

ANALYTICAL REPORT

PREPARED FOR

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JOB DESCRIPTION

Landfill Leachate

JOB NUMBER

320-107863-1

Eurofins Sacramento

Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northern California, LLC Project Manager.

Authorization



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Definitions/Glossary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Qualifiers

LCMS

Qualifier	Qualifier Description
*-	LCS and/or LCSD is outside acceptance limits, low biased.
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*1	LCS/LCSD RPD exceeds control limits.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
E	Result exceeded calibration range.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Case Narrative

Client: Hawaii Department of Health
Project: Landfill Leachate

Job ID: 320-107863-1

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Job Narrative 320-107863-1 Rev (1)

Revision 1

The sample ID has been corrected to WGLF-4B (320-107863-2).

Comments

This report contains only TOPS data.

Receipt

The samples were received on 12/8/2023 9:20 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 5.6° C.

LCMS

Method 537 (modified) - Pre & Post Treatment: The concentration of one or more analytes in all samples exceeded the instrument calibration range. These analytes have been qualified (E); however, the peak(s) did not saturate the instrument detector. Historical data indicate that for the isotope dilution method, dilution and re-analysis will not produce significantly different results from those reported above the calibration range.

Method 537 (modified) - Pre-Treatment: Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: WGLF-4B (320-107863-2) and (LCS 320-742659/2-A). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method 537 (modified): The labeled analyte M2-4:2 FTS is employed in this analysis as a "Reverse Surrogate" in order to monitor the oxidation efficiency of the TOP assay. This analyte is added to all sample fractions prior to any processing. The recovery of this analyte should be 0 – 10% in Post-Treatment fractions, indicating effective oxidation of the sample. The oxidation of M2-4:2 FTS yields PFBA as a conversion product and this contribution is included in the reported results for PFBA in Post-Treatment fractions of both samples and QC aliquots.

Method 537 (modified): The expected recovery of M2-4:2 FTS (0 – 10%) was observed in all Post-Treatment laboratory QC aliquots, and elevated recovery of M2-4:2 FTS in the Post-Treatment fraction of sample WGLF-4B (320-107863-2) indicates incomplete oxidation in this sample due to matrix interferences. The sample was re-extracted with concurring results.

Method 537 (modified): Enhanced recoveries of PFCA and 0 - 10% recovery of precursor analytes (such as 4:2 FTS, 6:2 FTS, 8:2 FTS, FOSA, NMeFOSAA, NEtFOSAA, etc.) is observed in the Post-Treatment Laboratory Control Sample aliquots (LCS/LCSD) associated with these samples, consistent with the expected oxidation of precursor analytes to PFCAs. The existing LCS control limits are based on historical performance for a subset of precursor analytes in the LCS solution, which has been recently expanded to include additional precursors. Consequently, the existing Post-Treatment control limits for LCS aliquots do not yet reflect the conversion of these additional analytes; control limits will be updated when sufficient data points are available.

Method 537 (modified) - Pre-Treatment: The laboratory control sample (LCS) and laboratory control sample duplicate (LCSD) for preparation batch 320-742659 had recoveries below control limits for the following analytes: N-methylperfluorooctane sulfonamide (NMeFOSA), N-ethylperfluorooctane sulfonamide (NEtFOSA) and N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE). The associated samples were re-extracted with similar recoveries for the LCS and LCSD. Sample results were evaluated and the best set of results have been reported.

Method 537 (modified): The continuing calibration verification (CCV) associated with analytical batch 320-746906 recovered above the upper control limit for 1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS). The samples associated with this CCV were non-detect (ND) for the affected analyte; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Organic Prep

Method TOP Prep: All samples were filtered prior to oxidation, per client request. A Preparation Blank (filter blank) was prepared in conjunction with this procedure.

Method TOP Prep: All samples were prepared using a reduced sample volume due to the potential for high analyte concentrations and empirical observations of matrix complexity. The reporting limits (RLs) have been adjusted proportionately.

Method TOP Prep: All samples were re-extracted outside of the laboratory's default sample preparation holding time due to incomplete oxidation achieved in the initial extraction.

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Case Narrative

Client: Hawaii Department of Health
Project: Landfill Leachate

Job ID: 320-107863-1

Job ID: 320-107863-1 (Continued)

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Method TOP Post Prep: All samples were oxidized using an extended oxidation time in an effort to ensure complete oxidation in these complex matrices.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

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Detection Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	1400	H	63		ng/L		1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	3100	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	4700	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	730	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	540	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	870	H	25		ng/L		1		537 (modified)	Pre-Treatment
3-Perfluoropropylpropanoic acid (3:3 FTCA)	180	H	25		ng/L		1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	1300	H	25		ng/L		1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	150	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA)	1800	*+ H	63		ng/L		1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA)	3200	*+ H	25		ng/L		1		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA)	5200	*+ H E	25		ng/L		1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	760	*+ H	25		ng/L		1		537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	610	H	25		ng/L		1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	25	*+ H	25		ng/L		1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	860	H	25		ng/L		1		537 (modified)	Post-Treatment
PFBA	450				ng/L		1		Total PFCA-Dif	Total/NA
PFPeA	170				ng/L		1		Total PFCA-Dif	Total/NA
PFHxA	480				ng/L		1		Total PFCA-Dif	Total/NA
PFHpA	24				ng/L		1		Total PFCA-Dif	Total/NA
PFOA	70				ng/L		1		Total PFCA-Dif	Total/NA
PFNA	0.00				ng/L		1		Total PFCA-Dif	Total/NA
Total PFCA	1100				ng/L		1		Total PFCA-Dif	Total/NA
Total PFCA	10000				ng/L		1		Total PFCA-Sum	Pre-Treatment
Total PFCA	12000				ng/L		1		Total PFCA-Sum	Post-Treatment

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	5800	E H	63		ng/L		1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	4400	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	6200	E H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	1500	H	25		ng/L		1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	2900	H	25		ng/L		1		537 (modified)	Pre-Treatment

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B (Continued)

Lab Sample ID: 320-107863-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorononanoic acid (PFNA)	140	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	46	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	3200	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	440	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	2900	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	43	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS)	1800	H	25		ng/L	1			537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	640	H	63		ng/L	1			537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	79	H	25		ng/L	1			537 (modified)	Pre-Treatment
3-Perfluoropropylpropanoic acid (3:3 FTCA)	330	H	25		ng/L	1			537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	8500	E H	25		ng/L	1			537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	1700	H	25		ng/L	1			537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA)	6700	*+ H E	63		ng/L	1			537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA)	4900	*+ H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA)	6400	*+ H E	25		ng/L	1			537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	1600	*+ H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorooctanoic acid (PFOA)	3200	H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	120	*+ H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	43	*+ H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	3100	H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	220	H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	2800	H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluoroheptanesulfonic acid (PFHpS)	39	H	25		ng/L	1			537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS)	1700	H	25		ng/L	1			537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	28	H *1	25		ng/L	1			537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	480	H	63		ng/L	1			537 (modified)	Post-Treatment
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	75	H	25		ng/L	1			537 (modified)	Post-Treatment
3-Perfluoropropylpropanoic acid (3:3 FTCA)	310	H	25		ng/L	1			537 (modified)	Post-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4200	H *1	25		ng/L	1			537 (modified)	Post-Treatment

This Detection Summary does not include radiochemical test results.

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Detection Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B (Continued)

Lab Sample ID: 320-107863-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	920	H	25		ng/L	1		537 (modified)	Post-Treatment
PFBA	850				ng/L	1		Total PFCA-Dif	Total/NA
PFPeA	470				ng/L	1		Total PFCA-Dif	Total/NA
PFHxA	180				ng/L	1		Total PFCA-Dif	Total/NA
PFHpA	150				ng/L	1		Total PFCA-Dif	Total/NA
PFOA	220				ng/L	1		Total PFCA-Dif	Total/NA
PFNA	0.00				ng/L	1		Total PFCA-Dif	Total/NA
Total PFCA	2000				ng/L	1		Total PFCA-Dif	Total/NA
Total PFCA	21000				ng/L	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	23000				ng/L	1		Total PFCA-Sum	Post-Treatment

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2800	H	63		ng/L	1		537 (modified)	Pre-Treatment
Perfluoropentanoic acid (PFPeA)	4400	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorohexanoic acid (PFHxA)	9600	E H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluoroheptanoic acid (PFHpA)	1300	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanoic acid (PFOA)	3200	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorononanoic acid (PFNA)	110	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorodecanoic acid (PFDA)	29	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorobutanesulfonic acid (PFBS)	14000	E H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluoropentanesulfonic acid (PFPeS)	190	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorohexanesulfonic acid (PFHxS)	620	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorooctanesulfonic acid (PFOS)	150	H	25		ng/L	1		537 (modified)	Pre-Treatment
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	420	H	63		ng/L	1		537 (modified)	Pre-Treatment
3-Perfluoropropylpropanoic acid (3:3 FTCA)	820	H	25		ng/L	1		537 (modified)	Pre-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	26000	E H	25		ng/L	1		537 (modified)	Pre-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	980	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	45	H	25		ng/L	1		537 (modified)	Pre-Treatment
Perfluorobutanoic acid (PFBA)	7300	*+ H E	63		ng/L	1		537 (modified)	Post-Treatment
Perfluoropentanoic acid (PFPeA)	5000	*+ H E	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorohexanoic acid (PFHxA)	9600	*+ H E	25		ng/L	1		537 (modified)	Post-Treatment
Perfluoroheptanoic acid (PFHpA)	1500	*+ H	25		ng/L	1		537 (modified)	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Detection Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6 (Continued)

Lab Sample ID: 320-107863-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	3100	H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorononanoic acid (PFNA)	99	*+ H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorodecanoic acid (PFDA)	28	*+ H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorobutanesulfonic acid (PFBS)	13000	H E	25		ng/L	1		537 (modified)	Post-Treatment
Perfluoropentanesulfonic acid (PFPeS)	120	H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorohexanesulfonic acid (PFHxS)	680	H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluorooctanesulfonic acid (PFOS)	140	H	25		ng/L	1		537 (modified)	Post-Treatment
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	H *1	25		ng/L	1		537 (modified)	Post-Treatment
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	63	H	25		ng/L	1		537 (modified)	Post-Treatment
Perfluoro-3-methoxypropanoic acid (PFMPA)	41	H *+	25		ng/L	1		537 (modified)	Post-Treatment
PFBA	4500				ng/L	1		Total PFCA-Dif	Total/NA
PFPeA	640				ng/L	1		Total PFCA-Dif	Total/NA
PFHxA	26				ng/L	1		Total PFCA-Dif	Total/NA
PFHpA	140				ng/L	1		Total PFCA-Dif	Total/NA
PFOA	0.00				ng/L	1		Total PFCA-Dif	Total/NA
PFNA	0.00				ng/L	1		Total PFCA-Dif	Total/NA
Total PFCA	5200				ng/L	1		Total PFCA-Dif	Total/NA
Total PFCA	21000				ng/L	1		Total PFCA-Sum	Pre-Treatment
Total PFCA	27000				ng/L	1		Total PFCA-Sum	Post-Treatment

This Detection Summary does not include radiochemical test results.

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Date Collected: 12/05/23 09:26

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1400	H	63		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoropentanoic acid (PFPeA)	3100	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorohexanoic acid (PFHxA)	4700	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoroheptanoic acid (PFHpA)	730	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorooctanoic acid (PFOA)	540	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorononanoic acid (PFNA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorodecanoic acid (PFDA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorobutanesulfonic acid (PFBS)	870	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:10	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:10	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:10	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:10	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	180	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Date Collected: 12/05/23 09:26

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropentylpropanoic acid (5:3 FTCA)	1300	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	150	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:10	1

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	87		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C4 PFBA	90		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C5 PFPeA	82		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFHxA	94		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C4 PFHpA	98		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C4 PFOA	103		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C5 PFNA	111		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFDA	108		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFUnA	90		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFDoA	110		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFTeDA	125		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 PFHxDA	105		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C3 PFBS	84		25 - 150				02/26/24 11:57	03/14/24 04:10	1
18O2 PFHxS	104		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C4 PFOS	105		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d5-NEtFOSAA	128		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d3-NMeFOSAA	113		25 - 150				02/26/24 11:57	03/14/24 04:10	1
M2-4:2 FTS	99		25 - 150				02/26/24 11:57	03/14/24 04:10	1
M2-6:2 FTS	100		25 - 150				02/26/24 11:57	03/14/24 04:10	1
M2-8:2 FTS	89		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d-N-MeFOSA-M	42		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d-N-EtFOSA-M	38		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d7-N-MeFOSE-M	34		25 - 150				02/26/24 11:57	03/14/24 04:10	1
d9-N-EtFOSE-M	32		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C3 HFPO-DA	94		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C-6:2 FTCA	90		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C-8:2 FTCA	81		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C2 10:2 FTS	94		25 - 150				02/26/24 11:57	03/14/24 04:10	1
13C-6:2 FTUCA	99		25 - 150				02/26/24 11:57	03/14/24 04:10	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	1800	*+ H	63		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoropentanoic acid (PFPeA)	3200	*+ H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorohexanoic acid (PFHxA)	5200	*+ H E	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoroheptanoic acid (PFHpA)	760	*+ H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorooctanoic acid (PFOA)	610	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Date Collected: 12/05/23 09:26

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorononanoic acid (PFNA)	ND	*+ H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorodecanoic acid (PFDA)	25	*+ H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorobutanesulfonic acid (PFBS)	860	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoropentanesulfonic acid (PFPeS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorohexanesulfonic acid (PFHxS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorooctanesulfonic acid (PFOS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 05:41	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H *1	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 05:41	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 05:41	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 05:41	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND	H *1	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Date Collected: 12/05/23 09:26

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H **	25		ng/L		02/26/24 12:16	03/14/24 05:41	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:41	1

Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	88		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C4 PFBA	66		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C5 PFPeA	77		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFHxA	92		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C4 PFHpA	99		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C4 PFOA	102		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C5 PFNA	108		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFDA	108		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFUnA	93		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFDoA	100		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFTeDA	112		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 PFHxDA	85		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C3 PFBS	82		25 - 150				02/26/24 12:16	03/14/24 05:41	1
18O2 PFHxS	97		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C4 PFOS	99		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d5-NEtFOSAA	121		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d3-NMeFOSAA	117		25 - 150				02/26/24 12:16	03/14/24 05:41	1
M2-4:2 FTS	0.2		0 - 10				02/26/24 12:16	03/14/24 05:41	1
M2-6:2 FTS	100		25 - 150				02/26/24 12:16	03/14/24 05:41	1
M2-8:2 FTS	91		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d-N-MeFOSA-M	58		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d-N-EtFOSA-M	45		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d7-N-MeFOSE-M	32		25 - 150				02/26/24 12:16	03/14/24 05:41	1
d9-N-EtFOSE-M	29		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C3 HFPO-DA	91		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C-6:2 FTCA	91		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C-8:2 FTCA	89		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C2 10:2 FTS	88		25 - 150				02/26/24 12:16	03/14/24 05:41	1
13C-6:2 FTUCA	89		25 - 150				02/26/24 12:16	03/14/24 05:41	1

Method: TAL SOP Total PFCA-Dif - Total PFCA (Treatment Difference)

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PFBA	450				ng/L			04/02/24 16:14	1
PFPeA	170				ng/L			04/02/24 16:14	1
PFHxA	480				ng/L			04/02/24 16:14	1
PFHpA	24				ng/L			04/02/24 16:14	1
PFOA	70				ng/L			04/02/24 16:14	1
PFNA	0.00				ng/L			04/02/24 16:14	1
Total PFCA	1100				ng/L			04/02/24 16:14	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH
Date Collected: 12/05/23 09:26
Date Received: 12/08/23 09:20

Lab Sample ID: 320-107863-1
Matrix: Water

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	10000				ng/L			03/14/24 04:10	1

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	12000				ng/L			03/14/24 05:41	1

Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Date Collected: 12/05/23 09:40

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	5800	E H	63		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoropentanoic acid (PFPeA)	4400	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorohexanoic acid (PFHxA)	6200	E H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoroheptanoic acid (PFHpA)	1500	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorooctanoic acid (PFOA)	2900	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorononanoic acid (PFNA)	140	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorodecanoic acid (PFDA)	46	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorotridecanoic acid (PFTTrDA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorobutanesulfonic acid (PFBS)	3200	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoropentanesulfonic acid (PFPeS)	440	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorohexanesulfonic acid (PFHxS)	2900	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoroheptanesulfonic acid (PFHpS)	43	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorooctanesulfonic acid (PFOS)	1800	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:21	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	640	H	63		ng/L		02/26/24 11:57	03/14/24 04:21	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	79	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:21	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:21	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1

Eurofins Sacramento

Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Date Collected: 12/05/23 09:40

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	330	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	8500	E H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	1700	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:21	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	96		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C4 PFBA	13	*5-	25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C5 PFPeA	44		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFHxA	97		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C4 PFHpA	113		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C4 PFOA	103		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C5 PFNA	101		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFDA	103		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFUnA	90		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFDoA	96		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFTeDA	104		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 PFHxDA	71		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C3 PFBS	68		25 - 150	02/26/24 11:57	03/14/24 04:21	1
18O2 PFHxS	98		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C4 PFOS	92		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d5-NEtFOSAA	142		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d3-NMeFOSAA	105		25 - 150	02/26/24 11:57	03/14/24 04:21	1
M2-4:2 FTS	112		25 - 150	02/26/24 11:57	03/14/24 04:21	1
M2-6:2 FTS	112		25 - 150	02/26/24 11:57	03/14/24 04:21	1
M2-8:2 FTS	138		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d-N-MeFOSA-M	61		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d-N-EtFOSA-M	57		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d7-N-MeFOSE-M	58		25 - 150	02/26/24 11:57	03/14/24 04:21	1
d9-N-EtFOSE-M	50		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C3 HFPO-DA	112		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C-6:2 FTCA	89		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C-8:2 FTCA	82		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C2 10:2 FTS	139		25 - 150	02/26/24 11:57	03/14/24 04:21	1
13C-6:2 FTUCA	97		25 - 150	02/26/24 11:57	03/14/24 04:21	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	6700	*+ H E	63		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoropentanoic acid (PFPeA)	4900	*+ H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorohexanoic acid (PFHxA)	6400	*+ H E	25		ng/L		02/26/24 12:16	03/14/24 05:52	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Date Collected: 12/05/23 09:40

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1600	++ H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorooctanoic acid (PFOA)	3200	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorononanoic acid (PFNA)	120	++ H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorodecanoic acid (PFDA)	43	++ H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorobutanesulfonic acid (PFBS)	3100	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoropentanesulfonic acid (PFPeS)	220	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorohexanesulfonic acid (PFHxS)	2800	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoroheptanesulfonic acid (PFHpS)	39	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorooctanesulfonic acid (PFOS)	1700	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 05:52	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	28	H *1	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	480	H	63		ng/L		02/26/24 12:16	03/14/24 05:52	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	75	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 05:52	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 05:52	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	310	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	4200	H *1	25		ng/L		02/26/24 12:16	03/14/24 05:52	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Date Collected: 12/05/23 09:40

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	920	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND	H **	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 05:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	85		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C4 PFBA	78		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C5 PFPeA	75		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFHxA	94		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C4 PFHpA	97		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C4 PFOA	95		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C5 PFNA	112		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFDA	105		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFUnA	91		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFDoA	101		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFTeDA	118		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 PFHxDA	92		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C3 PFBS	85		25 - 150				02/26/24 12:16	03/14/24 05:52	1
18O2 PFHxS	100		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C4 PFOS	96		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d5-NEtFOSAA	115		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d3-NMeFOSAA	105		25 - 150				02/26/24 12:16	03/14/24 05:52	1
M2-4:2 FTS	48	*5+	0 - 10				02/26/24 12:16	03/14/24 05:52	1
M2-6:2 FTS	89		25 - 150				02/26/24 12:16	03/14/24 05:52	1
M2-8:2 FTS	84		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d-N-MeFOSA-M	44		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d-N-EtFOSA-M	46		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d7-N-MeFOSE-M	48		25 - 150				02/26/24 12:16	03/14/24 05:52	1
d9-N-EtFOSE-M	45		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C3 HFPO-DA	93		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C-6:2 FTCA	84		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C-8:2 FTCA	87		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C2 10:2 FTS	92		25 - 150				02/26/24 12:16	03/14/24 05:52	1
13C-6:2 FTUCA	93		25 - 150				02/26/24 12:16	03/14/24 05:52	1

Method: TAL SOP Total PFCA-Dif - Total PFCA (Treatment Difference)

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PFBA	850				ng/L			04/02/24 16:14	1
PFPeA	470				ng/L			04/02/24 16:14	1
PFHxA	180				ng/L			04/02/24 16:14	1
PFHpA	150				ng/L			04/02/24 16:14	1
PFOA	220				ng/L			04/02/24 16:14	1
PFNA	0.00				ng/L			04/02/24 16:14	1
Total PFCA	2000				ng/L			04/02/24 16:14	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-4B
Date Collected: 12/05/23 09:40
Date Received: 12/08/23 09:20

Lab Sample ID: 320-107863-2
Matrix: Water

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	21000				ng/L			03/14/24 04:21	1

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	23000				ng/L			03/14/24 05:52	1

Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2800	H	63		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoropentanoic acid (PFPeA)	4400	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorohexanoic acid (PFHxA)	9600	E H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoroheptanoic acid (PFHpA)	1300	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorooctanoic acid (PFOA)	3200	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorononanoic acid (PFNA)	110	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorodecanoic acid (PFDA)	29	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorotridecanoic acid (PFTTrDA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorobutanesulfonic acid (PFBS)	14000	E H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoropentanesulfonic acid (PFPeS)	190	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorohexanesulfonic acid (PFHxS)	620	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorooctanesulfonic acid (PFOS)	150	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 11:57	03/14/24 04:32	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	420	H	63		ng/L		02/26/24 11:57	03/14/24 04:32	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:32	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H *	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 11:57	03/14/24 04:32	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Pre-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropropylpropanoic acid (3:3 FTCA)	820	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	26000	E H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	980	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	45	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEA)	ND	H	25		ng/L		02/26/24 11:57	03/14/24 04:32	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	94		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C4 PFBA	42		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C5 PFPeA	51		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFHxA	96		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C4 PFHpA	108		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C4 PFOA	98		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C5 PFNA	118		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFDA	100		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFUnA	98		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFDoA	111		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFTeDA	108		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 PFHxDA	85		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C3 PFBS	67		25 - 150	02/26/24 11:57	03/14/24 04:32	1
18O2 PFHxS	106		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C4 PFOS	104		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d5-NEtFOSAA	127		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d3-NMeFOSAA	107		25 - 150	02/26/24 11:57	03/14/24 04:32	1
M2-4:2 FTS	123		25 - 150	02/26/24 11:57	03/14/24 04:32	1
M2-6:2 FTS	109		25 - 150	02/26/24 11:57	03/14/24 04:32	1
M2-8:2 FTS	114		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d-N-MeFOSA-M	60		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d-N-EtFOSA-M	54		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d7-N-MeFOSE-M	59		25 - 150	02/26/24 11:57	03/14/24 04:32	1
d9-N-EtFOSE-M	52		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C3 HFPO-DA	110		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C-6:2 FTCA	96		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C-8:2 FTCA	93		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C2 10:2 FTS	99		25 - 150	02/26/24 11:57	03/14/24 04:32	1
13C-6:2 FTUCA	101		25 - 150	02/26/24 11:57	03/14/24 04:32	1

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	7300	*+ H E	63		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoropentanoic acid (PFPeA)	5000	*+ H E	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorohexanoic acid (PFHxA)	9600	*+ H E	25		ng/L		02/26/24 12:16	03/14/24 06:03	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluoroheptanoic acid (PFHpA)	1500	++ H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorooctanoic acid (PFOA)	3100	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorononanoic acid (PFNA)	99	++ H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorodecanoic acid (PFDA)	28	++ H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoroundecanoic acid (PFUnA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorododecanoic acid (PFDoA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorotridecanoic acid (PFTrDA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorotetradecanoic acid (PFTeA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorobutanesulfonic acid (PFBS)	13000	H E	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoropentanesulfonic acid (PFPeS)	120	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorohexanesulfonic acid (PFHxS)	680	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoroheptanesulfonic acid (PFHpS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorooctanesulfonic acid (PFOS)	140	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorononanesulfonic acid (PFNS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorodecanesulfonic acid (PFDS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorododecanesulfonic acid (PFDoS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluorooctanesulfonamide (FOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 06:03	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND	H *1	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND	H	63		ng/L		02/26/24 12:16	03/14/24 06:03	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 06:03	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9CI-PF3ONS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND	H	50		ng/L		02/26/24 12:16	03/14/24 06:03	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11CI-PF3OUdS)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	H *1	25		ng/L		02/26/24 12:16	03/14/24 06:03	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Method: EPA 537 (modified) - Fluorinated Alkyl Substances - Post-Treatment (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	63	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
6:2 FTUCA	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	41	H **	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND	H	25		ng/L		02/26/24 12:16	03/14/24 06:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 FOSA	84		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C4 PFBA	77		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C5 PFPeA	69		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFHxA	84		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C4 PFHpA	89		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C4 PFOA	90		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C5 PFNA	98		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFDA	99		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFUnA	88		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFDoA	103		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFTeDA	119		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 PFHxDA	95		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C3 PFBS	72		25 - 150				02/26/24 12:16	03/14/24 06:03	1
18O2 PFHxS	93		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C4 PFOS	92		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d5-NEtFOSAA	124		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d3-NMeFOSAA	108		25 - 150				02/26/24 12:16	03/14/24 06:03	1
M2-4:2 FTS	0.3		0 - 10				02/26/24 12:16	03/14/24 06:03	1
M2-6:2 FTS	84		25 - 150				02/26/24 12:16	03/14/24 06:03	1
M2-8:2 FTS	88		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d-N-MeFOSA-M	36		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d-N-EtFOSA-M	35		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d7-N-MeFOSE-M	38		25 - 150				02/26/24 12:16	03/14/24 06:03	1
d9-N-EtFOSE-M	37		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C3 HFPO-DA	89		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C-6:2 FTCA	82		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C-8:2 FTCA	83		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C2 10:2 FTS	95		25 - 150				02/26/24 12:16	03/14/24 06:03	1
13C-6:2 FTUCA	93		25 - 150				02/26/24 12:16	03/14/24 06:03	1

Method: TAL SOP Total PFCA-Dif - Total PFCA (Treatment Difference)

Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
PFBA	4500				ng/L			04/02/24 16:14	1
PFPeA	640				ng/L			04/02/24 16:14	1
PFHxA	26				ng/L			04/02/24 16:14	1
PFHpA	140				ng/L			04/02/24 16:14	1
PFOA	0.00				ng/L			04/02/24 16:14	1
PFNA	0.00				ng/L			04/02/24 16:14	1
Total PFCA	5200				ng/L			04/02/24 16:14	1

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Client Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Pre-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	21000				ng/L			03/14/24 04:32	1

Method: TAL SOP Total PFCA-Sum - Total PFCA (Summary) - Post-Treatment									
Analyte	Result	Qualifier	NONE	NONE	Unit	D	Prepared	Analyzed	Dil Fac
Total PFCA	27000				ng/L			03/14/24 06:03	1

Total Oxidation Precursors

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

TestAmerica Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1
Matrix: Water

Analyte	Pre-Treatment Method			Post-Treatment Method			Difference ¹	
	537 (modified)			537 (modified)				
	Result	Qualifier	Unit	Result	Qualifier	Unit	Result	Unit
Perfluorobutanoic acid (PFBA)	1400		ng/L	1800		ng/L	450	ng/L
Perfluoropentanoic acid (PFPeA)	3100		ng/L	3200		ng/L	170	ng/L
Perfluorohexanoic acid (PFHxA)	4700		ng/L	5200		ng/L	480	ng/L
Perfluoroheptanoic acid (PFHpA)	730		ng/L	760		ng/L	24	ng/L
Perfluorooctanoic acid (PFOA)	540		ng/L	610		ng/L	70	ng/L
Perfluorononanoic acid (PFNA)	ND		ng/L	ND		ng/L	0.00	ng/L
Total PFCA	10000		ng/L	12000		ng/L	1100	ng/L

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2
Matrix: Water

Analyte	Pre-Treatment Method			Post-Treatment Method			Difference ¹	
	537 (modified)			537 (modified)				
	Result	Qualifier	Unit	Result	Qualifier	Unit	Result	Unit
Perfluorobutanoic acid (PFBA)	5800		ng/L	6700		ng/L	850	ng/L
Perfluoropentanoic acid (PFPeA)	4400		ng/L	4900		ng/L	470	ng/L
Perfluorohexanoic acid (PFHxA)	6200		ng/L	6400		ng/L	180	ng/L
Perfluoroheptanoic acid (PFHpA)	1500		ng/L	1600		ng/L	150	ng/L
Perfluorooctanoic acid (PFOA)	2900		ng/L	3200		ng/L	220	ng/L
Perfluorononanoic acid (PFNA)	140		ng/L	120		ng/L	0.00	ng/L
Total PFCA	21000		ng/L	23000		ng/L	2000	ng/L

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3
Matrix: Water

Analyte	Pre-Treatment Method			Post-Treatment Method			Difference ¹	
	537 (modified)			537 (modified)				
	Result	Qualifier	Unit	Result	Qualifier	Unit	Result	Unit
Perfluorobutanoic acid (PFBA)	2800		ng/L	7300		ng/L	4500	ng/L
Perfluoropentanoic acid (PFPeA)	4400		ng/L	5000		ng/L	640	ng/L
Perfluorohexanoic acid (PFHxA)	9600		ng/L	9600		ng/L	26	ng/L
Perfluoroheptanoic acid (PFHpA)	1300		ng/L	1500		ng/L	140	ng/L
Perfluorooctanoic acid (PFOA)	3200		ng/L	3100		ng/L	0.00	ng/L
Perfluorononanoic acid (PFNA)	110		ng/L	99		ng/L	0.00	ng/L
Total PFCA	21000		ng/L	27000		ng/L	5200	ng/L

¹ Difference = Post-Treatment - Pre-Treatment

Isotope Dilution Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Pre-Treatment

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)
320-107863-1	WGLF-E8 ASH	87	90	82	94	98	103	111	108
320-107863-2	WGLF-4B	96	13 *5-	44	97	113	103	101	103
320-107863-3	WGLF-E6	94	42	51	96	108	98	118	100
LCS 320-742659/2-A	Lab Control Sample	78	89	72	91	91	90	100	105
LCSD 320-742659/3-A	Lab Control Sample Dup	87	88	82	103	103	97	111	104
MB 320-742659/1-A	Method Blank	94	84	82	100	97	99	116	112

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDoA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-107863-1	WGLF-E8 ASH	90	110	125	105	84	104	105	128
320-107863-2	WGLF-4B	90	96	104	71	68	98	92	142
320-107863-3	WGLF-E6	98	111	108	85	67	106	104	127
LCS 320-742659/2-A	Lab Control Sample	86	106	108	106	81	101	98	110
LCSD 320-742659/3-A	Lab Control Sample Dup	96	107	110	112	83	101	100	127
MB 320-742659/1-A	Method Blank	93	103	110	102	84	102	95	115

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d3NMFOS (25-150)	M242FTS (25-150)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-107863-1	WGLF-E8 ASH	113	99	100	89	42	38	34	32
320-107863-2	WGLF-4B	105	112	112	138	61	57	58	50
320-107863-3	WGLF-E6	107	123	109	114	60	54	59	52
LCS 320-742659/2-A	Lab Control Sample	122	93	97	92	45	38	29	24 *5-
LCSD 320-742659/3-A	Lab Control Sample Dup	120	112	101	105	50	40	29	25
MB 320-742659/1-A	Method Blank	112	118	109	97	50	40	32	26

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	MFHEA (25-150)	MFOEA (25-150)	M102FTS (25-150)	MFHUEA (25-150)
320-107863-1	WGLF-E8 ASH	94	90	81	94	99
320-107863-2	WGLF-4B	112	89	82	139	97
320-107863-3	WGLF-E6	110	96	93	99	101
LCS 320-742659/2-A	Lab Control Sample	86	83	72	92	89
LCSD 320-742659/3-A	Lab Control Sample Dup	92	91	87	97	95
MB 320-742659/1-A	Method Blank	91	89	82	91	93

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS

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Isotope Dilution Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

PFOS = 13C4 PFOS
d5NEFOS = d5-NEtFOSAA
d3NMFOS = d3-NMeFOSAA
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
HFPODA = 13C3 HFPO-DA
MFHEA = 13C-6:2 FTCA
MFOEA = 13C-8:2 FTCA
M102FTS = 13C2 10:2 FTS
MFHUEA = 13C-6:2 FTUCA

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Post-Treatment

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFOSA (25-150)	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)
320-107863-1	WGLF-E8 ASH	88	66	77	92	99	102	108	108
320-107863-2	WGLF-4B	85	78	75	94	97	95	112	105
320-107863-3	WGLF-E6	84	77	69	84	89	90	98	99
LCS 320-742660/2-A	Lab Control Sample	94	88	85	101	99	103	110	103
LCSD 320-742660/3-A	Lab Control Sample Dup	90	77	87	93	100	103	111	105
MB 320-742660/1-A	Method Blank	92	82	78	100	94	99	97	99

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFUnA (25-150)	PFDaA (25-150)	PFTDA (25-150)	PFHxDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	d5NEFOS (25-150)
320-107863-1	WGLF-E8 ASH	93	100	112	85	82	97	99	121
320-107863-2	WGLF-4B	91	101	118	92	85	100	96	115
320-107863-3	WGLF-E6	88	103	119	95	72	93	92	124
LCS 320-742660/2-A	Lab Control Sample	98	110	121	108	89	104	96	132
LCSD 320-742660/3-A	Lab Control Sample Dup	92	100	119	105	86	102	104	129
MB 320-742660/1-A	Method Blank	91	100	113	104	86	106	99	127

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	d3NMFOS (25-150)	M242FTS (0-10)	M262FTS (25-150)	M282FTS (25-150)	dMeFOSA (25-150)	dEtFOSA (25-150)	NMFM (25-150)	NEFM (25-150)
320-107863-1	WGLF-E8 ASH	117	0.2	100	91	58	45	32	29
320-107863-2	WGLF-4B	105	48 *5+	89	84	44	46	48	45
320-107863-3	WGLF-E6	108	0.3	84	88	36	35	38	37
LCS 320-742660/2-A	Lab Control Sample	128	0.1	111	97	48	43	39	37
LCSD 320-742660/3-A	Lab Control Sample Dup	122	0.1	114	101	48	41	37	34
MB 320-742660/1-A	Method Blank	111	0.2	114	99	42	35	33	31

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	HFPODA (25-150)	MFHEA (25-150)	MFOEA (25-150)	M102FTS (25-150)	MFHUEA (25-150)
320-107863-1	WGLF-E8 ASH	91	91	89	88	89
320-107863-2	WGLF-4B	93	84	87	92	93
320-107863-3	WGLF-E6	89	82	83	95	93
LCS 320-742660/2-A	Lab Control Sample	98	94	90	91	101
LCSD 320-742660/3-A	Lab Control Sample Dup	89	94	82	94	95
MB 320-742660/1-A	Method Blank	94	95	90	85	98

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Isotope Dilution Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Surrogate Legend

PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxDA = 13C2 PFHxDA
C3PFBS = 13C3 PFBS
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
d5NEFOS = d5-NEtFOSAA
d3NMFOS = d3-NMeFOSAA
M242FTS = M2-4:2 FTS
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
dMeFOSA = d-N-MeFOSA-M
dEtFOSA = d-N-EtFOSA-M
NMFM = d7-N-MeFOSE-M
NEFM = d9-N-EtFOSE-M
HFPODA = 13C3 HFPO-DA
MFHEA = 13C-6:2 FTCA
MFOEA = 13C-8:2 FTCA
M102FTS = 13C2 10:2 FTS
MFHUEA = 13C-6:2 FTUCA

QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-742659/1-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorotridecanoic acid (PFTTrDA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		13		ng/L		02/26/24 11:57	03/14/24 03:24	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		02/26/24 11:57	03/14/24 03:24	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		02/26/24 11:57	03/14/24 03:24	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
9-Chlorohexadecafluoro-3-oxanonan e-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		02/26/24 11:57	03/14/24 03:24	1
11-Chloroeicosafluoro-3-oxaundecan e-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-742659/1-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Method Blank

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
6:2 FTUCA	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		02/26/24 11:57	03/14/24 03:24	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	94		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C4 PFBA	84		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C5 PFPeA	82		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFHxA	100		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C4 PFHpA	97		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C4 PFOA	99		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C5 PFNA	116		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFDA	112		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFUnA	93		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFDoA	103		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFTeDA	110		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 PFHxDA	102		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C3 PFBS	84		25 - 150	02/26/24 11:57	03/14/24 03:24	1
18O2 PFHxS	102		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C4 PFOS	95		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d5-NEtFOSAA	115		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d3-NMeFOSAA	112		25 - 150	02/26/24 11:57	03/14/24 03:24	1
M2-4:2 FTS	118		25 - 150	02/26/24 11:57	03/14/24 03:24	1
M2-6:2 FTS	109		25 - 150	02/26/24 11:57	03/14/24 03:24	1
M2-8:2 FTS	97		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d-N-MeFOSA-M	50		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d-N-EtFOSA-M	40		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d7-N-MeFOSE-M	32		25 - 150	02/26/24 11:57	03/14/24 03:24	1
d9-N-EtFOSE-M	26		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C3 HFPO-DA	91		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C-6:2 FTCA	89		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C-8:2 FTCA	82		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C2 10:2 FTS	91		25 - 150	02/26/24 11:57	03/14/24 03:24	1
13C-6:2 FTUCA	93		25 - 150	02/26/24 11:57	03/14/24 03:24	1

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-742659/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	100	91.6		ng/L		92	76 - 136
Perfluoropentanoic acid (PFPeA)	100	107		ng/L		107	71 - 131
Perfluorohexanoic acid (PFHxA)	100	99.7		ng/L		100	73 - 133
Perfluoroheptanoic acid (PFHpA)	100	102		ng/L		102	72 - 132
Perfluorooctanoic acid (PFOA)	100	103		ng/L		103	70 - 130
Perfluorononanoic acid (PFNA)	100	94.7		ng/L		95	75 - 135
Perfluorodecanoic acid (PFDA)	100	84.9		ng/L		85	76 - 136
Perfluoroundecanoic acid (PFUnA)	100	114		ng/L		114	68 - 128
Perfluorododecanoic acid (PFDoA)	100	102		ng/L		102	71 - 131
Perfluorotridecanoic acid (PFTTrDA)	100	90.5		ng/L		91	71 - 131
Perfluorotetradecanoic acid (PFTeA)	100	88.5		ng/L		89	70 - 130
Perfluorobutanesulfonic acid (PFBS)	88.8	92.7		ng/L		104	67 - 127
Perfluoropentanesulfonic acid (PFPeS)	94.0	112		ng/L		119	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	91.2	83.1		ng/L		91	59 - 119
Perfluoroheptanesulfonic acid (PFHpS)	95.4	88.0		ng/L		92	76 - 136
Perfluorooctanesulfonic acid (PFOS)	93.0	91.2		ng/L		98	70 - 130
Perfluorononanesulfonic acid (PFNS)	96.0	98.0		ng/L		102	75 - 135
Perfluorodecanesulfonic acid (PFDS)	96.4	92.3		ng/L		96	71 - 131
Perfluorododecanesulfonic acid (PFDoS)	97.0	83.8		ng/L		86	67 - 127
Perfluorooctanesulfonamide (FOSA)	100	104		ng/L		104	73 - 133
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	94.4		ng/L		94	76 - 136
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	110		ng/L		110	76 - 136
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	112		ng/L		119	79 - 139
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	99.1		ng/L		104	59 - 175
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	95.1		ng/L		99	75 - 135
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	53.0	*-	ng/L		53	78 - 138
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	57.1	*-	ng/L		57	67 - 154
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	72.0		ng/L		72	70 - 130
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	70.1	*-	ng/L		70	71 - 131

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-742659/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
9-Chlorohexadecafluoro-3-oxan onane-1-sulfonic acid (9CI-PF3ONS)	93.4	88.3		ng/L		95	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	102		ng/L		102	51 - 173
11-Chloroeicosafluoro-3-oxaund ecane-1-sulfonic acid (11CI-PF3OUdS)	94.4	101		ng/L		107	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	98.4		ng/L		104	79 - 139
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	96.8		ng/L		97	70 - 130
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	99.9		ng/L		100	70 - 130
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	116		ng/L		116	70 - 130
6:2 FTUCA	100	112		ng/L		112	70 - 130
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	97.0		ng/L		97	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	110		ng/L		110	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	110		ng/L		110	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	83.3		ng/L		93	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	78		25 - 150
13C4 PFBA	89		25 - 150
13C5 PFPeA	72		25 - 150
13C2 PFHxA	91		25 - 150
13C4 PFHpA	91		25 - 150
13C4 PFOA	90		25 - 150
13C5 PFNA	100		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	86		25 - 150
13C2 PFDoA	106		25 - 150
13C2 PFTeDA	108		25 - 150
13C2 PFHxDA	106		25 - 150
13C3 PFBS	81		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	98		25 - 150
d5-NEtFOSAA	110		25 - 150
d3-NMeFOSAA	122		25 - 150
M2-4:2 FTS	93		25 - 150
M2-6:2 FTS	97		25 - 150
M2-8:2 FTS	92		25 - 150
d-N-MeFOSA-M	45		25 - 150
d-N-EtFOSA-M	38		25 - 150
d7-N-MeFOSE-M	29		25 - 150
d9-N-EtFOSE-M	24	*5-	25 - 150
13C3 HFPO-DA	86		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-742659/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Pre-Treatment

Prep Batch: 742659

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C-6:2 FTCA	83		25 - 150
13C-8:2 FTCA	72		25 - 150
13C2 10:2 FTS	92		25 - 150
13C-6:2 FTUCA	89		25 - 150

Lab Sample ID: LCSD 320-742659/3-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	100	104		ng/L		104	76 - 136	13	30
Perfluoropentanoic acid (PFPeA)	100	109		ng/L		109	71 - 131	2	30
Perfluorohexanoic acid (PFHxA)	100	94.6		ng/L		95	73 - 133	5	30
Perfluoroheptanoic acid (PFHpA)	100	103		ng/L		103	72 - 132	1	30
Perfluorooctanoic acid (PFOA)	100	95.6		ng/L		96	70 - 130	7	30
Perfluorononanoic acid (PFNA)	100	84.5		ng/L		84	75 - 135	11	30
Perfluorodecanoic acid (PFDA)	100	87.6		ng/L		88	76 - 136	3	30
Perfluoroundecanoic acid (PFUnA)	100	109		ng/L		109	68 - 128	5	30
Perfluorododecanoic acid (PFDoA)	100	106		ng/L		106	71 - 131	4	30
Perfluorotridecanoic acid (PFTTrDA)	100	97.7		ng/L		98	71 - 131	8	30
Perfluorotetradecanoic acid (PFTeA)	100	97.2		ng/L		97	70 - 130	9	30
Perfluorobutanesulfonic acid (PFBS)	88.8	105		ng/L		119	67 - 127	13	30
Perfluoropentanesulfonic acid (PFPeS)	94.0	116		ng/L		123	66 - 126	3	30
Perfluorohexanesulfonic acid (PFHxS)	91.2	89.2		ng/L		98	59 - 119	7	30
Perfluoroheptanesulfonic acid (PFHpS)	95.4	90.7		ng/L		95	76 - 136	3	30
Perfluorooctanesulfonic acid (PFOS)	93.0	96.6		ng/L		104	70 - 130	6	30
Perfluorononanesulfonic acid (PFNS)	96.0	105		ng/L		109	75 - 135	7	30
Perfluorodecanesulfonic acid (PFDS)	96.4	96.9		ng/L		101	71 - 131	5	30
Perfluorododecanesulfonic acid (PFDoS)	97.0	89.5		ng/L		92	67 - 127	6	30
Perfluorooctanesulfonamide (FOSA)	100	98.9		ng/L		99	73 - 133	5	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	106		ng/L		106	76 - 136	11	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	107		ng/L		107	76 - 136	3	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	122		ng/L		130	79 - 139	9	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	101		ng/L		106	59 - 175	2	30

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-742659/3-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 742659

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	87.9		ng/L		92	75 - 135	8	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	50.0	*-	ng/L		50	78 - 138	6	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	49.2	*-	ng/L		49	67 - 154	15	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	76.5		ng/L		77	70 - 130	6	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	68.7	*-	ng/L		69	71 - 131	2	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	96.1		ng/L		103	75 - 135	8	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	102		ng/L		102	51 - 173	0	30
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	107		ng/L		113	54 - 114	6	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	97.8		ng/L		103	79 - 139	1	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	104		ng/L		104	70 - 130	7	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	93.1		ng/L		93	70 - 130	7	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	110		ng/L		110	70 - 130	5	30
6:2 FTUCA	100	110		ng/L		110	70 - 130	3	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	88.0		ng/L		88	70 - 130	10	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	100		ng/L		100	70 - 130	10	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	103		ng/L		103	70 - 130	7	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	82.3		ng/L		92	70 - 130	1	30

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	87		25 - 150
13C4 PFBA	88		25 - 150
13C5 PFPeA	82		25 - 150
13C2 PFHxA	103		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	97		25 - 150
13C5 PFNA	111		25 - 150
13C2 PFDA	104		25 - 150
13C2 PFUnA	96		25 - 150
13C2 PFDoA	107		25 - 150
13C2 PFTeDA	110		25 - 150
13C2 PFHxDA	112		25 - 150
13C3 PFBS	83		25 - 150
18O2 PFHxS	101		25 - 150
13C4 PFOS	100		25 - 150
d5-NEtFOSAA	127		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-742659/3-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample Dup

Prep Type: Pre-Treatment

Prep Batch: 742659

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
d3-NMeFOSAA	120		25 - 150
M2-4:2 FTS	112		25 - 150
M2-6:2 FTS	101		25 - 150
M2-8:2 FTS	105		25 - 150
d-N-MeFOSA-M	50		25 - 150
d-N-EtFOSA-M	40		25 - 150
d7-N-MeFOSE-M	29		25 - 150
d9-N-EtFOSE-M	25		25 - 150
13C3 HFPO-DA	92		25 - 150
13C-6:2 FTCA	91		25 - 150
13C-8:2 FTCA	87		25 - 150
13C2 10:2 FTS	97		25 - 150
13C-6:2 FTUCA	95		25 - 150

Lab Sample ID: MB 320-742660/1-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Method Blank

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Perfluorobutanoic acid (PFBA)	ND		13		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoropentanoic acid (PFPeA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorohexanoic acid (PFHxA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoroheptanoic acid (PFHpA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorooctanoic acid (PFOA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorononanoic acid (PFNA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorodecanoic acid (PFDA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoroundecanoic acid (PFUnA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorododecanoic acid (PFDoA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorotridecanoic acid (PFTrDA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorotetradecanoic acid (PFTeA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorobutanesulfonic acid (PFBS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoropentanesulfonic acid (PFPeS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorohexanesulfonic acid (PFHxS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoroheptanesulfonic acid (PFHpS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorooctanesulfonic acid (PFOS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorononanesulfonic acid (PFNS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorodecanesulfonic acid (PFDS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorododecanesulfonic acid (PFDoS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluorooctanesulfonamide (FOSA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		13		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-742660/1-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Method Blank

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	ND		13		ng/L		02/26/24 12:16	03/14/24 04:55	1
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-ethylperfluorooctane sulfonamide (NEtFOSA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-methylperfluorooctane sulfonamide (NMeFOSA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	ND		10		ng/L		02/26/24 12:16	03/14/24 04:55	1
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	ND		10		ng/L		02/26/24 12:16	03/14/24 04:55	1
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
3-Perfluoropropylpropanoic acid (3:3 FTCA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
3-Perfluoropentylpropanoic acid (5:3 FTCA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
6:2 FTUCA	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoro-4-methoxybutanoic acid (PFMBA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoro-3-methoxypropanoic acid (PFMPA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1
Perfluoro (2-ethoxyethane) sulfonic acid (PFEEESA)	ND		5.0		ng/L		02/26/24 12:16	03/14/24 04:55	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	92		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C4 PFBA	82		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C5 PFPeA	78		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFHxA	100		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C4 PFHpA	94		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C4 PFOA	99		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C5 PFNA	97		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFDA	99		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFUnA	91		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFDoA	100		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFTeDA	113		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 PFHxDA	104		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C3 PFBS	86		25 - 150	02/26/24 12:16	03/14/24 04:55	1
18O2 PFHxS	106		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C4 PFOS	99		25 - 150	02/26/24 12:16	03/14/24 04:55	1
d5-NEtFOSAA	127		25 - 150	02/26/24 12:16	03/14/24 04:55	1

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-742660/1-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Method Blank

Prep Type: Post-Treatment

Prep Batch: 742660

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
d3-NMeFOSAA	111		25 - 150	02/26/24 12:16	03/14/24 04:55	1
M2-4:2 FTS	0.2		0 - 10	02/26/24 12:16	03/14/24 04:55	1
M2-6:2 FTS	114		25 - 150	02/26/24 12:16	03/14/24 04:55	1
M2-8:2 FTS	99		25 - 150	02/26/24 12:16	03/14/24 04:55	1
d-N-MeFOSA-M	42		25 - 150	02/26/24 12:16	03/14/24 04:55	1
d-N-EtFOSA-M	35		25 - 150	02/26/24 12:16	03/14/24 04:55	1
d7-N-MeFOSE-M	33		25 - 150	02/26/24 12:16	03/14/24 04:55	1
d9-N-EtFOSE-M	31		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C3 HFPO-DA	94		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C-6:2 FTCA	95		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C-8:2 FTCA	90		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C2 10:2 FTS	85		25 - 150	02/26/24 12:16	03/14/24 04:55	1
13C-6:2 FTUCA	98		25 - 150	02/26/24 12:16	03/14/24 04:55	1

Lab Sample ID: LCS 320-742660/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Perfluorobutanoic acid (PFBA)	100	174	*+	ng/L		174	93 - 153
Perfluoropentanoic acid (PFPeA)	100	181	*+	ng/L		181	85 - 145
Perfluorohexanoic acid (PFHxA)	100	207	*+	ng/L		207	81 - 141
Perfluoroheptanoic acid (PFHpA)	100	199	*+	ng/L		199	104 - 171
Perfluorooctanoic acid (PFOA)	100	314		ng/L		314	158 - 454
Perfluorononanoic acid (PFNA)	100	154	*+	ng/L		154	66 - 126
Perfluorodecanoic acid (PFDA)	100	124		ng/L		124	65 - 125
Perfluoroundecanoic acid (PFUnA)	100	92.4		ng/L		92	57 - 117
Perfluorododecanoic acid (PFDoA)	100	98.7		ng/L		99	66 - 126
Perfluorotridecanoic acid (PFTrDA)	100	97.2		ng/L		97	65 - 136
Perfluorotetradecanoic acid (PFTeA)	100	77.4		ng/L		77	63 - 123
Perfluorobutanesulfonic acid (PFBS)	88.8	94.1		ng/L		106	75 - 135
Perfluoropentanesulfonic acid (PFPeS)	94.0	113		ng/L		120	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	91.2	86.2		ng/L		95	64 - 124
Perfluoroheptanesulfonic acid (PFHpS)	95.4	93.8		ng/L		98	70 - 131
Perfluorooctanesulfonic acid (PFOS)	93.0	90.9		ng/L		98	68 - 128
Perfluorononanesulfonic acid (PFNS)	96.0	94.5		ng/L		98	70 - 130
Perfluorodecanesulfonic acid (PFDS)	96.4	93.9		ng/L		97	66 - 126
Perfluorododecanesulfonic acid (PFDoS)	97.0	92.3		ng/L		95	67 - 127
Perfluorooctanesulfonamide (FOSA)	100	8.55		ng/L		9	0 - 10

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-742660/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	ND		ng/L		2	0 - 10
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	ND		ng/L		2	0 - 10
1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)	93.8	ND		ng/L		0.2	0 - 10
1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)	95.2	ND		ng/L		3	0 - 10
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	8.68		ng/L		9	0 - 10
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	ND		ng/L		0	0 - 10
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	ND		ng/L		0	0 - 10
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	ND		ng/L		0	0 - 10
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	ND		ng/L		0	0 - 10
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	94.9		ng/L		102	75 - 135
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	76.0		ng/L		76	51 - 173
11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	83.8		ng/L		89	54 - 114
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	3.49	J	ng/L		4	0 - 10
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	ND		ng/L		0	0 - 10
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	ND		ng/L		0.3	0 - 10
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	2.84	J	ng/L		3	0 - 10
6:2 FTUCA	100	ND		ng/L		0	0 - 10
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	85.0		ng/L		85	70 - 130
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	83.8		ng/L		84	70 - 130
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	135	*+	ng/L		135	70 - 130
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	78.1		ng/L		88	70 - 130

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C8 FOSA	94		25 - 150
13C4 PFBA	88		25 - 150
13C5 PFPeA	85		25 - 150
13C2 PFHxA	101		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	110		25 - 150

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-742660/2-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample

Prep Type: Post-Treatment

Prep Batch: 742660

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C2 PFDA	103		25 - 150
13C2 PFUnA	98		25 - 150
13C2 PFDoA	110		25 - 150
13C2 PFTeDA	121		25 - 150
13C2 PFHxDA	108		25 - 150
13C3 PFBS	89		25 - 150
18O2 PFHxS	104		25 - 150
13C4 PFOS	96		25 - 150
d5-NEtFOSAA	132		25 - 150
d3-NMeFOSAA	128		25 - 150
M2-4:2 FTS	0.1		0 - 10
M2-6:2 FTS	111		25 - 150
M2-8:2 FTS	97		25 - 150
d-N-MeFOSA-M	48		25 - 150
d-N-EtFOSA-M	43		25 - 150
d7-N-MeFOSE-M	39		25 - 150
d9-N-EtFOSE-M	37		25 - 150
13C3 HFPO-DA	98		25 - 150
13C-6:2 FTCA	94		25 - 150
13C-8:2 FTCA	90		25 - 150
13C2 10:2 FTS	91		25 - 150
13C-6:2 FTUCA	101		25 - 150

Lab Sample ID: LCSD 320-742660/3-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample Dup

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	100	174	*+	ng/L		174	93 - 153	0	30
Perfluoropentanoic acid (PFPeA)	100	172	*+	ng/L		172	85 - 145	5	30
Perfluorohexanoic acid (PFHxA)	100	212	*+	ng/L		212	81 - 141	2	30
Perfluoroheptanoic acid (PFHpA)	100	205	*+	ng/L		205	104 - 171	3	30
Perfluorooctanoic acid (PFOA)	100	339		ng/L		339	158 - 454	7	30
Perfluorononanoic acid (PFNA)	100	159	*+	ng/L		159	66 - 126	3	30
Perfluorodecanoic acid (PFDA)	100	126	*+	ng/L		126	65 - 125	2	30
Perfluoroundecanoic acid (PFUnA)	100	113		ng/L		113	57 - 117	20	30
Perfluorododecanoic acid (PFDoA)	100	105		ng/L		105	66 - 126	6	30
Perfluorotridecanoic acid (PFTTrDA)	100	113		ng/L		113	65 - 136	15	30
Perfluorotetradecanoic acid (PFTeA)	100	84.7		ng/L		85	63 - 123	9	30
Perfluorobutanesulfonic acid (PFBS)	88.8	92.3		ng/L		104	75 - 135	2	30
Perfluoropentanesulfonic acid (PFPeS)	94.0	113		ng/L		120	70 - 130	0	30
Perfluorohexanesulfonic acid (PFHxS)	91.2	84.0		ng/L		92	64 - 124	3	30
Perfluoroheptanesulfonic acid (PFHpS)	95.4	83.3		ng/L		87	70 - 131	12	30

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QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-742660/3-A

Matrix: Water

Analysis Batch: 746906

Client Sample ID: Lab Control Sample Dup

Prep Type: Post-Treatment

Prep Batch: 742660

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	93.0	89.8		ng/L		97	68 - 128	1	30
Perfluorononanesulfonic acid (PFNS)	96.0	102		ng/L		107	70 - 130	8	30
Perfluorodecanesulfonic acid (PFDS)	96.4	88.4		ng/L		92	66 - 126	6	30
Perfluorododecanesulfonic acid (PFDoS)	97.0	85.3		ng/L		88	67 - 127	8	30
Perfluorooctanesulfonamide (FOSA)	100	7.24		ng/L		7	0 - 10	17	30
N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)	100	ND		ng/L		2	0 - 10	1	30
N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)	100	ND		ng/L		2	0 - 10	12	30
1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)	93.8	ND	*1	ng/L		0	0 - 10	200	30
1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)	95.2	ND		ng/L		3	0 - 10	21	30
1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)	96.0	7.44		ng/L		8	0 - 10	15	30
N-ethylperfluorooctane sulfonamide (NEtFOSA)	100	ND		ng/L		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamide (NMeFOSA)	100	ND		ng/L		0	0 - 10	NC	30
N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)	100	ND		ng/L		0	0 - 10	NC	30
N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)	100	ND		ng/L		0	0 - 10	NC	30
9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)	93.4	85.8		ng/L		92	75 - 135	10	30
Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)	100	80.6		ng/L		81	51 - 173	6	30
11-Chloroeicosafluoro-3-oxadecane-1-sulfonic acid (11Cl-PF3OUdS)	94.4	76.2		ng/L		81	54 - 114	10	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	94.6	2.76	J	ng/L		3	0 - 10	23	30
3-Perfluoropropylpropanoic acid (3:3 FTCA)	100	ND		ng/L		0	0 - 10	NC	30
3-Perfluoropentylpropanoic acid (5:3 FTCA)	100	ND	*1	ng/L		0	0 - 10	200	30
3-Perfluoroheptylpropanoic acid (7:3 FTCA)	100	2.79	J	ng/L		3	0 - 10	2	30
6:2 FTUCA	100	ND		ng/L		0	0 - 10	NC	30
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	100	94.0		ng/L		94	70 - 130	10	30
Perfluoro-4-methoxybutanoic acid (PFMBA)	100	80.3		ng/L		80	70 - 130	4	30
Perfluoro-3-methoxypropanoic acid (PFMPA)	100	128		ng/L		128	70 - 130	5	30
Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)	89.2	80.6		ng/L		90	70 - 130	3	30

Eurofins Sacramento

QC Sample Results

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	LCSD		Limits
	%Recovery	Qualifier	
13C8 FOSA	90		25 - 150
13C4 PFBA	77		25 - 150
13C5 PFPeA	87		25 - 150
13C2 PFHxA	93		25 - 150
13C4 PFHpA	100		25 - 150
13C4 PFOA	103		25 - 150
13C5 PFNA	111		25 - 150
13C2 PFDA	105		25 - 150
13C2 PFUnA	92		25 - 150
13C2 PFDoA	100		25 - 150
13C2 PFTeDA	119		25 - 150
13C2 PFHxDA	105		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	102		25 - 150
13C4 PFOS	104		25 - 150
d5-NEtFOSAA	129		25 - 150
d3-NMeFOSAA	122		25 - 150
M2-4:2 FTS	0.1		0 - 10
M2-6:2 FTS	114		25 - 150
M2-8:2 FTS	101		25 - 150
d-N-MeFOSA-M	48		25 - 150
d-N-EtFOSA-M	41		25 - 150
d7-N-MeFOSE-M	37		25 - 150
d9-N-EtFOSE-M	34		25 - 150
13C3 HFPO-DA	89		25 - 150
13C-6:2 FTCA	94		25 - 150
13C-8:2 FTCA	82		25 - 150
13C2 10:2 FTS	94		25 - 150
13C-6:2 FTUCA	95		25 - 150

QC Association Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

LCMS

Prep Batch: 742659

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Pre-Treatment	Water	TOP Pre - Prep	
320-107863-2	WGLF-4B	Pre-Treatment	Water	TOP Pre - Prep	
320-107863-3	WGLF-E6	Pre-Treatment	Water	TOP Pre - Prep	
MB 320-742659/1-A	Method Blank	Pre-Treatment	Water	TOP Pre - Prep	
LCS 320-742659/2-A	Lab Control Sample	Pre-Treatment	Water	TOP Pre - Prep	
LCSD 320-742659/3-A	Lab Control Sample Dup	Pre-Treatment	Water	TOP Pre - Prep	

Prep Batch: 742660

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Post-Treatment	Water	TOP Post Prep	
320-107863-2	WGLF-4B	Post-Treatment	Water	TOP Post Prep	
320-107863-3	WGLF-E6	Post-Treatment	Water	TOP Post Prep	
MB 320-742660/1-A	Method Blank	Post-Treatment	Water	TOP Post Prep	
LCS 320-742660/2-A	Lab Control Sample	Post-Treatment	Water	TOP Post Prep	
LCSD 320-742660/3-A	Lab Control Sample Dup	Post-Treatment	Water	TOP Post Prep	

Analysis Batch: 746906

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Post-Treatment	Water	537 (modified)	742660
320-107863-1	WGLF-E8 ASH	Pre-Treatment	Water	537 (modified)	742659
320-107863-2	WGLF-4B	Post-Treatment	Water	537 (modified)	742660
320-107863-2	WGLF-4B	Pre-Treatment	Water	537 (modified)	742659
320-107863-3	WGLF-E6	Post-Treatment	Water	537 (modified)	742660
320-107863-3	WGLF-E6	Pre-Treatment	Water	537 (modified)	742659
MB 320-742659/1-A	Method Blank	Pre-Treatment	Water	537 (modified)	742659
MB 320-742660/1-A	Method Blank	Post-Treatment	Water	537 (modified)	742660
LCS 320-742659/2-A	Lab Control Sample	Pre-Treatment	Water	537 (modified)	742659
LCS 320-742660/2-A	Lab Control Sample	Post-Treatment	Water	537 (modified)	742660
LCSD 320-742659/3-A	Lab Control Sample Dup	Pre-Treatment	Water	537 (modified)	742659
LCSD 320-742660/3-A	Lab Control Sample Dup	Post-Treatment	Water	537 (modified)	742660

Analysis Batch: 751951

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Pre-Treatment	Water	Total PFCA-Sum	
320-107863-2	WGLF-4B	Pre-Treatment	Water	Total PFCA-Sum	
320-107863-3	WGLF-E6	Pre-Treatment	Water	Total PFCA-Sum	

Analysis Batch: 751952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Post-Treatment	Water	Total PFCA-Sum	
320-107863-2	WGLF-4B	Post-Treatment	Water	Total PFCA-Sum	
320-107863-3	WGLF-E6	Post-Treatment	Water	Total PFCA-Sum	

Analysis Batch: 751953

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-107863-1	WGLF-E8 ASH	Total/NA	Water	Total PFCA-Dif	
320-107863-2	WGLF-4B	Total/NA	Water	Total PFCA-Dif	
320-107863-3	WGLF-E6	Total/NA	Water	Total PFCA-Dif	

Eurofins Sacramento

Lab Chronicle

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Client Sample ID: WGLF-E8 ASH

Lab Sample ID: 320-107863-1

Date Collected: 12/05/23 09:26

Matrix: Water

Date Received: 12/08/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			20.0 mL	10.0 mL	742660	02/26/24 12:16	JER	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 05:41	P1P	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			20.0 mL	10.0 mL	742659	02/26/24 11:57	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 04:10	P1P	EET SAC
Total/NA	Analysis	Total PFCA-Dif		1			751953	04/02/24 16:14	MKW	EET SAC
Post-Treatment	Analysis	Total PFCA-Sum		1			751952	03/14/24 05:41	MKW	EET SAC
Pre-Treatment	Analysis	Total PFCA-Sum		1			751951	03/14/24 04:10	MKW	EET SAC

Client Sample ID: WGLF-4B

Lab Sample ID: 320-107863-2

Date Collected: 12/05/23 09:40

Matrix: Water

Date Received: 12/08/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			20.0 mL	10.0 mL	742660	02/26/24 12:16	JER	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 05:52	P1P	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			20.0 mL	10.0 mL	742659	02/26/24 11:57	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 04:21	P1P	EET SAC
Total/NA	Analysis	Total PFCA-Dif		1			751953	04/02/24 16:14	MKW	EET SAC
Post-Treatment	Analysis	Total PFCA-Sum		1			751952	03/14/24 05:52	MKW	EET SAC
Pre-Treatment	Analysis	Total PFCA-Sum		1			751951	03/14/24 04:21	MKW	EET SAC

Client Sample ID: WGLF-E6

Lab Sample ID: 320-107863-3

Date Collected: 12/05/23 08:56

Matrix: Water

Date Received: 12/08/23 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Post-Treatment	Prep	TOP Post Prep			20.0 mL	10.0 mL	742660	02/26/24 12:16	JER	EET SAC
Post-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 06:03	P1P	EET SAC
Pre-Treatment	Prep	TOP Pre - Prep			20.0 mL	10.0 mL	742659	02/26/24 11:57	JER	EET SAC
Pre-Treatment	Analysis	537 (modified)		1	1 mL	1 mL	746906	03/14/24 04:32	P1P	EET SAC
Total/NA	Analysis	Total PFCA-Dif		1			751953	04/02/24 16:14	MKW	EET SAC
Post-Treatment	Analysis	Total PFCA-Sum		1			751952	03/14/24 06:03	MKW	EET SAC
Pre-Treatment	Analysis	Total PFCA-Sum		1			751951	03/14/24 04:32	MKW	EET SAC

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Eurofins Sacramento

Accreditation/Certification Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Laboratory: Eurofins Sacramento

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Hawaii	State	Eurofins Sacramento	01-29-25
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	TOP Post Prep	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Post Prep	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Post Prep	Water	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Post Prep	Water	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Post Prep	Water	3-Perfluoropropylpropanoic acid (3:3 FTCA)
537 (modified)	TOP Post Prep	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Post Prep	Water	6:2 FTUCA
537 (modified)	TOP Post Prep	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Post Prep	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Post Prep	Water	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Post Prep	Water	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Post Prep	Water	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)
537 (modified)	TOP Post Prep	Water	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Post Prep	Water	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Post Prep	Water	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Post Prep	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Post Prep	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
537 (modified)	TOP Post Prep	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)
537 (modified)	TOP Post Prep	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Post Prep	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Post Prep	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Post Prep	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Post Prep	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Post Prep	Water	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Post Prep	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Post Prep	Water	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Post Prep	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Post Prep	Water	Perfluorohexanesulfonic acid (PFHxS)

Eurofins Sacramento

Accreditation/Certification Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Laboratory: Eurofins Sacramento (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	TOP Post Prep	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Post Prep	Water	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Post Prep	Water	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Post Prep	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Post Prep	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Post Prep	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Post Prep	Water	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Post Prep	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Post Prep	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Post Prep	Water	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Post Prep	Water	Perfluoroundecanoic acid (PFUnA)
537 (modified)	TOP Pre - Prep	Water	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorodecane sulfonic acid (8:2 FTS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorohexane sulfonic acid (4:2 FTS)
537 (modified)	TOP Pre - Prep	Water	1H,1H,2H,2H-Perfluorooctane sulfonic acid (6:2 FTS)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoroheptylpropanoic acid (7:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoropentylpropanoic acid (5:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	3-Perfluoropropylpropanoic acid (3:3 FTCA)
537 (modified)	TOP Pre - Prep	Water	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)
537 (modified)	TOP Pre - Prep	Water	6:2 FTUCA
537 (modified)	TOP Pre - Prep	Water	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9Cl-PF3ONS)
537 (modified)	TOP Pre - Prep	Water	Hexafluoropropylene Oxide Dimer Acid (HFPO-DA/GenX)
537 (modified)	TOP Pre - Prep	Water	N-Ethyl perfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 (modified)	TOP Pre - Prep	Water	N-ethylperfluorooctane sulfonamide (NEtFOSA)
537 (modified)	TOP Pre - Prep	Water	N-ethylperfluorooctane sulfonamidoethanol (NEtFOSE)
537 (modified)	TOP Pre - Prep	Water	N-Methyl perfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 (modified)	TOP Pre - Prep	Water	N-methylperfluorooctane sulfonamide (NMeFOSA)
537 (modified)	TOP Pre - Prep	Water	N-methylperfluorooctane sulfonamidoethanol (NMeFOSE)
537 (modified)	TOP Pre - Prep	Water	Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)
537 (modified)	TOP Pre - Prep	Water	Perfluoro (2-ethoxyethane) sulfonic acid (PFEESA)
537 (modified)	TOP Pre - Prep	Water	Perfluoro-3-methoxypropanoic acid (PFMPA)

Eurofins Sacramento

Accreditation/Certification Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Laboratory: Eurofins Sacramento (Continued)

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.			
Analysis Method	Prep Method	Matrix	Analyte
537 (modified)	TOP Pre - Prep	Water	Perfluoro-4-methoxybutanoic acid (PFMBA)
537 (modified)	TOP Pre - Prep	Water	Perfluorobutanesulfonic acid (PFBS)
537 (modified)	TOP Pre - Prep	Water	Perfluorobutanoic acid (PFBA)
537 (modified)	TOP Pre - Prep	Water	Perfluorodecanesulfonic acid (PFDS)
537 (modified)	TOP Pre - Prep	Water	Perfluorodecanoic acid (PFDA)
537 (modified)	TOP Pre - Prep	Water	Perfluorododecanesulfonic acid (PFDoS)
537 (modified)	TOP Pre - Prep	Water	Perfluorododecanoic acid (PFDoA)
537 (modified)	TOP Pre - Prep	Water	Perfluoroheptanesulfonic acid (PFHpS)
537 (modified)	TOP Pre - Prep	Water	Perfluoroheptanoic acid (PFHpA)
537 (modified)	TOP Pre - Prep	Water	Perfluorohexanesulfonic acid (PFHxS)
537 (modified)	TOP Pre - Prep	Water	Perfluorohexanoic acid (PFHxA)
537 (modified)	TOP Pre - Prep	Water	Perfluorononanesulfonic acid (PFNS)
537 (modified)	TOP Pre - Prep	Water	Perfluorononanoic acid (PFNA)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanesulfonamide (FOSA)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanesulfonic acid (PFOS)
537 (modified)	TOP Pre - Prep	Water	Perfluorooctanoic acid (PFOA)
537 (modified)	TOP Pre - Prep	Water	Perfluoropentanesulfonic acid (PFPeS)
537 (modified)	TOP Pre - Prep	Water	Perfluoropentanoic acid (PFPeA)
537 (modified)	TOP Pre - Prep	Water	Perfluorotetradecanoic acid (PFTeA)
537 (modified)	TOP Pre - Prep	Water	Perfluorotridecanoic acid (PFTrDA)
537 (modified)	TOP Pre - Prep	Water	Perfluoroundecanoic acid (PFUnA)
Total PFCA-Dif		Water	PFBA
Total PFCA-Dif		Water	PFHpA
Total PFCA-Dif		Water	PFHxA
Total PFCA-Dif		Water	PFNA
Total PFCA-Dif		Water	PFOA
Total PFCA-Dif		Water	PFPeA
Total PFCA-Dif		Water	Total PFCA
Total PFCA-Sum		Water	Total PFCA

Method Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	EET SAC
Total PFCA-Dif	Total PFCA (Treatment Difference)	TAL SOP	EET SAC
Total PFCA-Sum	Total PFCA (Summary)	TAL SOP	EET SAC
TOP Post Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC
TOP Pre - Prep	Solid-Phase Extraction (SPE)	SW846	EET SAC

Protocol References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

EET SAC = Eurofins Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Hawaii Department of Health
Project/Site: Landfill Leachate

Job ID: 320-107863-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-107863-1	WGLF-E8 ASH	Water	12/05/23 09:26	12/08/23 09:20
320-107863-2	WGLF-4B	Water	12/05/23 09:40	12/08/23 09:20
320-107863-3	WGLF-E6	Water	12/05/23 08:56	12/08/23 09:20

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14

Address:

TetraTech

737 Bishop st ste 2340

Henolulu, HI 96813

Regulatory Program: ☐ DW ☐ NPDES ☐ RCRA ☐ Other:Regulatory Program: ☐ DW ☐ NPDES

Other:

TAI-8210

Company Name: Hawaii Dept of Health Address: 2385 Waimanalo Home Rd #100 City/State/Zip: Pearl City HI 96872 Phone: 1-808-586-4249 Fax: _____ Project Name: Landfill Leachate Site: _____ PO # _____		Client Contact Project Manager: Roger Brewer Tel/Email: 808-586-4249 Analysis Turnaround Time <input type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____ <input type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Date: _____ Carrier: _____ COC No.: _____ of _____ COCs Sampler: _____ For Lab Use Only: Walk-in Client: _____ Lab Sampling: _____ Job / SDG No.: _____																			
Sample Identification WGLF-ASH WGLF-E8ASH WGLF-4B (letter B) WGLF-E1 (#1) WGLF-E6 WGLF-EQB		Sample Date 12/15/23 12/15/23 12/15/23 12/15/23 12/15/23 12/15/23		Sample Time 9:26 9:40 8:56 9:12		Sample Type (C=Comp, G=Grab) G G G G G G		Matrix " " " " " "		# of Cont. 7 7 7 7 7 7		Filtered Sample (Y/N) (Y) (Y) (Y) (Y) (Y) (Y)		Perform MS/MSD (Y/N) (Y) (Y) (Y) (Y) (Y) (Y)		TORS (pre-post) NO NO NO NO NO NO		NTA NO NO NO NO NO NO		SC NO NO NO NO NO NO		Ultrashort PFA NO NO NO NO NO NO	
Sample Specific Notes: Not Sampled Not Sampled Not Sampled Not Sampled Not Sampled Not Sampled												Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other _____ Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample. <input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown												Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) <input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months											
Special Instructions/QC Requirements & Comments: Filter all samples except WGLF-EQB												Cooler Temp. (°C): Obsd: 5.6 Cor'd: _____ Therm ID No.: _____ Received by: Myron Hosa #1 per SD Date/Time: 12/15/23 11:45 Received by: Roger B Date/Time: 12/15/23 11:45 Received by: Feder Date/Time: 12/15/23 9:20 Received in Laboratory by: _____ Date/Time: _____											



Environment Testing

Sacramento Sample Receiving Notes (SSRN)

Loc 320
107863

Tracking # 8170 3101 6462

Job. _____

SO (PO) / FO / SAT / 2-Day / Ground / UPS / CDO / Courier
GSL / OnTrac / Goldstreak / USPS / Other _____

Use this form to record Sample Custody Seal Cooler Custody Seal Temperature & corrected Temperature & other observations.
File in the job folder with the COC

Therm ID L-11 Corr Factor (+/-) NA °C

Ice _____ Wet _____ Gel X Other _____

Cooler Custody Seal 2100594

Cooler ID _____

Temp Observed 5.6 °C Corrected 5.6 °C
From Temp Blank X Sample □

Opening/Processing The Shipment

	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials QNH Date 12/8/23

Unpacking/Labeling The Samples

	Yes	No	NA
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
COC is complete w/o discrepancies	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Is the Field Sampler's name on COC?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials me Date 12/8/23

Notes. _____

Trizma Lot #(s) _____

Ammonium

Acetate Lot #(s) _____

Login Completion

	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples received within hold time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Log Release checked in TALS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials me Date 12/8/23