLING PROCEDURES

Groundwater samples will be collected in accordance with a low flow protocol using a peristatic pump and dedicated (i.e., single use) silicon/HDPE tubing. Using new nitrile gloves, the PFAS will be collected first at each well, prior to collecting the 1,4-dioxane samples. This approach will avoid contact with any other type of sample containers, bottles or package materials. When the PFAS sample is collected into a laboratory supplied bottle it will immediately be capped and placed in a cooler with wet ice in an individual sealed plastic bag (e.g., Ziploc) separate from all other sample parameter bottles.

Quality assurance samples will include:

- A blind duplicate field sample;
- A matrix spike sample and a matrix spike duplicate sample; and
- for PFAS testing, an equipment blank will be collected through the peristaltic pump assembly prior to field sample collection using certified PFAS free water supplied by the laboratory.

4.0 SAMPLE ANALSES AND QUALITY ASSURANCE

Samples will transported under chain of custody to SGS North America (SGS) for analyses via laboratory courier.

The following constituents will be analyzed in the laboratory:

- PFAS Target Analyte List (TAL), EPA Method 537 (PFOA/PFOS detection limit of 2 parts per trillion [ppt]); and
- 1,4-Dioxane, EPA Method 8270-SIM (0.28 parts per billion [ppb] detection limit).

SGS holds appropriate ELAP certifications as required by NYSDEC for these analyses. **Appendix A** provides Sampling and Quality Control information for these compounds provided by SGS.

The PFAS TAL consists of the following compounds

Compound Name	Abbreviation	CAS #
Perfluorobutanesulfonic acid	PFBS	375-73-5
Perfluorohexanesulfonic acid	PFHxS	355-46-4
Perfluoroheptanesulfonic acid	PFHpS	375-92-8
Perfluorooctanessulfonic acid	PFOS	1763-23-1
Perfluorodecanesulfonic acid	PFDS	335-77-3
Perfluorobutanoic acid	PFBA	375-22-4
Perfluoropentanoic acid	PFPeA	2706-90-3
Perfluorohexanoic acid	PFHxA	307-24-4
Perfluoroheptanoic acid	PFHpA	375-85-9
Perfluorooctanoic acid	PFOA	335-67-1
Perfluorononanoic acid	PFNA	375-95-1
Perfluorodecanoic acid	PFDA	335-76-2
Perfluoroundecanoic acid	PFUA/PFUdA	2058-94-8
Perfluorododecanoic acid	PFDoA	307-55-1
Perfluorotridecanoic acid	PFTriA/PFTrDA	72629-94-8
Perfluorotetradecanoic acid	PFTA/PFTeDA	376-06-7
6:2 Fluorotelomer sulfonate	6:2 FTS	27619-97-2
8:2 Fluorotelomer sulfonate	8:2 FTS	39108-34-4
Perfluroroctanesulfonamide	FOSA	754-91-6
N-methyl perfluorooctanesulfonamidoacetic acid	N-MeFOSAA	2355-31-9
N-ethyl perfluorooctanesulfonamidoacetic acid	N-EtFOSAA	2991-50-6

5.0 REPORTING OF RESULTS AND DATA VALIDATION

A report providing results of the testing described herein will be submitted to the NYSDEC. The report will include the following:

- A summary of field testing/sample collection and data analyses activities;
- Figures showing site and sampling locations;
- Tabularized sampling results; and
- Laboratory and data validation reports.

Reporting of results from the laboratory will be provided in a Category B (CAT B) deliverable as defined in the ASP and DER-10 Appendix 2B, and electronic data deliverables (EDD) that comply with the NYSDEC's Electronic Data Warehouse Standards (EDWS) or as otherwise directed by DER.

Third party data validation of the CAT B laboratory report and preparation of a Data Usability Summary Report (DUSR) will be conducted by Environmental Data Services, Inc. (EDS), Williamsburg, VA..

Sampling location, sampling analytical and validation results and other pertinent site information will be provided electronically to the NYSDEC in an EDD using the database software application EQuIS™ (EQuIS) from EarthSoft® Inc. (EarthSoft) that is utilized by the NYSDEC's Environmental Information Management System (EIMS).

6.0 PROJECT SCHEDULE

It is estimated that the project will require 10 weeks from NYSDEC authorization to implement the work scope consisting of the following major tasks.

Project Setup (weeks 1-2)

Project setup will begin immediately upon NYSDEC approval of this Work Plan. At that time sampling equipment will be assembled and sampling media will be obtained from the laboratory.

Groundwater Sampling (week 3)

A field crew will collect groundwater and QA samples as described herein during a 1-day on-site mobilization.

Laboratory Analysis (weeks 4-5)

Samples will be provided to the laboratory for testing and reporting in Category B deliverable format using standard turnaround time scheduling.

Data Validation (weeks 6-8)

The groundwater sampling laboratory results will be validated by a third party chemist to assess usability. Findings of that assessment will be provided in DUSR deliverables.

Reporting of Results (week 10)

A report will be submitted to the NYSDEC providing results of the testing.

7.0 REFERENCES

New York State Department of Environmental Conservation (May 3, 2010). Final Program Policy DER-10 - Technical Guidance for Site Investigation and Remediation.

New York State Department of Environmental Conservation (July 21, 2018). Letter to Kenneth Shin – Request for Sampling of Emerging Contaminants. Hartsdale Village Square, Aristocrat Cleaners. Site No. C360111.

FIGURES

AERIAL PHOTOGRAPH

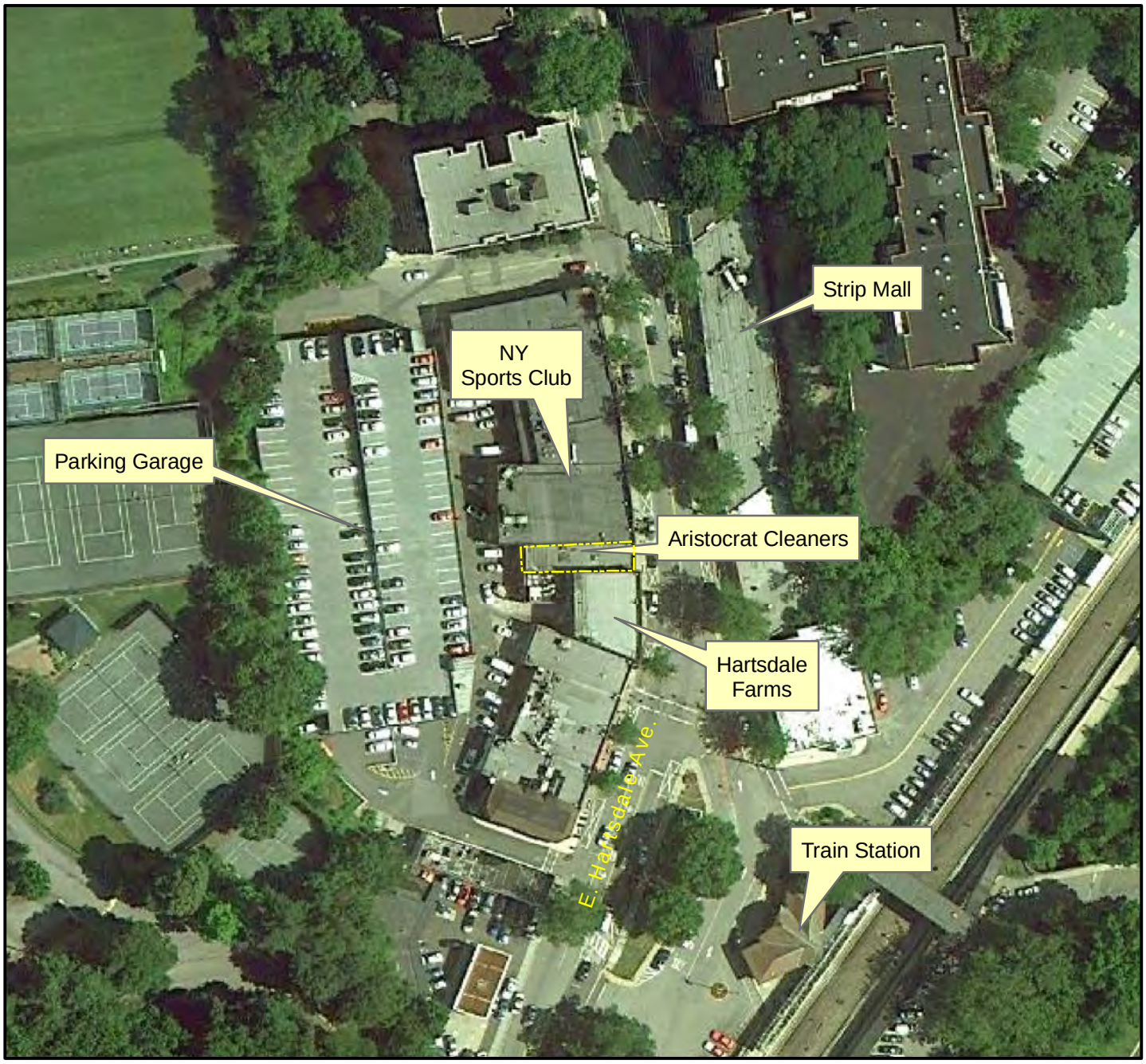
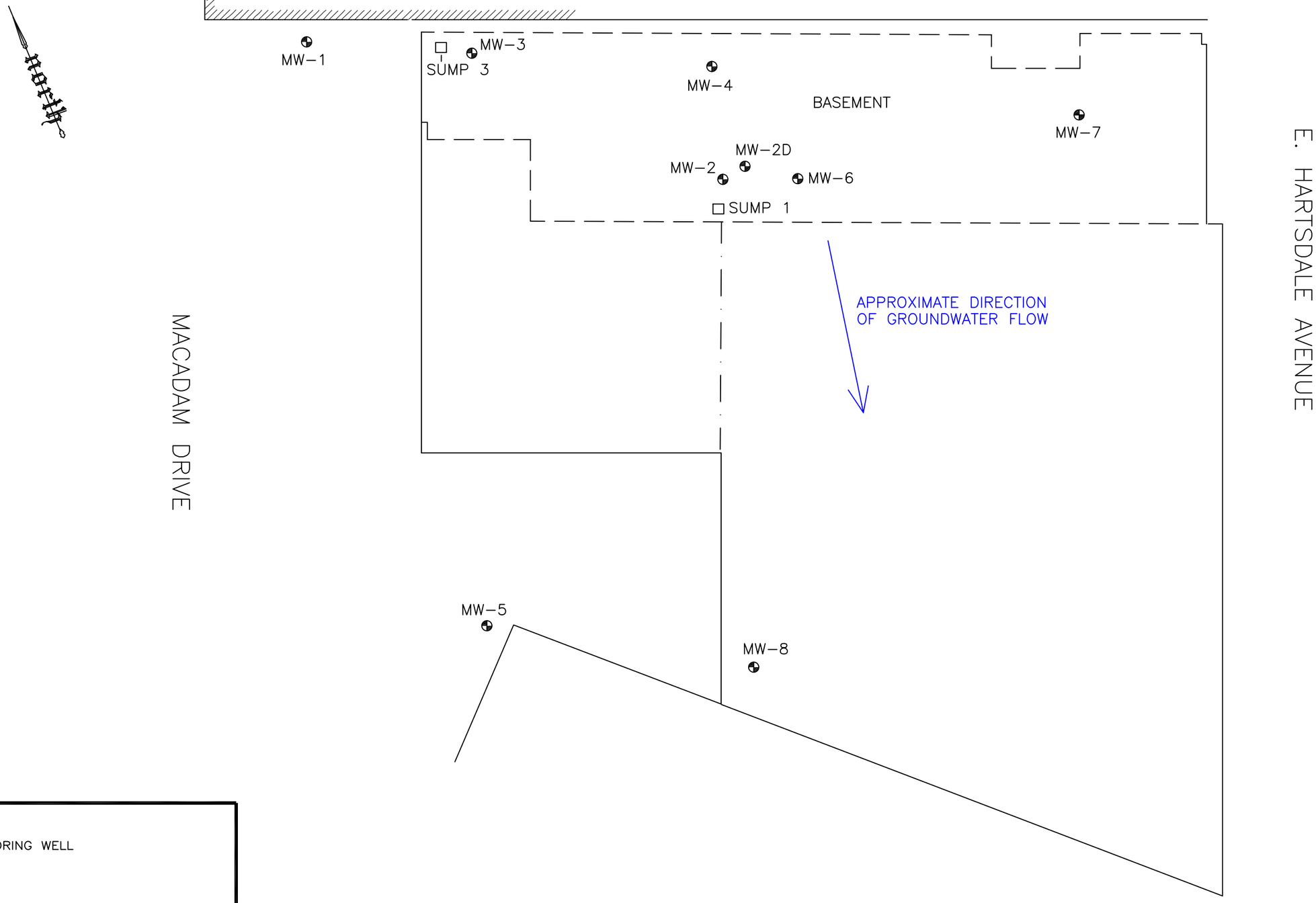


Figure 1-1
Site Location Map

Aristocrat Cleaners
212 E. Hartsdale Ave.
Hartsdale, NY

N
W E
S

EnviroTrac
Environmental Services
5 Old Dock Road
Yaphank, NY 11980
P: 631-924-3001 F:631-924-5001



LEGEND:

- MONITORING WELL
- SUMP

Base map taken from GABRIEL E. SENOR, P.C. map dated OCTOBER 11, 2011

EnviroTrac
ENVIRONMENTAL SERVICES
5 OLD DOCK ROAD, YAPHANK, NEW YORK 11980
PHONE: (631)924-3001 FAX: (631)924-5001

0 5 FT 10

REVISION DATE:	SCALE:	REVISED BY:
JULY 16, 2018	1" = 10 FEET	TB

ARISTOCRAT CLEANERS
212 E. HARTSDALE AVENUE
HARTSDALE, NEW YORK

MONITORING WELL LOCATIONS

FIGURE #
2-1

TABLES

Table 2-1: Monitoring Well Construction and Water Level Elevation Summary

Aristocrat Cleaners
212 E. Hartsdale Ave., Hartsdale, NY
BCA Site #C360111

WELL NO.	MW-1			MW-2			MW-2D		
LOCATION	Outdoor			Basement			Basement		
BOREHOLE DIAMETER (in.)	2			2			3		
CASING/SCREEN DIAMETER (in.)	1			1			1.25		
TOTAL WELL DEPTH (ft.)	18.5			10.5			18.0		
SCREEN INTERVAL (ft.)	8.5 - 18.5			0.5 - 10.5			13 - 18		
MP ELEVATION (ft./msl.)	169.15			162.70			161.86		
SCREEN INTERVAL (ft./msl.)	151-161			152-162			144-149		
SAMPLING DATE	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV
8/12/2008 (2)	9.40	0.00	159.75	0.50	0.00	162.20	NA		
10/11/2011	8.70	0.00	160.45	1.33	0.00	161.37	NA		
2/6/2013	8.61	0.00	160.54	2.70	0.00	160.00	2.01	0.00	159.85
2/27/2013	8.39	0.00	160.76	2.05	0.00	160.65	1.55	0.00	160.31
11/12/2013	10.02	0.00	159.13	3.77	0.00	158.93	2.78	0.00	159.08
2/26/2014	NM			2.86	0.00	159.84	3.65	0.00	158.21

WELL NO.	MW-3			MW-4			MW-5		
LOCATION	Basement			Basement			Outdoor		
BOREHOLE DIAMETER (in.)	2			2			2		
CASING/SCREEN DIAMETER (in.)	1			1			1		
TOTAL WELL DEPTH (ft.)	10.5			10.5			18.5		
SCREEN INTERVAL (ft.)	0.5 - 10.5			0.5 - 10.5			8.5 - 18.5		
MP ELEVATION (ft./msl.)	162.54			162.71			169.50		
SCREEN INTERVAL (ft./msl.)	152-162			152-162			151-161		
SAMPLING DATE	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV
8/12/2008 (2)	0.50	0.00	162.04	0.50	0.00	162.21	10.25	0.00	159.25
10/11/2011	1.85	0.00	160.69	2.29	0.00	160.42	9.47	0.00	160.03
2/6/2013	2.50	0.00	160.04	2.91	0.00	159.80	9.95	0.00	159.55
2/27/2013	NM			2.48	0.00	160.23	9.18	0.00	160.32
11/12/2013	3.50	0.00	159.04	3.73	0.00	158.98	10.77	0.00	158.73
2/26/2014	3.53	0.00	159.01	3.81	0.00	158.90	NM		

WELL NO.	MW-6			MW-7			MW-8		
LOCATION	Basement			Basement			Basement (1)		
BOREHOLE DIAMETER (in.)	2			2			3		
CASING/SCREEN DIAMETER (in.)	1			1			2		
TOTAL WELL DEPTH (ft.)	10.5			10.5			8.0		
SCREEN INTERVAL (ft.)	0.5 - 10.5			0.5 - 10.5			3 - 8		
MP ELEVATION (ft./msl.)	162.88			162.87			160.91		
SCREEN INTERVAL (ft./msl.)	152-162			152-162			153-158		
SAMPLING DATE	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV	DTW	LNAPL	ELEV
8/12/2008 (2)	0.50	0.00	162.38	0.50	0.00	162.37	NA		
10/11/2011	2.69	0.00	160.19	2.59	0.00	160.28	NA		
2/6/2013	3.25	0.00	159.63	3.17	0.00	159.70	1.81	0.00	159.10
2/27/2013	NM			NM			1.06	0.00	159.85
11/12/2013	4.11	0.00	158.77	4.02	0.00	158.85	2.26	0.00	158.65
2/26/2014	4.24	0.00	158.64	2.29	0.00	160.58	2.24	0.00	158.67

Notes:
MP - Top of casing measuring point.
DTW - Depth to water below measuring point (ft.).
LNAPL - Light non-aqueous phase liquid thickness (ft.).
ELEV - Groundwater elevation (ft./msl).
(1) - Liquor store - all other "Basement" samples are located in the dry cleaner.
(2) - Measurements recorded by Tapash, Hammonton, NY.
NA - Not applicable, well not installed.
NM - Not measured.

APPENDICES

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APPENDIX A

Sampling and Quality Control Information

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SAMPLING, SHIPPING & HANDLING OF PER AND POLYFLUORINATED ALKYL SUBSTANCES (PFAS) BY LC/MS/MS

FACT SHEET - 2017

SAMPLING GUIDELINES

When sampling for PFAS, it is recommended that additional and/or more frequent field/equipment blanks be collected prior to and during sampling to check for residual PFAS on sampling equipment due to the potential for cross-contamination issues and the need for very low reporting limits.

Using new nitrile gloves, collect the sample for PFAS first, prior to collecting samples for any other parameters into any other containers. This avoids contact with any other type of sample containers, bottles or package materials.

Do not place the sample bottle cap on any other surface when collecting the sample.

Avoid all contact with the inside of the sample bottle or its cap.

When sample is collected and capped, place the sample bottle(s) in an individual sealed plastic bag (eg. Ziploc) separate from all other sample parameter bottles.

MATRIX	CONTAINER	PRESERVATIVE	MATRIX CODE ON COC	METHOD	NOTES
Soil, sediment	1x4 oz HDPE	none	SO/SED	537MOD	
Groundwater, surface water, water	2x125 ml HDPE	none	GW/SW/WW	537MOD	
Groundwater, surface water, water needing lower RLs	2x250 ml HDPE	none	GW/SW/WW	537MOD	
Effluent	2x125 ml HDPE	TRIZMA	WW or EF	537MOD	Finished samples may need TRIZMA. TRIZMA is a buffer and removes free chlorine.
Drinking water	2x250 ml HDPE or PP	TRIZMA	DW	537	
Drinking water not for compliance	2x250 ml HDPE	TRIZMA	WW	537MOD	Matrix code DW triggers the lab to use method 537 so samples need to be logged as WW.
Air					contact Orlando lab for specifics
Tissue					contact SGS AXYS for specifics

SHIPPING

Please include a fully completed chain-of-custody with each shipment. All sample documentation must be received in order for the samples to be accepted for analysis.

Samples are accepted Monday through Friday from 8 am – 5 pm. Samples are accepted Saturday delivery by Federal Express only. Other arrangements may be made as necessary.

DO NOT USE ITEMS	DO USE ITEMS
FIELD EQUIPMENT ITEMS	
No Teflon™ containing materials	High-density polyethylene (HDPE) and Low density polyethylene (LDPE) materials
Do not store samples in containers made of LDPE materials	Acetate liners
No Teflon™ tubing	Silicon tubing
No waterproof field books	Loose paper (non-waterproof)
No plastic clipboards, binders, or spiral hard cover notebooks	Aluminum field clipboards or with Masonite
No Post-It Notes	Sharpies®, pens
No chemical (blue) ice packs	Regular ice
FIELD CLOTHING AND PPE ITEMS	**FIELD CLOTHING AND PPE ITEMS**
No new clothing or water resistant, waterproof, or stain-treated clothing, clothing containing Gore-Tex™	Well-laundered clothing, defined as clothing that has been washed 6 or more times after purchase, made of synthetic or natural fibers (preferable cotton)
No clothing laundered using fabric softener	No fabric softener
No boots containing Gore-Tex™	Boots made with polyurethane and polyvinyl chloride (PVC)
No Tyvek®	Cotton Clothing
No cosmetics, moisturizers, hand cream, or other related products as part of personal cleaning/showering routine on the morning of sampling	Sunscreens – All Organic Natural Sunscreen, that are "free" or "natural" Check the label
	Insect Repellents – Various natural one, DEET, check the label
SAMPLE CONTAINERS ITEMS	**SAMPLE CONTAINERS ITEMS**
No LDPE or glass containers	HDPE or polypropylene
No Teflon™-lined caps	Lined or unlined HDPE or polypropylene caps
RAIN GEAR ITEMS	**RAIN GEAR ITEMS**
No waterproof or resistant rain gear	Tent that is only touched or moved prior to & following sampling activities
EQUIPMENT DECONTAMINATION ITEMS	**EQUIPMENT DECONTAMINATION ITEMS**
No Decon 90	Alconox® and/or Liquinox®
No water from an on-site well	Potable water from municipal drinking water supply
FOOD ITEMS	**FOOD ITEMS**
No food and drink, with exceptions noted on the right	Bottled water and hydration drinks (i.e. Gatorade® and Powerade®) to be brought and consumed only in the staging area

WHY SGS

SGS is the world's leading inspection, verification, testing and certification company. Recognized as the global benchmark for quality and integrity, we employ over 90 000 people and operate a network of more than 2 000 offices and laboratories around the world.

FOR ADDITIONAL INFORMATION PLEASE CONTACT YOUR LOCAL SGS REPRESENTATIVE AT +1 800 329 0204 PFAS.EXPERT@SGS.COM OR VISIT WWW.ACCUTEST.COM/PFC-ANALYSIS

WHEN YOU NEED TO BE SURE

SGS

PHYSICAL AND CHEMICAL PROPERTIES OF PFAS COMPOUNDS

Name	Acronym	CAS #	Molecular formula	MW	Water Solubility* 20-25°C (g/l)	Vapor Pressure [Pa]	Density 20-20°C (g/ml)	Melting Point [°C]	Boiling Point [°C]	Dissociation Constant [pKa]
Perfluoroalkyl Carboxylates / Perfluoroalkyl Carboxylic Acids	**PFCAs**									
Perfluorobutanoic AcidF	PFBA	375-22-4	(CF2)3COOH	214.04	Miscibile	1307	1.65	-17.5	121	-0.2 to 0.7
Perfluoropentanoic Acid	PFPeA	2706-90-3	F(CF2)4COOH	264.05	112.6	1057	1.7	-----	124.4	-0.06
Perfluorohexanoic Acid	PFHxA	307-24-4	F(CF2)5COOH	314.05	21.7	457	1.72	14	143	-0.13
Perfluoroheptanoic Acid	PFHpA	375-85-9	F(CF2)6COOH	364.06	4.2	158	1.79	30	175	-0.15
Perfluorooctanoic Acid	PFOA	335-67-1	F(CF2)7COOH	414.07	3.4-9.5	4-1300	1.8	37-60	188-192	-0.16 to 3.8
Perfluorononanoic Acid	PFNA	375-95-1	F(CF2)8COOH	464.08	9.5	1.3	1.75	59-56	218	-0.17
Perfluorodecanoic Acid	PFDA	335-76-2	F(CF2)9COOH	514.09	9.5	0.2	1.76	77-88	218	-0.17
Perfluoroundecanoic Acid	PFUnA	2058-94-8	F(CF2)10COOH	564.09	0.004	0.1	1.76	83-101	160-230	-0.17
Perfluorododecanoic Acid	PFDoA	307-55-1	F(CF2)11COOH	614.1	0.0007	0.01	1.77	107-109	245	-0.17 to 0.8
Perfluorotridecanoic Acid	PFTrdA	72629-94-8	F(CF2)12COOH	664.11	0.0002	0.3	1.77	-----	-----	-----
Perfluorotetradecanoic Acid	PFTeDA	376-06-7	F(CF2)13COOH	714.12	0.00003	0.1	1.78	-----	276	-----
Perfluoropentadecanoic Acid	PFPeDA	141074-63-7	F(CF2)14COOH	764.12	-----	-----	-----	-----	-----	-----
Pentadecafluorooctanoic Acid Ammonium Salt										
(Ammonium Pentadecafluorooctanoate)	APFO	3825-26-1	C8 H4 NF15 NO2	445.11	14.2	0.01	-----	157-165	-----	2.5
Perfluoroalkyl Sulfonates / Perfluoroalkyl Sulfonic Acids	**PFSAs**									
Perfluorobutane Sulfonate	PFBS	375-73-5	F(CF2)4SO3H	300.1	46.2-56.6	631	1.81	76-84	211	-6 to -5.0
Perfluorohexane Sulfonate	PFHxS	432-50-8	F(CF2)6SO3H	400.11	2.3	58.9	-----	-----	-----	-6 to -5.0
Perfluoroheptane Sulfonate	PFHpS	357-92-8	F(CF2)7SO3H	450.12	-----	-----	-----	-----	-----	-----
Perfluorooctane Sulfonate	PFOS	1763-23-1	F(CF2)8SO3H	500.13	1.52-1.57	6.7	-----	54	>400	-6 to -2.6
Perfluorodecane Sulfonate	PFDS	333-77-3	F(CF2)10SO3H	600.14	0.002	0.71	-----			
Perfluoroalkyl Phosphonic Acids PFPAs										
Perfluorobutyl Phosphonic Acid	PFBPA	52299-24-8	F(CF2)4P(O)(OH)2	350.02	14259.1	0.18	-----	-----	-----	-----
Perfluorohexyl Phosphonic Acid	PFHxPA	40143-76-8	F(CF2)6P(O)(OH)2	400.03	515.3	0.04	-----	-----	-----	-----
Perfluorooctyl Phosphonic Acid	PFOPA	40143-78-0	F(CF2)8P(O)(OH)2	500.05	24.5	0.01	-----	-----	-----	-----
Perfluorodecyl Phosphonic Acid	PFDPA	52299-26-0	F(CF2)10P(O)(OH)2	600.06	0.5	0.0002	-----	-----	-----	-----
Perfluorooctane Sulfonamide and Derivatives										
Perfluorooctane Sulfonamide	PFOSA	754-91-6	F(CF2)8SO2NH2	499.14	-----	-----	-----	154-155	-----	-----
Perfluorooctane Sulfonamidoethanol	FOSE	10116-92-4	F(CF2)8SO2NH(CH2)2OH	543.19	0.0009	0	-----	-----	-----	-----
N-Methyl-Perfluorooctane Sulfonamide	N-MeFOSA	31506-32-8	F(CF2)8SO2NHCH3	513.17	0.0002	0.3	-----	-----	-----	-----
N-Ethyl-Perfluorooctane Sulfonamide	N-EtFOSA	4151-50-2	F(CF2)8SO2NHCH2CH3	527.2	0.0001	0.12	-----	-----	-----	-----
N-Methyl-Perfluorooctane Sulfonamidoethanol	N-MeFOSE	24448-09-7	F(CF2)8SO2N(CH3)(CH2)2OH	557.22	0.0003	0.0004	-----	-----	-----	-----
N-Ethyl-Perfluorooctane	N-EtFOSE	1691-99-2	F(CF2)8SO2N(CH2CH3)(CH2)2OH	571.25	0.0001	0.002	-----	55-60	-----	-----

PHYSICAL AND CHEMICAL PROPERTIES OF PFAS COMPOUNDS

Name	Acronym	CAS #	Molecular formula	MW	Water Solubility* 20-25°C (g/l)	Vapor Pressure [Pa]	Density 20-20°C (g/ml)	Melting Point [°C]	Boiling Point [°C]	Dissociation Constant [pKa]
Fluorotelomer sulfonic acids FTSs										
1H, 1H, 2H, 2H-Perfluorobutanesulfonic Acid H4-PFBS (2:2 FTS)	H4-PFBS (2:2 FTS)	149246-63-9	F(CF2)2CH2CH2SO3H	228.13	-----	-----	-----	-----	-----	-----
1H, 1H, 2H, 2H-Perfluorohexanesulfonic Acid	H4-PFHxS (4:2 FTS)	757124-72-4	F(CF2)4CH2CH2SO3H	328.15	27.9	0.33	-----	-----	-----	-----
1H, 1H, 2H, 2H-Perfluorooctanesulfonic Acid	H4-PFOS (6:2 FTS)	27619 97 2	F(CF2)6CH2CH2SO3H	428.17	1.3	0.11	-----	-----	-----	1.31
1H, 1H, 2H, 2H-Perfluorodecanesulfonic Acid	H4-PFDeS (8:2 FTS)	39108-34-4	F(CF2)8CH2CH2SO3H	528.18	0.06	0.01	-----	-----	-----	1.32
1H, 1H, 2H, 2H-Perfluoroundecanesulfonic Acid	H4-PFUdS (10:2 FTS)	120226-60-0	F(CF2)10CH2CH2SO3H	628.2	0.002	0.001	-----	-----	-----	-----
1H, 1H, 2H, 2H-Perfluorotetradecanesulfonic Acid	H4-PFTeS (12:2 FTS)	149246-64-0	F(CF2)12CH2CH2SO3H	728.21	0.0002	0.001	-----	-----	-----	-----
Fluorotelomer Alcohols FTOHs										
Perfluormethylethanol	2:2 2:2 FTOH	54949-74-5	F(CF2)2CH2CH2OH	164.08	-----	-----	-----	-----	-----	-----
Perfluorethylethanol -- 0.98 -- -- 214 -- 3.30 0.93 -- --	4:2 4:2 FTOH	2043-47-2	F(CF2)4CH2CH2OH	264.09	0.98	214	-----	-----	-----	-----
Perfluorhexylethanol	6:2 6:2 FTOH	647-42-7	F(CF2)6CH2CH2OH	364.11	0.02	18.2	-----	-33	172	-----
Perfluorocylethanol	8:2 8:2 FTOH	865-86-1	F(CF2)8CH2CH2OH	464.12	0.0001	3.98	-----	45	114	-----
Perfluordecylethanol	10:2 10:2 FTOH	678-39-8	F(CF2)10CH2CH2OH	564.14	0.00001	0.2	-----	-----	-----	-----
Perfluordodecylethanol	12:2 12:2 FTOH	39239-77-5	F(CF2)12CH2CH2OH	664.15	-----		-----	-----	-----	-----
Polyfluorinated Alkyl Phosphates PAPs										
Monoester	monoPAP									
4:2 Fluortelomerphosphatemonoester	4:2 monoPAP	150065-76-2	F(CF2)4CH2CH2OP(O)(OH)2	344.07	11.9	0	-----	-----	-----	-----
6:2 Fluortelomerphosphatemonoester	6:2 monoPap		F(CF2)6CH2CH2OP(O)(OH)2	444.09	2.6	0	-----	-----	-----	-----
8:2 Fluortelomerphosphatemonoester	8:2 monoPAP	57678-03-2	F(CF2)8CH2CH2OP(O)(OH)2	544.1	0.16	0	-----	-----	-----	-----
10:2 Fluortelomerphosphatemonoester	10:2 monoPAP	57678-05-4	F(CF2)10CH2CH2OP(O)(OH)2	644.12	0.01	0	-----	-----	-----	-----
12:2 Fluortelomerphosphatemonoester	12:2 monoPAP	57678-07-6	F(CF2)12CH2CH2OP(O)(OH)2	744.13	0.0003	0	-----	-----	-----	-----
Diester diPAP										
4:2 Fluortelomerphosphatediester	4:2 diPAP	135098-69-0	F(CF2)4CH2CH2OP(OH)OCH2CH2	590.15	0.0004	0	-----	-----	-----	-----
6:2 Fluortelomerphosphatediester	6:2 diPAP	57677-95-9	F(CF2)6CH2CH2OP(OH)OCH2CH2	790.18	8.00E-07	0	-----	-----	-----	-----
8:2 Fluortelomerphosphatediester	8:2 diPAP	678-41-1	F(CF2)8CH2CH2OP(OH)OCH2CH2	990.21	5.00E-10	0	-----	-----	-----	-----
10:2 Fluortelomerphosphatediester	10:2 diPAP	1895-26-7	F(CF2)10CH2CH2OP(OH)OCH2CH2	1190.24	2.00E-12	0	-----	-----	-----	-----
12:2 Fluortelomerphosphatediester	12:2 diPAP	57677-99-3	F(CF2)12CH2CH2OP(OH)OCH2CH2	1390.27	3.00E-15	0	-----	-----	-----	-----
Polytetrafluoroethylene (Teflon)	PTFE	9002-84-0	(CF2)2n		-----	-----	-----	327		-----

Compound List Report

Product: LCID537NY21 PFAS Full List NY 21 Analytes
Matrix: AQ Aqueous
May 03, 2018 11:42 am
ALSE10755: Special Report List

Method List:	LCID537 AQ	**Method Ref:**	EPA 537M BY ID	LF25875
Report List:	LCID537NY21 ALL	PFAS List		LF25894
RL/MDL Factor:	.004	**RL List:**	LCID537 AQ	LF26055 [a]

					Control Limits (%) Rev: 04/27/18A			
Compound	**CAS No.**	**RL**	**MDL**	**Units**	**MS/MSD**	**RPD**	**BS**	**DUP**
Perfluorobutanoic acid	375-22-4	0.0080	0.0020	ug/l	70-130	30	70-130	30
Perfluoropentanoic acid	2706-90-3	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluorohexanoic acid	307-24-4	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluoroheptanoic acid	375-85-9	0.0020 [b]	0.0010	ug/l	71-130	30	71-130	30
Perfluorooctanoic acid	335-67-1	0.0020 [b]	0.0010	ug/l	74-130	30	74-130	30
Perfluorononanoic acid	375-95-1	0.0020 [b]	0.0010	ug/l	76-130	30	76-130	30
Perfluorodecanoic acid	335-76-2	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluoroundecanoic acid	2058-94-8	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluorododecanoic acid	307-55-1	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluorotridecanoic acid	72629-94-8	0.0040	0.0010	ug/l	70-139	30	70-139	30
Perfluorotetradecanoic acid	376-06-7	0.0040	0.0010	ug/l	70-130	30	70-130	30
Perfluorobutanesulfonic acid	375-73-5	0.0020 [b]	0.0010	ug/l	73-130	30	73-130	30
Perfluorohexanesulfonic acid	355-46-4	0.0020 [b]	0.0010	ug/l	74-130	30	74-130	30
Perfluoroheptanesulfonic acid	375-92-8	0.0040	0.0010	ug/l	74-130	30	74-130	30
Perfluorooctanesulfonic acid	1763-23-1	0.0020 [b]	0.0020	ug/l	70-130	30	70-130	30
Perfluorodecanesulfonic acid	335-77-3	0.0040	0.0010	ug/l	70-130	30	70-130	30
PFOSA	754-91-6	0.0040	0.0010	ug/l	70-131	30	70-131	30
MeFOSAA	2355-31-9	0.020	0.0040	ug/l	70-130	30	70-130	30
EtFOSAA	2991-50-6	0.020	0.0040	ug/l	70-130	30	70-130	30
6:2 Fluorotelomer sulfonate	27619-97-2	0.0080	0.0020	ug/l	70-133	30	70-133	30
8:2 Fluorotelomer sulfonate	39108-34-4	0.0080	0.0020	ug/l	70-130	30	70-130	30

13C4-PFBA	Surrogate Limits:	30-140
13C5-PFPeA	Surrogate Limits:	40-140
13C5-PFHxA	Surrogate Limits:	50-150
13C4-PFHpA	Surrogate Limits:	50-150
13C8-PFOA	Surrogate Limits:	50-150
13C9-PFNA	Surrogate Limits:	50-150
13C6-PFDA	Surrogate Limits:	50-150
13C7-PFUnDA	Surrogate Limits:	50-150
13C2-PFDoDA	Surrogate Limits:	50-150
13C2-PFTeDA	Surrogate Limits:	40-150
13C3-PFBS	Surrogate Limits:	50-150
13C3-PFHxS	Surrogate Limits:	50-150
13C8-PFOS	Surrogate Limits:	50-150
13C8-FOSA	Surrogate Limits:	30-140
d3-MeFOSAA	Surrogate Limits:	50-150
13C2-6:2FTS	Surrogate Limits:	50-150
13C2-8:2FTS	Surrogate Limits:	50-150

21 compounds and 17 surrogates reported in list LCID537NY21

(a) Custom list for ALSE10755.
(b) RL from ALSE10755 list.

Compound List Report
Product: LCID537PFOA_S PFOA/PFOS only
Matrix: AQ Aqueous
May 04, 2018 04:23 pm
ALSE10755: Special Report List
Method List: LCID537 AQ
Method Ref: EPA 537M BY ID
LF25875
Report List: LCID537PFOA_S ALL
LF25868
RL/MDL Factor: 4
RL List: LCID537 AQ
LF26055 (a)

Compound	CAS No.	RL	MDL	Units	Control Limits (%) Rev: 04/27/18A MS/MSD	RPD	BS	DUP	
Perfluorooctanoic acid	335-67-1	2.0	1.0	ng/l	74-130	30	74-130	30	(b)
Perfluorooctanesulfonic acid	1763-23-1	2.0	1.5	ng/l	70-130	30	70-130	30	(b)

13C8-PFOA	Surrogate Limits:	50-150
13C8-PFOS	Surrogate Limits:	50-150

2 compounds and 2 surrogates reported in list LCID537PFOA_S

(a) Custom list for ALSE10755.
(b) RL from ALSE10755 list.

Compound List Report
Product: B8270SIM14DIOX 1,4-Dioxane, SIM
Matrix: AQ Aqueous 5/14/2018 9:10

Method List: AB8270SIM AQ Method Ref: SW846 8270D BY SIM LJ52052
Report List: BSURR ALL LJ28804
RL/MDL Factor: 1

Control Limits (%) Rev: 2/2/17

Compound	CAS No.	RL	MDL	Units	MS/MSD	RPD	BS	DUP
1,4-Dioxane	123-91-1	0.1	0.049	ug/l	10-125	46	10-110	30
Nitrobenzene-d5	4165-60-0			Surrogate Limits:			29-124	
2-Fluorobiphenyl	321-60-8			Surrogate Limits:			23-122	
Terphenyl-d14	1718-51-0			Surrogate Limits:			22-130	

1 compounds and 3 surrogates reported in list BSURR