

 **ANALYTICAL REPORT****PREPARED FOR**

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JOB DESCRIPTION

HONO'ULI'ULI WWTP

JOB NUMBER

410-163791-1

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Authorization



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Authorized for release by
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Compliance Statement

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- QC results that exceed the upper limits and are associated with non-detect samples are qualified but further narration is not required since the bias is high and does not change a non-detect result. Further narration is also not required with QC blank detection when the associated sample concentration is non-detect or more than ten times the level in the blank.
- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD is performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.

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Table of Contents

Cover Page	1
Table of Contents	4
Definitions/Glossary	5
Case Narrative	6
Detection Summary	7
Client Sample Results	8
QC Sample Results	10
QC Association Summary	13
Lab Chronicle	15
Certification Summary	17
Method Summary	18
Sample Summary	19
Chain of Custody	20
Receipt Checklists	21

Definitions/Glossary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Qualifiers

HPLC/IC

Qualifier	Qualifier Description
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.

LCMS

Qualifier	Qualifier Description
cn	Refer to Case Narrative for further detail
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past 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: Tetra Tech, Inc.
Project: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Job ID: 410-163791-1

Eurofins Lancaster Laboratories Environment

Job Narrative 410-163791-1

Analytical test results meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page unless otherwise noted under the individual analysis. Data qualifiers are applied to indicate exceptions. Noncompliant quality control (QC) is further explained in narrative comments.

- Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD may be performed, unless otherwise specified in the method.
- Surrogate and/or isotope dilution analyte recoveries (if applicable) which are outside of the QC window are confirmed unless attributed to a dilution or otherwise noted in the narrative.

Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Receipt

The samples were received on 3/13/2024 9:40 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 time was 3.8°C.

Receipt Exceptions

The Field Sampler was not listed on the Chain of Custody. The field sampler is Roger Brewer.

The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): HNWWTP-EFFL-EB (410-163791-3) and HNWWTP-INFL-EB (410-163791-4). The container labels list collection time as 07:30, while the COC lists 07:10. As per client, the sample collection time listed on the COC is correct.

The Chain-of-Custody (COC) was incomplete as received. The COC is missing the Sample Preservation, Number of containers per sample, Sample Type (Grab or Composite) and State of Origin. This does not meet regulatory requirements. As per client on 03/14, Preservation by freezing only. Original containers (noted on COC): Two 500ml, three 125ml and two 60 ml. 24-hour "composite" sample collected in Hawaii. Use the sample collection time on the COCs.

MBL is defined as the second method blank after the final sample and prior to the closing calibration verification standard (CCV).

HPLC/IC

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

PFAS

Method 1621_Plug2: The breakthrough for sample HNWWTP-EFFL-EB (410-163791-3) and HNWWTP-INFL-EB (410-163791-4) is 0 %. The method requirement is <50%.

Method 1621_Plug2: The breakthrough for sample HNWWTP-EFFL (410-163791-1) is 0%. The method requirement is <50%.

Method 1621_Plug2: The breakthrough for sample HNWWTP-INFL (410-163791-2) is 0%. The method requirement is <50%.

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

General Chemistry

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

Detection Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Client Sample ID: HNWWTP-EFFL

Lab Sample ID: 410-163791-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Adsorbable Organic Fluorine (AOF)	1.9	J H H3	2.0	1.0	ug/L	1		1621 Plug 1	Total/NA
Adsorbable Organic Fluorine (AOF)	1.9	J	2.0	1.0	ug/L	1		1621 Sum	Total/NA
Total Suspended Solids	60		3.0	3.0	mg/L	1		1621	Total/NA

Client Sample ID: HNWWTP-INFL

Lab Sample ID: 410-163791-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Adsorbable Organic Fluorine (AOF)	1.5	J H H3	2.0	1.0	ug/L	1		1621 Plug 1	Total/NA
Adsorbable Organic Fluorine (AOF)	1.5	J	2.0	1.0	ug/L	1		1621 Sum	Total/NA
Total Suspended Solids	75		3.0	3.0	mg/L	1		1621	Total/NA

Client Sample ID: HNWWTP-EFFL-EB

Lab Sample ID: 410-163791-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	5.0		3.0	3.0	mg/L	1		1621	Total/NA

Client Sample ID: HNWWTP-INFL-EB

Lab Sample ID: 410-163791-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Total Suspended Solids	5.0		3.0	3.0	mg/L	1		1621	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Environment Testing, LLC

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Client Sample ID: HNWWTP-EFFL

Lab Sample ID: 410-163791-1

Date Collected: 09/19/23 07:54

Matrix: Water

Date Received: 03/13/24 09:40

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride ion	<0.45	H H3	1.0	0.45	mg/L			03/18/24 15:35	5

Method: EPA 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	1.9	J H H3	2.0	1.0	ug/L		03/29/24 09:39	03/29/24 14:21	1

Method: EPA 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0	H H3 cn	2.0	1.0	ug/L		03/29/24 09:39	03/29/24 14:52	1

Method: EPA 1621 Sum - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	1.9	J	2.0	1.0	ug/L			04/02/24 11:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (EPA 1621)	60		3.0	3.0	mg/L			03/18/24 11:03	1

Client Sample ID: HNWWTP-INFL

Lab Sample ID: 410-163791-2

Date Collected: 09/19/23 07:37

Matrix: Water

Date Received: 03/13/24 09:40

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride ion	<0.45	H H3	1.0	0.45	mg/L			03/18/24 15:47	5

Method: EPA 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	1.5	J H H3	2.0	1.0	ug/L		03/29/24 09:39	03/31/24 16:19	1

Method: EPA 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0	H H3 cn	2.0	1.0	ug/L		03/29/24 09:39	03/31/24 16:50	1

Method: EPA 1621 Sum - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	1.5	J	2.0	1.0	ug/L			04/02/24 11:37	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (EPA 1621)	75		3.0	3.0	mg/L			03/18/24 11:03	1

Client Sample Results

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Client Sample ID: HNWWTP-EFFL-EB

Lab Sample ID: 410-163791-3

Date Collected: 09/18/23 07:10

Matrix: Water

Date Received: 03/13/24 09:40

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride ion	<0.090	H H3	0.20	0.090	mg/L			03/18/24 14:47	1

Method: EPA 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.78	H H3	1.6	0.78	ug/L		03/27/24 09:59	03/28/24 20:50	1

Method: EPA 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.78	H H3 cn	1.6	0.78	ug/L		03/27/24 09:59	03/28/24 21:21	1

Method: EPA 1621 Sum - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.78		1.6	0.78	ug/L			04/01/24 07:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (EPA 1621)	5.0		3.0	3.0	mg/L			03/18/24 11:03	1

Client Sample ID: HNWWTP-INFL-EB

Lab Sample ID: 410-163791-4

Date Collected: 09/18/23 07:13

Matrix: Water

Date Received: 03/13/24 09:40

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride ion	<0.090	H H3	0.20	0.090	mg/L			03/18/24 16:11	1

Method: EPA 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.84	H H3	1.7	0.84	ug/L		03/27/24 09:59	03/28/24 21:52	1

Method: EPA 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.84	H H3 cn	1.7	0.84	ug/L		03/27/24 09:59	03/28/24 22:23	1

Method: EPA 1621 Sum - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<0.84		1.7	0.84	ug/L			04/01/24 07:34	1

General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (EPA 1621)	5.0		3.0	3.0	mg/L			03/18/24 11:03	1

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 410-484414/5
Matrix: Water
Analysis Batch: 484414

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Fluoride ion	<0.090		0.20	0.090	mg/L			03/18/24 10:03	1

Lab Sample ID: LCS 410-484414/3
Matrix: Water
Analysis Batch: 484414

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Fluoride ion	0.750	0.685		mg/L		91	90 - 110

Lab Sample ID: LCSD 410-484414/4
Matrix: Water
Analysis Batch: 484414

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Fluoride ion	0.750	0.727		mg/L		97	90 - 110	6	20

Method: 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Lab Sample ID: MB 410-487635/1-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487635

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/27/24 09:55	03/28/24 17:45	1

Lab Sample ID: MBL 410-487635/27-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487635

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/27/24 10:01	03/29/24 08:41	1

Lab Sample ID: LCS 410-487635/3-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487635

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	24.9	23		ug/L		92	70 - 130

Lab Sample ID: LCSD 410-487635/5-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 487635

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	24.9	23		ug/L		91	70 - 130	1	20

QC Sample Results

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Method: 1621 Plug 1 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography (Continued)

Lab Sample ID: MB 410-488555/1-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488555

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/29/24 09:39	03/29/24 11:16	1

Lab Sample ID: MBL 410-488555/27-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488555

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/29/24 09:39	04/01/24 06:45	1

Lab Sample ID: LCS 410-488555/3-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 488555

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	24.9	23.0		ug/L		93	70 - 130

Lab Sample ID: LCSD 410-488555/5-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 488555

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	24.9	22.5		ug/L		91	70 - 130	2	20

Method: 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography

Lab Sample ID: MB 410-487635/2-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487635

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/27/24 09:55	03/28/24 18:16	1

Lab Sample ID: MBL 410-487635/28-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 487635

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/27/24 10:01	03/29/24 09:12	1

Lab Sample ID: LCS 410-487635/4-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 487635

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	24.9	<1.0		ug/L		3	0 - 50

QC Sample Results

Client: Tetra Tech, Inc.
 Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Method: 1621 Plug2 - Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography (Continued)

Lab Sample ID: LCSD 410-487635/6-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 487635

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	24.9	<1.0		ug/L		1	0 - 50	64	200

Lab Sample ID: MB 410-488555/2-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488555

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/29/24 09:39	03/29/24 11:47	1

Lab Sample ID: MBL 410-488555/28-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 488555

Analyte	MBL Result	MBL Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Adsorbable Organic Fluorine (AOF)	<1.0		2.0	1.0	ug/L		03/29/24 09:39	04/01/24 07:16	1

Lab Sample ID: LCS 410-488555/4-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 488555

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Adsorbable Organic Fluorine (AOF)	24.9	<1.0		ug/L		2	0 - 50

Lab Sample ID: LCSD 410-488555/6-A
Matrix: Water
Analysis Batch: 488604

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 488555

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Adsorbable Organic Fluorine (AOF)	24.9	<1.0		ug/L		2	0 - 50	9	200

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

HPLC/IC

Analysis Batch: 484414

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-1	HNWWTP-EFFL	Total/NA	Water	EPA 300.0 R2.1	
410-163791-2	HNWWTP-INFL	Total/NA	Water	EPA 300.0 R2.1	
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	EPA 300.0 R2.1	
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	EPA 300.0 R2.1	
MB 410-484414/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-484414/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-484414/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

LCMS

Prep Batch: 487635

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621 Prep	
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621 Prep	
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621 Prep	
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621 Prep	
MB 410-487635/1-A	Method Blank	Total/NA	Water	1621 Prep	
MB 410-487635/2-A	Method Blank	Total/NA	Water	1621 Prep	
MBL 410-487635/27-A	Method Blank	Total/NA	Water	1621 Prep	
MBL 410-487635/28-A	Method Blank	Total/NA	Water	1621 Prep	
LCS 410-487635/3-A	Lab Control Sample	Total/NA	Water	1621 Prep	
LCS 410-487635/4-A	Lab Control Sample	Total/NA	Water	1621 Prep	
LCSD 410-487635/5-A	Lab Control Sample Dup	Total/NA	Water	1621 Prep	
LCSD 410-487635/6-A	Lab Control Sample Dup	Total/NA	Water	1621 Prep	

Prep Batch: 488555

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621 Prep	
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621 Prep	
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621 Prep	
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621 Prep	
MB 410-488555/1-A	Method Blank	Total/NA	Water	1621 Prep	
MB 410-488555/2-A	Method Blank	Total/NA	Water	1621 Prep	
MBL 410-488555/27-A	Method Blank	Total/NA	Water	1621 Prep	
MBL 410-488555/28-A	Method Blank	Total/NA	Water	1621 Prep	
LCS 410-488555/3-A	Lab Control Sample	Total/NA	Water	1621 Prep	
LCS 410-488555/4-A	Lab Control Sample	Total/NA	Water	1621 Prep	
LCSD 410-488555/5-A	Lab Control Sample Dup	Total/NA	Water	1621 Prep	
LCSD 410-488555/6-A	Lab Control Sample Dup	Total/NA	Water	1621 Prep	

Analysis Batch: 488604

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621 Plug 1	488555
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621 Plug2	488555
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621 Plug 1	488555
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621 Plug2	488555
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621 Plug 1	487635
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621 Plug2	487635
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621 Plug 1	487635
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621 Plug2	487635
MB 410-487635/1-A	Method Blank	Total/NA	Water	1621 Plug 1	487635

QC Association Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

LCMS (Continued)

Analysis Batch: 488604 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 410-487635/2-A	Method Blank	Total/NA	Water	1621 Plug2	487635
MB 410-488555/1-A	Method Blank	Total/NA	Water	1621 Plug 1	488555
MB 410-488555/2-A	Method Blank	Total/NA	Water	1621 Plug2	488555
MBL 410-487635/27-A	Method Blank	Total/NA	Water	1621 Plug 1	487635
MBL 410-487635/28-A	Method Blank	Total/NA	Water	1621 Plug2	487635
MBL 410-488555/27-A	Method Blank	Total/NA	Water	1621 Plug 1	488555
MBL 410-488555/28-A	Method Blank	Total/NA	Water	1621 Plug2	488555
LCS 410-487635/3-A	Lab Control Sample	Total/NA	Water	1621 Plug 1	487635
LCS 410-487635/4-A	Lab Control Sample	Total/NA	Water	1621 Plug2	487635
LCS 410-488555/3-A	Lab Control Sample	Total/NA	Water	1621 Plug 1	488555
LCS 410-488555/4-A	Lab Control Sample	Total/NA	Water	1621 Plug2	488555
LCSD 410-487635/5-A	Lab Control Sample Dup	Total/NA	Water	1621 Plug 1	487635
LCSD 410-487635/6-A	Lab Control Sample Dup	Total/NA	Water	1621 Plug2	487635
LCSD 410-488555/5-A	Lab Control Sample Dup	Total/NA	Water	1621 Plug 1	488555
LCSD 410-488555/6-A	Lab Control Sample Dup	Total/NA	Water	1621 Plug2	488555

Analysis Batch: 489005

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621 Sum	
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621 Sum	
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621 Sum	
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621 Sum	

General Chemistry

Analysis Batch: 484302

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
410-163791-1	HNWWTP-EFFL	Total/NA	Water	1621	
410-163791-2	HNWWTP-INFL	Total/NA	Water	1621	
410-163791-3	HNWWTP-EFFL-EB	Total/NA	Water	1621	
410-163791-4	HNWWTP-INFL-EB	Total/NA	Water	1621	

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Client Sample ID: HNWWTP-EFFL

Lab Sample ID: 410-163791-1

Date Collected: 09/19/23 07:54

Matrix: Water

Date Received: 03/13/24 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	484414	W7FX	ELLE	03/18/24 15:35
Total/NA	Prep	1621 Prep			488555	QLP7	ELLE	03/29/24 09:39
Total/NA	Analysis	1621 Plug 1		1	488604	QLP7	ELLE	03/29/24 14:21
Total/NA	Prep	1621 Prep			488555	QLP7	ELLE	03/29/24 09:39
Total/NA	Analysis	1621 Plug2		1	488604	QLP7	ELLE	03/29/24 14:52
Total/NA	Analysis	1621 Sum		1	489005	WG7O	ELLE	04/02/24 11:37
Total/NA	Analysis	1621		1	484302	M98K	ELLE	03/18/24 11:03

Client Sample ID: HNWWTP-INFL

Lab Sample ID: 410-163791-2

Date Collected: 09/19/23 07:37

Matrix: Water

Date Received: 03/13/24 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		5	484414	W7FX	ELLE	03/18/24 15:47
Total/NA	Prep	1621 Prep			488555	QLP7	ELLE	03/29/24 09:39
Total/NA	Analysis	1621 Plug 1		1	488604	QLP7	ELLE	03/31/24 16:19
Total/NA	Prep	1621 Prep			488555	QLP7	ELLE	03/29/24 09:39
Total/NA	Analysis	1621 Plug2		1	488604	QLP7	ELLE	03/31/24 16:50
Total/NA	Analysis	1621 Sum		1	489005	WG7O	ELLE	04/02/24 11:37
Total/NA	Analysis	1621		1	484302	M98K	ELLE	03/18/24 11:03

Client Sample ID: HNWWTP-EFFL-EB

Lab Sample ID: 410-163791-3

Date Collected: 09/18/23 07:10

Matrix: Water

Date Received: 03/13/24 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	484414	W7FX	ELLE	03/18/24 14:47
Total/NA	Prep	1621 Prep			487635	QLP7	ELLE	03/27/24 09:59
Total/NA	Analysis	1621 Plug 1		1	488604	QLP7	ELLE	03/28/24 20:50
Total/NA	Prep	1621 Prep			487635	QLP7	ELLE	03/27/24 09:59
Total/NA	Analysis	1621 Plug2		1	488604	QLP7	ELLE	03/28/24 21:21
Total/NA	Analysis	1621 Sum		1	489005	WG7O	ELLE	04/01/24 07:34
Total/NA	Analysis	1621		1	484302	M98K	ELLE	03/18/24 11:03

Client Sample ID: HNWWTP-INFL-EB

Lab Sample ID: 410-163791-4

Date Collected: 09/18/23 07:13

Matrix: Water

Date Received: 03/13/24 09:40

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Batch Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	EPA 300.0 R2.1		1	484414	W7FX	ELLE	03/18/24 16:11
Total/NA	Prep	1621 Prep			487635	QLP7	ELLE	03/27/24 09:59
Total/NA	Analysis	1621 Plug 1		1	488604	QLP7	ELLE	03/28/24 21:52
Total/NA	Prep	1621 Prep			487635	QLP7	ELLE	03/27/24 09:59
Total/NA	Analysis	1621 Plug2		1	488604	QLP7	ELLE	03/28/24 22:23

Lab Chronicle

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Client Sample ID: HNWWTP-INFL-EB

Lab Sample ID: 410-163791-4

Date Collected: 09/18/23 07:13

Matrix: Water

Date Received: 03/13/24 09:40

<u>Prep Type</u>	<u>Batch Type</u>	<u>Batch Method</u>	<u>Run</u>	<u>Dilution Factor</u>	<u>Batch Number</u>	<u>Analyst</u>	<u>Lab</u>	<u>Prepared or Analyzed</u>
Total/NA	Analysis	1621 Sum		1	489005	WG7O	ELLE	04/01/24 07:34
Total/NA	Analysis	1621		1	484302	M98K	ELLE	03/18/24 11:03

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

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Accreditation/Certification Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

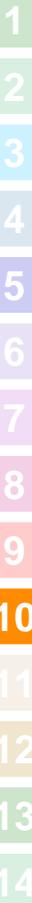
Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

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

Authority	Program	Identification Number	Expiration Date
Hawaii	State	N/A	01-31-25

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
1621		Water	Total Suspended Solids
1621 Plug 1	1621 Prep	Water	Adsorbable Organic Fluorine (AOF)
1621 Plug2	1621 Prep	Water	Adsorbable Organic Fluorine (AOF)
1621 Sum		Water	Adsorbable Organic Fluorine (AOF)
EPA 300.0 R2.1		Water	Fluoride ion



Method Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

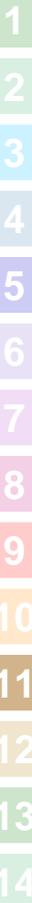
Method	Method Description	Protocol	Laboratory
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	ELLE
1621 Plug 1	Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography	EPA	ELLE
1621 Plug2	Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography	EPA	ELLE
1621 Sum	Adsorbable Organic Fluorine (AOF) by Combustion Ion Chromatography	EPA	ELLE
1621	Percent Suspend Solids for Analysis AOF in Aqueous Samples by LC/MS	EPA	ELLE
1621 Prep	Preparation, Fluorine	EPA	ELLE

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300



Sample Summary

Client: Tetra Tech, Inc.
Project/Site: HONO'ULI'ULI WWTP

Job ID: 410-163791-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
410-163791-1	HNWWTP-EFFL	Water	09/19/23 07:54	03/13/24 09:40
410-163791-2	HNWWTP-INFL	Water	09/19/23 07:37	03/13/24 09:40
410-163791-3	HNWWTP-EFFL-EB	Water	09/18/23 07:10	03/13/24 09:40
410-163791-4	HNWWTP-INFL-EB	Water	09/18/23 07:13	03/13/24 09:40

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CHAIN OF CUSTODY

2045 Mills Road West TEL: (250) 655-5800 TOLL FREE 1-888-373-0881
 Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

SGS AXYS CLIENT #: 4066

REPORT TO:			INVOICE TO:			ANALYSIS REQUESTED			
Company <u>Hawaii DOH-HEER Office</u>			Company <u>TetraTech</u>			MLA-100	MLA-111	MLA-119	
Address <u>2385 Waimanu Home Rd #100</u>			Address <u>737 Bishop St Ste 2340</u>						
Pearl City, HI 96782			Honolulu, HI 96813						
Contact <u>Roger Brewer</u>			Contact <u>Eric Jensen</u>						
Phone <u>808-586-4249</u>			Phone <u>808-225-7084</u>						
E-mail <u>roger.brewer@doh.hawaii.gov</u>			E-mail <u>eric.jensen@tetratech.com</u>						
Project Name/Number:			Sampler's Name:						
			Signature:						
Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	SGS AXYS Lab Sample ID (Lab use only)				
HVWWTP-EFFL	H ₂ O	9/19/23	7:54am	3 50ml 3 25ml	L 40347-6	X	X	X	
HVWWTP-INFL	"	9/19/23	7:37am	2 60ml	-12	X	X	X	
HVWWTP-EFFL-EB	"	9/18/23	7:10am	"	-3	X	X	X	
HVWWTP-INFL-EB	"	9/18/23	7:30am	"	-9	X	X	X	
Relinquished by (Signature) <u>Proge B</u>			Received by (Signature) <u>ASS</u>			Courier		Waybill No.	
Date <u>10/3/23</u> Time <u>9:00am</u>			Date <u>10-3-2023</u> Time <u>09:20</u>						
Relinquished by (Signature) _____			Received by (Signature) <u>LM</u>			Sample Receipt			
Date _____ Time _____			Date <u>3/13/24</u> Time <u>09:40</u>						
Remarks <u>* Filter water samples prior to analysis (0.45um)</u>						Cooler			
						Temp °C <u>R: 3.9 C: 3.8</u>			
						Custody Seal #			
						Seal Intact Y/N			
						Sample Tags Y/N			

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MR

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 410-163791-1

Login Number: 163791

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC

List Number: 1

Creator: Santiago, Nathaniel

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable, where thermal pres is required ($\leq 6^{\circ}\text{C}$, not frozen).	True	
Cooler Temperature is recorded.	True	
WV: Container Temp acceptable, where thermal pres is required ($\leq 6^{\circ}\text{C}$, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	False	Refer to Job Narrative for details.
There are no discrepancies between the containers received and the COC.	False	Refer to Job Narrative for details.
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Refer to Job Narrative for details.
Sample custody seals are intact.	N/A	
VOA sample vials do not have headspace $>6\text{mm}$ in diameter (none, if from WV)?	N/A	