NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

Division of Environmental Remediation, Remedial Bureau E
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www.dec.ny.gov

November 5, 2019

Mr. George Green, Supervisor
Town of New Windsor
555 Union Avenue
New Windsor, New York 12553

Re: New Windsor Public Water Supply Well Sample Results
Butterhill Wells, New Windsor (T), Orange County

Dear Supervisor Green,

The New York State Department of Environmental Conservation (DEC) is providing you with a copy of the analytical results derived from October 11, 2019 clearance sampling of the temporary granular activated carbon (GAC) water treatment system recently installed by the DEC at the Town of New Windsor (Town) Butterhill Well Field located at 181 Forge Hill Road.

Samples from pre-treated water taken before the GAC system and post-treated water taken after the GAC system have been collected and analyzed to ensure that if Polyfluoroalkyl substances (PFAS), in particular Perfluorooctanesulfonic acid (PFOS) and Perfluorooctanoic acid (PFOA), are present in the untreated water it has been effectively removed. **The DEC, in partnership with the New York State Department of Health (DOH), has evaluated the clearance sample results and determined that the GAC system is working effectively.**

The samples were analyzed for a total of twenty-one per- and polyfluoroalkyl substances (PFAS), including Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS).

During this event, sampling was conducted at four locations:

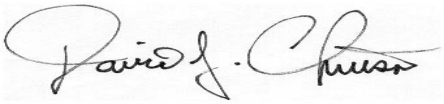
- pre-treatment (raw untreated water), which has a “BHPRE” identifier in the Client Sample ID;
- post-treatment (after the GAC Pair Train 1), which has a “BHTRAIN1POST” identifier in the Client Sample ID;
- post-treatment (after the GAC Pair Train 2), which has a “BHTRAIN2POST” identifier in the Client Sample ID; and
- post-treatment (after the GAC Pair Train 3), which has a “BHTRAIN3POST” identifier in the Client Sample ID.

The four locations sampled (and their associated identifiers) are depicted in Figure 1.

While testing for PFOS and PFOA was the primary goal, the DEC also tested for other possible compounds that may be found in the Butterhill Well water. Specifically, at the request of the New York State Department of Health (DOH), analysis for DOH Part 5, Subpart 5-1 compounds was included during this round. Moving forward, it is currently anticipated that water samples will be analyzed on a monthly basis for PFAS only, unless otherwise directed by DOH.

If you have any technical questions regarding the analytical results or on the operation and performance of the GAC treatment system, please feel free to contact me or Dana Bryant, Senior Water Engineer - Arcadis (DEC's Project Engineer) at (518) 250-7347) or dana.bryant@arcadis.com. For questions regarding site-related health concerns, please contact Steve Gagnon of the Orange County DOH at (845) 291-2331 or Steve Gladding of the NYSDOH Bureau of Water Supply Protection at (518) 402-7650; email: steven.gladding@health.ny.gov .

Sincerely,



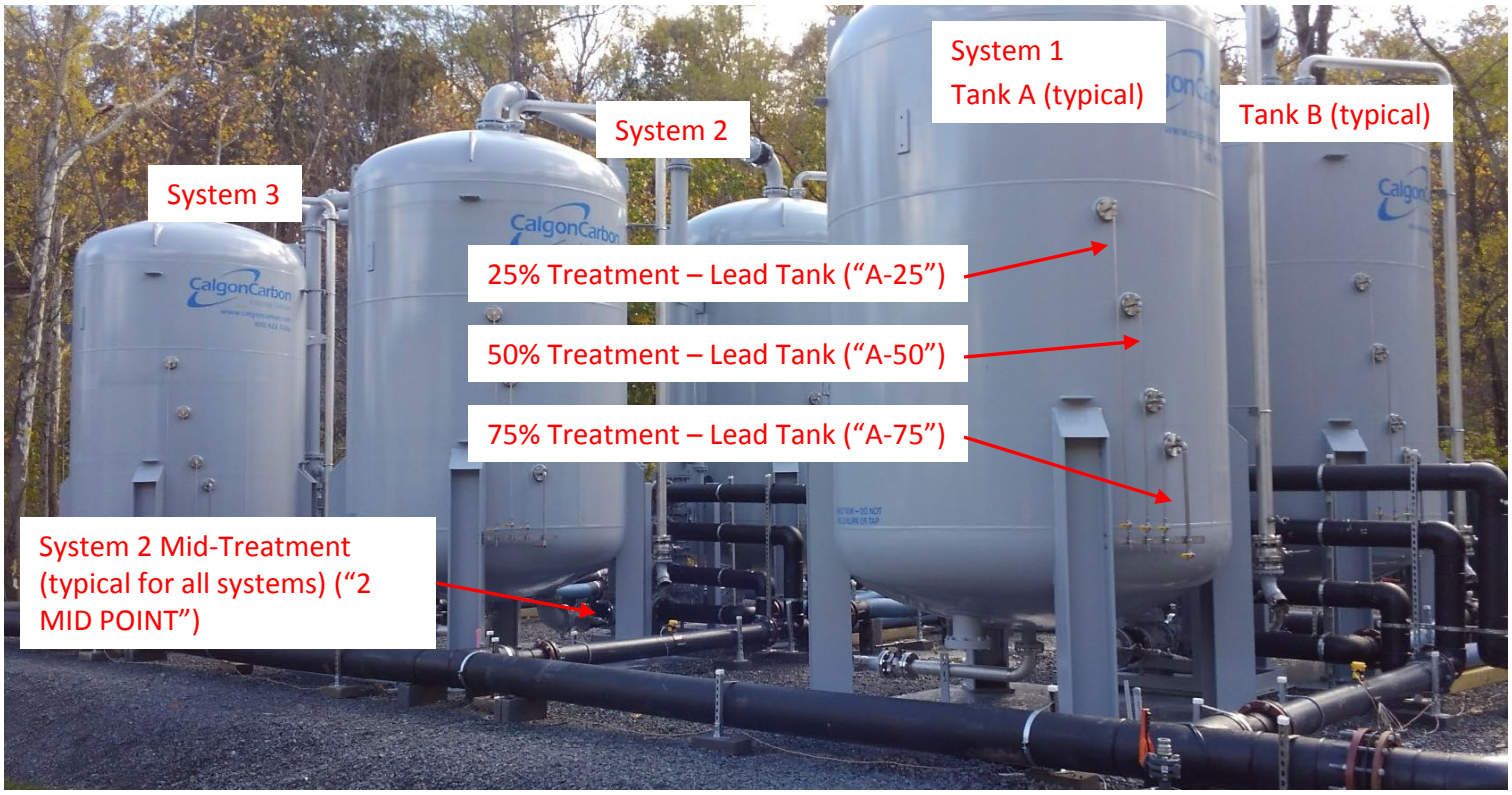
David J. Chiusano
Environmental Engineer/Project Manager
Remedial Section A, Remedial Bureau E
Division of Environmental Remediation

Enclosures

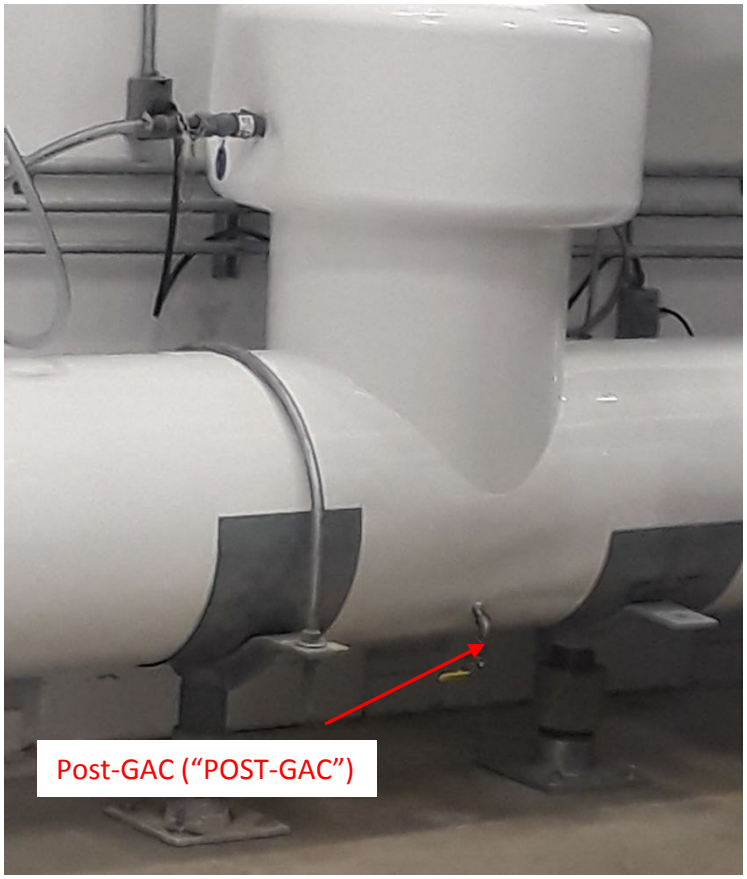
ec: w/enclosures
D. Zagon, Town of New Windsor
J. Egitto, Town of New Windsor
D. McGoey/M. Weeks, MHE
W. Gilday, NYSDOH
Dr. Kim, NYSDOH
S. Gagnon, OCDOH
M. Andersen, OCDOH
D. Bryant, Arcadis
F. Fina, Arcadis
M. Cruden, NYSDEC
D. Bendell, Region 3 RHWRE
D. Harrington, NYSDEC

Figure 1
Sampling Locations

Butterhill Plant Temporary GAC Treatment System



Post-Filters, Pre-GAC ("PRE-GAC")



25%, 50%, 75% sample locations repeated on Lag "B" Tanks. Post-treatment taps for each individual System can be collected after each Lag "B" Tank, same sample location as MID-POINT sample location on Lead "A" Tank.

Town of New Windsor
Butterhill Well GAC PFAS Clearance Sampling Results

Date	Analyte	Result[1] Raw Water (BHPRE)	Result Post-Treatment (BHTRAIN1POST)	Result Post-Treatment (BHTRAIN2POST)	Result Post-Treatment (BHTRAIN3POST)	Comparison Value (MCL[3] or Guidance Value)
October 2019	PFOA	3.5	ND[2]	ND	ND	70[4]
	PFOS	3.1	ND	ND	ND	70[4]
	PFOA+PFOS	6.6	ND	ND	ND	70[4]

Notes:

1. PFOS and PFOA results and comparison values are reported in parts per trillion (ppt, nanograms per liter, ng/l).
2. "ND" means non-detect. The analyte was not detected in the sample.
3. MCL (Maximum Contaminant Level, mg/l) is the maximum permissible level of a contaminant in water delivered by a public water system.
4. Guidance: USEPA Public Health Advisory for drinking water is currently 70 ppt.

How to Read Your Laboratory Reports

PFOA and PFOS Results:

- Analyte is the term used to describe what the laboratory was testing for, in this case PFOS and PFOA.
- Conc. (ng/l) is your result for PFOS and PFOA. In your case, no PFOS and PFOA were detected, thus ND or "non-detect" or <2.0 ng/l was reported. (ng/l = ppt)
- RL = reporting limit or RDL = reportable detection limit is the lowest level at which this specific testing protocol and laboratory has confidence in measuring the given analyte.
- Qualifiers are added information to help understand the quality of the data. Often, if something about the results or the calibration of the testing equipment was irregular, it would be reported here.

All other columns represent laboratory quality control information. The laboratory calibrates its equipment against a precise quantity of the chemical in order to ensure that the equipment is functioning properly. Some laboratory reports may not have all this information.

- Labeled Standard or Surrogate is the lab's specific name for an individual control sample.
- %R is the percent of the control sample that was detected by the equipment. A 100% reading represents perfect equipment alignment.
- LCL-UCL is the lower concentration limit (LCL) and upper concentration limit (UCL). The LCL represents the lowest acceptable %R value and the UCL represent the highest acceptable %R value required to ensure your result is accurate.
- Qualifiers: If a result quality control variance is noted or I the %R value of any of the control samples were outside the allowable range that would have been noted in this last column. This gives the analyst less confidence in the measured value.

The analysis for PFOS and PFOA is performed using modified EPA Method 537. The laboratory may report a detection of PFOS and PFOA down to approximately 2.0 nanograms per liter (ng/l) or parts per trillion (ppt).

Inorganic Results:

- Parameter is the same as "analyte" above – it is the chemical being tested.
- Result is the concentration of that chemical detected.
- RL/PQL is the lowest level at which the specific laboratory test can reliably quantify the concentration. Below that number, the result is considered unreliable.
- DIL is the number of times the sample was diluted (necessary because the test has a certain range that it is accurate for).
- Units: mg/l is milligrams per liter or parts per million; ug/l is micrograms per liter or parts per billion.
- DW MCL stands for drinking water (DW) and "maximum contaminant level" (MCL). All chemicals that have a "maximum contaminant level" (MCL) established for drinking water (DW) have a level reported in this column.

- Sec Goal is the EPA nomenclature for all contaminants that have regulatory levels set based on aesthetics (for example, taste or color). DOH recognizes these EPA secondary goals as primary standards and enforces its drinking water quality program accordingly.
- Date/Time represents the date and time of the analysis at the lab.
- By refers to the technician who ran the test.
- Reference indicates the EPA method used in the test.

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ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-55277-1
Client Project/Site: Stewart ANGB - Butterhill #336089

For:
New York State D.E.C.
625 Broadway
12th Floor
Albany, New York 12233-7017

Attn: Mr. Dave Chiusano

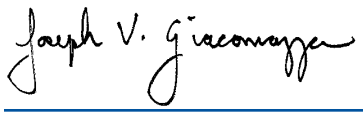
Joseph V. Giacomazza

Authorized for release by:
10/31/2019 5:44:24 PM
Joe Giacomazza, Project Management Assistant II
joe.giacomazza@testamericainc.com

Designee for

Judy Stone, Senior Project Manager
(484)685-0868
judy.stone@testamericainc.com

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed within the body of this report. Release of the data contained in this sample data package and in the electronic data deliverable has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.



Joe Giacomazza
Project Management Assistant II
10/31/2019 5:44:24 PM

Table of Contents

Definitions/Glossary

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Case Narrative

Client: New York State D.E.C.
Project/Site: Stewart ANGB - Butterhill #336089

Job ID: 320-55277-1

Job ID: 320-55277-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative
320-55277-1

Comments
No additional comments.

Receipt
The samples were received on 10/12/2019 8:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.5º C.

Receipt Exceptions
The container label for the following samples did not match the information listed on the Chain-of-Custody (COC): BHTRAIN1POST (320-55277-2), BHTRAIN2POST (320-55277-3) and BHTRAIN3POST (320-55277-4). Sample #2 container labels do not list a sample date, while the COC lists the sample date as 10/11/19. Sample #3 container labels do not list sample date, while the COC lists sample date as 10/11/19. Sample #4 container labels do not list sample date, while on the COC lists sample date as 10/11/19.

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

Organic Prep
Method 537 DW: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-332468.

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

Detection Summary

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

Client Sample ID: BHPRE
Lab Sample ID: 320-55277-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	0.0035		0.0019		ug/L	1		537 DW	Total/NA
Perfluorobutanesulfonic acid (PFBS)	0.0029		0.0019		ug/L	1		537 DW	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	0.0030		0.0019		ug/L	1		537 DW	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.0031		0.0019		ug/L	1		537 DW	Total/NA

Client Sample ID: BHTRAIN1POST
Lab Sample ID: 320-55277-2

No Detections.

Client Sample ID: BHTRAIN2POST
Lab Sample ID: 320-55277-3

No Detections.

Client Sample ID: BHTRAIN3POST
Lab Sample ID: 320-55277-4

No Detections.

This Detection Summary does not include radiochemical test results.

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

Client Sample ID: BHPRE
Lab Sample ID: 320-55277-1
Date Collected: 10/11/19 10:40
Matrix: Water
Date Received: 10/12/19 08:55

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorooctanoic acid (PFOA)	**0.0035**		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorononanoic acid (PFNA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorodecanoic acid (PFDA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorobutanesulfonic acid (PFBS)	**0.0029**		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorohexanesulfonic acid (PFHxS)	**0.0030**		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
Perfluorooctanesulfonic acid (PFOS)	**0.0031**		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:09	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*102*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:09*	*1*
13C2 PFDA	*105*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:09*	*1*
d5-NEtFOSAA	*103*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:09*	*1*

Client Sample ID: BHTRAIN1POST
Lab Sample ID: 320-55277-2
Date Collected: 10/11/19 11:33
Matrix: Water
Date Received: 10/12/19 08:55

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorooctanoic acid (PFOA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorononanoic acid (PFNA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorodecanoic acid (PFDA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:18	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*105*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:18*	*1*
13C2 PFDA	*105*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:18*	*1*
d5-NEtFOSAA	*95*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:18*	*1*

Client Sample ID: BHTRAIN2POST
Lab Sample ID: 320-55277-3
Date Collected: 10/11/19 11:56
Matrix: Water
Date Received: 10/12/19 08:55

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorooctanoic acid (PFOA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorononanoic acid (PFNA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorodecanoic acid (PFDA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:26	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*98*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:26*	*1*
13C2 PFDA	*105*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:26*	*1*
d5-NEtFOSAA	*103*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:26*	*1*

Client Sample ID: BHTRAIN3POST
Lab Sample ID: 320-55277-4
Date Collected: 10/11/19 12:10
Matrix: Water
Date Received: 10/12/19 08:55

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorooctanoic acid (PFOA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorononanoic acid (PFNA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorodecanoic acid (PFDA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorododecanoic acid (PFDoA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0019		ug/L		10/21/19 10:00	10/22/19 11:34	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*101*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:34*	*1*
13C2 PFDA	*110*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:34*	*1*
d5-NEtFOSAA	*96*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:34*	*1*

Surrogate Summary

Client: New York State D.E.C.
Project/Site: Stewart ANGB - Butterhill #336089

Job ID: 320-55277-1

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)		
Lab Sample ID	Client Sample ID	PFHxA (70-130)	PFDA (70-130)	-NEtFOS/ (70-130)
320-55277-1	BHPRE	102	105	103
320-55277-2	BHTRAIN1POST	105	105	95
320-55277-3	BHTRAIN2POST	98	105	103
320-55277-4	BHTRAIN3POST	101	110	96
LCS 320-332468/2-A	Lab Control Sample	109	109	98
LCSD 320-332468/3-A	Lab Control Sample Dup	105	105	95
MB 320-332468/1-A	Method Blank	103	104	102

Surrogate Legend

PFHxA = 13C2 PFHxA
PFDA = 13C2 PFDA
d5-NEtFOSAA = d5-NEtFOSAA

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS)

Lab Sample ID: MB 320-332468/1-A
Matrix: Water
Analysis Batch: 332770

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 332468

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexanoic acid (PFHxA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorooctanoic acid (PFOA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorononanoic acid (PFNA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluoroheptanoic acid (PFHpA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorodecanoic acid (PFDA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluoroundecanoic acid (PFUnA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorotridecanoic acid (PFTriA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorododecanoic acid (PFDoA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorotetradecanoic acid (PFTeA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorobutanesulfonic acid (PFBS)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorohexanesulfonic acid (PFHxS)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
Perfluorooctanesulfonic acid (PFOS)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	ND		0.0020		ug/L		10/21/19 10:00	10/22/19 11:01	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C2 PFHxA	*103*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:01*	*1*
13C2 PFDA	*104*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:01*	*1*
d5-NEtFOSAA	*102*		*70 - 130*	*10/21/19 10:00*	*10/22/19 11:01*	*1*

Lab Sample ID: LCS 320-332468/2-A
Matrix: Water
Analysis Batch: 332836

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332468

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorohexanoic acid (PFHxA)	0.100	0.103		ug/L		103	70 - 130
Perfluorooctanoic acid (PFOA)	0.100	0.103		ug/L		103	70 - 130
Perfluorononanoic acid (PFNA)	0.100	0.106		ug/L		106	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.100	0.104		ug/L		104	70 - 130
Perfluorodecanoic acid (PFDA)	0.100	0.102		ug/L		102	70 - 130
Perfluoroundecanoic acid (PFUnA)	0.100	0.106		ug/L		106	70 - 130
Perfluorotridecanoic acid (PFTriA)	0.100	0.104		ug/L		104	70 - 130
Perfluorododecanoic acid (PFDoA)	0.100	0.106		ug/L		106	70 - 130
Perfluorotetradecanoic acid (PFTeA)	0.100	0.0990		ug/L		99	70 - 130
Perfluorobutanesulfonic acid (PFBS)	0.0884	0.0900		ug/L		102	70 - 130
Perfluorohexanesulfonic acid (PFHxS)	0.0910	0.0953		ug/L		105	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.0928	0.0949		ug/L		102	70 - 130
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.100	0.0926		ug/L		93	70 - 130
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.100	0.0984		ug/L		98	70 - 130

Method: 537 DW - Perfluorinated Alkyl Acids (LC/MS) (Continued)

Lab Sample ID: LCS 320-332468/2-A
Matrix: Water
Analysis Batch: 332836

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 332468

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C2 PFHxA	109		70 - 130
13C2 PFDA	109		70 - 130
d5-NEtFOSAA	98		70 - 130

Lab Sample ID: LCSD 320-332468/3-A
Matrix: Water
Analysis Batch: 332836

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 332468

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorohexanoic acid (PFHxA)			0.100	0.102		ug/L		102	70 - 130	2	30
Perfluorooctanoic acid (PFOA)			0.100	0.103		ug/L		103	70 - 130	0	30
Perfluorononanoic acid (PFNA)			0.100	0.105		ug/L		105	70 - 130	1	30
Perfluoroheptanoic acid (PFHpA)			0.100	0.104		ug/L		104	70 - 130	0	30
Perfluorodecanoic acid (PFDA)			0.100	0.103		ug/L		103	70 - 130	1	30
Perfluoroundecanoic acid (PFUnA)			0.100	0.104		ug/L		104	70 - 130	2	30
Perfluorotridecanoic acid (PFTriA)			0.100	0.108		ug/L		108	70 - 130	5	30
Perfluorododecanoic acid (PFDoA)			0.100	0.106		ug/L		106	70 - 130	0	30
Perfluorotetradecanoic acid (PFTeA)			0.100	0.0986		ug/L		99	70 - 130	0	30
Perfluorobutanesulfonic acid (PFBS)			0.0884	0.0927		ug/L		105	70 - 130	3	30
Perfluorohexanesulfonic acid (PFHxS)			0.0910	0.0966		ug/L		106	70 - 130	1	30
Perfluorooctanesulfonic acid (PFOS)			0.0928	0.0965		ug/L		104	70 - 130	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)			0.100	0.0897		ug/L		90	70 - 130	3	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)			0.100	0.102		ug/L		102	70 - 130	4	30

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C2 PFHxA	105		70 - 130
13C2 PFDA	105		70 - 130
d5-NEtFOSAA	95		70 - 130

QC Association Summary

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

LCMS

Prep Batch: 332468

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55277-1	BHPRE	Total/NA	Water	537 DW	
320-55277-2	BHTRAIN1POST	Total/NA	Water	537 DW	
320-55277-3	BHTRAIN2POST	Total/NA	Water	537 DW	
320-55277-4	BHTRAIN3POST	Total/NA	Water	537 DW	
MB 320-332468/1-A	Method Blank	Total/NA	Water	537 DW	
LCS 320-332468/2-A	Lab Control Sample	Total/NA	Water	537 DW	
LCSD 320-332468/3-A	Lab Control Sample Dup	Total/NA	Water	537 DW	

Analysis Batch: 332770

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-55277-1	BHPRE	Total/NA	Water	537 DW	332468
320-55277-2	BHTRAIN1POST	Total/NA	Water	537 DW	332468
320-55277-3	BHTRAIN2POST	Total/NA	Water	537 DW	332468
320-55277-4	BHTRAIN3POST	Total/NA	Water	537 DW	332468
MB 320-332468/1-A	Method Blank	Total/NA	Water	537 DW	332468

Analysis Batch: 332836

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-332468/2-A	Lab Control Sample	Total/NA	Water	537 DW	332468
LCSD 320-332468/3-A	Lab Control Sample Dup	Total/NA	Water	537 DW	332468

Lab Chronicle

Client: New York State D.E.C.
Project/Site: Stewart ANGB - Butterhill #336089

Job ID: 320-55277-1

Client Sample ID: BHPRE
Date Collected: 10/11/19 10:40
Date Received: 10/12/19 08:55

Lab Sample ID: 320-55277-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			261.1 mL	10.00 mL	332468	10/21/19 10:00	SK	TAL SAC
Total/NA	Analysis	537 DW		1			332770	10/22/19 11:09	JRB	TAL SAC

Client Sample ID: BHTRAIN1POST
Date Collected: 10/11/19 11:33
Date Received: 10/12/19 08:55

Lab Sample ID: 320-55277-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			262 mL	10.00 mL	332468	10/21/19 10:00	SK	TAL SAC
Total/NA	Analysis	537 DW		1			332770	10/22/19 11:18	JRB	TAL SAC

Client Sample ID: BHTRAIN2POST
Date Collected: 10/11/19 11:56
Date Received: 10/12/19 08:55

Lab Sample ID: 320-55277-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			269.2 mL	10.00 mL	332468	10/21/19 10:00	SK	TAL SAC
Total/NA	Analysis	537 DW		1			332770	10/22/19 11:26	JRB	TAL SAC

Client Sample ID: BHTRAIN3POST
Date Collected: 10/11/19 12:10
Date Received: 10/12/19 08:55

Lab Sample ID: 320-55277-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	537 DW			263.5 mL	10.00 mL	332468	10/21/19 10:00	SK	TAL SAC
Total/NA	Analysis	537 DW		1			332770	10/22/19 11:34	JRB	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

Laboratory: Eurofins TestAmerica, Sacramento

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

Authority	Program	Identification Number	Expiration Date
New York	NELAP	11666	04-01-20

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 DW	537 DW	Water	N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)
537 DW	537 DW	Water	N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)
537 DW	537 DW	Water	Perfluorobutanesulfonic acid (PFBS)
537 DW	537 DW	Water	Perfluorodecanoic acid (PFDA)
537 DW	537 DW	Water	Perfluorododecanoic acid (PFDoA)
537 DW	537 DW	Water	Perfluoroheptanoic acid (PFHpA)
537 DW	537 DW	Water	Perfluorohexanesulfonic acid (PFHxS)
537 DW	537 DW	Water	Perfluorohexanoic acid (PFHxA)
537 DW	537 DW	Water	Perfluorononanoic acid (PFNA)
537 DW	537 DW	Water	Perfluorotetradecanoic acid (PFTeA)
537 DW	537 DW	Water	Perfluorotridecanoic acid (PFTriA)
537 DW	537 DW	Water	Perfluoroundecanoic acid (PFUnA)

Laboratory: Eurofins TestAmerica, Buffalo

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
New York	NELAP	10026	03-31-20

Method Summary

Client: New York State D.E.C.
Project/Site: Stewart ANGB - Butterhill #336089

Job ID: 320-55277-1

Method	Method Description	Protocol	Laboratory
537 DW	Perfluorinated Alkyl Acids (LC/MS)	EPA	TAL SAC
537 DW	Extraction of Perfluorinated Alkyl Acids	EPA	TAL SAC

Protocol References:

EPA = US Environmental Protection Agency

Laboratory References:

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

Sample Summary

Client: New York State D.E.C.
Job ID: 320-55277-1
Project/Site: Stewart ANGB - Butterhill #336089

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-55277-1	BHPRE	Water	10/11/19 10:40	10/12/19 08:55	
320-55277-2	BHTRAIN1POST	Water	10/11/19 11:33	10/12/19 08:55	
320-55277-3	BHTRAIN2POST	Water	10/11/19 11:56	10/12/19 08:55	
320-55277-4	BHTRAIN3POST	Water	10/11/19 12:10	10/12/19 08:55	

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Phone: 916-373-5600 Fax: 916-372-1059

Albany #224

Chain of Custody Record

eurofins Environment Testing TestAmerica

Client Information	Sampler:	Lab PM: Stone, Judy L	Carrier Tracking No(s):	COC No: 480-135690-30539.1
Client Contact: Jeffrey Redfield	Phone:	E-Mail: judy.stone@testamericainc.com		Page: Page 1 of 1
Company: ARCADIS U.S. Inc				Job #:
Address: 855 Route 146 Suite 210	Due Date Requested:			
City: Clifton Park	TAT Requested (days): Standard TAT			
State, Zip: NY, 12065				
Phone: 518-402-9814(Tel)	PO #: Callout ID: 137349			
Email: jeffrey.redfield@arcadis.com	WO #:			
Project Name: Stewart ANGB - Butterhill #336089	Project #: 48020960			
Site:	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	PFAS_DI_DW - (MOD) PFAS, UCMR List	537_DW - Method 537 List	Total Number of containers	Special Instructions/Note:
Preservation Code:										
BHPRE	10-11-19	1040	G	Water				X	2	
BHPRE				Water						
BHTRAIN1POST	10-11-19	1133	G	Water				X	2	
BHTRAIN2POST	10-11-19	1156	G	Water				X	2	
BHTRAIN3POST	10-11-19	1210	G	Water				X	2	
BHPRE				Water						
BHPRE				Water						
BHTRAIN1POST				Water						
BHTRAIN2POST				Water						
BHTRAIN3POST				Water						

320-55277 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify)

Special Instructions/QC Requirements:

Empty Kit Relinquished by: | Date: | Time: | Method of Shipment:

	Date/Time	Company		Date/Time	Company
Relinquished by:	10-11-19 1557	ARCADIS	Received by:	10/12/19 1557	Eurofins
Relinquished by: Karl Zoche	10/11/19 1700	Eurofins	Received by:	10/12/19 855	EA RS
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ✗ Yes △ No | Custody Seal No.: 1096800

Cooler Temperature(s) °C and Other Remarks: 0.4 cr 0.5

Ver: 01/16/2019

NO date on all containers so 10/12/19

Login Sample Receipt Checklist

Client: New York State D.E.C. Job Number: 320-55277-1

Login Number: 55277 **List Source: Eurofins TestAmerica, Sacramento**
List Number: 1
Creator: Thompson, Sarah W

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	1096800
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time (Excluding tests with immediate HTs)..	True	
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	
Sample Preservation Verified	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	True	
If necessary, staff have been informed of any short hold time or quick TAT needs	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Sampling Company provided.	True	
Samples received within 48 hours of sampling.	True	
Samples requiring field filtration have been filtered in the field.	True	
Chlorine Residual checked.	N/A	