Data Usability Summary Report

Site: Hoosick Falls Landfill
Laboratory: Test America – Buffalo, Amherst, NY
SDGs: 480-137103-1 and 480-137240-1
Parameters: Per- and poly-fluoroalkyl substances
Data Reviewer: Samir A. Naguib/TRC
Peer Reviewer: Lisa Krowitz and Elizabeth Denly/TRC
Date: July 19, 2018

Sample Reviewed and Evaluation Summary

SDG: 480-137103-1

15 groundwater samples: HFL-MW-1B, HFL-MW-2, HFL-MW-4, HFL-MW-101, HFL-MW-101B, HFL-MW-101C, HFL-MW-102, HFL-MW-103, HFL-MW-104, HFL-MW-104C, HFL-MW-105, HFL-MW-105C, HFL-MW-106, HFL-MW-106C, HFL-PW-1

1 Equipment blank: HFL-EB-1

SDG: 480-137240-1

2 surface water samples: HFL-MH-WS, HFL-WS-114

1 sediment sample: HFL-MH-SD

The above-listed samples were collected on June 5, 6, 7, and 11, 2018 and were submitted to Test America-Buffalo, Amherst, NY which were then subcontracted to Test America-Sacramento, CA for analysis. The samples were analyzed for the following parameter:

- Per- and Poly-fluoroalkyl substances (21 target analytes) based on EPA Method 537.1 (modified)

The data validation was performed in accordance with the following USEPA guidance, modified for the methodology utilized:

- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA-540-R-2017-002), January 2017

- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA-542-B-16-001), April 2016

The data were evaluated based on the following parameters:

	•	Overall Evaluation of Data and Potential Usability Issues
*	•	Data Completeness
*	•	Holding Times and Sample Preservation
*	•	Initial and Continuing Calibrations
	•	Blanks
	•	Isotopically Labeled Surrogate Results
	•	Internal Standard Results
*	•	Laboratory Control Sample (LCS) /LCS Duplicate (LCSD) Results
*	•	Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
NA	•	Field Duplicate Results
*	•	Percent Solids
	•	Sample Results and Reported Quantitation Limits (QLs)
	•	Target Compound Identification
	•	Laboratory Methodology

* - All criteria were met.
NA - Field duplicates were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for project objectives. Qualifications applied to the data as a result of sampling error are discussed below.

- The positive results for PFHxA in samples HFL-MW-101B and HFL-MW-101C were qualified as nondetect (U) due to equipment blank contamination. These results can be used for project objectives as nondetects, which may have a minor impact on the data usability.

Qualifications applied to the data as a result of analytical error are discussed below.

- Potential uncertainty exists for select results that were below the lowest calibration standard and QL. These results were qualified as estimated (J) in the associated samples and can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for PFBA in samples HFL-MW-101B, HFL-MW-101C, HFL-MW-104C, HFL-MW-105C, HFL-MW-106, HFL-MW-106C, and HFL-EB-1 were qualified as nondetect (U) at the QL due to method blank contamination. These results can be used for project objectives as nondetects, which may have a minor impact on the data usability.

- The positive result for PFHxS in samples HFL-WS-114, HFL-MW-1B, HFL-MW-2, HFL-MW-4, HFL-MW-101B, HFL-MW-101C, HFL-MW-102, HFL-MW-103, HFL-MW-104, HFL-MW-104C, HFL-MW-105, HFL-MW-106, HFL-MW-106C, and HFL-EB-1 were qualified as nondetect (U) at the QL due to method blank contamination. These results can be used for project objectives as nondetects, which may have a minor impact on the data usability.

- The positive result for PFHpA in sample HFL-MW-101C was qualified as estimated (J) due to nonconformance of the ratio between the two precursor/product ion transitions. This result can be used for project objectives as an estimated value, which may have a minor impact on the data usability.

- The positive results for PFOS in samples HFL-MW-4, HFL-MW-103, HFL-MW-104, HFL-MW-105, and HFL-MW-106 were qualified as estimated (J) due to nonconformance of the ratio between the two precursor/product ion transitions. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive result for PFDA in sample HFL-MH-SD was qualified as estimated (J) due to nonconformance of the ratio between the two precursor/product ion transitions. This result can be used for project objectives as an estimated value, which may have a minor impact on the data usability.

- The nondetect result for PFHxA in sample HFL-MW-101B was qualified as estimated (UJ) due to nonconformance of the ratio between the two precursor/product ion transitions. This result can be used for project objectives as a nondetect with an estimated QL, which may have a minor impact on the data usability.

Data Completeness

The data package was found to be complete as received from the laboratory.

Holding Times and Sample Preservation

The cooler temperature was within the acceptance criteria upon sample receipt at both laboratories.

All samples were prepared and analyzed within the method-specified holding time.

Initial and Continuing Calibrations

The initial calibration consisted of seven standards for each target compound. The percent relative standard deviations (%RSDs), correlation coefficients, percent differences/drifts (%Ds), and/or relative response factors (RRFs) for the target compounds were within the laboratory acceptance criteria in the initial and continuing calibrations (IC, CC).

Blanks

The following tables summarize the compounds that were detected in the laboratory method blanks, the associated samples, and the validation actions.

Blank ID	Compound	Result (ng/L)	Validation Actions
MB 320-228271/1-A	PFBA	0.400 J	The positive results for PFBA in samples HFL-MW-101B, HFL-MW-101C, HFL-MW-104C, HFL-MW-105C, HFL-MW-106, HFL-MW-106C, and HFL-EB-1 were qualified as nondetect (U) at the QLs since the concentrations were <QL. No validation action was required in the remaining associated samples since PFBA was detected at concentrations > 2x the blank result.
	PFHxS	0.225 J	The positive results for PFHxS in samples HFL-MW-1B, HFL-MW-2, HFL-MW-101B, HFL-MW-101C, HFL-MW-102, HFL-MW-103, HFL-MW-104, HFL-MW-104C, HFL-MW-105, HFL-MW-106, HFL-MW-106C, and HFL-EB-1 was qualified as nondetect (U) at the QLs since the concentrations were <QL. There was no qualification for the remaining associated samples since PFHxS was either nondetect or detected at concentrations > 2x the blank result.
Associated samples:	HFL-MW-1B, HFL-MW-2, HFL-MW-4, HFL-MW-101, HFL-MW-101B, HFL-MW-101C, HFL-MW-102, HFL-MW-103, HFL-MW-104, HFL-MW-104C, HFL-MW-105, HFL-MW-105C, HFL-MW-106, HFL-MW-106C, HFL-PW-1, HFL-EB-1		

Blank ID	Compound	Result (ng/L)	Validation Actions
MB 320-228916/1-A	PFHxS	0.244 J	The positive result for PFHxS in sample HFL-WS-114 was qualified as a nondetect (U) at the QL since the concentration was <QL. No validation action was required in sample HFL-MH-WS since PFHxS was detected at a concentration > 2x the blank result.
Associated samples:	HFL-MH-WS, HFL-WS-114		

Sample HFL-EB-1 is the equipment blank associated with sampling of all groundwater samples. Samples HFL-EB-105, HFL-EB-106, HFL-EB-107, and HFL-EB-108 are equipment blanks that were reported in SDG 480-134613-1 and are associated with the installation of the new wells.

The following table summarizes the contaminant detected in the equipment blank, the concentration detected, and the resulting validation actions.

Blank ID	Compound	Result (ng/L)	Validation Actions
HFL-EB-108	PFHxA	2.6	The positive result for PFHxA in sample HFL-MW-101B was qualified as nondetect (U) at the reported concentration since the concentration was < 2x the blank result. The positive result for PFHxA in sample HFL-MW-101C was qualified as nondetect (U) at the QL since the concentration was <QL. There was no qualification for the remaining associated samples since PFHxA was either nondetect or detected at concentrations > 2x the blank result.
Associated samples: HFL-MW-101B, HFL-MW-101C, HFL-MW-104, HFL-MW-104C, HFL-MW-105, HFL-MW-105C, HFL-MW-106, HFL-MW-106C			

Isotopically Labeled Surrogate Results

Isotopically labeled surrogates were spiked into the samples prior to extraction. The following table summarizes the percent recoveries (%Rs) that did not meet the laboratory limits of 25-150% and the validation actions.

Sample ID	%R M2-8:2FTS[1]	%R d3NMFeOSAA	Validation Actions
HFL-MW-101	165	152	The results for 8:2 FTS and NMeFOSAA were not detected in sample HFL-MW-101; thus, no qualification of the data was required.
- Criteria were met [1] M2-8:2FTS - sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)			

Sample ID	%R M2-8:2FTS[1]	%R PFDA	%R d3NMFeOSAA	Validation Actions
HFL-MH-WS	161	154	155	The results for 8:2 FTS, PFDA and NMeFOSAA were not detected in sample HFL-MH-WS; thus, no qualification of the data was required.
- Criteria were met [1] M2-8:2FTS - sodium 1H,1H,2H,2H-perfluorodecane sulfonate (8:2)				

Internal Standard Results

The isotopically labeled internal standard (IS) 13C2-PFOA was added to each sample prior to injection to monitor for ion suppression/enhancement at the instrument level. The IS was not used to quantitate target analytes.

The IS area recoveries of the following samples did not meet the acceptance criteria 50-150% of the continuing calibration area. These samples were re-analyzed with similar results; the results of the initial analyses were reported by the laboratory: HFL-MW-105C (167%) and HFL-MW-106C (169%). The IS area recoveries in these samples were high which may indicate potential ion enhancement. However, since the isotopically labeled surrogate %Rs were within the acceptance criteria and the IS was not used to quantitate target analytes, no qualifications were required for samples HFL-MW-105C and HF-MW-106C.

LCS/LCSD Results

The LCS and/or LCSD %Rs and relative percent differences (RPDs) met the laboratory acceptance criteria.

MS/MSD Results

MS/MSD analyses were performed on samples HFL-MW-106 and HFL-MH-SD. The %Rs and RPDs met the laboratory acceptance criteria. Qualification of the data was not required in the cases of nonconformances when the sample concentration was >4x the spike concentration.

Field Duplicate Results

There were no field duplicate pairs submitted with this sample set.

Percent Solids

The percent solids for the sediment sample in this data set was >30%; thus, no qualification was required.

Sample Results and Reported QLs

Sample calculations were spot-checked; there were no errors noted. Select results were below the lowest calibration standard level and QL. These results were qualified as estimated (J) by the laboratory.

It should be noted that the laboratory decanted the following samples prior to preparation due to the presence of sediment in the sample bottles which could clog the solid-phase column: HFL-MW-4, HFL-MW-101B, HFL-MW-103, HFL-MW-106, HFL-MW-106C, HFL-MH-WS, and HFL-WS-114.

The following table summarizes dilutions performed on samples in this data set; QLs were elevated accordingly.

Sample ID	Dilution	Reason for Dilution
HFL-MW-2	10-fold 100-fold	A 10-fold dilution was performed due to the concentrations of target compounds that would have exceeded the calibration range if analyzed undiluted. A 100-fold dilution was performed due to the concentration of PFOA which exceeded the calibration range in the 10-fold dilution. The laboratory combined the results of both diluted analyses.
HFL-MW-4	10-fold	A 10-fold dilution was performed due to the concentration of PFOA that exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the undiluted and diluted analyses.
HFL-MW-102		
HFL-MW-105		
HFL-PW-1		
HFL-MW-101	20-fold	A 20-fold dilution was performed due to the concentration of PFOA that exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the undiluted and diluted analyses.
HFL-MH-WS		
HFL-MW-103	5-fold	A 5-fold dilution was performed due to the concentration of PFOA that exceeded the calibration range in the undiluted analysis. The laboratory combined the results of the undiluted and diluted analyses.
HFL-MW-104		
HFL-MW-106		
HFL-WS-114	100-fold	A 100-fold dilution was performed due to the concentration of PFOA that would have exceeded the calibration range if analyzed undiluted.

The quantitation for PFOA, PFOS, and PFHxS included both linear and branched chain isomers.

Target Compound Identification

Extracted ion chromatograms were reviewed to verify the target compound identifications. The laboratory manually integrated several peaks to ensure the inclusion of linear and branched isomers for PFOA, PFOS, and/or PFHxS and/or to ensure proper integration.

Two precursor/product ion transitions were used for identification for all compounds except for PFBA, PFPeA, FOSA, MeFOSAA, NetFOSAA, 6:2 FTS, and 8:2 FTS which only used one precursor/product ion transition for identification.

The following table summarizes the ratio between the two precursor/product ion transitions that did not meet the laboratory ratio limits.

Sample ID	Compound	Ratio	Ratio Limits	Validation Actions
HFL-MW-4	PFOS	7.92	2.31-6.93	The positive results for PFOS in samples HFL-MW-4, HFL-MW-103, and HFL-MW-105 were qualified as estimated (J).
HFL-MW-103		8.94		
HFL-MW-105		7.62		
HFL-MW-104		11.77		The positive results for PFOS in samples HFL-MW-104 and HFL-MW-106 were below the QLs and already qualified as estimated (J) by the laboratory; therefore no further validation action was required.
HFL-MW-106		8.21		
HFL-MW-101B	PFHxA	17.67	5.03-15.10	The blank qualified nondetect result for PFHxA in sample HFL-MW-101B was qualified as estimated (UJ).
HFL-MW-101C	PFHpA	3.43	1.13-3.40	The positive result for PFHpA in sample HFL-MW-101C already qualified estimated (J) by the laboratory; therefore no further validation action was required.
HFL-MH-SD	PFDA	16.29	2.36-7.09	The positive result for PFDA in sample HFL-MH-SD was already qualified as estimated (J) by the laboratory; therefore no further validation action was required.

Laboratory Methodology

Test America based their PFAS methodology on EPA Method 537.1. Some of the specific differences between EPA Method 537.1 and Test America's PFAS method are as follows:

- Eighteen (18) isotopically labeled surrogates were added to each sample prior to extraction.
- Quantitation was based on using either the average relative response factor or linear regression.
- No analytical or technical grade standards were used for identification of the branched isomers.
- The sediment sample was extracted with a potassium hydroxide/methanol solution using an orbital shaker for 3 hours followed by sonication for 12 hours. The mixture was centrifuged and the solvent filtered prior to solid-phase extraction (SPE).

QUALIFIED FORM 1s

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-1B | Lab Sample ID: 480-137103-1

Matrix: Water | Lab File ID: 2018.06.25LLA_006.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 13:10

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 261(mL) | Date Analyzed: 06/25/2018 09:16

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	3.3	B	1.9	0.34
2706-90-3	Perfluoropentanoic acid (PFPeA)	2.1		1.9	0.47
307-24-4	Perfluorohexanoic acid (PFHxA)	6.5		1.9	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	6.6		1.9	0.24
335-67-1	Perfluorooctanoic acid (PFOA)	310		1.9	0.81
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.26
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.30
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.52	J	1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.73	J B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.71	J	1.9	0.52
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.34
27619-97-2	6:2 FTS	ND		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: MFL-MW-2 | Lab Sample ID: 480-137103-2

Matrix: Water | Lab File ID: 2018.06.28LLBBB_006.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 10:40

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 256.2(mL) | Date Analyzed: 06/28/2018 14:58

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231583 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	58	B	20	3.4
2706-90-3	Perfluoropentanoic acid (PFPeA)	88		20	4.8
307-24-4	Perfluorohexanoic acid (PFHxA)	520		20	5.7
375-85-9	Perfluoroheptanoic acid (PFHpA)	500		20	2.4
375-95-1	Perfluorononanoic acid (PFNA)	ND		20	2.6
335-76-2	Perfluorodecanoic acid (PFDA)	ND		20	3.0
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		20	11
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		20	5.4
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		20	13
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		20	2.8
375-73-5	Perfluorobutanesulfonic acid (PFBS)	6.6	J	20	2.0
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	5.1	J B	20	1.7
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		20	1.9
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		20	5.3
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		20	3.1
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		20	3.4
27619-97-2	6:2 FTS	ND		200	20
39108-34-4	8:2 FTS	ND		200	20
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		200	19
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		200	30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-2 DL | Lab Sample ID: 480-137103-2 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_011.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 10:40

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 256.2(mL) | Date Analyzed: 06/26/2018 13:14

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 100

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	25000		200	83

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	77		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-4 | Lab Sample ID: 480-137103-3

Matrix: Water | Lab File ID: 2018.06.25LLA_008.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 08:40

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 241.4(mL) | Date Analyzed: 06/25/2018 09:33

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	9.5	~~B~~	2.1	0.36
2706-90-3	Perfluoropentanoic acid (PFPeA)	7.7		2.1	0.51
307-24-4	Perfluorohexanoic acid (PFHxA)	26		2.1	0.60
375-85-9	Perfluoroheptanoic acid (PFHpA)	36		2.1	0.26
375-95-1	Perfluorononanoic acid (PFNA)	11		2.1	0.28
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.1	0.32
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.1	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.30
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.6	J	2.1	0.21
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.2	~~B~~	2.1	0.18
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.39 ~~0.39~~	~~J~~ J	2.1	0.20
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	9.9	J ✓	2.1	0.56
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.1	0.33
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.1	0.36
27619-97-2	6:2 FTS	ND		21	2.1
39108-34-4	8:2 FTS	ND		21	2.1
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		21	2.0
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		21	3.2

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-4 DL | Lab Sample ID: 480-137103-3 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_012.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 08:40

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 241.4(mL) | Date Analyzed: 06/26/2018 13:22

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	2200		21	8.8

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-101 | Lab Sample ID: 480-137103-4

Matrix: Water | Lab File ID: 2018.06.25LLA_009.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 16:10

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 268.4(mL) | Date Analyzed: 06/25/2018 09:41

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	6.7	B	1.9	0.33
2706-90-3	Perfluoropentanoic acid (PFPeA)	5.2		1.9	0.46
307-24-4	Perfluorohexanoic acid (PFHxA)	27		1.9	0.54
375-85-9	Perfluoroheptanoic acid (PFHpA)	45		1.9	0.23
375-95-1	Perfluorononanoic acid (PFNA)	2.6		1.9	0.25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27
375-73-5	Perfluorobutanesulfonic acid (PFBS)	1.9		1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	3.8	B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.77	J	1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	34		1.9	0.50
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.33
27619-97-2	6:2 FTS	3.5	J	19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-101 DL | Lab Sample ID: 480-137103-4 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_013.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 16:10

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 268.4(mL) | Date Analyzed: 06/26/2018 13:30

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 20

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	4400		37	16

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	80		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-101B | Lab Sample ID: 480-137103-5

Matrix: Water | Lab File ID: 2018.06.25LLA_010.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 17:50

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 241.7(mL) | Date Analyzed: 06/25/2018 09:49

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	1.5	J B	2.1	0.36
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		2.1	0.51
307-24-4	Perfluorohexanoic acid (PFHxA)	2.2		2.1	0.60
375-85-9	Perfluoroheptanoic acid (PFHpA)	1.3	J	2.1	0.26
335-67-1	Perfluorooctanoic acid (PFOA)	28		2.1	0.88
375-95-1	Perfluorononanoic acid (PFNA)	ND		2.1	0.28
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.1	0.32
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.1	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.30
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.31	J B	2.1	0.18
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.1	0.20
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.56
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.1	0.33
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.1	0.36
27619-97-2	6:2 FTS	ND		21	2.1
39108-34-4	8:2 FTS	ND		21	2.1
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		21	2.0
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		21	3.2

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-101C | Lab Sample ID: 480-137103-6

Matrix: Water | Lab File ID: 2018.06.25LLA_011.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 16:25

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 265(mL) | Date Analyzed: 06/25/2018 09:57

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	1.1	J B	1.9	0.33
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.9	0.46
307-24-4	Perfluorohexanoic acid (PFHxA)	0.93	J	1.9	0.55
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.54	J	1.9	0.24
335-67-1	Perfluorooctanoic acid (PFOA)	10		1.9	0.80
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.33
27619-97-2	6:2 FTS	ND		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-102 | Lab Sample ID: 480-137103-7

Matrix: Water | Lab File ID: 2018.06.25LLA_012.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 08:50

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 263(mL) | Date Analyzed: 06/25/2018 10:05

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	3.3	B	1.9	0.33
2706-90-3	Perfluoropentanoic acid (PFPeA)	3.2		1.9	0.47
307-24-4	Perfluorohexanoic acid (PFHxA)	28		1.9	0.55
375-85-9	Perfluoroheptanoic acid (PFHpA)	38		1.9	0.24
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.26
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.24	J	1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.42	J B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.88	J	1.9	0.51
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.33
27619-97-2	6:2 FTS	2.7	J	19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-102 DL | Lab Sample ID: 480-137103-7 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_015.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 08:50

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 263(mL) | Date Analyzed: 06/26/2018 13:45

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	1800		19	8.1

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	88		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-103 | Lab Sample ID: 480-137103-8

Matrix: Water | Lab File ID: 2018.06.25LLA_013.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 11:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 253.8(mL) | Date Analyzed: 06/25/2018 10:13

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	4.8	B	2.0	0.34
2706-90-3	Perfluoropentanoic acid (PFPeA)	4.9		2.0	0.48
307-24-4	Perfluorohexanoic acid (PFHxA)	14		2.0	0.57
375-85-9	Perfluoroheptanoic acid (PFHpA)	22		2.0	0.25
375-95-1	Perfluorononanoic acid (PFNA)	4.2		2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.54
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.48	J	2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.0	J B U ✓	2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	8.5	J ✓	2.0	0.53
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.34
27619-97-2	6:2 FTS	ND		20	2.0
39108-34-4	8:2 FTS	ND		20	2.0
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-103 DL | Lab Sample ID: 480-137103-8 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_016.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 11:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 253.8(mL) | Date Analyzed: 06/26/2018 13:53

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	650		9.9	4.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	79		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-104 | Lab Sample ID: 480-137103-9

Matrix: Water | Lab File ID: 2018.06.25LLA_015.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 09:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 265.5(mL) | Date Analyzed: 06/25/2018 10:29

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	7.3	B	1.9	0.33
2706-90-3	Perfluoropentanoic acid (PFPeA)	7.8		1.9	0.46
307-24-4	Perfluorohexanoic acid (PFHxA)	20		1.9	0.55
375-85-9	Perfluoroheptanoic acid (PFHpA)	24		1.9	0.24
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.78	J	1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7	J B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.2	J	1.9	0.51
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.33
27619-97-2	6:2 FTS	ND		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-104 DL | Lab Sample ID: 480-137103-9 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_017.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 09:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 265.5(mL) | Date Analyzed: 06/26/2018 14:01

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	590		9.4	4.0

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	77		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-104C | Lab Sample ID: 480-137103-10

Matrix: Water | Lab File ID: 2018.06.25LLA_016.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 11:35

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 239.2(mL) | Date Analyzed: 06/25/2018 10:38

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.80	J B	2.1	0.37
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		2.1	0.51
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		2.1	0.61
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		2.1	0.26
335-67-1	Perfluorooctanoic acid (PFOA)	5.3		2.1	0.89
375-95-1	Perfluorononanoic acid (PFNA)	ND		2.1	0.28
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.1	0.32
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.1	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.1	0.57
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.1	1.4
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.1	0.30
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		2.1	0.21
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.23	J B	2.1	0.18
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.1	0.20
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		2.1	0.56
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.1	0.33
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.1	0.37
27619-97-2	6:2 FTS	12	J	21	2.1
39108-34-4	8:2 FTS	ND		21	2.1
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		21	2.0
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		21	3.2

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-105 | Lab Sample ID: 480-137103-11

Matrix: Water | Lab File ID: 2018.06.25LLA_017.d

Analysis Method: 537 (modified) | Date Collected: 06/05/2018 15:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 257.5(mL) | Date Analyzed: 06/25/2018 10:45

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	3.1	B	1.9	0.34
2706-90-3	Perfluoropentanoic acid (PFPeA)	3.1		1.9	0.48
307-24-4	Perfluorohexanoic acid (PFHxA)	15		1.9	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	25		1.9	0.24
375-95-1	Perfluorononanoic acid (PFNA)	0.66	J	1.9	0.26
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.30
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.80	J	1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.1	J B	1.9	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.5	J	1.9	0.52
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.34
27619-97-2	6:2 FTS	ND		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-105 DL | Lab Sample ID: 480-137103-11 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_019.d

Analysis Method: 537 (modified) | Date Collected: 06/05/2018 15:30

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 257.5(mL) | Date Analyzed: 06/26/2018 14:17

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	930		19	8.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	85		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-105C | Lab Sample ID: 480-137103-12

Matrix: Water | Lab File ID: 2018.06.25LLA_018.d

Analysis Method: 537 (modified) | Date Collected: 06/05/2018 16:45

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 266.4(mL) | Date Analyzed: 06/25/2018 10:53

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.55	J B	1.9	0.33
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.9	0.46
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.9	0.54
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.23
335-67-1	Perfluorooctanoic acid (PFOA)	2.5		1.9	0.80
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.52
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.27
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.51
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.30
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.33
27619-97-2	6:2 FTS	3.5	J	19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-106 | Lab Sample ID: 480-137103-13

Matrix: Water | Lab File ID: 2018.06.25LLA_019.d

Analysis Method: 537 (modified) | Date Collected: 06/05/2018 12:10

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 250.4(mL) | Date Analyzed: 06/25/2018 11:01

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.99	J B	2.0	0.35
2706-90-3	Perfluoropentanoic acid (PFPeA)	0.54	J	2.0	0.49
307-24-4	Perfluorohexanoic acid (PFHxA)	7.4		2.0	0.58
375-85-9	Perfluoroheptanoic acid (PFHpA)	25		2.0	0.25
375-95-1	Perfluorononanoic acid (PFNA)	0.44	J	2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	0.51	J	2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.59	J B	2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.1	J	2.0	0.54
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35
27619-97-2	6:2 FTS	ND		20	2.0
39108-34-4	8:2 FTS	ND		20	2.0
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-106 DL | Lab Sample ID: 480-137103-13 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_022.d

Analysis Method: 537 (modified) | Date Collected: 06/05/2018 12:10

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 250.4(mL) | Date Analyzed: 06/26/2018 14:40

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 5

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	850		10	4.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	70		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-MW-106C | Lab Sample ID: 480-137103-14

Matrix: Water | Lab File ID: 2018.06.25LLA_022.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 09:40

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 257.2(mL) | Date Analyzed: 06/25/2018 11:24

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.45	J B	1.9	0.34
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.9	0.48
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.9	0.83
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.26
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.30
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.24	J B	1.9	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.34
27619-97-2	6:2 FTS	65		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-PW-1 | Lab Sample ID: 480-137103-15

Matrix: Water | Lab File ID: 2018.06.25LLA_023.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 17:15

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 251.7(mL) | Date Analyzed: 06/25/2018 11:32

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	7.6	B	2.0	0.35
2706-90-3	Perfluoropentanoic acid (PFPeA)	8.6		2.0	0.49
307-24-4	Perfluorohexanoic acid (PFHxA)	30		2.0	0.58
375-85-9	Perfluoroheptanoic acid (PFHpA)	27		2.0	0.25
375-95-1	Perfluorononanoic acid (PFNA)	3.7		2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	0.53	J	2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.4		2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	2.7	B	2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	10		2.0	0.54
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35
27619-97-2	6:2 FTS	ND		20	2.0
39108-34-4	8:2 FTS	ND		20	2.0
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-PW-1 DL | Lab Sample ID: 480-137103-15 DL

Matrix: Water | Lab File ID: 2018.06.26LLB_026.d

Analysis Method: 537 (modified) | Date Collected: 06/06/2018 17:15

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 251.7(mL) | Date Analyzed: 06/26/2018 15:11

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 10

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 231118 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	1300		20	8.4

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	68		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: HFL-EB-1 | Lab Sample ID: 480-137103-17

Matrix: Water | Lab File ID: 2018.06.25LLA_024.d

Analysis Method: 537 (modified) | Date Collected: 06/07/2018 13:20

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 259.7(mL) | Date Analyzed: 06/25/2018 11:40

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.66	J B	1.9	0.34
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.9	0.47
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.9	0.56
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.9	0.24
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.9	0.82
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.9	0.26
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.9	0.30
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.9	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.9	0.53
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.9	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.9	0.28
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.9	0.19
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.9	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.9	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.9	0.52
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.9	0.31
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.9	0.34
27619-97-2	6:2 FTS	ND		19	1.9
39108-34-4	8:2 FTS	ND		19	1.9
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		19	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		19	3.0

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137240-1

SDG No.:

Client Sample ID: HFL-MH-WS | Lab Sample ID: 480-137240-1

Matrix: Water | Lab File ID: 2018.06.21LLB_017.d

Analysis Method: 537 (modified) | Date Collected: 06/11/2018 13:00

Extraction Method: 3535 | Date Extracted: 06/13/2018 15:29

Sample wt/vol: 271.4(mL) | Date Analyzed: 06/21/2018 13:09

Con. Extract Vol.: 10(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230289 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	9.4		1.8	0.32
2706-90-3	Perfluoropentanoic acid (PFPeA)	12		1.8	0.45
307-24-4	Perfluorohexanoic acid (PFHxA)	65		1.8	0.53
375-85-9	Perfluoroheptanoic acid (PFHpA)	83		1.8	0.23
375-95-1	Perfluorononanoic acid (PFNA)	4.8		1.8	0.25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.8	0.29
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.8	1.0
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.8	0.51
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.8	1.2
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.27
375-73-5	Perfluorobutanesulfonic acid (PFBS)	2.5		1.8	0.18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	4.7	B	1.8	0.16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	0.24	J	1.8	0.18
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	20		1.8	0.50
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.29
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.32	J	1.8	0.32
27619-97-2	6:2 FTS	ND		18	1.8
39108-34-4	8:2 FTS	ND		18	1.8
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	4.1	J	18	1.8
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		18	2.9

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137240-1

SDG No.:

Client Sample ID: HFL-MH-WS DL | Lab Sample ID: 480-137240-1 DL

Matrix: Water | Lab File ID: 2018.06.22LLCC_009.d

Analysis Method: 537 (modified) | Date Collected: 06/11/2018 13:00

Extraction Method: 3535 | Date Extracted: 06/13/2018 15:29

Sample wt/vol: 271.4(mL) | Date Analyzed: 06/22/2018 22:40

Con. Extract Vol.: 10(mL) | Dilution Factor: 20

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230533 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
335-67-1	Perfluorooctanoic acid (PFOA)	4700		37	16

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00990	13C4 PFOA	91		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137240-1

SDG No.:

Client Sample ID: HFL-WS-114 | Lab Sample ID: 480-137240-2

Matrix: Water | Lab File ID: 2018.06.22LLCC_010.d

Analysis Method: 537 (modified) | Date Collected: 06/11/2018 14:00

Extraction Method: 3535 | Date Extracted: 06/13/2018 15:29

Sample wt/vol: 274(mL) | Date Analyzed: 06/22/2018 22:48

Con. Extract Vol.: 10(mL) | Dilution Factor: 100

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230533 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	43	J	180	32
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		180	45
307-24-4	Perfluorohexanoic acid (PFHxA)	270		180	53
375-85-9	Perfluoroheptanoic acid (PFHpA)	310		180	23
335-67-1	Perfluorooctanoic acid (PFOA)	24000		180	78
375-95-1	Perfluorononanoic acid (PFNA)	ND		180	25
335-76-2	Perfluorodecanoic acid (PFDA)	ND		180	28
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		180	100
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		180	50
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		180	120
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		180	26
375-73-5	Perfluorobutanesulfonic acid (PFBS)	200		180	18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	66	J B	180	16
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		180	17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	150	J	180	49
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		180	29
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		180	32
27619-97-2	6:2 FTS	ND		1800	180
39108-34-4	8:2 FTS	ND		1800	180
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		1800	170
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		1800	280

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137240-1

SDG No.:

Client Sample ID: HFL-MH-SD | Lab Sample ID: 480-137240-3

Matrix: Solid | Lab File ID: 2018.06.25LLAA_061.d

Analysis Method: 537 (modified) | Date Collected: 06/11/2018 13:30

Extraction Method: SHAKE | Date Extracted: 06/15/2018 06:22

Sample wt/vol: 5.03(g) | Date Analyzed: 06/25/2018 19:38

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 53.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230903 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.42	0.053
375-22-4	Perfluorobutanoic acid (PFBA)	0.070	J	0.42	0.059
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.42	0.083
335-76-2	Perfluorodecanoic acid (PFDA)	0.19	J	0.42	0.047
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.42	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.42	0.074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.16	J	0.42	0.062
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.42	0.066
307-24-4	Perfluorohexanoic acid (PFHxA)	0.21	J	0.42	0.089
375-95-1	Perfluorononanoic acid (PFNA)	0.098	J	0.42	0.076
754-91-6	Perfluorooctane Sulfonamide (FOSA)	0.24	J	0.42	0.17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.7		1.1	0.42
335-67-1	Perfluorooctanoic acid (PFOA)	20		0.42	0.18
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.42	0.16
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.42	0.11
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.42	0.11
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.42	0.076
27619-97-2	6:2 FTS	ND		4.2	0.32
39108-34-4	8:2 FTS	ND		4.2	0.53
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	0.92	J	4.2	0.79
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		4.2	0.83

QC NONCONFORMANCE DOCUMENTATION

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-137103-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-228271/1-A

Matrix: Water | Lab File ID: 2018.06.25LLA_004.d

Analysis Method: 537 (modified) | Date Collected:

Extraction Method: 3535 | Date Extracted: 06/10/2018 07:02

Sample wt/vol: 250(mL) | Date Analyzed: 06/25/2018 09:00

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 230748 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.400	J	2.0	0.35
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25
335-67-1	Perfluorooctanoic acid (PFOA)	ND		2.0	0.85
375-95-1	Perfluorononanoic acid (PFNA)	ND		2.0	0.27
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.0	0.31
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.225	J	2.0	0.17
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35
27619-97-2	6:2 FTS	ND		20	2.0
39108-34-4	8:2 FTS	ND		20	2.0
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		20	1.9
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		20	3.1

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 480-137103-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): GeminiC18 3 ID: 3 (mm)

Client Sample ID	Lab Sample ID	PFOS #	M282FTS #	PFOSA #	PFDA #	d3NMFOS #	d5NEFOS #	PFUnA #	PFDoA #
HFL-MW-2	480-137103-2	88	106	89	100	88	96	99	94
HFL-MW-4	480-137103-3	109	142	106	126	145	141	122	110
HFL-MW-101	480-137103-4	125	165 *	122	137	152 *	150	127	118
HFL-MW-102	480-137103-7	106	141	98	122	132	135	105	111
HFL-MW-103	480-137103-8	86	120	81	99	104	109	90	80
HFL-MW-104	480-137103-9	80	103	76	92	104	109	84	79
HFL-MW-105	480-137103-11	87	111	79	96	110	104	91	80
HFL-MW-106	480-137103-13	76	91	69	86	92	95	80	68
HFL-PW-1	480-137103-15	82	105	77	91	97	97	84	78
HFL-MW-106 MS	480-137103-13 MS	79	98	74	88	93	99	79	76
HFL-MW-106 MSD	480-137103-13 MSD	72	89	66	82	91	94	78	71

	QC LIMITS
PFOS = 13C4 PFOS	25-150
M282FTS = M2-8:2FTS	25-150
PFOSA = 13C8 FOSA	25-150
PFDA = 13C2 PFDA	25-150
d3NMFOS = d3-NMeFOSAA	25-150
d5NEFOS = d5-NEtFOSAA	25-150
PFUnA = 13C2 PFUnA	25-150
PFDoA = 13C2 PFDoA	25-150

Column to be used to flag recovery values

FORM II 537 (modified)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 480-137103-1

SDG No.:

Sample No.: CCV 320-230748/3 Date Analyzed: 06/25/2018 08:52

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.06.25LLA_003.d Heated Purge: (Y/N) N

Calibration ID: 39779

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3879825	2.65				
UPPER LIMIT		5819738	2.85				
LOWER LIMIT		1939913	2.45				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-230748/1		4258812	2.65				
CCVL 320-230748/2		3914507	2.66				
MB 320-228271/1-A		4523773	2.65				
LCS 320-228271/2-A		4752751	2.65				
480-137103-1	HFL-MW-1B	4019913	2.66				
480-137103-3	HFL-MW-4	3630411	2.65				
480-137103-4	HFL-MW-101	3139761	2.66				
480-137103-5	HFL-MW-101B	4896444	2.65				
480-137103-6	HFL-MW-101C	4437971	2.66				
480-137103-7	HFL-MW-102	3694436	2.64				
480-137103-8	HFL-MW-103	4845563	2.66				
CCV 320-230748/14		3802283	2.66				
480-137103-9	HFL-MW-104	4958267	2.66				
480-137103-10	HFL-MW-104C	5807711	2.65				
480-137103-11	HFL-MW-105	4784000	2.66				
480-137103-12	HFL-MW-105C	6491388*	2.65				
480-137103-13	HFL-MW-106	5408816	2.67				
480-137103-13 MS	HFL-MW-106 MS	5122087	2.65				
480-137103-13 MSD	HFL-MW-106 MSD	5625195	2.65				
480-137103-14	HFL-MW-106C	6555603*	2.66				
480-137103-15	HFL-PW-1	4720056	2.65				
480-137103-17	HFL-EB-1	4732849	2.65				
CCV 320-230748/31		3815396	2.65				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 480-137103-1

SDG No.:

Sample No.: CCV 320-231115/3 Date Analyzed: 06/26/2018 12:27

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.06.26LLB_005.d Heated Purge: (Y/N) N

Calibration ID: 39779

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		3945640	2.64				
UPPER LIMIT		5918460	2.84				
LOWER LIMIT		1972820	2.44				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-231115/1		3459851	2.64				
CCVL 320-231115/2		3658324	2.64				
CCV 320-231118/1		3835694	2.64				
480-137103-2 DL	HFL-MW-2 DL	56371*	2.65				
480-137103-3 DL	HFL-MW-4 DL	436783*	2.65				
480-137103-4 DL	HFL-MW-101 DL	239705*	2.64				
480-137103-7 DL	HFL-MW-102 DL	484635*	2.64				
480-137103-8 DL	HFL-MW-103 DL	1032520*	2.65				
480-137103-9 DL	HFL-MW-104 DL	1064484*	2.65				
480-137103-11 DL	HFL-MW-105 DL	516467*	2.64				
CCV 320-231118/12		3946447	2.65				
480-137103-13 DL	HFL-MW-106 DL	1180784*	2.64				
480-137103-13 MS DL	HFL-MW-106 MS DL	1107610*	2.65				
480-137103-13 MSD DL	HFL-MW-106 MSD DL	1214726*	2.65				
480-137103-15 DL	HFL-PW-1 DL	568731*	2.68				
CCV 320-231118/20		3611229	2.69				

13PFOA = 13C2-PFOA
13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 480-137103-1

SDG No.:

Sample No.: IC 320-231528/5 Date Analyzed: 06/28/2018 13:24

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.06.28LLICAL_00 Heated Purge: (Y/N) N

Calibration ID: 39855

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MID-POINT		3739685	2.64				
UPPER LIMIT		5609528	2.84				
LOWER LIMIT		1869843	2.44				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 320-231528/9		3924045	2.63				
ICV 320-231528/10		4017500	2.64				
CCV 320-231583/1		3712051	2.65				
480-137103-2	HFL-MW-2	439996*	2.64				
CCV 320-231583/4		3879637	2.64				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180625-60177.b\2018.06.25LLA_011.d
Lims ID: 480-137103-A-6-A
Client ID: HFL-MW-101C
Sample Type: Client
Inject. Date: 25-Jun-2018 09:57:30 ALS Bottle#: 8 Worklist Smp#: 11
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 480-137103-a-6-
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180625-60177.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 26-Jun-2018 12:23:30 Calib Date: 22-Jun-2018 10:05:18
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180622-60080.b\2018.06.022LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: mongkols Date: 26-Jun-2018 12:23:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										M
212.90 > 169.00	1.435	1.430	0.005	1.004	83458	0.0298			34.6	M
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.430	0.0	0.538	6968238	2.76		110	52989	
D 3 13C5-PFPeA										
267.90 > 223.00	1.701	1.693	0.008	0.640	4256351	2.33		93.3	57548	
D 47 13C3-PFBS										
301.90 > 83.00	1.729	1.729	-0.001	0.650	93523	2.03		87.4	517	
D 7 13C2 PFHxA										
315.00 > 270.00	1.981	1.970	0.011	0.745	4972739	2.50		100.0	81333	
6 Perfluorohexanoic acid										
313.00 > 269.00	1.970	1.970	0.0	0.995	51385	0.0246			105	
313.00 > 119.00	1.981	1.970	0.011	1.000	3827		13.43(5.03-15.10)		93.9	
D 9 13C4-PFHpA										
367.00 > 322.00	2.306	2.293	0.013	0.867	4568747	2.53		101	42229	
10 Perfluoroheptanoic acid										R
363.00 > 319.00	2.293	2.294	-0.001	0.994	30476	0.0144			34.0	R
363.00 > 169.00	2.306	2.294	0.012	1.000	8881		3.43(1.13-3.40)		94.4	
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.306	0.013	0.872	5496143	2.13		90.2	37524	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.307	0.012	1.000	15359	0.005814			83.7	
399.00 > 99.00	2.319	2.307	0.012	1.000	6805		2.26(1.50-4.49)		33.7	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.620	0.016	0.991	1160287	2.49		105	15073	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.620	0.016	1.000	7549	0.009294			173	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	4227107	2.48		99.2	53665	

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-105 | Lab Sample ID: 480-134613-6

Matrix: Water | Lab File ID: 2018.05.04LLB_032.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 293.6(mL) | Date Analyzed: 05/04/2018 22:39

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 J	~~0.24 J B~~	1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30
27619-97-2	6:2FTS	ND		17	1.7
39108-34-4	8:2FTS	ND		17	1.7
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		17	2.6

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-106 | Lab Sample ID: 480-134613-7

Matrix: Water | Lab File ID: 2018.05.04LLB_033.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 285(mL) | Date Analyzed: 05/04/2018 22:46

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.8	0.31
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.8	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.8	0.75
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.8	0.24
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.8	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.8	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.8 U ~~0.22 J B~~		1.8	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.8	0.31
27619-97-2	6:2FTS	ND		18	1.8
39108-34-4	8:2FTS	ND		18	1.8
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		18	1.7
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		18	2.7

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-107 | Lab Sample ID: 480-134613-8

Matrix: Water | Lab File ID: 2018.05.04LLB_034.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 289.8(mL) | Date Analyzed: 05/04/2018 22:54

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.73
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 J	~~0.19 J B~~	1.7	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30
27619-97-2	6:2FTS	ND		17	1.7
39108-34-4	8:2FTS	ND		17	1.7
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-108 | Lab Sample ID: 480-134613-9

Matrix: Water | Lab File ID: 2018.05.04LLB_035.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 289(mL) | Date Analyzed: 05/04/2018 23:02

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	2.6		1.7	0.50
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.74
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 J ~~0.24 J~~ B		1.7	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30
27619-97-2	6:2FTS	24		17	1.7
39108-34-4	8:2FTS	ND		17	1.7
2991-50-6	N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)	ND		17	1.6
2355-31-9	N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)	ND		17	2.7

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.627	2.620	0.007	0.991	862851	2.26		95.2	6008	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.627	2.620	0.007	1.000	11800	0.0195			242	
D 14 13C4 PFOA										
417.00 > 372.00	2.651	2.652	-0.001	1.000	3070836	2.20		88.1	25685	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.658	2.653	0.005	1.003	58725611	39.2			13798	EM
413.00 > 169.00	2.658	2.653	0.005	1.003	41392447		1.42(0.84-2.52)		101536	
* 62 13C2-PFOA										
415.00 > 370.00	2.651	2.653	-0.002		3630411	2.50			33863	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.658	2.660	-0.002	0.880	19902	0.009398			62.2	
449.00 > 99.00	2.658	2.660	-0.002	0.880	4793		4.15(1.94-5.82)		43.6	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.017	0.005	1.140	3652907	2.60		109	27090	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.017	0.005	1.140	3453063	3.14		126	44725	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.906	3.023	-0.117	0.962	414570	0.2385			1896	M
499.00 > 99.00	2.911	3.023	-0.112	0.963	52374		7.92(2.31-6.93)		333	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.022	3.023	-0.001	1.000	388778	0.2592			301	
463.00 > 169.00	3.022	3.023	-0.001	1.000	85440		4.55(1.90-5.69)		201	
D 26 M2-8:2FTS										
529.00 > 81.00	3.376	3.370	0.006	1.273	1182106	3.41		142	15709	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.370	0.006	1.273	5283138	2.65		106	34539	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.379	0.006	1.277	2624887	3.15		126	27136	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.534	3.529	0.005	1.333	923898	3.62		145	22408	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.698	0.007	1.397	929376	3.53		141	2411	
D 30 13C2 PFUnA										
565.00 > 520.00	3.715	3.708	0.007	1.402	1953040	3.04		122	28663	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	3.999	0.006	1.511	1780678	2.75		110	15037	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.501	-0.002	1.697	1836050	3.07		123	7937	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.620	0.008	0.988	1035758	2.03		85.6	1783	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.628	2.620	0.008	1.000	19761	0.0273			328	
D 14 13C4 PFOA										
417.00 > 372.00	2.659	2.652	0.007	1.000	3732963	2.01		80.2	28857	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.659	2.653	0.006	1.000	27416086	15.0			5947	EM
413.00 > 169.00	2.659	2.653	0.006	1.000	16474388		1.66(0.84-2.52)		51582	
* 62 13C2-PFOA										
415.00 > 370.00	2.659	2.653	0.006		4845563	2.50			42726	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.017	0.011	1.139	3846969	2.05		86.0	5581	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.017	0.011	1.139	3360163	2.29		91.7	43091	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.907	3.023	-0.116	0.960	392772	0.2145			385	M
499.00 > 99.00	2.917	3.023	-0.106	0.963	43923		8.94(2.31-6.93)		181	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.023	0.005	1.000	156500	0.1072			100	
463.00 > 169.00	3.028	3.023	0.005	1.000	33152		4.72(1.90-5.69)		146	
D 26 M2-8:2FTS										
529.00 > 81.00	3.375	3.370	0.005	1.269	1333301	2.88		120	3484	
D 21 13C8 FOSA										
506.00 > 78.00	3.375	3.370	0.005	1.269	5391272	2.03		81.1	45854	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.379	0.006	1.273	2762641	2.49		99.5	39279	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.534	3.529	0.005	1.329	885832	2.60		104	17640	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.704	3.698	0.006	1.393	961613	2.73		109	3409	
D 30 13C2 PFUnA										
565.00 > 520.00	3.704	3.708	-0.004	1.393	1928829	2.25		90.0	33034	
D 36 13C2 PFDoA										
615.00 > 570.00	4.004	3.999	0.005	1.506	1738336	2.01		80.5	11807	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.498	4.501	-0.003	1.691	1851742	2.32		92.9	8502	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.632	2.620	0.012	0.988	989308	1.90		79.9	9533	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.632	2.636	-0.004	1.000	5179	0.007478			106	
D 14 13C4 PFOA										
417.00 > 372.00	2.664	2.652	0.012	1.000	3789784	1.99		79.6	46941	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.664	2.659	0.005	1.000	27284954	14.8			8441	EM
413.00 > 169.00	2.664	2.659	0.005	1.000	17781473		1.53(0.84-2.52)		32241	
* 62 13C2-PFOA										
415.00 > 370.00	2.664	2.659	0.005		4958267	2.50			34097	
D 18 13C4 PFOS										
503.00 > 80.00	3.033	3.017	0.016	1.139	3668606	1.92		80.1	32131	
D 19 13C5 PFNA										
468.00 > 423.00	3.033	3.017	0.016	1.139	3426770	2.28		91.4	45994	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.916	3.032	-0.116	0.961	56627	0.0324			322	
499.00 > 99.00	2.926	3.032	-0.106	0.965	4812		11.77(2.31-6.93)		29.6	M
D 26 M2-8:2FTS										
529.00 > 81.00	3.390	3.370	0.020	1.272	1165531	2.46		103	17193	
D 21 13C8 FOSA										
506.00 > 78.00	3.390	3.370	0.020	1.272	5161543	1.90		75.9	44907	
D 23 13C2 PFDA										
515.00 > 470.00	3.399	3.379	0.020	1.276	2627149	2.31		92.4	49182	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.548	3.529	0.019	1.332	910809	2.61		104	25210	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.709	3.698	0.011	1.392	983882	2.73		109	3854	
D 30 13C2 PFUnA										
565.00 > 520.00	3.720	3.708	0.012	1.396	1848688	2.11		84.3	43171	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.720	3.719	0.001	1.000	4585	0.007706			16.0	
563.00 > 169.00	3.720	3.719	0.001	1.000	977		4.69(2.12-6.36)		55.5	
D 36 13C2 PFDoA										
615.00 > 570.00	4.020	3.999	0.021	1.509	1750360	1.98		79.2	11133	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.511	4.501	0.010	1.693	1737560	2.13		85.2	8083	

QC Flag Legend

Processing Flags

E - Exceeded Maximum Amount

Review Flags

M - Manually Integrated

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.628	2.620	0.008	0.988	956329	1.90		80.1	14170	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.636	0.0	1.003	2701	0.004035			70.7	
D 14 13C4 PFOA										
417.00 > 372.00	2.660	2.652	0.008	1.000	3526775	1.92		76.8	32156	
15 Perfluorooctanoic acid										EM
413.00 > 369.00	2.660	2.659	0.001	1.000	37204861	21.6			9028	EM
413.00 > 169.00	2.660	2.659	0.001	1.000	24532555		1.52(0.84-2.52)		66065	
* 62 13C2-PFOA										
415.00 > 370.00	2.660	2.659	0.001		4784000	2.50			36844	
16 Perfluoroheptanesulfonic acid										
449.00 > 80.00	2.660	2.667	-0.007	0.880	3850	0.001725			45.5	
449.00 > 99.00	2.667	2.667	0.0	0.883	1744		2.21(1.94-5.82)		26.3	
D 18 13C4 PFOS										
503.00 > 80.00	3.022	3.017	0.005	1.136	3849322	2.08		87.1	49800	
D 19 13C5 PFNA										
468.00 > 423.00	3.022	3.017	0.005	1.136	3475023	2.40		96.0	57948	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.907	3.032	-0.125	0.962	116535	0.0636			1674	
499.00 > 99.00	2.913	3.032	-0.120	0.964	15293		7.62(2.31-6.93)		117	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.022	3.032	-0.010	1.000	25794	0.0171			32.9	
463.00 > 169.00	3.022	3.032	-0.010	1.000	7010		3.68(1.90-5.69)		50.4	
D 26 M2-8:2FTS										
529.00 > 81.00	3.367	3.370	-0.003	1.266	1215890	2.66		111	18443	
D 21 13C8 FOSA										
506.00 > 78.00	3.376	3.370	0.006	1.269	5152526	1.96		78.5	35678	
D 23 13C2 PFDA										
515.00 > 470.00	3.385	3.379	0.006	1.273	2635132	2.40		96.1	34988	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.535	3.529	0.006	1.329	927817	2.76		110	22864	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.705	3.698	0.007	1.393	902241	2.60		104	2355	
D 30 13C2 PFUnA										
565.00 > 520.00	3.705	3.708	-0.003	1.393	1920422	2.27		90.8	30361	
31 Perfluoroundecanoic acid										
563.00 > 519.00	3.705	3.719	-0.014	1.000	2950	0.004773			10.4	
563.00 > 169.00	3.716	3.719	-0.003	1.003	1297		2.27(2.12-6.36)		68.0	
D 36 13C2 PFDoA										
615.00 > 570.00	4.005	3.999	0.006	1.506	1701573	1.99		79.8	11219	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.499	4.501	-0.002	1.691	1784147	2.27		90.7	8443	

Report Date: 26-Jun-2018 12:22:43 Chrom Revision: 2.2 07-Jun-2018 07:41:54

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\ChromNa\Sacramento\ChromData\A8_N\20180625-60177.b\2018.06.25LLA_010.d
Lims ID: 480-137103-A-5-A
Client ID: HFL-MW-101B
Sample Type: Client
Inject. Date: 25-Jun-2018 09:49:34 ALS Bottle#: 7 Worklist Smp#: 10
Injection Vol: 2.0 ul Dil. Factor: 1.0000
Sample Info: 480-137103-a-5-a
Misc. Info.: Plate: 1 Rack: 4
Operator ID: SACINSTLCMS01 Instrument ID: A8_N

Method: \\ChromNa\Sacramento\ChromData\A8_N\20180625-60177.b\A8_N.m
Limit Group: LC PFC ICAL
Last Update: 26-Jun-2018 12:22:42 Calib Date: 22-Jun-2018 10:05:18
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\ChromNA\Sacramento\ChromData\A8_N\20180622-60080.b\2018.06.022LLICALA_008.d

Column 1 : Det: EXP1
Process Host: XAWRK001

First Level Reviewer: mongkols Date: 26-Jun-2018 12:22:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
2 Perfluorobutyric acid										
212.90 > 169.00	1.430	1.430	0.0	1.000	96900	0.0371			43.6	
D 1 13C4 PFBA										
217.00 > 172.00	1.430	1.430	0.0	0.539	6499008	2.33		93.3	47873	
D 3 13C5-PFPeA										
267.90 > 223.00	1.694	1.693	0.001	0.638	3928381	1.95		78.0	50533	
4 Perfluoropentanoic acid										
262.90 > 219.00	1.685	1.693	-0.008	0.995	21618	0.0113			7.0	
D 47 13C3-PFBS										
301.90 > 83.00	1.730	1.729	0.001	0.652	97315	1.92		82.5	593	
D 7 13C2 PFHxA										
315.00 > 270.00	1.971	1.970	0.001	0.743	5003813	2.28		91.2	88914	
6 Perfluorohexanoic acid										R
313.00 > 269.00	1.971	1.970	0.001	1.000	113714	0.0541			240	R
313.00 > 119.00	1.971	1.970	0.001	1.000	6437		17.67(5.03-15.10)		146	
D 9 13C4-PFHpA										
367.00 > 322.00	2.295	2.293	0.002	0.865	4602555	2.31		92.5	36710	
10 Perfluoroheptanoic acid										
363.00 > 319.00	2.295	2.294	0.001	1.000	68004	0.0319			80.9	
363.00 > 169.00	2.295	2.294	0.001	1.000	29001		2.34(1.13-3.40)		266	
D 11 18O2 PFHxS										
403.00 > 84.00	2.308	2.306	0.002	0.870	5479299	1.93		81.5	41698	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.308	2.307	0.001	1.000	19913	0.007561			64.4	
399.00 > 99.00	2.308	2.307	0.001	1.000	6471		3.08(1.50-4.49)		30.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.629	2.620	0.009	0.991	1161710	2.26		95.0	18065	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.629	2.620	0.009	1.000	14196	0.0175			495	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 11 18O2 PFHxS										
403.00 > 84.00	2.319	2.306	0.013	0.870	5188604	1.65		69.8	45503	
8 Perfluorohexanesulfonic acid										
399.00 > 80.00	2.319	2.319	0.0	1.000	36768	0.0147			137	
399.00 > 99.00	2.319	2.319	0.0	1.000	11949		3.08(1.50-4.49)		44.9	
D 12 M2-6:2FTS										
429.00 > 81.00	2.636	2.620	0.016	0.988	955941	1.68		70.8	10503	
13 1H,1H,2H,2H-perfluorooctanesulfoni										
427.00 > 407.00	2.636	2.636	0.0	1.000	2738	0.004092			85.0	
D 14 13C4 PFOA										
417.00 > 372.00	2.667	2.652	0.015	1.000	3520984	1.70		67.8	31968	
15 Perfluorooctanoic acid										E
413.00 > 369.00	2.667	2.659	0.008	1.000	32818772	19.1			14987	E
413.00 > 169.00	2.667	2.659	0.008	1.000	20354341		1.61(0.84-2.52)		106591	
* 62 13C2-PFOA										
415.00 > 370.00	2.667	2.659	0.008		5408816	2.50			46460	
D 18 13C4 PFOS										
503.00 > 80.00	3.028	3.017	0.011	1.135	3813135	1.82		76.3	45251	
D 19 13C5 PFNA										
468.00 > 423.00	3.028	3.017	0.011	1.135	3254134	1.99		79.5	48510	
17 Perfluorooctane sulfonic acid										M
499.00 > 80.00	2.912	3.032	-0.120	0.962	50178	0.0276			501	
499.00 > 99.00	2.922	3.032	-0.110	0.965	6114		8.21(2.31-6.93)		55.9	M
20 Perfluorononanoic acid										
463.00 > 419.00	3.028	3.032	-0.004	1.000	15418	0.0109			20.0	
463.00 > 169.00	3.035	3.032	0.003	1.002	3687		4.18(1.90-5.69)		23.2	
D 26 M2-8:2FTS										
529.00 > 81.00	3.374	3.370	0.004	1.265	1132323	2.19		91.5	15006	
D 21 13C8 FOSA										
506.00 > 78.00	3.384	3.370	0.014	1.269	5113239	1.72		68.9	37408	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.384	3.379	0.005	1.000	2101	0.001021			71.3	
D 23 13C2 PFDA										
515.00 > 470.00	3.384	3.379	0.005	1.269	2665305	2.15		86.0	33487	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.542	3.529	0.013	1.328	876577	2.30		92.1	16248	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.711	3.698	0.013	1.392	930326	2.37		94.7	2474	
D 30 13C2 PFUnA										
565.00 > 520.00	3.711	3.708	0.003	1.392	1914192	2.00		80.0	43972	
D 36 13C2 PFDoA										
615.00 > 570.00	4.010	3.999	0.011	1.504	1635703	1.70		67.8	14430	
D 43 13C2-PFTeDA										
715.00 > 670.00	4.501	4.501	0.0	1.688	1692919	1.90		76.1	7623	
D 44 13C2-PFHxDA										
815.00 > 770.00	4.913	4.905	0.008	1.842	2269899	1.51		60.3	7006	

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 M2-6:2FTS										
429.00 > 81.00	2.611	2.611	0.0	0.988	1191520	2.58		109	5822	
D 14 13C4 PFOA										
417.00 > 372.00	2.644	2.644	0.0	1.000	3628997	2.15		86.0	45468	
15 Perfluorooctanoic acid										
413.00 > 369.00	2.644	2.652	-0.008	1.000	8269558	4.67			3597	
413.00 > 169.00	2.644	2.652	-0.008	1.000	4750312		1.74(0.84-2.52)		15000	
* 62 13C2-PFOA										
415.00 > 370.00	2.644	2.652	-0.008		4394646	2.50			41904	
D 18 13C4 PFOS										
503.00 > 80.00	3.007	3.008	-0.001	1.138	3180259	1.87		78.4	23119	
D 19 13C5 PFNA										
468.00 > 423.00	3.007	3.008	-0.001	1.138	3050563	2.29		91.8	38216	
20 Perfluorononanoic acid										
463.00 > 419.00	3.007	3.022	-0.015	1.000	30554	0.0231			36.0	
463.00 > 169.00	3.007	3.022	-0.015	1.000	6065		5.04(1.90-5.69)		56.8	
17 Perfluorooctane sulfonic acid										
499.00 > 80.00	3.007	3.022	-0.015	1.000	962114	0.6357			4304	
499.00 > 99.00	3.007	3.022	-0.015	1.000	207114		4.65(2.31-6.93)		1684	
D 26 M2-8:2FTS										
529.00 > 81.00	3.356	3.357	-0.001	1.269	1303976	3.11		130	8141	
D 23 13C2 PFDA										
515.00 > 470.00	3.365	3.367	-0.002	1.273	2392236	2.37		95.0	39187	
D 21 13C8 FOSA										
506.00 > 78.00	3.365	3.367	-0.002	1.273	4106349	1.70		68.1	37574	
22 Perfluorooctane Sulfonamide										
498.00 > 78.00	3.365	3.367	-0.002	1.000	93746	0.0567			68.7	
24 Perfluorodecanoic acid										R
513.00 > 469.00	3.402	3.376	0.026	1.011	43970	0.0453			40.6	R
513.00 > 169.00	3.365	3.376	-0.011	1.000	2700		16.29(2.36-7.09)		38.6	
D 27 d3-NMeFOSAA										
573.00 > 419.00	3.524	3.525	-0.001	1.333	772383	2.50		99.9	14355	
28 N-methyl perfluorooctane sulfonami										
570.00 > 419.00	3.524	3.535	-0.011	1.000	27622	0.0904			350	
29 Perfluorodecane Sulfonic acid										R
599.00 > 80.00	3.679	3.684	-0.005	1.223	1505	0.001751			14.5	R
599.00 > 99.00	3.659	3.684	-0.025	1.217	1914		0.79(1.39-4.16)		29.6	
D 32 d5-NEtFOSAA										
589.00 > 419.00	3.690	3.694	-0.004	1.396	782563	2.45		98.1	2861	
D 30 13C2 PFUnA										
565.00 > 520.00	3.701	3.694	0.007	1.400	1658636	2.13		85.4	20239	
33 N-ethyl perfluorooctane sulfonamid										M
584.00 > 419.00	3.701	3.705	-0.004	1.003	62695	0.2157			859	M
D 36 13C2 PFDoA										
615.00 > 570.00	3.989	3.985	0.004	1.509	1751937	2.24		89.4	12130	
41 Perfluorotridecanoic acid										R
663.00 > 619.00	4.243	4.259	-0.016	1.064	6686	0.0102			1.9	R
663.00 > 169.00	4.174	4.259	-0.085	1.046	691		9.68(1.25-3.76)		10.7	

Data Usability Summary Report

Site: Hoosick Falls Landfill
Laboratory: Test America – Buffalo, Amherst, NY
SDG Nos.: 480-133189-1, 480-133590-1, 480-133608-1, 480-134080-1, 480-134613-1
Parameters: Perfluoroalkyl substances
Data Reviewer: Lisa Krowitz/TRC
Peer Reviewer: Elizabeth Denly/TRC
Date: June 5, 2018

Sample Reviewed and Evaluation Summary

SDG 480-133189-1
1 soil sample: HFL-MW-101B (48-50)

SDG 480-133590-1
3 soil samples: HFL-SS-103, HFL-SS-104, HFL-SS-105

SDG 480-133608-1
1 soil sample: HFL-MW-104 (9-11)

SDG 480-134080-1
1 soil sample: HFL-MW-105 (22-24)

SDG 480-134613-1
1 soil sample: HFL-MW-106 (19-21)

4 Equipment blanks: HFL-EB-101, HFL-EB-102, HFL-EB-103, HFL-EB-104
(Associated with soil boring samples)

4 Equipment blanks: HFL-EB-105, HFL-EB-106, HFL-EB-107, HFL-EB-108
(Associated with groundwater samples, reported in separate SDG)

The above-listed samples collected on March 27, 2018, and April 4, 11, 19, and 20, 2018 were submitted to Test America-Buffalo, Amherst, NY which were then subcontracted to Test America-Sacramento, CA for analysis. The samples were analyzed for the following parameter:

- Perfluoroalkyl substances (17 target analytes) based on EPA Method 537.1 (modified)

The data validation was performed in accordance with the following USEPA guidance, modified for the methodology utilized:

- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA-540-R-2017-002), January 2017
- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA-542-B-16-001), April 2016

The data were evaluated based on the following parameters:

	•	Overall Evaluation of Data and Potential Usability Issues
*	•	Data Completeness
*	•	Holding Times and Sample Preservation
*	•	Initial and Continuing Calibrations
	•	Blanks
*	•	Isotopically Labeled Surrogate Results
*	•	Laboratory Control Sample (LCS) Results
*	•	Matrix Spike and Matrix Spike Duplicate (MS/MSD) Results
NA	•	Field Duplicate Results
*	•	Internal Standard Results
	•	Sample Results and Reported Quantitation Limits (QLs)
*	•	Percent Solids
	•	Target Compound Identification
	•	Laboratory Methodology

*	-	All criteria were met.
NA	-	Field duplicates were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for project objectives. Qualifications applied to the data as a result of sampling error were not required. Qualifications applied to the data as a result of analytical error are discussed below.

- Potential uncertainty exists for select results that were below the lowest calibration standard and QL. These results were qualified as estimated (J) in the associated samples and can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for PFBA in samples HFL-MW-104 (9-11), HFL-SS-103, and HFL-SS-105 were qualified as nondetect (U) at the QLs due to method blank contamination. These results can be used for project objectives as nondetect results.

- The positive results for PFHxS in samples HFL-EB-101, HFL-EB-102, HFL-EB-103, HFL-EB-104, HFL-EB-105, HFL-EB-106, HFL-EB-107, and HFL-EB-108 were qualified as nondetects (U) at the QL due to method blank contamination. These results can be used for project objectives as nondetect results.

Data Completeness

The data package was found to be complete as received from the laboratory.

Holding Times and Sample Preservation

The cooler temperature was within the acceptance criteria upon sample receipt at the laboratory. All samples were prepared and analyzed within the method-specified holding time.

Initial and Continuing Calibrations

The initial calibration consisted of seven standards for each target compound. The percent relative standard deviations (%RSDs), percent differences/drifts (%Ds) and/or relative response factors (RRFs) for the target compounds were within the laboratory acceptance criteria in the initial and continuing calibrations (IC, CC).

Blanks

The following table summarizes the compounds that were detected in the laboratory method blanks and equipment blanks, the associated samples, and the validation actions.

Blank ID	Compound	Result	Validation Action
MB 320-216190	PFBA	0.0356 J µg/kg	No validation action was required in the associated sample since PFBA was nondetect.
Associated samples:	HFL-MW-101B (48-50)		
MB 320-217627	PFBA	0.0307 J µg/kg	The positive results for PFBA in samples HFL-SS-103, HFL-SS-105, and HFL-MW-104 (9-11) were qualified as nondetect (U) at the QL. No validation action was required in sample HFL-SS-104 since PFBA was > the QL and > 2x the blank concentration.
Associated samples:	HFL-SS-103, HFL-SS-104, HFL-SS-105, HFL-MW-104 (9-11)		
MB 320-221286	PFHxS	0.300 J ng/L	The positive results for PFHxS in samples HFL-EB-101, HFL-EB-102, HFL-EB-103, HFL-EB-104, HFL-EB-105, HFL-EB-106, HFL-EB-107, and HFL-EB-108 were qualified as nondetects (U) at the QL.
Associated samples:	HFL-EB-101, HFL-EB-102, HFL-EB-103, HFL-EB-104, HFL-EB-105, HFL-EB-106, HFL-EB-107, HFL-EB-108		
HFL-EB-104	PFTeA	0.38 J ng/L	No validation action was required since PFTeA was nondetect in the associated samples.
	PFOS	1.3 J ng/L	No validation action was required since PFOS was nondetect in the associated samples.
Associated samples:	HFL-MW-101B (48-50), HFL-MW-104 (9-11), HFL-MW-105 (22-24), HFL-MW-106 (19-21)		
HFL-EB-108	PFHxA	2.6 ng/L	No qualification since no associated samples in these data sets.
Associated samples:	Associated with groundwater samples, but none in these data sets		

The data were qualified based on the following:

- If the result was < the QL, the result was qualified as nondetect (U) at the QL
- If the result was ≥QL and <2x blank result, the result was qualified as nondetect (U) at the reported concentration
- If the result was ≥QL and ≥2x blank concentration, no qualification was required

Isotopically Labeled Surrogate Results

Isotopically labeled surrogates were spiked into the samples prior to extraction. The table below summarizes the percent recoveries (%Rs) for isotopically labeled surrogates that did not meet the laboratory limits of 25-150% and the validation actions.

Sample ID	IS %R	Validation Action
HFL-EB-103	151	The internal standard is used to monitor the integrity of the injection; since the analytes were nondetect in sample HFL-EB-103, no validation action was required.

LCS Results

The LCS %Rs and relative percent differences (RPDs) met the laboratory acceptance criteria.

MS/MSD Results

MS/MSD analyses were performed on samples HFL-MW-104 (9-11), HFL-MW-105 (22-24), and HFL-MW-106 (19-21). The %Rs and RPDs met the laboratory acceptance criteria.

Field Duplicate Results

There were no field duplicate pairs submitted with this sample set.

Internal Standard Results

The isotopically labeled internal standard 13C2-PFOA was added to each sample prior to injection to monitor for ion suppression/enhancement at the instrument level. The internal standard responses for all samples were within ±50% from the continuing calibration area, except for sample HFL-EB-102 which recovered at 151%. The laboratory re-analyzed the sample and the internal standard responses were similar to the initial analysis. The laboratory reported the results from the initial analysis. Since the internal standard recovery recovered high and the results were nondetect in sample HFL-EB-102 no qualification was applied.

Sample Results and Reported QLs

Sample calculations were spot-checked; there were no errors noted. Select results were below the lowest calibration standard level and QL. These results were qualified as estimated (J) by the laboratory. There were no dilutions performed on any samples.

The quantitation for PFOA, PFOS, and PFHxS included both linear and branched chain isomers.

Percent Solids

The percent solids for all samples were >30%.

Target Compound Identification

Chromatograms were reviewed to verify the target compound identifications. The laboratory manually integrated several peaks to ensure the inclusion of linear and branched isomers for PFOA, PFOS, and/or PFHxS and/or to ensure proper integration.

For PFOA, PFHpA, PFNA, PFDA, PFUnA, PFOS, PFBS, PFHxA, PFHxS, PFHpS, PFDS, PFTriA, PFDoA, and PFTeA, two precursor/product ion transitions were used for identification.

Laboratory Methodology

Test America based their PFAS methodology on EPA Method 537. Some of the specific differences between EPA Method 537 and Test America's PFAS method are as follows:

- The soil samples were extracted with a potassium hydroxide/methanol solution using an orbital shaker for 3 hours followed by sonication for 12 hours. The mixture was centrifuged and the solvent filtered prior to solid-phase extraction (SPE).
- Twelve (12) isotopically labeled surrogates were added to each sample prior to extraction.
- Quantitation was based on using the average relative response factor for all analytes.
- Ion fragment ratios for electrospray mass spectrometry were not determined.
- No analytical or technical grade standards were used for identification of the branched isomers.

QUALIFIED FORM 1s

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: 2018.04.10LLG_009.d

Analysis Method: 537 (modified) | Date Collected: 03/27/2018 15:00

Extraction Method: SHAKE | Date Extracted: 04/03/2018 20:58

Sample wt/vol: 5.04(g) | Date Analyzed: 04/10/2018 21:00

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 217411 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.26	0.033
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.26	0.037
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.26	0.051
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.26	0.029
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.26	0.088
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.26	0.046
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.26	0.038
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.26	0.041
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.26	0.055
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.26	0.047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.26	0.11
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.66	0.26
335-67-1	Perfluorooctanoic acid (PFOA)	0.30		0.26	0.11
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.26	0.10
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.26	0.071
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.26	0.067
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.26	0.047

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-103 Lab Sample ID: 480-133590-1

Matrix: Solid Lab File ID: 2018.04.17LLA_012.d

Analysis Method: 537 (modified) Date Collected: 04/04/2018 08:15

Extraction Method: SHAKE Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.04(g) Date Analyzed: 04/17/2018 07:30

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.1 GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.254 0.085	~~J B~~	0.25	0.035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.097
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.053
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.084	J	0.25	0.036
335-67-1	Perfluorooctanoic acid (PFOA)	2.9		0.25	0.11
375-95-1	Perfluorononanoic acid (PFNA)	0.072	J	0.25	0.045
335-76-2	Perfluorodecanoic acid (PFDA)	0.060	J	0.25	0.028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.077	J	0.25	0.045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.63	0.25
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-104 | Lab Sample ID: 480-133590-2

Matrix: Solid | Lab File ID: 2018.04.17LLA_013.d

Analysis Method: 537 (modified) | Date Collected: 04/04/2018 08:30

Extraction Method: SHAKE | Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.10(g) | Date Analyzed: 04/17/2018 07:38

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.4 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.27	B	0.25	0.035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.096
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.052
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.065	J	0.25	0.036
335-67-1	Perfluorooctanoic acid (PFOA)	0.56		0.25	0.11
375-95-1	Perfluorononanoic acid (PFNA)	0.14	J	0.25	0.045
335-76-2	Perfluorodecanoic acid (PFDA)	0.087	J	0.25	0.027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.13	J	0.25	0.045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.067
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.46	J	0.62	0.25
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-105 Lab Sample ID: 480-133590-3

Matrix: Solid Lab File ID: 2018.04.17LLA_014.d

Analysis Method: 537 (modified) Date Collected: 04/04/2018 08:45

Extraction Method: SHAKE Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.02(g) Date Analyzed: 04/17/2018 07:46

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 13.3 GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.23U ~~0.17~~	~~J B~~	0.23	0.032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.23	0.088
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.23	0.048
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.061	J	0.23	0.033
335-67-1	Perfluorooctanoic acid (PFOA)	0.53		0.23	0.099
375-95-1	Perfluorononanoic acid (PFNA)	0.12	J	0.23	0.041
335-76-2	Perfluorodecanoic acid (PFDA)	0.076	J	0.23	0.025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.089	J	0.23	0.041
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.23	0.077
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.23	0.059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.23	0.040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.1		0.57	0.23
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.23	0.045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.23	0.094

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133608-1

SDG No.:

Client Sample ID: HFL-MW-104 (9-11) | Lab Sample ID: 480-133608-1

Matrix: Solid | Lab File ID: 2018.04.17LLA_009.d

Analysis Method: 537 (modified) | Date Collected: 04/04/2018 14:00

Extraction Method: SHAKE | Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.01(g) | Date Analyzed: 04/17/2018 07:06

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 30.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.294 ~~0.055~~	~~J B~~	0.29	0.040
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.29	0.11
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.29	0.060
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.29	0.041
335-67-1	Perfluorooctanoic acid (PFOA)	0.46		0.29	0.12
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.29	0.051
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.29	0.031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.29	0.051
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.29	0.096
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.29	0.073
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.29	0.077
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.29	0.036
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.29	0.044
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.29	0.050
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.71	0.29
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.29	0.056
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.29	0.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134080-1

SDG No.:

Client Sample ID: HFL-MW-105(22-24) | Lab Sample ID: 480-134080-1

Matrix: Solid | Lab File ID: 2018.04.20LLB_026.d

Analysis Method: 537 (modified) | Date Collected: 04/11/2018 16:45

Extraction Method: SHAKE | Date Extracted: 04/18/2018 08:44

Sample wt/vol: 5.04(g) | Date Analyzed: 04/20/2018 19:53

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 20.7 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 219114 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.25	0.035
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.25	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.25	0.036
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.053
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.25	0.045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.63	0.25
335-67-1	Perfluorooctanoic acid (PFOA)	0.23	J	0.25	0.11
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.096
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.068
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.25	0.045

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-MW-106 (19-21) Lab Sample ID: 480-134613-1

Matrix: Solid Lab File ID: 2018.04.28LLB_046.d

Analysis Method: 537 (modified) Date Collected: 04/20/2018 11:10

Extraction Method: SHAKE Date Extracted: 04/26/2018 18:19

Sample wt/vol: 5.02(g) Date Analyzed: 04/29/2018 02:17

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 11.9 GPC Cleanup:(Y/N) N

Analysis Batch No.: 220511 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.028
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.23	0.032
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.23	0.044
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.23	0.025
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.23	0.076
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.23	0.040
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.23	0.033
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.035
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.23	0.047
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.23	0.041
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.23	0.093
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.57	0.23
335-67-1	Perfluorooctanoic acid (PFOA)	0.33		0.23	0.097
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.23	0.087
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.061
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.23	0.058
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.23	0.041

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-101 Lab Sample ID: 480-134613-2

Matrix: Water Lab File ID: 2018.05.04LLB_028.d

Analysis Method: 537 (modified) Date Collected: 04/19/2018 17:00

Extraction Method: 3535 Date Extracted: 05/03/2018 10:59

Sample wt/vol: 294.1(mL) Date Analyzed: 05/04/2018 22:07

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 ~~0.26~~	~~J B~~ ✓	1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-102 | Lab Sample ID: 480-134613-3

Matrix: Water | Lab File ID: 2018.05.04LLB_029.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 292.8(mL) | Date Analyzed: 05/04/2018 22:15

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.73
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 J	~~0.24 J B~~ ✓	1.7	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 480-134613-1
SDG No.:
Client Sample ID: HFL-EB-103
Lab Sample ID: 480-134613-4
Matrix: Water
Lab File ID: 2018.05.04LLB_030.d
Analysis Method: 537 (modified)
Date Collected: 04/19/2018 17:00
Extraction Method: 3535
Date Extracted: 05/03/2018 10:59
Sample wt/vol: 294.3(mL)
Date Analyzed: 05/04/2018 22:23
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 221663
Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.93
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 ~~0.24~~	~~J B~~ ✓	1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-104 | Lab Sample ID: 480-134613-5

Matrix: Water | Lab File ID: 2018.05.04LLB_031.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 293.5(mL) | Date Analyzed: 05/04/2018 22:31

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	0.38	J	1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 U ~~0.25~~ ~~J B~~ ✓		1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	1.3	J	1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-105 | Lab Sample ID: 480-134613-6

Matrix: Water | Lab File ID: 2018.05.04LLB_032.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 293.6(mL) | Date Analyzed: 05/04/2018 22:39

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.49
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.21
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.72
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.26
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.94
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7u ~~0.24~~	~~J B~~ ✓	1.7	0.14
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.46
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-106 | Lab Sample ID: 480-134613-7

Matrix: Water | Lab File ID: 2018.05.04LLB_033.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 285(mL) | Date Analyzed: 05/04/2018 22:46

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.8	0.31
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.8	0.43
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.8	0.51
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.8	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.8	0.75
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.8	0.24
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.8	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.8	0.96
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.8	0.48
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.8	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.8	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.8	0.18
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 ~~0.22~~	~~J B~~ ✓	1.8	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.8	0.17
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.8	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.8	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.8	0.31

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-107 | Lab Sample ID: 480-134613-8

Matrix: Water | Lab File ID: 2018.05.04LLB_034.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 289.8(mL) | Date Analyzed: 05/04/2018 22:54

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		1.7	0.50
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.73
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.47
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.7 J	~~0.19~~ ~~J B~~ ✓	1.7	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

FORM 1
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-134613-1

SDG No.:

Client Sample ID: HFL-EB-108 | Lab Sample ID: 480-134613-9

Matrix: Water | Lab File ID: 2018.05.04LLB_035.d

Analysis Method: 537 (modified) | Date Collected: 04/19/2018 17:00

Extraction Method: 3535 | Date Extracted: 05/03/2018 10:59

Sample wt/vol: 289(mL) | Date Analyzed: 05/04/2018 23:02

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 | Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	ND		1.7	0.30
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		1.7	0.42
307-24-4	Perfluorohexanoic acid (PFHxA)	2.6		1.7	0.50
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		1.7	0.22
335-67-1	Perfluorooctanoic acid (PFOA)	ND		1.7	0.74
375-95-1	Perfluorononanoic acid (PFNA)	ND		1.7	0.23
335-76-2	Perfluorodecanoic acid (PFDA)	ND		1.7	0.27
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		1.7	0.95
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		1.7	0.48
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		1.7	1.1
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		1.7	0.25
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		1.7	0.17
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	1.74 ~~0.24~~	~~J B~~ ✓	1.7	0.15
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		1.7	0.16
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		1.7	0.47
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		1.7	0.28
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		1.7	0.30

QC NONCONFORMANCE DOCUMENTATION

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-133189-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-216190/1-A

Matrix: Solid Lab File ID: 2018.04.10LLG_004.d

Analysis Method: 537 (modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 04/03/2018 20:58

Sample wt/vol: 5.00(g) Date Analyzed: 04/10/2018 20:21

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 217411 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025
375-22-4	Perfluorobutanoic acid (PFBA)	0.0356	J	0.20	0.028
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.20	0.039
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.20	0.022
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.20	0.035
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.20	0.036
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.20	0.082
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.20	0.086
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.20	0.077
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.20	0.051
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-133590-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-217627/1-A

Matrix: Solid Lab File ID: 2018.04.17LLA_007.d

Analysis Method: 537 (modified) Date Collected:

Extraction Method: SHAKE Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.00(g) Date Analyzed: 04/17/2018 06:51

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0307	J	0.20	0.028
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.20	0.077
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.20	0.086
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.20	0.036
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.20	0.022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.20	0.051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.20	0.035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.20	0.039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.20	0.082

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-134613-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-221286/1-A

Matrix: Water Lab File ID: 2018.05.04LLB_026.d

Analysis Method: 537 (modified) Date Collected:

Extraction Method: 3535 Date Extracted: 05/03/2018 10:59

Sample wt/vol: 250.00(mL) Date Analyzed: 05/04/2018 21:52

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: GPC Cleanup:(Y/N) N

Analysis Batch No.: 221663 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.20
375-22-4	Perfluorobutanoic acid (PFBA)	ND		2.0	0.35
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		2.0	0.32
335-76-2	Perfluorodecanoic acid (PFDA)	ND		2.0	0.31
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		2.0	0.55
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		2.0	0.19
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.25
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	0.300	J	2.0	0.17
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		2.0	0.58
375-95-1	Perfluorononanoic acid (PFNA)	ND		2.0	0.27
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		2.0	0.35
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		2.0	0.54
335-67-1	Perfluorooctanoic acid (PFOA)	ND		2.0	0.85
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		2.0	0.49
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		2.0	0.29
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		2.0	1.3
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		2.0	1.1

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 480-134613-1

SDG No.:

Sample No.: CCV 320-221654/3 Date Analyzed: 05/04/2018 17:33

Instrument ID: A8_N GC Column: GeminiC18 3x100 ID: 3(mm)

Lab File ID (Standard): 2018.05.04LLAA_025. Heated Purge: (Y/N) N

Calibration ID: 38527

		13PFOA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
12/24 HOUR STD		4134406	2.71				
UPPER LIMIT		6201609	2.91				
LOWER LIMIT		2067203	2.51				
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 320-221654/1		4252677	2.70				
CCVL 320-221654/2		4422844	2.71				
CCV 320-221663/1		4366419	2.71				
MB 320-221286/1-A		4334777	2.70				
LCS 320-221286/2-A		4174292	2.72				
480-134613-2	HFL-EB-101	4509194	2.70				
480-134613-3	HFL-EB-102	6233695*	2.71				
480-134613-4	HFL-EB-103	4440957	2.71				
480-134613-5	HFL-EB-104	4649171	2.71				
480-134613-6	HFL-EB-105	4212476	2.71				
480-134613-7	HFL-EB-106	4246678	2.71				
480-134613-8	HFL-EB-107	4325433	2.71				
480-134613-9	HFL-EB-108	4340063	2.71				
CCV 320-221663/12		4090175	2.71				
CCV 320-221663/20		4386587	2.71				

13PFOA = 13C2-PFOA

Area Limit = 50%-150% of internal standard area
RT Limit = ± 0.2 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII 537 (MODIFIED)

Data Usability Summary Report

Site: Hoosick Falls Landfill
Laboratory: Test America – Buffalo, Amherst, NY
SDG Nos.: 480-133189-1, 480-133590-1, 480-133608-1, 134080-1
Parameters: Perfluoroalkyl substances
Data Reviewer: Lisa Krowitz/TRC
Peer Reviewer: Elizabeth Denly/TRC
Date: May 4, 2018

Sample Reviewed and Evaluation Summary

SDG 480-133189-1

1 soil sample HFL-MW-101B (48-50)

SDG 480-133590-1

3 soil samples HFL-SS-104, HFL-SS-105, HFL-SS-106

SDG 480-133608-1

1 soil sample HFL-MW-104 (9-11)

SDG 480-134080-1

1 soil sample HFL-MW-105 (22-24)

The above-listed soil samples collected on March 27, 2018, and April 4 and 11, 2018 were submitted to Test America-Buffalo, Amherst, NY which were then subcontracted to Test America-Sacramento, CA for analysis. The samples were analyzed for the following parameter:

- Perfluoroalkyl substances (17 target analytes) based on EPA Method 537.1 (modified)

The data validation was performed in accordance with the following USEPA guidance, modified for the methodology utilized:

- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (EPA-540-R-2017-002), January 2017
- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (EPA-542-B-16-001), April 2016

The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness

*	•	Holding Times and Sample Preservation
*	•	Initial and Continuing Calibrations
	•	Blanks
*	•	Isotopically Labeled Surrogate Results
*	•	Laboratory Control Sample (LCS) Results
*	•	Matrix Spike and Matrix Spike Duplicate (MS/MSD) Results
NA	•	Field Duplicate Results
*	•	Internal Standard Results
	•	Sample Results and Reported Quantitation Limits (QLs)
*	•	Percent Solids
	•	Target Compound Identification
	•	Laboratory Methodology

* - All criteria were met.
NA - Field duplicates were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for project objectives. Qualifications applied to the data as a result of sampling error were not required. Qualifications applied to the data as a result of analytical error are discussed below.

- Potential uncertainty exists for select results that were below the lowest calibration standard and QL. These results were qualified as estimated (J) in the associated samples and can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for PFBA in samples HFL-MW-104 (9-11), HFL-SS-104, and HFL-SS-105 were qualified as nondetect (U) at the QLs due to method blank contamination. These results can be used for project objectives as nondetect results.

Data Completeness

The data package was found to be complete as received from the laboratory.

Holding Times and Sample Preservation

The cooler temperature was within the acceptance criteria upon sample receipt at the laboratory. All samples were prepared and analyzed within the method-specified holding time.

Initial and Continuing Calibrations

The initial calibration consisted of seven standards for each target compound. The percent relative standard deviations (%RSDs), percent differences/drifts (%Ds) and/or relative response factors (RRFs) for the target compounds were within the laboratory acceptance criteria in the initial and continuing calibrations (IC, CC).

Blanks

The following table summarizes the compounds that were detected in the laboratory method blanks, the associated samples, and the validation actions.

Blank ID	Compound	Result	Validation Action
MB 320-216190	PFBA	0.0356 J µg/kg	No validation action was required in the associated sample since PFBA was nondetect.
Associated samples: HFL-MW-101B (48-50)			
MB 320-217627	PFBA	0.0307 J µg/kg	The positive results for PFBA in samples HFL-SS-104, HFL-SS-105, and HFL-MW-104 (9-11) were qualified as nondetect (U) at the QL. No validation action was required in sample HFL-SS-106 since PFBA was > the QL and > 2x the blank concentration.
Associated samples: HFL-SS-104, HFL-SS-106, HFL-SS-105, HFL-MW-104 (9-11)			

The data were qualified based on the following:

- If the result was < the QL, the result was qualified as nondetect (U) at the QL
- If the result was ≥QL and <2x blank result, the result was qualified as nondetect (U) at the reported concentration
- If the result was ≥QL and ≥2x blank concentration, no qualification was required

Isotopically Labeled Surrogate Results

Isotopically labeled surrogates were spiked into the samples prior to extraction. The percent recoveries (%Rs) for all isotopically labeled surrogates in all samples met the laboratory limits of 25-150%.

LCS Results

The LCS %Rs and relative percent differences (RPDs) met the laboratory acceptance criteria.

MS/MSD Results

MS/MSD analyses were performed on samples HFL-MW-104 (9-11) and HFL-MW-105 (22-24). The %Rs and RPDs met the laboratory acceptance criteria.

Field Duplicate Results

There were no field duplicate pairs submitted with this sample set.

Internal Standard Results

The isotopically labeled internal standard 13C2-PFOA was added to each sample prior to injection to monitor for ion suppression/enhancement at the instrument level. The internal standard responses for all samples were within ±50% from the continuing calibration area.

Sample Results and Reported QLs

Sample calculations were spot-checked; there were no errors noted. Select results were below the lowest calibration standard level and QL. These results were qualified as estimated (J) by the laboratory. There were no dilutions performed on any samples.

The quantitation for PFOA, PFOS, and PFHxS included both linear and branched chain isomers.

Percent Solids

The percent solids for all samples were >30%.

Target Compound Identification

Chromatograms were reviewed to verify the target compound identifications. The laboratory manually integrated several peaks to ensure the inclusion of linear and branched isomers for PFOA, PFOS, and/or PFHxS and/or to ensure proper integration.

For PFOA, PFHpA, PFNA, PFDA, PFUnA, PFOS, PFBS, PFHxA, PFHxS, PFHpS, PFDS, PFTriA, and PFTeA, two precursor/product ion transitions were used for identification.

Laboratory Methodology

Test America based their PFAS methodology on EPA Method 537. Some of the specific differences between EPA Method 537 and Test America's PFAS method are as follows:

- The soil samples were extracted with a potassium hydroxide/methanol solution using an orbital shaker for 3 hours followed by sonication for 12 hours. The mixture was centrifuged and the solvent filtered prior to solid-phase extraction (SPE).
- Twelve (12) isotopically labeled surrogates were added to each sample prior to extraction.
- Quantitation was based on using the average relative response factor for all analytes.
- Ion fragment ratios for electrospray mass spectrometry were not determined.
- No analytical or technical grade standards were used for identification of the branched isomers.

QUALIFIED FORM 1s

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: 2018.04.10LLG_009.d

Analysis Method: 537 (modified) | Date Collected: 03/27/2018 15:00

Extraction Method: SHAKE | Date Extracted: 04/03/2018 20:58

Sample wt/vol: 5.04(g) | Date Analyzed: 04/10/2018 21:00

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 217411 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.26	0.033
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.26	0.037
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.26	0.051
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.26	0.029
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.26	0.088
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.26	0.046
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.26	0.038
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.26	0.041
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.26	0.055
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.26	0.047
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.26	0.11
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.66	0.26
335-67-1	Perfluorooctanoic acid (PFOA)	0.30		0.26	0.11
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.26	0.10
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.26	0.071
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.26	0.067
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.26	0.047

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-104 | Lab Sample ID: 480-133590-1

Matrix: Solid | Lab File ID: 2018.04.17LLA_012.d

Analysis Method: 537 (modified) | Date Collected: 04/04/2018 08:15

Extraction Method: SHAKE | Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.04(g) | Date Analyzed: 04/17/2018 07:30

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.1 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.254 ~~0.085~~	~~J B~~	0.25	0.035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.097
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.053
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.084	J	0.25	0.036
335-67-1	Perfluorooctanoic acid (PFOA)	2.9		0.25	0.11
375-95-1	Perfluorononanoic acid (PFNA)	0.072	J	0.25	0.045
335-76-2	Perfluorodecanoic acid (PFDA)	0.060	J	0.25	0.028
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.077	J	0.25	0.045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.068
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.63	0.25
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-106 Lab Sample ID: 480-133590-2

Matrix: Solid Lab File ID: 2018.04.17LLA_013.d

Analysis Method: 537 (modified) Date Collected: 04/04/2018 08:30

Extraction Method: SHAKE Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.10(g) Date Analyzed: 04/17/2018 07:38

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 21.4 GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.27	J	0.25	0.035
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.096
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.052
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.065	J	0.25	0.036
335-67-1	Perfluorooctanoic acid (PFOA)	0.56		0.25	0.11
375-95-1	Perfluorononanoic acid (PFNA)	0.14	J	0.25	0.045
335-76-2	Perfluorodecanoic acid (PFDA)	0.087	J	0.25	0.027
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.13	J	0.25	0.045
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.067
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.46	J	0.62	0.25
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133590-1

SDG No.:

Client Sample ID: HFL-SS-105 | Lab Sample ID: 480-133590-3

Matrix: Solid | Lab File ID: 2018.04.17LLA_014.d

Analysis Method: 537 (modified) | Date Collected: 04/04/2018 08:45

Extraction Method: SHAKE | Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.02(g) | Date Analyzed: 04/17/2018 07:46

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 13.3 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.23 U ~~0.17~~ ~~J B~~ ✓		0.23	0.032
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.23	0.088
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.23	0.048
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.061	J	0.23	0.033
335-67-1	Perfluorooctanoic acid (PFOA)	0.53		0.23	0.099
375-95-1	Perfluorononanoic acid (PFNA)	0.12	J	0.23	0.041
335-76-2	Perfluorodecanoic acid (PFDA)	0.076	J	0.23	0.025
2058-94-8	Perfluoroundecanoic acid (PFUnA)	0.089	J	0.23	0.041
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.23	0.077
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.23	0.059
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.23	0.062
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.23	0.029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.23	0.036
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.23	0.040
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	2.1		0.57	0.23
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.23	0.045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.23	0.094

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133608-1

SDG No.:

Client Sample ID: HFL-MW-104 (9-11) | Lab Sample ID: 480-133608-1

Matrix: Solid | Lab File ID: 2018.04.17LLA_009.d

Analysis Method: 537 (modified) | Date Collected: 04/04/2018 14:00

Extraction Method: SHAKE | Date Extracted: 04/12/2018 10:32

Sample wt/vol: 5.01(g) | Date Analyzed: 04/17/2018 07:06

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 30.2 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 218358 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.29 U ~~0.055~~ ~~J B~~ ✓		0.29	0.040
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.29	0.11
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.29	0.060
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.29	0.041
335-67-1	Perfluorooctanoic acid (PFOA)	0.46		0.29	0.12
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.29	0.051
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.29	0.031
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.29	0.051
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.29	0.096
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.29	0.073
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.29	0.077
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.29	0.036
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.29	0.044
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.29	0.050
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.71	0.29
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.29	0.056
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.29	0.12

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 480-134080-1

SDG No.:

Client Sample ID: HFL-MW-105(22-24) Lab Sample ID: 480-134080-1

Matrix: Solid Lab File ID: 2018.04.20LLB_026.d

Analysis Method: 537 (modified) Date Collected: 04/11/2018 16:45

Extraction Method: SHAKE Date Extracted: 04/18/2018 08:44

Sample wt/vol: 5.04(g) Date Analyzed: 04/20/2018 19:53

Con. Extract Vol.: 10.00(mL) Dilution Factor: 1

Injection Volume: 2(uL) GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: 20.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 219114 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.25	0.031
375-22-4	Perfluorobutanoic acid (PFBA)	ND		0.25	0.035
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.25	0.049
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.25	0.028
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.25	0.084
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.25	0.044
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.25	0.036
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.25	0.039
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.25	0.053
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.25	0.045
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.25	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.63	0.25
335-67-1	Perfluorooctanoic acid (PFOA)	0.23	J	0.25	0.11
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.25	0.096
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.25	0.068
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.25	0.064
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.25	0.045

QC NONCONFORMANCE DOCUMENTATION

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento | Job No.: 480-133189-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 320-216190/1-A

Matrix: Solid | Lab File ID: 2018.04.10LLG_004.d

Analysis Method: 537 (modified) | Date Collected:

Extraction Method: SHAKE | Date Extracted: 04/03/2018 20:58

Sample wt/vol: 5.00(g) | Date Analyzed: 04/10/2018 20:21

Con. Extract Vol.: 10.00(mL) | Dilution Factor: 1

Injection Volume: 2(uL) | GC Column: GeminiC18 3x100 ID: 3(mm)

% Moisture: | GPC Cleanup:(Y/N) N

Analysis Batch No.: 217411 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025
375-22-4	Perfluorobutanoic acid (PFBA)	0.0356	J	0.20	0.028
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.20	0.039
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.20	0.022
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.20	0.035
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.20	0.036
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.20	0.082
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.20	0.086
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.20	0.077
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.20	0.051
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento
Job No.: 480-133590-1
SDG No.:
Client Sample ID:
Lab Sample ID: MB 320-217627/1-A
Matrix: Solid
Lab File ID: 2018.04.17LLA_007.d
Analysis Method: 537 (modified)
Date Collected:
Extraction Method: SHAKE
Date Extracted: 04/12/2018 10:32
Sample wt/vol: 5.00(g)
Date Analyzed: 04/17/2018 06:51
Con. Extract Vol.: 10.00(mL)
Dilution Factor: 1
Injection Volume: 2(uL)
GC Column: GeminiC18 3x100 ID: 3(mm)
% Moisture:
GPC Cleanup:(Y/N) N
Analysis Batch No.: 218358
Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
375-22-4	Perfluorobutanoic acid (PFBA)	0.0307	J	0.20	0.028
2706-90-3	Perfluoropentanoic acid (PFPeA)	ND		0.20	0.077
307-24-4	Perfluorohexanoic acid (PFHxA)	ND		0.20	0.042
375-85-9	Perfluoroheptanoic acid (PFHpA)	ND		0.20	0.029
335-67-1	Perfluorooctanoic acid (PFOA)	ND		0.20	0.086
375-95-1	Perfluorononanoic acid (PFNA)	ND		0.20	0.036
335-76-2	Perfluorodecanoic acid (PFDA)	ND		0.20	0.022
2058-94-8	Perfluoroundecanoic acid (PFUnA)	ND		0.20	0.036
307-55-1	Perfluorododecanoic acid (PFDoA)	ND		0.20	0.067
72629-94-8	Perfluorotridecanoic Acid (PFTriA)	ND		0.20	0.051
376-06-7	Perfluorotetradecanoic acid (PFTeA)	ND		0.20	0.054
375-73-5	Perfluorobutanesulfonic acid (PFBS)	ND		0.20	0.025
355-46-4	Perfluorohexanesulfonic acid (PFHxS)	ND		0.20	0.031
375-92-8	Perfluoroheptanesulfonic Acid (PFHpS)	ND		0.20	0.035
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	ND		0.50	0.20
335-77-3	Perfluorodecanesulfonic acid (PFDS)	ND		0.20	0.039
754-91-6	Perfluorooctane Sulfonamide (FOSA)	ND		0.20	0.082

Data Usability Summary Report

Site: Hoosick Falls Landfill
Laboratory: Test America - Buffalo, Amherst, NY
SDG No.: 480-133189-1
Parameters: Volatile Organic Compounds (VOCs), Semivolatile Organic Compounds (SVOCs), Pesticides, Polychlorinated Biphenyl (PCB) Aroclors
Data Reviewers: Samir A. Naguib and Kristen Morin/TRC
Peer Reviewer: Elizabeth Denly/TRC
Date: April 17, 2018
Revision Date: July 24, 2018

Samples Reviewed and Evaluation Summary

1 soil sample: HFL-MW-101B (48-50)

The above-listed soil sample was collected on March 27, 2018 and was analyzed for the following parameters:

- VOCs by SW-846 Methods 5035A/8260C
- SVOCs by SW-846 Methods 3550C/8270D
- Pesticides by SW-846 Methods 3550C/3620C/8081B
- PCB Aroclors by SW-846 Methods 3550C/8082A

The data validation was performed in accordance with the following USEPA guidance, modified for the SW-846 methodologies utilized:

- USEPA National Functional Guidelines for Organic Superfund Methods Data Review, January 2017

The data were evaluated based on the following parameters:

	• Overall Evaluation of Data and Potential Usability Issues
*	• Data Completeness
*	• Holding Times and Sample Preservation
*	• Gas Chromatography/Electron Capture Detector (GC/ECD) Instrument Performance Checks
*	• Gas Chromatography/Mass Spectrometry (GC/MS) Tunes
	• Initial and Continuing Calibrations
*	• Blanks
	• Surrogate Recoveries
*	• Internal Standards
*	• Laboratory Control Sample (LCS)/ LCS Duplicate (LCSD) Results
NA	• Matrix Spike and Matrix Spike Duplicate (MS/MSD) Results
NA	• Field Duplicate Results
*	• Percent Solids

- Sample Results and Reported Quantitation Limits
* • Target Compound Identification

* - All criteria were met.
NA - MS/MSDs and field duplicates were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for project objectives with the exception of 1,4-dioxane (VOC) in sample HFL-MW-101B (48-50) due to low VOC calibration response factors. Qualifications applied to the data as a result of sampling error were not required. Qualifications applied to the data as a result of analytical error are discussed below.

- The nondetect VOC result for 1,4-dioxane in sample HFL-MW-101B (48-50) was rejected (R) due to low relative response factors in VOC initial and continuing calibrations. This result is not usable for project objectives. Since the result for 1,4-dioxane from the SVOC analysis of this sample was usable, there was no adverse impact on the data usability.

- Potential uncertainty exists for select VOC results that were below the lowest calibration standard and quantitation limit (QL). These results were qualified as estimated (J) in the associated samples. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The nondetect results for dichlorodifluoromethane, chloromethane, vinyl chloride, methyl acetate, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,2-dibromo-3-chloropropane in sample HFL-MW-101B (48-50) were qualified as estimated (UJ) due to continuing calibration nonconformances. These results can be used for project objectives as nondetects with estimated QLs, which may have a minor impact on the data usability.

- The nondetect results for PCB-1221, PCB-1232, and PCB-1242 in sample HFL-MW-101B (48-50) were qualified as estimated (UJ) due to continuing calibration nonconformances. These results can be used for project objectives as nondetects with estimated QLs, which may have a minor impact on the data usability.

Data Completeness

The data package was a complete Level IV data deliverable package.

The data package was revised on July 17, 2018 to add 1,4-dioxane to the SVOC analysis.

Holding Times and Sample Preservation

All holding times and sample preservation method criteria were met for the VOC, SVOC, pesticide and PCB analyses.

GC/ECD Instrument Performance Checks

All criteria were met for the DDT/endrin breakdown checks associated with the pesticide analyses.

GC/MS Tunes

All criteria were met in the VOC and SVOC analyses.

Initial and Continuing Calibrations

VOCs

All percent relative standard deviations (%RSDs) and correlation coefficients were within the acceptance criteria in the initial calibrations (ICs) associated with the sample in this data set.

The following table summarizes the RRF that did not meet the method acceptance criteria in the IC associated with the sample in this data set.

IC	Compound	RRF	Validation Actions
HP5973F 03/16/18	1,4-Dioxane	0.0076	The nondetect result for 1,4-dioxane was rejected (R) in the associated sample. The result for 1,4-dioxane from the SVOC analysis should be used for project objectives.
Associated sample: HFL-MW-101B (48-50)			

The following table summarizes the percent differences or percent drifts (%Ds) and RRFs that did not meet the method acceptance criteria in the continuing calibration (CC) standards associated with the sample in this data set.

CC	Compound	RRF	%D	Validation Actions
HP5973F 03/28/18 10:18	Dichlorodifluoromethane	-	36.2	The nondetect results for the affected VOCs in sample HFL-MW-101B (48-50) were qualified as estimated (UJ).
	Chloromethane	-	20.4	
	Vinyl chloride	-	20.4	
	Methyl acetate	-	22.6	
	2-Butanone	-	20.2	
	4-Methyl-2-pentanone	-	21.7	
	2-Hexanone	-	21.1	
	1,2-Dibromo-3-Chloropropane	-	22.0	
	1,4-Dioxane	0.0096	26.3	The nondetect result for 1,4-dioxane was rejected (R) in the associated sample. The result for 1,4-dioxane from the SVOC analysis should be used for project objectives.
Associated sample: HFL-MW-101B (48-50)				- Criteria met

SVOCs

All %RSDs and RRFs were within the acceptance criteria in the ICs associated with the sample in this data set. The %Ds and RRFs were within the acceptance criteria in the associated continuing calibration standard.

The following table summarizes the correlation coefficient (r^2) that did not meet the method acceptance criteria in the IC associated with the sample in this data set.

IC	Compound	r^2	Validation Actions
HP5973X 03/27/18	Pentachlorophenol	0.9700	No qualification was required in the associated sample since pentachlorophenol was nondetect.
Associated sample: HFL-MW-101B (48-50)			

Pesticides

All r^2 were within the method acceptance criteria in the initial calibrations associated with the sample in this data set. The following table summarizes the %Ds that did not meet the method acceptance criteria in the continuing calibration standards associated with the sample in this data set.

CCV	Instrument	Compound	%D		Validation Actions
			Col RTX-CLP-I	Col RTX-CLP-II	
03/30/18 @ 10:40	HP6890-25	Toxaphene peak 3	26.8	-	No qualification was required since the average %D on column RTX-CLP I was within the acceptance criteria and the %D on column RTX-CLP II was acceptable.
Associated sample: HFL-MW-101B (48-50)			- Criteria met		

PCBs

All %RSDs and r^2 were within the method acceptance criteria in the initial calibrations associated with the sample in this data set. The following table summarizes the %Ds that did not meet the method acceptance criteria in the continuing calibration standards associated with the sample in this data set.

CCV	Instrument	Compound	%D		Validation Actions
			Col ZB-5	Col ZB-35	
03/30/18 @ 08:26	HP5890-12	PCB-1016 Peak 1	-	44.2	No qualification required; results were reported from column ZB-5 which had acceptable average %D.
		PCB-1016 Peak 2	39.1	41.1	
		PCB-1016 Peak 3	-	45.7	
		PCB-1016 Peak 4	26.6	30.3	
		PCB-1016 Peak 5	-	35.6	
		PCB-1260 Peak 1	-	54.4	No qualification was required since the average %D was within the acceptance criteria on both columns.
		PCB-1260 Peak 2	35.2	-	

CCV	Instrument	Compound	%D		Validation Actions
			Col ZB-5	Col ZB-35	
03/30/18 @ 08:49	HP5890-12	PCB-1221 Peak 1	36.5	37.4	The nondetect result for PCB-1221 in sample HFL-MW-101B (48-50) was qualified as estimated (UJ) since average %Ds on both columns were outside the acceptance criteria.
		PCB-1221 Peak 2	-20.8	32.1	
		PCB-1221 Peak 3	-	59.7	
		PCB-1254 Peak 1	29.3	23.8	No qualification required; results were reported from column ZB-5 which had acceptable average %D.
		PCB-1254 Peak 2	-	31.0	
		PCB-1254 Peak 3	-	29.0	
		PCB-1254 Peak 4	-	38.9	
		PCB-1254 Peak 5	-	35.9	
03/30/18 @ 09:05		PCB-1232 Peak 1	-	41.3	The nondetect result for PCB-1232 in sample HFL-MW-101B (48-50) was qualified as estimated (UJ) since average %Ds on both columns were outside the acceptance criteria.
		PCB-1232 Peak 2	-	41.8	
		PCB-1232 Peak 3	35.4	25.1	
		PCB-1232 Peak 4	-	34.5	
		PCB-1232 Peak 5	27.2	25.6	
03/30/18 @ 09:20		PCB-1242 Peak 1	-	35.4	The nondetect result for PCB-1242 in sample HFL-MW-101B (48-50) was qualified as estimated (UJ) since average %Ds on both columns were outside the acceptance criteria.
		PCB-1242 Peak 2	36.8	40.9	
		PCB-1242 Peak 3	23.1	49.1	
		PCB-1242 Peak 4	26.7	40.4	
		PCB-1242 Peak 5	-	51.6	
03/30/18 @ 09:35		PCB-1248 Peak 1	43.9	44.8	No qualification was required since the average %D was within the acceptance criteria on ZB-35 column.
		PCB-1248 Peak 3	-42.3	-	
Associated sample: HFL-MW-101B (48-50)			- Criteria met		

Blanks

All method blanks for VOCs, SVOCs, pesticides and PCBs were free of contamination.

Surrogate Recoveries

All criteria were met in the VOC, SVOC, and pesticide analyses.

PCBs

The following table lists the surrogate percent recoveries (%Rs) that were outside of the acceptance limits and the resulting validation actions.

Sample ID	Surrogate	%R ZB-35	%R ZB-5	%R QC Limits	Validation Actions
HFL-MW-101B (48-50)	Tetrachloro-m-xylene	176	164	60-154	No qualification of the data was required due to high %Rs since PCBs were not detected in sample HFL-MW-101B (48-50).
	Decachlorobiphenyl	204	207	65-174	

Internal Standards

All criteria were met in the VOC, SVOC, pesticide and PCB analyses.

LCS/LCSD Results

The LCS/LCSD %Rs and/or relative percent differences (RPDs) were within the laboratory acceptance criteria in the VOC, SVOC pesticide, and PCB analyses.

MS/MSD Results

MS/MSD analyses were not performed with VOC, SVOC, pesticide, and PCB analyses.

Field Duplicate Results

No field duplicate pairs were submitted with this sample set.

Percent Solids

The percent solids for the soil sample in this data set was >30%; thus, no qualification was required.

Sample Results and Reported Quantitation Limits

One VOC result was reported below the lowest calibration standard level and QL. This result was qualified as estimated (J) in the associated sample by the laboratory.

1,4-Dioxane was reported by both VOC and SVOC methods; the nondetect result for 1,4-dioxane in the SVOC analysis of the sample in this SDG should be used for decision-making purposes since the nondetect VOC result was rejected.

Sample calculations for all parameters were spot-checked; there were no errors noted. There were no dilutions performed on the sample in this data set.

For PCB analyses, the laboratory used the medium/high concentration extraction procedure and thus used a 2-gram rather than a 30-gram aliquot which is typically used for a low concentration extraction procedure. The QLs were elevated accordingly, but there was no impact on meeting the project action limits.

Target Compound Identification

All criteria were met for the VOC, SVOC, pesticides, and PCB analyses.

QUALIFIED FORM Is

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: F1326.D

Analysis Method: 8260C | Date Collected: 03/27/2018 15:00

Sample wt/vol: 7.594(g) | Date Analyzed: 03/28/2018 12:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (30) VOA ID: 0.25(mm)

% Moisture: 24.5 | Level: (low/med) Low

Analysis Batch No.: 406082 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
71-55-6	1,1,1-Trichloroethane	ND		4.4	0.32
79-34-5	1,1,2,2-Tetrachloroethane	ND		4.4	0.71
76-13-1	1,1,2-Trichloro-1,2,2-trifluoroethane	ND		4.4	0.99
79-00-5	1,1,2-Trichloroethane	ND		4.4	0.57
75-34-3	1,1-Dichloroethane	ND		4.4	0.53
75-35-4	1,1-Dichloroethene	ND		4.4	0.53
120-82-1	1,2,4-Trichlorobenzene	ND		4.4	0.27
96-12-8	1,2-Dibromo-3-Chloropropane	ND	UJ ✓	4.4	2.2
106-93-4	1,2-Dibromoethane	ND		4.4	0.56
95-50-1	1,2-Dichlorobenzene	ND		4.4	0.34
107-06-2	1,2-Dichloroethane	ND		4.4	0.22
78-87-5	1,2-Dichloropropane	ND		4.4	2.2
541-73-1	1,3-Dichlorobenzene	ND		4.4	0.22
106-46-7	1,4-Dichlorobenzene	ND		4.4	0.61
78-93-3	2-Butanone (MEK)	ND	UJ ✓	22	1.6
591-78-6	2-Hexanone	ND	UJ ✓	22	2.2
108-10-1	4-Methyl-2-pentanone (MIBK)	ND	UJ ✓	22	1.4
67-64-1	Acetone	5.0	J	22	3.7
71-43-2	Benzene	ND		4.4	0.21
75-27-4	Bromodichloromethane	ND		4.4	0.58
75-25-2	Bromoform	ND		4.4	2.2
74-83-9	Bromomethane	ND		4.4	0.39
75-15-0	Carbon disulfide	ND		4.4	2.2
56-23-5	Carbon tetrachloride	ND		4.4	0.42
108-90-7	Chlorobenzene	ND		4.4	0.58
75-00-3	Chloroethane	ND		4.4	0.99
67-66-3	Chloroform	ND		4.4	0.27
74-87-3	Chloromethane	ND	UJ ✓	4.4	0.26
156-59-2	cis-1,2-Dichloroethene	ND		4.4	0.56
10061-01-5	cis-1,3-Dichloropropene	ND		4.4	0.63
110-82-7	Cyclohexane	ND		4.4	0.61
124-48-1	Dibromochloromethane	ND		4.4	0.56
75-71-8	Dichlorodifluoromethane	ND	UJ ✓	4.4	0.36
100-41-4	Ethylbenzene	ND		4.4	0.30
98-82-8	Isopropylbenzene	ND		4.4	0.66

FORM I
GC/MS VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: F1326.D

Analysis Method: 8260C | Date Collected: 03/27/2018 15:00

Sample wt/vol: 7.594(g) | Date Analyzed: 03/28/2018 12:48

Soil Aliquot Vol: | Dilution Factor: 1

Soil Extract Vol.: | GC Column: ZB-624 (30) VOA ID: 0.25(mm)

% Moisture: 24.5 | Level: (low/med) Low

Analysis Batch No.: 406082 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
79-20-9	Methyl acetate	ND	UJ ✓	22	2.6
1634-04-4	Methyl tert-butyl ether	ND		4.4	0.43
108-87-2	Methylcyclohexane	ND		4.4	0.66
75-09-2	Methylene Chloride	ND		4.4	2.0
100-42-5	Styrene	ND		4.4	0.22
127-18-4	Tetrachloroethene	ND		4.4	0.59
108-88-3	Toluene	ND		4.4	0.33
156-60-5	trans-1,2-Dichloroethene	ND		4.4	0.45
10061-02-6	trans-1,3-Dichloropropene	ND		4.4	1.9
79-01-6	Trichloroethene	ND		4.4	0.96
75-69-4	Trichlorofluoromethane	ND		4.4	0.41
75-01-4	Vinyl chloride	ND	UJ ✓	4.4	0.53
1330-20-7	Xylenes, Total	ND		8.7	0.73
123-91-1	1,4-Dioxane	ND	R ✓	~~87~~	~~10~~

CAS NO.	SURROGATE	%REC	Q	LIMITS
17060-07-0	1,2-Dichloroethane-d4 (Surr)	101		64-126
460-00-4	4-Bromofluorobenzene (Surr)	98		72-126
1868-53-7	Dibromofluoromethane (Surr)	99		60-140
2037-26-5	Toluene-d8 (Surr)	100		71-125

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: X210298.D

Analysis Method: 8270D | Date Collected: 03/27/2018 15:00

Extract. Method: 3550C | Date Extracted: 03/28/2018 07:26

Sample wt/vol: 30.17(g) | Date Analyzed: 03/29/2018 21:58

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 406407 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
92-52-4	Biphenyl	ND		220	33
108-60-1	bis (2-chloroisopropyl) ether	ND		220	45
95-95-4	2,4,5-Trichlorophenol	ND		220	61
88-06-2	2,4,6-Trichlorophenol	ND		220	45
120-83-2	2,4-Dichlorophenol	ND		220	24
105-67-9	2,4-Dimethylphenol	ND		220	54
51-28-5	2,4-Dinitrophenol	ND		2200	1000
121-14-2	2,4-Dinitrotoluene	ND		220	46
606-20-2	2,6-Dinitrotoluene	ND		220	26
91-58-7	2-Chloronaphthalene	ND		220	37
95-57-8	2-Chlorophenol	ND		220	41
95-48-7	2-Methylphenol	ND		220	26
91-57-6	2-Methylnaphthalene	ND		220	45
88-74-4	2-Nitroaniline	ND		430	33
88-75-5	2-Nitrophenol	ND		220	63
91-94-1	3,3'-Dichlorobenzidine	ND		430	260
99-09-2	3-Nitroaniline	ND		430	62
534-52-1	4,6-Dinitro-2-methylphenol	ND		430	220
101-55-3	4-Bromophenyl phenyl ether	ND		220	32
59-50-7	4-Chloro-3-methylphenol	ND		220	55
106-47-8	4-Chloroaniline	ND		220	55
7005-72-3	4-Chlorophenyl phenyl ether	ND		220	28
106-44-5	4-Methylphenol	ND		430	26
100-01-6	4-Nitroaniline	ND		430	120
100-02-7	4-Nitrophenol	ND		430	160
83-32-9	Acenaphthene	ND		220	33
208-96-8	Acenaphthylene	ND		220	29
98-86-2	Acetophenone	ND		220	30
120-12-7	Anthracene	ND		220	55
1912-24-9	Atrazine	ND		220	78
100-52-7	Benzaldehyde	ND		220	180
56-55-3	Benzo[a]anthracene	ND		220	22
50-32-8	Benzo[a]pyrene	ND		220	33
205-99-2	Benzo[b]fluoranthene	ND		220	36

FORM I
GC/MS SEMI VOA ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: X210298.D

Analysis Method: 8270D | Date Collected: 03/27/2018 15:00

Extract. Method: 3550C | Date Extracted: 03/28/2018 07:26

Sample wt/vol: 30.17(g) | Date Analyzed: 03/29/2018 21:58

Con. Extract Vol.: 1(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | Level: (low/med) Low

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 406407 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
191-24-2	Benzo[g,h,i]perylene	ND		220	24
207-08-9	Benzo[k]fluoranthene	ND		220	29
111-91-1	Bis(2-chloroethoxy)methane	ND		220	47
111-44-4	Bis(2-chloroethyl)ether	ND		220	29
117-81-7	Bis(2-ethylhexyl) phthalate	ND		220	76
85-68-7	Butyl benzyl phthalate	ND		220	37
105-60-2	Caprolactam	ND		220	67
86-74-8	Carbazole	ND		220	26
218-01-9	Chrysene	ND		220	50
53-70-3	Dibenz(a,h)anthracene	ND		220	40
84-74-2	Di-n-butyl phthalate	ND		220	38
117-84-0	Di-n-octyl phthalate	ND		220	26
132-64-9	Dibenzofuran	ND		220	26
84-66-2	Diethyl phthalate	ND		220	29
131-11-3	Dimethyl phthalate	ND		220	26
206-44-0	Fluoranthene	ND		220	24
86-73-7	Fluorene	ND		220	26
118-74-1	Hexachlorobenzene	ND		220	30
87-68-3	Hexachlorobutadiene	ND		220	33
77-47-4	Hexachlorocyclopentadiene	ND		220	30
67-72-1	Hexachloroethane	ND		220	29
193-39-5	Indeno[1,2,3-cd]pyrene	ND		220	28
78-59-1	Isophorone	ND		220	47
621-64-7	N-Nitrosodi-n-propylamine	ND		220	38
86-30-6	N-Nitrosodiphenylamine	ND		220	180
91-20-3	Naphthalene	ND		220	29
98-95-3	Nitrobenzene	ND		220	25
87-86-5	Pentachlorophenol	ND		430	220
85-01-8	Phenanthrene	ND		220	33
108-95-2	Phenol	ND		220	34
129-00-0	Pyrene	ND		220	26
123-91-1	1,4-Dioxane	ND		260	72

FORM I
PESTICIDES ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: 25_06-013.D

Analysis Method: 8081B | Date Collected: 03/27/2018 15:00

Extraction Method: 3550C | Date Extracted: 03/29/2018 07:20

Sample wt/vol: 30.18(g) | Date Analyzed: 03/30/2018 12:18

Con. Extract Vol.: 10(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: RTX-CLPI ID: 0.53(mm)

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 406540 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
72-54-8	4,4'-DDD	ND		2.2	0.43
72-55-9	4,4'-DDE	ND		2.2	0.46
50-29-3	4,4'-DDT	ND		2.2	0.51
309-00-2	Aldrin	ND		2.2	0.54
319-84-6	alpha-BHC	ND		2.2	0.39
5103-71-9	cis-Chlordane	ND		2.2	1.1
319-85-7	beta-BHC	ND		2.2	0.39
319-86-8	delta-BHC	ND		2.2	0.41
60-57-1	Dieldrin	ND		2.2	0.53
959-98-8	Endosulfan I	ND		2.2	0.42
33213-65-9	Endosulfan II	ND		2.2	0.39
1031-07-8	Endosulfan sulfate	ND		2.2	0.41
72-20-8	Endrin	ND		2.2	0.43
7421-93-4	Endrin aldehyde	ND		2.2	0.56
53494-70-5	Endrin ketone	ND		2.2	0.54
58-89-9	gamma-BHC (Lindane)	ND		2.2	0.40
5103-74-2	trans-Chlordane	ND		2.2	0.70
76-44-8	Heptachlor	ND		2.2	0.48
1024-57-3	Heptachlor epoxide	ND		2.2	0.57
72-43-5	Methoxychlor	ND		2.2	0.45
8001-35-2	Toxaphene	ND		22	13

CAS NO.	SURROGATE	%REC	Q	LIMITS
2051-24-3	DCB Decachlorobiphenyl	98		45-120
877-09-8	Tetrachloro-m-xylene	80		30-124

FORM I
PCBS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Buffalo | Job No.: 480-133189-1

SDG No.:

Client Sample ID: HFL-MW-101B (48-50) | Lab Sample ID: 480-133189-1

Matrix: Solid | Lab File ID: 12_013_230.D

Analysis Method: 8082A | Date Collected: 03/27/2018 15:00

Extraction Method: 3550C | Date Extracted: 03/29/2018 07:29

Sample wt/vol: 2.05(g) | Date Analyzed: 03/30/2018 11:23

Con. Extract Vol.: 10(mL) | Dilution Factor: 1

Injection Volume: 1(uL) | GC Column: ZB-5 ID: 0.53(mm)

% Moisture: 24.5 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 406505 | Units: mg/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
12674-11-2	PCB-1016	ND		0.32	0.063
11104-28-2	PCB-1221	ND	UJ	0.32	0.063
11141-16-5	PCB-1232	ND	UJ	0.32	0.063
53469-21-9	PCB-1242	ND	UJ	0.32	0.063
12672-29-6	PCB-1248	ND		0.32	0.063
11097-69-1	PCB-1254	ND		0.32	0.15
11096-82-5	PCB-1260	ND		0.32	0.15

CAS NO.	SURROGATE	%REC	Q	LIMITS
877-09-8	Tetrachloro-m-xylene	164	X	60-154
2051-24-3	DCB Decachlorobiphenyl	207	X	65-174

QC NONCONFORMANCE DOCUMENTATION

FORM VI
GC/MS VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1 Analy Batch No.: 404437

SDG No.:

Instrument ID: HP5973F GC Column: ZB-624 (30) ID: 0.25(mm) Heated Purge: (Y/N) Y

Calibration Start Date: 03/16/2018 16:48 Calibration End Date: 03/16/2018 19:22 Calibration ID: 33147

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Carbon tetrachloride	1.5961 1.7420	1.5836 1.6423	1.7088	1.7974	1.6600	Ave		1.6757			0.1000	4.7		20.0			
Isobutyl alcohol	+++++ 0.0765	0.0722 0.0715	0.0724	0.0806	0.0820	Ave		0.0759				6.0		20.0			
Benzene	5.8590 5.3915	5.5685 4.8315	5.9867	6.0662	5.4308	Ave		5.5906			0.5000	7.6		20.0			
1,2-Dichloroethane	2.0663 1.8414	1.9093 1.7130	2.0238	2.0409	1.8579	Ave		1.9218			0.1000	6.7		20.0			
n-Heptane	2.8768 2.5795	2.7767 2.3273	2.8573	2.9127	2.5736	Ave		2.7006				7.9		20.0			
Trichloroethene	1.4668 1.4322	1.4472 1.3367	1.5365	1.5680	1.4101	Ave		1.4568			0.2000	5.3		20.0			
Methylcyclohexane	2.7462 2.5504	2.6175 2.3694	2.8137	2.8389	2.5117	Ave		2.6354			0.1000	6.6		20.0			
1,2-Dichloropropane	1.3953 1.3318	1.2672 1.2657	1.3851	1.4326	1.3300	Ave		1.3439			0.1000	4.8		20.0			
1,4-Dioxane	+++++ 0.0073	0.0075 0.0070	0.0076	0.0082	0.0080	Ave		0.0076				6.1		20.0			
Dibromomethane	0.8297 0.8448	0.7967 0.8023	0.8624	0.8838	0.8428	Ave		0.8375			0.1000	3.7		20.0			
Bromodichloromethane	1.5430 1.7536	1.5185 1.6844	1.6906	1.7463	1.6836	Ave		1.6600			0.2000	5.6		20.0			
2-Chloroethyl vinyl ether	0.7847 0.9028	0.8115 0.8641	0.8630	0.9109	0.8769	Ave		0.8591				5.4		20.0			
cis-1,3-Dichloropropene	2.0608 2.1861	1.9207 2.0508	2.1500	2.2154	2.1424	Ave		2.1038			0.2000	4.8		20.0			
4-Methyl-2-pentanone (MIBK)	0.7042 0.6980	0.7531 0.5983	0.7883	0.8448	0.7687	Ave		0.7365			0.1000	10.7		20.0			
Toluene	1.9433 1.6792	1.7888 1.5630	1.9023	1.9096	1.7117	Ave		1.7854			0.4000	7.9		20.0			
trans-1,3-Dichloropropene	0.8604 0.9529	0.8373 0.9177	0.9244	0.9769	0.9461	Ave		0.9165			0.1000	5.5		20.0			
Ethyl methacrylate	0.8554 0.9029	0.8348 0.8673	0.8963	0.9430	0.9155	Ave		0.8879				4.2		20.0			
1,1,2-Trichloroethane	0.4950 0.4851	0.4934 0.4702	0.5134	0.5258	0.4896	Ave		0.4961			0.1000	3.7		20.0			
Tetrachloroethene	0.7527 0.7472	0.7573 0.7033	0.8289	0.8420	0.7571	Ave		0.7698			0.2000	6.3		20.0			
1,3-Dichloropropane	1.0273 0.9912	0.9933 0.9356	1.0493	1.0751	1.0009	Ave		1.0104				4.5		20.0			

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCVIS 480-406082/3 Calibration Date: 03/28/2018 10:18

Instrument ID: HP5973F Calib Start Date: 03/16/2018 16:48

GC Column: ZB-624 (30) VOA ID: 0.25(mm) Calib End Date: 03/16/2018 19:22

Lab File ID: F1321.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Dichlorodifluoromethane	Ave	1.295	1.764	0.1000	68.1	50.0	36.2	50.0
Chloromethane	Ave	1.104	1.329	0.1000	60.2	50.0	20.4*	20.0
Butadiene	Ave	1.094	1.382		63.1	50.0	26.3*	20.0
Vinyl chloride	Ave	1.023	1.232	0.1000	60.2	50.0	20.4*	20.0
Bromomethane	Ave	0.5961	0.6552	0.1000	55.0	50.0	9.9	50.0
Chloroethane	Ave	0.5070	0.5623	0.1000	55.5	50.0	10.9	50.0
Dichlorofluoromethane	Ave	1.334	1.530		57.3	50.0	14.6	20.0
Trichlorofluoromethane	Ave	1.390	1.605	0.1000	57.8	50.0	15.5	20.0
Ethyl ether	Ave	0.9141	0.9141		50.0	50.0	-0.0	20.0
Acrolein	Ave	0.2956	0.3192		270	250	8.0	50.0
1,1,2-Trichloro-1,2,2-trifluoroethane	Ave	1.181	1.324	0.1000	56.1	50.0	12.1	20.0
1,1-Dichloroethene	Ave	1.197	1.328	0.1000	55.5	50.0	10.9	20.0
Acetone	Ave	0.5294	0.5438	0.1000	257	250	2.7	50.0
Iodomethane	Ave	2.180	2.465		56.5	50.0	13.1	20.0
Carbon disulfide	Ave	3.959	4.475	0.1000	56.5	50.0	13.0	20.0
Allyl chloride	Ave	2.344	2.572		54.8	50.0	9.7	20.0
Methyl acetate	Ave	1.210	1.483	0.1000	123	100	22.6	50.0
Methylene Chloride	Ave	1.625	1.642	0.1000	50.5	50.0	1.0	20.0
2-Methyl-2-propanol	Ave	0.1633	0.2005		614	500	22.8	50.0
Methyl tert-butyl ether	Ave	4.202	4.643	0.1000	55.2	50.0	10.5	20.0
trans-1,2-Dichloroethene	Ave	1.444	1.625	0.1000	56.3	50.0	12.5	20.0
Acrylonitrile	Ave	0.5688	0.7036		618	500	23.7*	20.0
Hexane	Ave	2.637	2.793		52.9	50.0	5.9	20.0
Vinyl acetate	Ave	3.053	3.664		120	100	20.0	20.0
1,1-Dichloroethane	Ave	2.399	2.679	0.2000	55.8	50.0	11.7	20.0
2,2-Dichloropropane	Ave	1.872	2.080		55.6	50.0	11.1	20.0
2-Butanone (MEK)	Ave	0.7798	0.9375	0.1000	301	250	20.2*	20.0
cis-1,2-Dichloroethene	Ave	1.599	1.769	0.1000	55.3	50.0	10.6	20.0
Chlorobromomethane	Ave	0.7672	0.8421		54.9	50.0	9.8	20.0
Tetrahydrofuran	Ave	0.5120	0.6073		119	100	18.6	20.0
Chloroform	Ave	2.357	2.614	0.2000	55.4	50.0	10.9	20.0
1,1,1-Trichloroethane	Ave	1.991	2.219	0.1000	55.7	50.0	11.4	20.0
Cyclohexane	Ave	2.624	2.960	0.1000	56.4	50.0	12.8	20.0
1,1-Dichloropropene	Ave	1.887	2.149		56.9	50.0	13.9	20.0
Carbon tetrachloride	Ave	1.676	1.886	0.1000	56.3	50.0	12.5	20.0
Isobutyl alcohol	Ave	0.0759	0.0969		1600	1250	27.7	50.0
Benzene	Ave	5.591	6.255	0.5000	55.9	50.0	11.9	20.0
1,2-Dichloroethane	Ave	1.922	2.059	0.1000	53.6	50.0	7.1	20.0
n-Heptane	Ave	2.701	2.927		54.2	50.0	8.4	20.0
Trichloroethene	Ave	1.457	1.634	0.2000	56.1	50.0	12.1	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCVIS 480-406082/3 Calibration Date: 03/28/2018 10:18

Instrument ID: HP5973F Calib Start Date: 03/16/2018 16:48

GC Column: ZB-624 (30) VOA ID: 0.25(mm) Calib End Date: 03/16/2018 19:22

Lab File ID: F1321.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Methylcyclohexane	Ave	2.635	2.961	0.1000	56.2	50.0	12.4	20.0
1,2-Dichloropropane	Ave	1.344	1.507	0.1000	56.1	50.0	12.2	20.0
1,4-Dioxane	Ave	0.0076	0.0096		1260	1000	26.3	50.0
Dibromomethane	Ave	0.8375	0.9410	0.1000	56.2	50.0	12.4	20.0
Bromodichloromethane	Ave	1.660	1.866	0.2000	56.2	50.0	12.4	20.0
2-Chloroethyl vinyl ether	Ave	0.8591	0.9932		57.8	50.0	15.6	20.0
cis-1,3-Dichloropropene	Ave	2.104	2.347	0.2000	55.8	50.0	11.6	20.0
4-Methyl-2-pentanone (MIBK)	Ave	0.7365	0.8965	0.1000	304	250	21.7*	20.0
Toluene	Ave	1.785	1.934	0.4000	54.2	50.0	8.3	20.0
trans-1,3-Dichloropropene	Ave	0.9165	1.026	0.1000	56.0	50.0	12.0	20.0
Ethyl methacrylate	Ave	0.8879	1.006		56.6	50.0	13.3	20.0
1,1,2-Trichloroethane	Ave	0.4961	0.5440	0.1000	54.8	50.0	9.7	20.0
Tetrachloroethene	Ave	0.7698	0.8689	0.2000	56.4	50.0	12.9	20.0
1,3-Dichloropropane	Ave	1.010	1.124		55.6	50.0	11.2	20.0
2-Hexanone	Ave	0.5687	0.6888	0.1000	303	250	21.1*	20.0
Dibromochloromethane	Ave	0.5864	0.6885	0.1000	58.7	50.0	17.4	20.0
1,2-Dibromoethane	Ave	0.6239	0.7050		56.5	50.0	13.0	20.0
Chlorobenzene	Ave	1.932	2.118	0.5000	54.8	50.0	9.6	20.0
Ethylbenzene	Ave	3.147	3.494	0.1000	55.5	50.0	11.0	20.0
1,1,1,2-Tetrachloroethane	Ave	0.5916	0.6693		56.6	50.0	13.1	20.0
m,p-Xylene	Ave	1.299	1.460	0.1000	56.2	50.0	12.4	20.0
o-Xylene	Ave	1.231	1.368	0.3000	55.6	50.0	11.2	20.0
Styrene	Ave	2.191	2.406	0.3000	54.9	50.0	9.8	20.0
Bromoform	Ave	0.3805	0.4376	0.1000	57.5	50.0	15.0	50.0
Isopropylbenzene	Ave	3.015	3.363	0.1000	55.8	50.0	11.5	20.0
1,1,2,2-Tetrachloroethane	Ave	0.7587	0.8640	0.3000	56.9	50.0	13.9	20.0
Bromobenzene	Ave	0.8441	0.9121		54.0	50.0	8.1	20.0
N-Propylbenzene	Ave	3.531	3.942		55.8	50.0	11.6	20.0
trans-1,4-Dichloro-2-butene	Ave	0.2598	0.3021		58.1	50.0	16.3	50.0
1,2,3-Trichloropropane	Ave	0.2562	0.2851		55.6	50.0	11.3	20.0
2-Chlorotoluene	Ave	0.7657	0.8373		54.7	50.0	9.4	20.0
1,3,5-Trimethylbenzene	Ave	2.573	2.880		56.0	50.0	11.9	20.0
4-Chlorotoluene	Ave	0.8144	0.8902		54.7	50.0	9.3	20.0
tert-Butylbenzene	Ave	0.5922	0.6557		55.4	50.0	10.7	20.0
1,2,4-Trimethylbenzene	Ave	2.642	2.942		55.7	50.0	11.3	20.0
sec-Butylbenzene	Ave	3.246	3.660		56.4	50.0	12.8	20.0
4-Isopropyltoluene	Ave	2.832	3.201		56.5	50.0	13.0	20.0
1,3-Dichlorobenzene	Ave	1.593	1.745	0.6000	54.8	50.0	9.5	20.0
1,4-Dichlorobenzene	Ave	1.625	1.780	0.5000	54.8	50.0	9.6	20.0
n-Butylbenzene	Ave	2.505	2.831		56.5	50.0	13.0	20.0
1,2-Dichlorobenzene	Ave	1.487	1.609	0.4000	54.1	50.0	8.1	20.0

FORM VII
GC/MS VOA CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCVIS 480-406082/3 Calibration Date: 03/28/2018 10:18

Instrument ID: HP5973F Calib Start Date: 03/16/2018 16:48

GC Column: ZB-624 (30) VOA ID: 0.25(mm) Calib End Date: 03/16/2018 19:22

Lab File ID: F1321.D Conc. Units: ug/L Heated Purge: (Y/N) Y

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
1,2-Dibromo-3-Chloropropane	Ave	0.1326	0.1618	0.0500	61.0	50.0	22.0	50.0
1,2,4-Trichlorobenzene	Ave	0.9634	1.070	0.2000	55.5	50.0	11.1	20.0
Hexachlorobutadiene	Ave	0.5286	0.5769		54.6	50.0	9.1	20.0
Naphthalene	Ave	2.489	2.889		58.0	50.0	16.0	20.0
1,2,3-Trichlorobenzene	Ave	0.8923	0.9854		55.2	50.0	10.4	20.0
Dibromofluoromethane (Surr)	Ave	1.221	1.259		51.6	50.0	3.1	20.0
1,2-Dichloroethane-d4 (Surr)	Ave	0.7166	0.7245		50.6	50.0	1.1	20.0
Toluene-d8 (Surr)	Ave	2.336	2.365		50.6	50.0	1.2	20.0
4-Bromofluorobenzene (Surr)	Ave	0.7799	0.7803		50.0	50.0	0.0	20.0

FORM VI
GC/MS SEMI VOA BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1 Analy Batch No.: 405952

SDG No.:

Instrument ID: HP5973X GC Column: RXI-5Sil MS ID: 0.25(mm) Heated Purge: (Y/N) N

Calibration Start Date: 03/27/2018 15:15 Calibration End Date: 03/27/2018 17:54 Calibration ID: 33339

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Diethyl phthalate	1.4311 1.6283	1.5067 1.6753	1.5176	1.6454	1.6361	Ave		1.5772			0.0100	5.8		20.0			
Hexadecane	1.1441 1.2357	1.1564 1.2230	1.1904	1.2438	1.2385	Ave		1.2046			0.0100	3.4		20.0			
4-Chlorophenyl phenyl ether	0.7716 0.8538	0.8325 0.8934	0.8291	0.8645	0.8739	Ave		0.8455			0.4000	4.7		20.0			
4-Nitroaniline	0.2732 0.3919	0.3131 0.4113	0.3608	0.3929	0.4053	Ave		0.3641			0.0100	14.4		20.0			
Fluorene	1.4794 1.6022	1.5320 1.6204	1.4904	1.5930	1.5632	Ave		1.5544			0.9000	3.6		20.0			
4,6-Dinitro-2-methylphenol	0.0540 0.1612	0.0923 0.1666	0.1191	0.1461	0.1485	Lin2	-0.527	0.1531			0.0100	8.7			0.9920		0.9900
Diphenylamine	0.5886 0.6655	0.6498 0.6779	0.6156	0.6250	0.6417	Ave		0.6377			0.0100	4.8		20.0			
N-Nitrosodiphenylamine	0.5032 0.5690	0.5556 0.5796	0.5263	0.5344	0.5487	Ave		0.5453			0.0100	4.8		20.0			
1,2-Diphenylhydrazine	0.7568 0.8600	0.8349 0.8665	0.8232	0.8207	0.8530	Ave		0.8307			0.0100	4.5		20.0			
trans-Azobenzene	0.7568 0.8600	0.8349 0.8665	0.8232	0.8207	0.8530	Ave		0.8307			0.0100	4.5		20.0			
4-Bromophenyl phenyl ether	0.2105 0.2673	0.2397 0.2808	0.2610	0.2593	0.2620	Lin2	-0.147	0.2690			0.1000	2.5			0.9990		0.9900
Hexachlorobenzene	0.2568 0.2734	0.2566 0.2792	0.2478	0.2619	0.2663	Ave		0.2631			0.1000	4.1		20.0			
Atrazine	0.3833 0.4539	0.4433 0.4484	0.4430	0.4821	0.4718	Lin2	-0.187	0.4652			0.0100	3.5			0.9990		0.9900
Pentachlorophenol	+++++ 0.1665	0.0174 0.1812	0.0788	0.1298	0.1483	Lin2	-1.502	0.1575			0.0500	17.4			0.9700	*	0.9900
n-Octadecane	0.5130 0.6192	0.5661 0.6156	0.5685	0.5875	0.6081	Lin2	-0.231	0.6056			0.0100	2.6			0.9990		0.9900
Phenanthrene	1.0507 1.1481	1.0835 1.1723	1.0939	1.1085	1.1088	Ave		1.1094			0.7000	3.6		20.0			
Anthracene	1.0589 1.2166	1.1131 1.2034	1.1266	1.1571	1.1829	Ave		1.1512			0.7000	4.8		20.0			
Carbazole	0.8851 1.0479	0.9838 1.0663	0.9845	1.0208	1.0296	Lin2	-0.375	1.0399			0.0100	2.3			0.9990		0.9900
Di-n-butyl phthalate	1.0997 1.3150	1.2061 1.3603	1.2102	1.2882	1.2528	Lin2	-0.502	1.2974			0.0100	3.5			0.9990		0.9900
Fluoranthene	1.1616 1.3644	1.2543 1.4020	1.2296	1.3323	1.3355	Lin2	-0.477	1.3446			0.6000	3.7			0.9980		0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII
PESTICIDES CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406540/8 Calibration Date: 03/30/2018 10:40

Instrument ID: HP6890-25 Calib Start Date: 04/13/2017 14:18

GC Column: RTX-CLPI ID: 0.53(mm) Calib End Date: 04/13/2017 15:37

Lab File ID: 25_06-008.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Toxaphene Peak 1	Lin1		0.0605		0.594	0.500	18.8	20.0
Toxaphene Peak 2	Lin1		0.0802		0.561	0.500	12.3	20.0
Toxaphene Peak 3	Lin1		0.0481		0.634	0.500	26.8*	20.0
Toxaphene Peak 4	Lin1		0.0479		0.595	0.500	19.0	20.0
Toxaphene Peak 5	Lin1		0.0400		0.522	0.500	4.4	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCVIS 480-406505/4 Calibration Date: 03/30/2018 08:26

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 15:46

GC Column: ZB-5 ID: 0.53(mm) Calib End Date: 05/11/2017 18:19

Lab File ID: 12_013_219.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Ave	0.0272	0.0301		0.553	0.500	10.6	20.0
PCB-1016 Peak 2	Ave	0.0290	0.0403		0.696	0.500	39.1*	20.0
PCB-1016 Peak 3	Ave	0.0988	0.0903		0.457	0.500	-8.6	20.0
PCB-1016 Peak 4	Lin1		0.0485		0.633	0.500	26.6*	20.0
PCB-1016 Peak 5	Lin1		0.0263		0.554	0.500	10.9	20.0
PCB-1260 Peak 1	Lin1		0.0613		0.536	0.500	7.2	20.0
PCB-1260 Peak 2	Lin1		0.1041		0.676	0.500	35.2*	20.0
PCB-1260 Peak 3	Ave	0.0437	0.0424		0.485	0.500	-3.0	20.0
PCB-1260 Peak 4	Lin1		0.0356		0.490	0.500	-2.0	20.0
PCB-1260 Peak 5	Lin1		0.0446		0.448	0.500	-10.4	20.0
Tetrachloro-m-xylene	Lin1		1.185		0.0148	0.0125	18.1	20.0
DCB Decachlorobiphenyl	Ave	1.313	1.397		0.0133	0.0125	6.5	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCVIS 480-406505/4 Calibration Date: 03/30/2018 08:26

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 15:46

GC Column: ZB-35 ID: 0.53(mm) Calib End Date: 05/11/2017 18:19

Lab File ID: 12_013_219.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1016 Peak 1	Lin1		0.0295		0.721	0.500	44.2*	20.0
PCB-1016 Peak 2	Lin1		0.0591		0.705	0.500	41.1*	20.0
PCB-1016 Peak 3	Lin1		0.0378		0.728	0.500	45.7*	20.0
PCB-1016 Peak 4	Lin1		0.1050		0.652	0.500	30.3*	20.0
PCB-1016 Peak 5	Ave	0.0335	0.0454		0.678	0.500	35.6*	20.0
PCB-1260 Peak 1	Lin1		0.0808		0.772	0.500	54.4*	20.0
PCB-1260 Peak 2	Lin1		0.0478		0.547	0.500	9.4	20.0
PCB-1260 Peak 3	Lin1		0.0374		0.571	0.500	14.2	20.0
PCB-1260 Peak 4	Lin1		0.1184		0.510	0.500	1.9	20.0
PCB-1260 Peak 5	Lin1		0.0838		0.549	0.500	9.9	20.0
Tetrachloro-m-xylene	Lin1		1.011		0.0141	0.0125	13.1	20.0
DCB Decachlorobiphenyl	Lin1		1.602		0.0149	0.0125	19.1	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/5 Calibration Date: 03/30/2018 08:49

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 19:52

GC Column: ZB-5 ID: 0.53(mm) Calib End Date: 05/11/2017 20:22

Lab File ID: 12_013_220.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Lin1		0.0170		0.683	0.500	36.5*	20.0
PCB-1221 Peak 2	Lin1		0.0103		0.396	0.500	-20.8*	20.0
PCB-1221 Peak 3	Lin1		0.0463		0.588	0.500	17.5	20.0
PCB-1254 Peak 1	Lin1		0.0818		0.646	0.500	29.3*	20.0
PCB-1254 Peak 2	Lin1		0.0975		0.564	0.500	12.9	20.0
PCB-1254 Peak 3	Lin1		0.1014		0.555	0.500	11.1	20.0
PCB-1254 Peak 4	Lin1		0.0592		0.511	0.500	2.3	20.0
PCB-1254 Peak 5	Lin1		0.0847		0.541	0.500	8.1	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/5 Calibration Date: 03/30/2018 08:49

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 19:52

GC Column: ZB-35 ID: 0.53(mm) Calib End Date: 05/11/2017 20:22

Lab File ID: 12_013_220.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1221 Peak 1	Lin1		0.0136		0.687	0.500	37.4*	20.0
PCB-1221 Peak 2	Lin1		0.0154		0.660	0.500	32.1*	20.0
PCB-1221 Peak 3	Lin1		0.0470		0.799	0.500	59.7*	20.0
PCB-1254 Peak 1	Lin1		0.0633		0.619	0.500	23.8*	20.0
PCB-1254 Peak 2	Lin1		0.0450		0.655	0.500	31.0*	20.0
PCB-1254 Peak 3	Lin1		0.1029		0.645	0.500	29.0*	20.0
PCB-1254 Peak 4	Lin1		0.1161		0.695	0.500	38.9*	20.0
PCB-1254 Peak 5	Lin1		0.0781		0.679	0.500	35.9*	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/6 Calibration Date: 03/30/2018 09:05

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 20:53

GC Column: ZB-5 ID: 0.53(mm) Calib End Date: 05/11/2017 21:24

Lab File ID: 12_013_221.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1232 Peak 1	Lin1		0.0389		0.595	0.500	19.1	20.0
PCB-1232 Peak 2	Lin1		0.0347		0.578	0.500	15.6	20.0
PCB-1232 Peak 3	Lin1		0.0188		0.677	0.500	35.4*	20.0
PCB-1232 Peak 4	Lin1		0.0384		0.426	0.500	-14.9	20.0
PCB-1232 Peak 5	Lin1		0.0238		0.636	0.500	27.2*	20.0
PCB-1262 Peak 1	Lin1		0.0627		0.511	0.500	2.3	20.0
PCB-1262 Peak 2	Lin1		0.0538		0.613	0.500	22.6*	20.0
PCB-1262 Peak 3	Lin1		0.0366		0.478	0.500	-4.4	20.0
PCB-1262 Peak 4	Lin1		0.0503		0.520	0.500	4.1	20.0
PCB-1262 Peak 5	Lin1		0.0895		0.554	0.500	10.9	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/6 Calibration Date: 03/30/2018 09:05

Instrument ID: HP5890-12 Calib Start Date: 05/11/2017 20:53

GC Column: ZB-35 ID: 0.53(mm) Calib End Date: 05/11/2017 21:24

Lab File ID: 12_013_221.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1232 Peak 1	Lin1		0.0362		0.707	0.500	41.3*	20.0
PCB-1232 Peak 2	Lin1		0.0316		0.709	0.500	41.8*	20.0
PCB-1232 Peak 3	Lin1		0.0479		0.625	0.500	25.1*	20.0
PCB-1232 Peak 4	Lin1		0.0204		0.673	0.500	34.5*	20.0
PCB-1232 Peak 5	Lin1		0.0215		0.628	0.500	25.6*	20.0
PCB-1262 Peak 1	Lin1		0.0808		0.688	0.500	37.6*	20.0
PCB-1262 Peak 2	Lin1		0.0684		0.648	0.500	29.6*	20.0
PCB-1262 Peak 3	Lin1		0.1632		0.641	0.500	28.2*	20.0
PCB-1262 Peak 4	Lin1		0.0522		0.557	0.500	11.3	20.0
PCB-1262 Peak 5	Lin1		0.1263		0.659	0.500	31.9*	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/7 Calibration Date: 03/30/2018 09:20

Instrument ID: HP5890-12 Calib Start Date: 05/13/2017 11:27

GC Column: ZB-5 ID: 0.53(mm) Calib End Date: 05/13/2017 12:34

Lab File ID: 12_013_222.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1242 Peak 1	Lin1		0.0739		0.471	0.500	-5.7	20.0
PCB-1242 Peak 2	Lin1		0.0436		0.684	0.500	36.8*	20.0
PCB-1242 Peak 3	Lin1		0.0360		0.616	0.500	23.1*	20.0
PCB-1242 Peak 4	Lin1		0.0608		0.634	0.500	26.7*	20.0
PCB-1242 Peak 5	Lin1		0.0190		0.451	0.500	-9.8	20.0
PCB-1268 Peak 1	Lin1		0.1372		0.653	0.500	30.6*	20.0
PCB-1268 Peak 2	Lin1		0.2634		0.645	0.500	29.0*	20.0
PCB-1268 Peak 3	Lin1		0.1467		0.637	0.500	27.4*	20.0
PCB-1268 Peak 4	Lin1		0.0641		0.569	0.500	13.9	20.0
PCB-1268 Peak 5	Lin1		0.5220		0.691	0.500	38.2*	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/7 Calibration Date: 03/30/2018 09:20

Instrument ID: HP5890-12 Calib Start Date: 05/13/2017 11:27

GC Column: ZB-35 ID: 0.53(mm) Calib End Date: 05/13/2017 12:34

Lab File ID: 12_013_222.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1242 Peak 1	Lin1		0.0915		0.677	0.500	35.4*	20.0
PCB-1242 Peak 2	Lin1		0.0394		0.704	0.500	40.9*	20.0
PCB-1242 Peak 3	Lin1		0.0501		0.746	0.500	49.1*	20.0
PCB-1242 Peak 4	Lin1		0.0474		0.702	0.500	40.4*	20.0
PCB-1242 Peak 5	Lin1		0.0399		0.758	0.500	51.6*	20.0
PCB-1268 Peak 1	Lin1		0.1415		0.657	0.500	31.5*	20.0
PCB-1268 Peak 2	Lin1		0.2306		0.750	0.500	50.1*	20.0
PCB-1268 Peak 3	Lin1		0.1582		0.722	0.500	44.5*	20.0
PCB-1268 Peak 4	Lin1		0.0720		0.683	0.500	36.6*	20.0
PCB-1268 Peak 5	Lin1		0.5426		0.755	0.500	51.1*	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/8 Calibration Date: 03/30/2018 09:35

Instrument ID: HP5890-12 Calib Start Date: 05/13/2017 13:04

GC Column: ZB-5 ID: 0.53(mm) Calib End Date: 05/13/2017 13:35

Lab File ID: 12_013_223.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1248 Peak 1	Lin1		0.0351		0.720	0.500	43.9*	20.0
PCB-1248 Peak 2	Ave	0.0509	0.0470		0.461	0.500	-7.8	20.0
PCB-1248 Peak 3	Lin1		0.0353		0.289	0.500	-42.3*	20.0
PCB-1248 Peak 4	Lin1		0.0942		0.469	0.500	-6.2	20.0
PCB-1248 Peak 5	Lin1		0.0378		0.551	0.500	10.1	20.0

FORM VII
PCBS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Lab Sample ID: CCV 480-406505/8 Calibration Date: 03/30/2018 09:35

Instrument ID: HP5890-12 Calib Start Date: 05/13/2017 13:04

GC Column: ZB-35 ID: 0.53(mm) Calib End Date: 05/13/2017 13:35

Lab File ID: 12_013_223.D Conc. Units: ng/uL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
PCB-1248 Peak 1	Lin1		0.0394		0.724	0.500	44.8*	20.0
PCB-1248 Peak 2	Lin1		0.0333		0.492	0.500	-1.7	20.0
PCB-1248 Peak 3	Lin1		0.0605		0.591	0.500	18.3	20.0
PCB-1248 Peak 4	Lin1		0.0458		0.541	0.500	8.2	20.0
PCB-1248 Peak 5	Lin1		0.0515		0.508	0.500	1.6	20.0

FORM II
PCBS SURROGATE RECOVERY

Lab Name: TestAmerica Buffalo Job No.: 480-133189-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): ZB-35 ID: 0.53(mm) GC Column (2): ZB-5 ID: 0.53(mm)

Client Sample ID	Lab Sample ID	TCX1	#	TCX2	#	DCBP1	#	DCBP2	#
HFL-MW-101B (48-50)	480-133189-1	176	X	164	X	204	X	207	X
	MB 480-406294/1-A	178	X	176	X	203	X	197	X
	LCS 480-406294/2-A	169	X	158	X	190	X	183	X

	QC LIMITS
TCX = Tetrachloro-m-xylene	60-154
DCBP = DCB Decachlorobiphenyl	65-174

Column to be used to flag recovery values

FORM II 8082A

Data Usability Summary Report

Site: Hoosick Falls Landfill
Laboratory: Test America - Buffalo, Amherst, NY
SDGs: 480-133590-1, 480-133608-1, and 480-134080-1
Parameters: Metals
Data Reviewer: Samir A. Naguib/TRC
Peer Reviewer: Elizabeth Denly/TRC
Date: April 27, 2018

Sample Reviewed and Evaluation Summary

SDG: 480-133590-1

3 surface soil samples HFL-SS-104, HFL-SS-105, HFL-SS-106

SDG: 480-133608-1

1 soil sample HFL-MW-104 (9-11)

SDG: 480-134080-1

1 soil sample HFL-MW-105 (22-24)

The above-listed soil samples were collected on April 4 and 11, 2018 and were analyzed for the following parameter:

- Metals by SW-846 Methods 6010C/7471B

The data validation was performed in accordance with the following USEPA guidance, modified for the SW-846 methodologies utilized:

- USEPA National Functional Guidelines for Inorganic Superfund Methods Data Review, January 2017

The data were evaluated based on the following parameters:

- Overall Evaluation of Data and Potential Usability Issues
* • Data Completeness
* • Holding Times and Sample Preservation
* • Initial and Continuing Calibrations
- Interference Check Sample (ICS) Results
- Blanks
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- ICP Serial Dilution Results
* • Laboratory Control Sample (LCS) Results
NA • Field Duplicate Results

*	•	Percent Solids
	•	Sample Results and Reported Quantitation Limits (QLs)
*	-	All criteria were met.
NA	-	Field duplicates were not associated with this sample set.

Overall Evaluation of Data and Potential Usability Issues

All results are usable for project objectives. Qualifications applied to the data as a result of sampling error were not required. Qualifications applied to the data as a result of analytical error are discussed below.

- Potential uncertainty exists for select metals results that were detected between the method detection limit (MDL) and QL. These results were qualified as estimated (J) in the associated samples. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for sodium in samples HFL-SS-104, HFL-SS-105, HFL-SS-106, and HFL-MW-104 (9-11) were qualified as nondetect (U) at the QLs due to preparation blank contamination. These results can be used for project objectives as nondetects, which may have a minor impact on the data usability.

- The positive results for antimony in samples HFL-SS-104, HFL-SS-105, HFL-SS-106, and HFL-MW-104 (9-11) were qualified as nondetect (U) at the QLs due to positive interference in the ICS analyses. These results can be used for project objectives as nondetects, which may have a minor impact on the data usability.

- The positive results for cadmium in samples HFL-SS-104, HFL-SS-105, HFL-SS-106, and HFL-MW-104 (9-11) were qualified as estimated (J-) with a potential low bias due to negative interference in the ICS analyses. However, since the positive results in samples HFL-SS-104, HFL-SS-105, and HFL-MW-104 (9-11) were also qualified as estimated (J) due to quantitation below QL, the overall qualification for cadmium was estimated (J) in these samples. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The nondetect results for thallium in samples HFL-SS-104, HFL-SS-105, HF-SS-106, and HFL-MW-104 (9-11) and antimony and thallium in sample HFL-MW-105 (22-24) were qualified as estimated (UJ) with a potential low bias due to negative interference in the ICS analyses. These results can be used for project objectives as nondetects results with estimated QLs, which may have a minor impact on the data usability.

- The positive result for sodium in sample HFL-MW-105 (22-24) was qualified as a nondetect (U) at the QL due to positive interference in the ICS analyses. This result can be used for project objectives as a nondetect, which may have a minor impact on the data usability.

- The nondetect results for antimony in all soil samples were qualified as estimated (UJ) due to low MS/MSD recoveries. These results can be used for project objectives as nondetects with estimated QLs, which may have a minor impact on the data usability.

- The positive results for barium, calcium, and potassium in samples HFL-SS-104, HFL-SS-105, and HFL-SS-106 were qualified as estimated (J) due to high MS/MSD recoveries. These results can be used for project objectives as estimated values with estimated QLs, which may have a minor impact on the data usability.

- The positive results for barium, calcium, magnesium, and potassium in samples HFL-MW-105 (22-24) and HFL-MW-104 (9-11) were qualified as estimated (J+) with a potential high bias due to high MS/MSD recoveries. These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

- The positive results for chromium, iron, and manganese in samples HFL-SS-104 and HFL-SS-105, HFL-SS-106 were qualified as estimated (J) due to the high serial dilution percent difference (%D). These results can be used for project objectives as estimated values, which may have a minor impact on the data usability.

Data Completeness

The data package was a complete Level IV data deliverable package.

Holding Times and Sample Preservation

All holding time and sample preservation method criteria were met for the metals analyses.

Initial and Continuing Calibrations

The initial calibration verification (ICV) and/or continuing calibration verification (CCV) percent recoveries (%Rs) met the method acceptance limits for the metals analyses. All initial calibration coefficients (r) were >0.995. The low-level check standard %Rs met the QC acceptance limits of 70-130%.

Interference Check Sample (ICS) Results

All analytes recovered within the acceptance limits in the ICSAB sample analyses; however, several analytes were detected as positive and/or negative interference in the ICSA analysis. The interferent, iron, was detected in samples HFL-SS-104, HFL-SS-105, HFL-SS-106, HFL-MW-104 (9-11), and HFL–MW-105 (22-24) at a level comparable to the ICSA solution.

The following table lists the concentration found in the ICSA for analytes that were impacted by the iron interferent and the validation actions.

ICSA Date	Analyte	ICSA Concentration (mg/L)	Validation Actions

ICSA Date	Analyte	ICSA Concentration (mg/L)	Validation Actions
04/10/18	Antimony	0.0184	The positive results for antimony in the associated samples were <QL and the estimates of interference were greater than 10% of the detected antimony concentrations. Therefore, the results for antimony in these samples were qualified as nondetects (U) at the QL.
	Cadmium	-0.0008	The positive results for cadmium in samples HFL-SS-104, HFL-SS-105, HFL-SS-106, and HFL-MW-104 (9-11) were qualified as estimated (J-) with a potential low bias. However, the results for cadmium in samples HFL-SS-103, HFL-SS-105, and HFL-MW-104 (9-11) were also qualified as estimated (J) since the results were between the MDL and QL. Thus, the overall qualification for cadmium was J for these samples.
	Cobalt	-0.0008	No qualifications were required in the associated samples since the positive results for cobalt, lead, and manganese were >10x the absolute value of the negative concentration, after corrected for the soil preparation factor.
	Lead	-0.0028	
	Manganese	-0.0012	
	Thallium	-0.0032	The nondetect results for thallium in the associated samples were qualified as estimated (UJ) with a potential low bias.
	Zinc	0.0079	No qualifications were required since positive results for zinc in the associated samples were detected at a concentration greater than 90% of the estimated ICSA interference.
Associated samples: HFL-SS-104, HFL-SS-105, HFL-SS-106, HFL-MW-104 (9-11)			
04/11/18	Nickel	-0.0023	No qualifications were required since the positive results for nickel in the associated samples were >10x the absolute value of the negative concentration, after corrected for the soil preparation factor.
Associated samples: HFL-SS-104, HFL-SS-105, HFL-SS-106, HFL-MW-104 (9-11)			
04/16/18	Antimony	-0.0157	The nondetect results for antimony and thallium in sample HFL-MW-105 (22-24) were qualified as estimated (UJ) with a potential low bias.
	Thallium	-0.0077	
	Cobalt	-0.0013	No qualifications were required since the positive results for cobalt, lead, manganese, and nickel in sample HFL-MW-105 (22-24) were >10x the absolute value of the negative concentration, after corrected for the soil preparation factor.
	Lead	-0.0038	
	Manganese	-0.0014	
	Nickel	-0.0027	
	Sodium	0.177	The positive result for sodium in sample HFL-MW-105 (22-24) was <QL and the estimate of interference was greater than 10% of the detected sodium concentration; thus, the result for sodium in this sample was qualified as nondetect (U) at the QL.
	Vanadium	0.0020	No qualifications were required since positive results for vanadium and zinc in the associated sample were detected at a concentration greater than 90% of the estimated ICSA interference.
	Zinc	0.0064	
Associated sample: HFL-MW-105 (22-24)			

Blanks

The following table summarizes the blank contaminants, the concentrations detected, and the resulting validation actions.

Preparation Blank ID	Analyte	Blank Concentration	Validation Actions
MB-480-407397/1-A	Calcium	3.91 J mg/Kg	No qualifications were required since the sample results for calcium, manganese and potassium were greater than the 10x the blank results.
	Manganese	0.0667 J mg/Kg	
	Potassium	28.37 J mg/Kg	
	Sodium	40.13 J mg/Kg	The positive results for sodium in the associated samples were qualified as nondetect (U) at the QL since the results were ≤ QL.
Associated samples: HFL-SS-104, HFL-SS-105, HFL-SS-106, HFL-MW-104 (9-11)			
MB-480-408868/1-A	Potassium	19.63 J mg/Kg	No qualification of the data was required since the sample result for potassium was greater than the 10x the blank result.
Associated sample: HFL-MW-105 (22-24)			

MS/MSD Results

MS/MSD analyses were performed on samples HSL-SS-104 and HFL-MW-105 (22-24). Qualification of the data is not required in the case of nonconformances when the sample concentration is >4x the spike concentration; thus these results were not summarized in these reports.

The following table summarizes the %Rs that were outside of the acceptance criteria, the associated samples and the validation actions.

MS/MSD Sample ID	Analyte	MS/MSD %R	RPD	Post Digestion	QC Limits %R/RPD	Validation Action
HFL-SS-103	Antimony	59/55	-	-	75-125/35	The nondetect results for antimony in the associated samples were qualified as estimated (UJ) due to the low MS/MSD recoveries.
	Barium	240/220	-	-		The positive results for barium, calcium, and potassium in the associated samples were qualified as estimated (J) due to high MS and/or MSD recoveries with acceptable post digestion spike recoveries.
	Calcium	141/-	-	-		
	Potassium	256/238	-	-		
Associated samples: HFL-SS-104, HFL-SS-105, HFL-SS-106 -Criteria met						

The following table summarizes the %Rs that were outside of the acceptance criteria, the associated sample and the validation actions.

MS/MSD Sample ID	Analyte	MS/MSD %R	RPD	QC Limits %R/RPD	Validation Action
HFL-MW-105 (22-24)	Antimony	55/50	-	75-125/35	The nondetect result for antimony in sample HFL-MW-105 (22-24) was qualified as estimated (UJ) due to the low MS/MSD recoveries.
	Barium	158/208	-		The positive results for barium, calcium, magnesium, and potassium in sample HFL-MW-105 (22-24) were qualified as estimated (J+) with a potential high bias due to high MS/MSD recoveries. Post digestion spike was not performed.
	Calcium	232/291	-		
	Magnesium	132/143	-		
	Potassium	174/257	-		
Associated sample: HFL-MW-105 (22-24), HFL-MW-104 (9-11) -Criteria met					

ICP Serial Dilution Results

A serial dilution analysis was performed on soil sample HFL-SS-104. The following table lists the %Ds outside of the acceptance limits and the resulting validation actions.

Sample ID	Analyte	%D	%D QC Limit	Validation Actions
HFL-SS-104	Chromium	12	10	The concentrations of the affected analytes in sample HFL-SS-104 were >50x MDL; thus, the positive results in the associated samples were qualified as estimated (J).
	Iron	11		
	Manganese	11		
Associated samples: HFL-SS-104, HFL-SS-105, HFL-SS-106				

LCS Results

The %Rs for all metals met the laboratory acceptance criteria in the LCSs.

Field Duplicate Results

No field duplicate pairs were submitted with this sample set.

Percent Solids

The percent solids for the soil samples in this data set was >30%; thus, no qualification was required.

Sample Results and Reported Quantitation Limits

Select metal results were reported between the MDL and QL. These results were qualified as estimated (J) in the associated samples by the laboratory. Sample calculations were spot-checked; there were no errors noted. There were no dilutions performed on the samples in this data set.

QUALIFIED FORM Is

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: HFL-SS-104 | Lab Sample ID: 480-133590-1

Lab Name: TestAmerica Buffalo | Job No.: 480-133590-1

SDG ID.:

Matrix: Solid | Date Sampled: 04/04/2018 08:15

Reporting Basis: DRY | Date Received: 04/05/2018 00:45

% Solids: 78.9

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	19400	13.6	6.0	mg/Kg			1	6010C
7440-36-0	Antimony	~~2.0~~	20.4	U J 0.54	mg/Kg	~~J~~	~~F1~~	1	6010C
7440-38-2	Arsenic	6.3	2.7	0.54	mg/Kg			1	6010C
7440-39-3	Barium	131	0.68	0.15	mg/Kg	J	~~F1~~	1	6010C
7440-41-7	Beryllium	0.74	0.27	0.038	mg/Kg			1	6010C
7440-43-9	Cadmium	0.068	0.27	0.041	mg/Kg	J		1	6010C
7440-70-2	Calcium	2810	67.9	4.5	mg/Kg	J	~~B F1~~	1	6010C
7440-47-3	Chromium	20.5	0.68	0.27	mg/Kg	J		1	6010C
7440-48-4	Cobalt	12.3	0.68	0.068	mg/Kg			1	6010C
7440-50-8	Copper	22.4	1.4	0.29	mg/Kg			1	6010C
7439-89-6	Iron	28000	13.6	4.8	mg/Kg	J		1	6010C
7439-92-1	Lead	25.1	1.4	0.33	mg/Kg			1	6010C
7439-95-4	Magnesium	6180	27.2	1.3	mg/Kg			1	6010C
7439-96-5	Manganese	725	0.27	0.043	mg/Kg	J	~~B~~	1	6010C
7440-02-0	Nickel	26.2	6.8	0.31	mg/Kg			1	6010C
7440-09-7	Potassium	2920	40.8	27.2	mg/Kg	J	~~B F1~~	1	6010C
7782-49-2	Selenium	0.62	5.4	0.54	mg/Kg	J		1	6010C
7440-22-4	Silver	ND	0.82	0.27	mg/Kg			1	6010C
7440-23-5	Sodium	~~112~~	190	U 17.7	mg/Kg	~~J~~	~~B~~	1	6010C
7440-28-0	Thallium	~~ND~~	8.2	0.41	mg/Kg	U J		1	6010C
7440-62-2	Vanadium	24.8	0.68	0.15	mg/Kg			1	6010C
7440-66-6	Zinc	87.9	2.7	0.87	mg/Kg			1	6010C
7439-97-6	Mercury	0.050	0.026	0.010	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: HFL-SS-106
Lab Sample ID: 480-133590-2
Lab Name: TestAmerica Buffalo
Job No.: 480-133590-1
SDG ID.:
Matrix: Solid
Date Sampled: 04/04/2018 08:30
Reporting Basis: DRY
Date Received: 04/05/2018 00:45
% Solids: 78.6

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	13900	12.8	5.6	mg/Kg			1	6010C
7440-36-0	Antimony	~~1.7~~	19.2	UJ 0.51	mg/Kg	J		1	6010C
7440-38-2	Arsenic	6.2	2.6	0.51	mg/Kg			1	6010C
7440-39-3	Barium	78.6	0.64	0.14	mg/Kg	J		1	6010C
7440-41-7	Beryllium	0.49	0.26	0.036	mg/Kg			1	6010C
7440-43-9	Cadmium	0.28	0.26	0.038	mg/Kg	J		1	6010C
7440-70-2	Calcium	3180	63.9	4.2	mg/Kg	J	~~B~~	1	6010C
7440-47-3	Chromium	13.6	0.64	0.26	mg/Kg	J		1	6010C
7440-48-4	Cobalt	10.7	0.64	0.064	mg/Kg			1	6010C
7440-50-8	Copper	25.0	1.3	0.27	mg/Kg			1	6010C
7439-89-6	Iron	24900	12.8	4.5	mg/Kg	J		1	6010C
7439-92-1	Lead	83.4	1.3	0.31	mg/Kg			1	6010C
7439-95-4	Magnesium	4830	25.6	1.2	mg/Kg			1	6010C
7439-96-5	Manganese	702	0.26	0.041	mg/Kg	J	~~B~~	1	6010C
7440-02-0	Nickel	21.6	6.4	0.29	mg/Kg			1	6010C
7440-09-7	Potassium	1440	38.4	25.6	mg/Kg	J	~~B~~	1	6010C
7782-49-2	Selenium	0.61	5.1	0.51	mg/Kg	J		1	6010C
7440-22-4	Silver	ND	0.77	0.26	mg/Kg			1	6010C
7440-23-5	Sodium	~~66.1~~	179	U 16.6	mg/Kg	~~J~~	~~B~~	1	6010C
7440-28-0	Thallium	~~ND~~	7.7	0.38	mg/Kg	UJ		1	6010C
7440-62-2	Vanadium	17.0	0.64	0.14	mg/Kg			1	6010C
7440-66-6	Zinc	91.0	2.6	0.82	mg/Kg			1	6010C
7439-97-6	Mercury	0.037	0.025	0.010	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: HFL-SS-105 | Lab Sample ID: 480-133590-3

Lab Name: TestAmerica Buffalo | Job No.: 480-133590-1

SDG ID.:

Matrix: Solid | Date Sampled: 04/04/2018 08:45

Reporting Basis: DRY | Date Received: 04/05/2018 00:45

% Solids: 86.7

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	10500	12.1	5.3	mg/Kg			1	6010C
7440-36-0	Antimony	1.5	18.1	0.48	mg/Kg	J		1	6010C
7440-38-2	Arsenic	5.8	2.4	0.48	mg/Kg			1	6010C
7440-39-3	Barium	83.1	0.60	0.13	mg/Kg			1	6010C
7440-41-7	Beryllium	0.40	0.24	0.034	mg/Kg			1	6010C
7440-43-9	Cadmium	0.17	0.24	0.036	mg/Kg	J		1	6010C
7440-70-2	Calcium	5240	60.4	4.0	mg/Kg	J	B	1	6010C
7440-47-3	Chromium	12.3	0.60	0.24	mg/Kg			1	6010C
7440-48-4	Cobalt	9.2	0.60	0.060	mg/Kg			1	6010C
7440-50-8	Copper	59.3	1.2	0.25	mg/Kg			1	6010C
7439-89-6	Iron	20700	12.1	4.2	mg/Kg			1	6010C
7439-92-1	Lead	164	1.2	0.29	mg/Kg			1	6010C
7439-95-4	Magnesium	6110	24.2	1.1	mg/Kg			1	6010C
7439-96-5	Manganese	565	0.24	0.039	mg/Kg		B	1	6010C
7440-02-0	Nickel	19.2	6.0	0.28	mg/Kg			1	6010C
7440-09-7	Potassium	1740	36.2	24.2	mg/Kg		B	1	6010C
7782-49-2	Selenium	ND	4.8	0.48	mg/Kg			1	6010C
7440-22-4	Silver	ND	0.72	0.24	mg/Kg			1	6010C
7440-23-5	Sodium	58.3	169	15.7	mg/Kg	U	B	1	6010C
7440-28-0	Thallium	ND	7.2	0.36	mg/Kg			1	6010C
7440-62-2	Vanadium	13.9	0.60	0.13	mg/Kg			1	6010C
7440-66-6	Zinc	208	2.4	0.77	mg/Kg			1	6010C
7439-97-6	Mercury	0.15	0.022	0.0090	mg/Kg			1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: HFL-MW-104 (9-11)
Lab Sample ID: 480-133608-1
Lab Name: TestAmerica Buffalo
Job No.: 480-133608-1
SDG ID.:
Matrix: Solid
Date Sampled: 04/04/2018 14:00
Reporting Basis: DRY
Date Received: 04/05/2018 00:45
% Solids: 69.8

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	15100	15.2	6.7	mg/Kg			1	6010C
7440-36-0	Antimony	1.6	22.8	0.61	mg/Kg			1	6010C
7440-38-2	Arsenic	8.1	3.0	0.61	mg/Kg			1	6010C
7440-39-3	Barium	94.7	0.76	0.17	mg/Kg			1	6010C
7440-41-7	Beryllium	0.61	0.30	0.043	mg/Kg			1	6010C
7440-43-9	Cadmium	0.061	0.30	0.046	mg/Kg			1	6010C
7440-70-2	Calcium	22800	75.9	5.0	mg/Kg		B	1	6010C
7440-47-3	Chromium	17.1	0.76	0.30	mg/Kg			1	6010C
7440-48-4	Cobalt	12.4	0.76	0.076	mg/Kg			1	6010C
7440-50-8	Copper	23.8	1.5	0.32	mg/Kg			1	6010C
7439-89-6	Iron	26400	15.2	5.3	mg/Kg			1	6010C
7439-92-1	Lead	13.9	1.5	0.36	mg/Kg			1	6010C
7439-95-4	Magnesium	11400	30.4	1.4	mg/Kg			1	6010C
7439-96-5	Manganese	434	0.30	0.049	mg/Kg			1	6010C
7440-02-0	Nickel	26.3	7.6	0.35	mg/Kg			1	6010C
7440-09-7	Potassium	3130	45.6	30.4	mg/Kg		B	1	6010C
7782-49-2	Selenium	ND	6.1	0.61	mg/Kg			1	6010C
7440-22-4	Silver	ND	0.91	0.30	mg/Kg			1	6010C
7440-23-5	Sodium	115	213	19.7	mg/Kg		B	1	6010C
7440-28-0	Thallium	ND	9.1	0.46	mg/Kg			1	6010C
7440-62-2	Vanadium	19.5	0.76	0.17	mg/Kg			1	6010C
7440-66-6	Zinc	72.9	3.0	0.97	mg/Kg			1	6010C
7439-97-6	Mercury	0.016	0.028	0.011	mg/Kg	J		1	7471B

1A-IN
INORGANIC ANALYSIS DATA SHEET
METALS

Client Sample ID: HFL-MW-105(22-24)
Lab Sample ID: 480-134080-1
Lab Name: TestAmerica Buffalo
Job No.: 480-134080-1
SDG ID.:
Matrix: Solid
Date Sampled: 04/11/2018 16:45
Reporting Basis: DRY
Date Received: 04/13/2018 01:15
% Solids: 79.3

CAS No.	Analyte	Result	RL	MDL	Units	C	Q	DIL	Method
7429-90-5	Aluminum	13500	12.4	5.5	mg/Kg			1	6010C
7440-36-0	Antimony	ND	18.6	0.50	mg/Kg	UJ	F1	1	6010C
7440-38-2	Arsenic	5.2	2.5	0.50	mg/Kg			1	6010C
7440-39-3	Barium	80.7	0.62	0.14	mg/Kg	J+	F1	1	6010C
7440-41-7	Beryllium	0.71	0.25	0.035	mg/Kg			1	6010C
7440-43-9	Cadmium	0.083	0.25	0.037	mg/Kg	J		1	6010C
7440-70-2	Calcium	9470	62.1	4.1	mg/Kg	J+	F1	1	6010C
7440-47-3	Chromium	16.2	0.62	0.25	mg/Kg			1	6010C
7440-48-4	Cobalt	10.8	0.62	0.062	mg/Kg			1	6010C
7440-50-8	Copper	24.7	1.2	0.26	mg/Kg			1	6010C
7439-89-6	Iron	25200	12.4	4.3	mg/Kg			1	6010C
7439-92-1	Lead	12.2	1.2	0.30	mg/Kg			1	6010C
7439-95-4	Magnesium	7110	24.8	1.2	mg/Kg	J+	F1	1	6010C
7439-96-5	Manganese	564	0.25	0.040	mg/Kg		F2	1	6010C
7440-02-0	Nickel	26.8	6.2	0.29	mg/Kg			1	6010C
7440-09-7	Potassium	2700	37.2	24.8	mg/Kg	J+	F1 F2	1	6010C
7782-49-2	Selenium	ND	5.0	0.50	mg/Kg			1	6010C
7440-22-4	Silver	ND	0.74	0.25	mg/Kg			1	6010C
7440-23-5	Sodium	65.7	174	16.1	mg/Kg	J		1	6010C
7440-28-0	Thallium	ND	7.4	0.37	mg/Kg	UJ		1	6010C
7440-62-2	Vanadium	19.8	0.62	0.14	mg/Kg			1	6010C
7440-66-6	Zinc	70.6	2.5	0.79	mg/Kg			1	6010C
7439-97-6	Mercury	0.012	0.025	0.0099	mg/Kg	J		1	7471B

QC NONCONFORMANCE DOCUMENTATION

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Buffalo Job No.: 480-133590-1

SDG No.:

Lab Sample ID: ICSA 480-408250/9 Instrument ID: ICAP2

Lab File ID: I2041018A-8.asc ICS Source: MEI_07_ICSA_00109

Concentration Units: mg/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Aluminum	500	505	101
Antimony		0.0184	
Arsenic		0.0032	
Barium		0.0007	
Beryllium		-0.0002	
Cadmium		-0.0008	
Calcium	500	489	98
Chromium		0.0005	
Cobalt		-0.0008	
Copper		0.0015	
Iron	200	192	96
Lead		-0.0028	
Magnesium	500	524	105
Manganese		-0.0012	
Nickel		-0.0023	
Potassium		0.155	
Selenium		0.0000	
Silver		-0.0001	
Sodium		0.123	
Thallium		-0.0032	
Vanadium		0.0002	
Zinc		0.0079	
Boron		*-0.0040*	
Lithium		*-0.0176*	
Molybdenum		*0.0001*	
Tin		*0.0041*	
Titanium		*-0.0018*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Buffalo Job No.: 480-133590-1

SDG No.:

Lab Sample ID: ICSA 480-408457/8 Instrument ID: ICAP1

Lab File ID: ICS Source: MEI_07_ICSA_00109

Concentration Units: mg/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Iron	**200**	**184**	**92**
Nickel		**-0.0023**	
Aluminum	*500*	*491*	*98*
Antimony		*-0.0122*	
Arsenic		*-0.0126*	
Barium		*0.0008*	
Beryllium		*0.0000*	
Boron		*-0.0006*	
Cadmium		*0.0004*	
Calcium	*500*	*461*	*92*
Chromium		*0.0013*	
Cobalt		*-0.0003*	
Copper		*0.0001*	
Lead		*0.0000*	
Lithium		*0.0048*	
Magnesium	*500*	*505*	*101*
Manganese		*0.0021*	
Molybdenum		*0.0000*	
Potassium		*0.0578*	
Selenium		*-0.0077*	
Silver		*-0.0006*	
Sodium		*0.0586*	
Thallium		*0.0072*	
Tin		*0.0002*	
Titanium		*-0.0007*	
Vanadium		*-0.0008*	
Zinc		*0.0030*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

4A-IN
INTERFERENCE CHECK STANDARD
METALS

Lab Name: TestAmerica Buffalo Job No.: 480-134080-1

SDG No.:

Lab Sample ID: ICSA 480-409178/8 Instrument ID: ICAP2

Lab File ID: i2041618a-11.asc ICS Source: MEI_07_ICSA_00109

Concentration Units: mg/L

Analyte	True Solution A	Found Solution A	Percent Recovery
Aluminum	500	467	93
Antimony		-0.0157	
Arsenic		0.0004	
Barium		0.0007	
Beryllium		-0.0002	
Cadmium		-0.0002	
Calcium	500	457	91
Chromium		0.0005	
Cobalt		-0.0013	
Copper		0.0017	
Iron	200	175	87
Lead		-0.0038	
Magnesium	500	500	100
Manganese		-0.0014	
Nickel		-0.0027	
Potassium		0.159	
Selenium		0.0030	
Silver		-0.0001	
Sodium		0.177	
Thallium		-0.0077	
Vanadium		0.0020	
Zinc		0.0064	
Boron		*-0.0046*	
Lithium		*-0.0210*	
Molybdenum		*0.0000*	
Tin		*0.0037*	
Titanium		*-0.0010*	

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM IVA-IN

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Buffalo Job No.: 480-133590-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 480-407397/1-A

Instrument Code: ICAP2 Batch No.: 408250

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010C
7440-36-0	Antimony	ND			6010C
7440-38-2	Arsenic	ND			6010C
7440-39-3	Barium	ND			6010C
7440-41-7	Beryllium	ND			6010C
7440-43-9	Cadmium	ND			6010C
7440-70-2	Calcium	3.91	J		6010C
7440-47-3	Chromium	ND			6010C
7440-48-4	Cobalt	ND			6010C
7440-50-8	Copper	ND			6010C
7439-89-6	Iron	ND			6010C
7439-92-1	Lead	ND			6010C
7439-95-4	Magnesium	ND			6010C
7439-96-5	Manganese	0.0667	J		6010C
7440-02-0	Nickel	ND			6010C
7440-09-7	Potassium	28.37	J		6010C
7782-49-2	Selenium	ND			6010C
7440-22-4	Silver	ND			6010C
7440-23-5	Sodium	40.13	J		6010C
7440-28-0	Thallium	ND			6010C
7440-62-2	Vanadium	ND			6010C
7440-66-6	Zinc	ND			6010C

3-IN
METHOD BLANK
METALS

Lab Name: TestAmerica Buffalo Job No.: 480-134080-1

SDG No.:

Concentration Units: mg/Kg Lab Sample ID: MB 480-408868/1-A

Instrument Code: ICAP2 Batch No.: 409178

CAS No.	Analyte	Concentration	C	Q	Method
7429-90-5	Aluminum	ND			6010C
7440-36-0	Antimony	ND			6010C
7440-38-2	Arsenic	ND			6010C
7440-39-3	Barium	ND			6010C
7440-41-7	Beryllium	ND			6010C
7440-43-9	Cadmium	ND			6010C
7440-70-2	Calcium	ND			6010C
7440-47-3	Chromium	ND			6010C
7440-48-4	Cobalt	ND			6010C
7440-50-8	Copper	ND			6010C
7439-89-6	Iron	ND			6010C
7439-92-1	Lead	ND			6010C
7439-95-4	Magnesium	ND			6010C
7439-96-5	Manganese	ND			6010C
7440-02-0	Nickel	ND			6010C
7440-09-7	Potassium	19.63	J		6010C
7782-49-2	Selenium	ND			6010C
7440-22-4	Silver	ND			6010C
7440-23-5	Sodium	ND			6010C
7440-28-0	Thallium	ND			6010C
7440-62-2	Vanadium	ND			6010C
7440-66-6	Zinc	ND			6010C

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: HFL-SS-103 MS
Lab ID: 480-133590-1 MS
Lab Name: TestAmerica Buffalo
Job No.: 480-133590-1
SDG No.:
Matrix: Solid
Concentration Units: mg/Kg
% Solids: 78.9

Analyte	SSR C		Sample Result (SR) C		Spike Added (SA)	%R	Control Limit %R	Q	Method
Aluminum	30430		19400		2650	418	75-125	4	6010C
Antimony	33.32		2.0	J	53.0	59	75-125	F1	6010C
Arsenic	55.79		6.3		53.0	93	75-125		6010C
Barium	258.1		131		53.0	240	75-125	F1	6010C
Beryllium	46.14		0.74		53.0	86	75-125		6010C
Cadmium	49.95		0.068	J	53.0	94	75-125		6010C
Calcium	6552		2810		2650	141	75-125	F1	6010C
Chromium	77.11		20.5		53.0	107	75-125		6010C
Cobalt	64.12		12.3		53.0	98	75-125		6010C
Copper	70.26		22.4		53.0	90	75-125		6010C
Iron	29080		28000		2650	40	75-125	4	6010C
Lead	78.02		25.1		53.0	100	75-125		6010C
Magnesium	8794		6180		2650	99	75-125		6010C
Manganese	784.0		725		53.0	111	75-125	4	6010C
Nickel	77.71		26.2		53.0	97	75-125		6010C
Potassium	9707		2920		2650	256	75-125	F1	6010C
Selenium	47.87		0.62	J	53.0	89	75-125		6010C
Silver	13.01		ND		13.3	98	75-125		6010C
Sodium	2740		112	J	2660	99	75-125		6010C
Thallium	49.10		ND		53.0	93	75-125		6010C
Vanadium	91.20		24.8		53.0	125	75-125		6010C
Zinc	137.8		87.9		53.0	94	75-125		6010C

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: HFL-SS-103 MSD | Lab ID: 480-133590-1 MSD

Lab Name: TestAmerica Buffalo | Job No.: 480-133590-1

SDG No.:

Matrix: Solid | Concentration Units: mg/Kg

% Solids: 78.9

Analyte	(SDR) C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	27880	2390	356	75-125	9	20	4	6010C
Antimony	28.13	47.9	55	75-125	17	20	F1	6010C
Arsenic	49.96	47.9	91	75-125	11	20		6010C
Barium	236.2	47.9	220	75-125	9	20	F1	6010C
Beryllium	41.03	47.9	84	75-125	12	20		6010C
Cadmium	43.58	47.9	91	75-125	14	20		6010C
Calcium	5457	2390	111	75-125	18	20		6010C
Chromium	68.38	47.9	100	75-125	12	20		6010C
Cobalt	57.64	47.9	95	75-125	11	20		6010C
Copper	63.47	47.9	86	75-125	10	20		6010C
Iron	28230	2390	8	75-125	3	20	4	6010C
Lead	71.71	47.9	97	75-125	8	20		6010C
Magnesium	8421	2390	94	75-125	4	20		6010C
Manganese	698.3	47.9	-56	75-125	12	20	4	6010C
Nickel	70.87	47.9	93	75-125	9	20		6010C
Potassium	8607	2390	238	75-125	12	20	F1	6010C
Selenium	41.89	47.9	86	75-125	13	20		6010C
Silver	11.21	12.0	94	75-125	15	20		6010C
Sodium	2457	2400	98	75-125	11	20		6010C
Thallium	43.27	47.9	90	75-125	13	20		6010C
Vanadium	80.96	47.9	117	75-125	12	20		6010C
Zinc	124.8	47.9	77	75-125	10	20		6010C

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

5A-IN
MATRIX SPIKE SAMPLE RECOVERY
METALS

Client ID: HFL-MW-105(22-24) MS | Lab ID: 480-134080-1 MS

Lab Name: TestAmerica Buffalo | Job No.: 480-134080-1

SDG No.:

Matrix: Solid | Concentration Units: mg/Kg

% Solids: 79.3

Analyte	SSR	C	Sample Result (SR)	C	Spike Added (SA)	%R	Control Limit %R	Q	Method
Aluminum	22360		13500		2550	347	75-125	4	6010C
Antimony	28.04		ND		51.1	55	75-125	F1	6010C
Arsenic	48.28		5.2		51.1	84	75-125		6010C
Barium	161.4		80.7		51.1	158	75-125	F1	6010C
Beryllium	41.77		0.71		51.1	80	75-125		6010C
Cadmium	44.29		0.083	J	51.1	87	75-125		6010C
Calcium	15380		9470		2550	232	75-125	F1	6010C
Chromium	64.49		16.2		51.1	94	75-125		6010C
Cobalt	60.07		10.8		51.1	96	75-125		6010C
Copper	78.40		24.7		51.1	105	75-125		6010C
Iron	30640		25200		2550	213	75-125	4	6010C
Lead	61.62		12.2		51.1	97	75-125		6010C
Magnesium	10490		7110		2550	132	75-125	F1	6010C
Manganese	639.6		564		51.1	148	75-125	4	6010C
Nickel	77.78		26.8		51.1	100	75-125		6010C
Potassium	7156		2700		2560	174	75-125	F1	6010C
Selenium	43.14		ND		51.1	84	75-125		6010C
Silver	11.12		ND		12.8	87	75-125		6010C
Sodium	2199		65.7	J	2560	83	75-125		6010C
Thallium	46.18		ND		51.1	90	75-125		6010C
Vanadium	74.35		19.8		51.1	107	75-125		6010C
Zinc	115.4		70.6		51.1	88	75-125		6010C
Mercury	0.425		0.012	J					7471B

SSR = Spiked Sample Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VA - IN

5A-IN
MATRIX SPIKE DUPLICATE SAMPLE RECOVERY
METALS

Client ID: HFL-MW-105(22-24) MSD
Lab ID: 480-134080-1 MSD
Lab Name: TestAmerica Buffalo
Job No.: 480-134080-1
SDG No.:
Matrix: Solid
Concentration Units: mg/Kg
% Solids: 79.3

Analyte	(SDR) C	Spike Added (SA)	%R	Control Limit %R	RPD	RPD Limit	Q	Method
Aluminum	25140	2480	471	75-125	12	20	4	6010C
Antimony	24.89	49.5	50	75-125	12	20	F1	6010C
Arsenic	48.57	49.5	88	75-125	1	20		6010C
Barium	183.5	49.5	208	75-125	13	20	F1	6010C
Beryllium	40.44	49.5	80	75-125	3	20		6010C
Cadmium	43.38	49.5	87	75-125	2	20		6010C
Calcium	16660	2480	291	75-125	8	20	F1	6010C
Chromium	69.15	49.5	107	75-125	7	20		6010C
Cobalt	58.34	49.5	96	75-125	3	20		6010C
Copper	67.78	49.5	87	75-125	15	20		6010C
Iron	30750	2480	224	75-125	0	20	4	6010C
Lead	61.20	49.5	99	75-125	1	20		6010C
Magnesium	10660	2480	143	75-125	2	20	F1	6010C
Manganese	501.5	49.5	-127	75-125	24	20	4 F2	6010C
Nickel	75.49	49.5	98	75-125	3	20		6010C
Potassium	9056	2480	257	75-125	23	20	F1 F2	6010C
Selenium	41.49	49.5	84	75-125	4	20		6010C
Silver	11.31	12.4	91	75-125	2	20		6010C
Sodium	2172	2480	85	75-125	1	20		6010C
Thallium	44.53	49.5	90	75-125	4	20		6010C
Vanadium	80.09	49.5	122	75-125	7	20		6010C
Zinc	116.9	49.5	93	75-125	1	20		6010C
Mercury	0.424							7471B

SDR = Sample Duplicate Result

Calculations are performed before rounding to avoid round-off errors in calculated results.
Note - Results and Reporting Limits have been adjusted for dry weight.

FORM VD - IN

8-IN
ICP-AES AND ICP-MS SERIAL DILUTIONS
METALS

Lab ID: 480-133590-1

SDG No:

Lab Name: TestAmerica Buffalo Job No: 480-133590-1

Matrix: Solid Concentration Units: mg/Kg

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	Method
Aluminum	19400		20750		7.2		6010C
Antimony	2.0	J	3.23	J	NC		6010C
Arsenic	6.3		7.21	J	NC		6010C
Barium	131		144.3		10		6010C
Beryllium	0.74		0.775	J	NC		6010C
Cadmium	0.068	J	ND		NC		6010C
Calcium	2810		3062		9.0		6010C
Chromium	20.5		23.05		12	V	6010C
Cobalt	12.3		12.18		1.2		6010C
Copper	22.4		23.65		5.5		6010C
Iron	28000		31070		11	V	6010C
Lead	25.1		26.16		4.3		6010C
Magnesium	6180		6765		9.5		6010C
Manganese	725		805.7		11	V	6010C
Nickel	26.2		25.65	J	2.1		6010C
Potassium	2920		3109		6.6		6010C
Selenium	0.62	J	ND		NC		6010C
Silver	ND		ND		NC		6010C
Sodium	112	J	187.1	J	NC		6010C
Thallium	ND		ND		NC		6010C
Vanadium	24.8		26.32		6.0		6010C
Zinc	87.9		94.81		7.8		6010C

Calculations are performed before rounding to avoid round-off errors in calculated results.

FORM VIII-IN