



**Department of
Environmental
Conservation**

New York State Department of Environmental
Conservation – Division of Environmental
Remediation

TIOGA CASTINGS SITE SEMI- ANNUAL REPORT

Third Quarter 2017

Site 7-54-012

November 2017

A large, solid orange geometric shape, resembling a stylized triangle or a section of a larger triangle, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, creating a diagonal line across its surface.



Andrew Violins, P.G.
Associate Vice President



Jeremy Wyckoff
Project Geologist

TIOGA CASTINGS SITE SEMI-ANNUAL REPORT

Third Quarter 2017

Prepared for:

New York State Department of
Environmental Conservation
Division of Environmental Remediation
625 Broadway
Albany, New York 12233

Prepared by:

Arcadis CE, Inc.
855 Route 146
Suite 210
Clifton Park
New York 12065
Tel 518 250 7300
Fax 518 250 7301

Our Ref.:

00266403.0000

Date:

November 2017

This document is intended only for the use of the individual or entity for which it was prepared and may contain information that is privileged, confidential and exempt from disclosure under applicable law. Any dissemination, distribution or copying of this document is strictly prohibited.

CONTENTS

1	Introduction	1
2	Site Description.....	2
3	Operation and Maintenance	3
3.1	Landfill Security	3
3.2	Landfill Cap Maintenance	3
4	Groundwater Monitoring Program	4
4.1	Groundwater Monitoring Well Inspection	4
4.2	Water Level Measurements	4
4.3	Groundwater Sampling	4
4.4	Groundwater Sampling Results.....	5
5	Recommendations.....	6
6	Summary	7
7	References	8

TABLES

Table 4-1	Summary of Groundwater Elevations
Table 4-2	Summary of Groundwater Sampling Results-Metals
Table 4-3	Summary of Groundwater Sampling Results-PFAS and 1,4-Dioxane

FIGURES

Figure 2-1	Site Location
Figure 2-2	Site Features
Figure 4-1	Potentiometric Surface – August 28, 2017

APPENDICES

Appendix A.....	Operation and Maintenance Check List
Appendix B.....	Photograph Log

Tioga Castings Site Semi-Annual Report

Appendix C.....	Groundwater Sampling Purge Logs
Appendix D.....	Groundwater Level Data Form
Appendix E.....	Analytical Data Package

1 INTRODUCTION

The New York State Department of Environmental Conservation (NYSDEC) has issued a Work Assignment (# D004443-8) to Arcadis CE, Inc. (Arcadis), for Operation, Maintenance, and Monitoring at the Tioga Castings Site (NYSDEC site number 7-54-012) in New York State. This Semi-Annual Report has been prepared in accordance with the NYSDEC-approved Site Management Plan (SMP) to summarize third quarter 2017 operation and maintenance (O&M) activities and groundwater sampling results.

2 SITE DESCRIPTION

The Tioga Castings site is located on Foundry Street, Owego, Broome County, New York (Figure 2-1). The former foundry buildings have been razed, leaving the concrete slabs in-place. A capped, closed landfill is present at the western end of the site. In August 2011, the boundaries of the site (originally encompassing approximately seven acres) were reduced by the NYSDEC to only include the approximately one-acre landfill (Figure 2-2).

3 OPERATION AND MAINTENANCE

Operation and Maintenance (O&M) activities were performed on August 28, 2017 in accordance with the SMP. A Post Closure O&M Checklist (Appendix A) was used to document the status of the landfill. Photographs taken during the inspection are provided in Appendix B. The next O&M event is scheduled to be performed during the second quarter 2018.

3.1 Landfill Security

The landfill perimeter fence, entry gate, and locks were inspected for proper operation and signs of deterioration. As indicated in the O&M Checklist, no problems were observed with the integrity of these components. In addition, the Foundry Street entry gate warning sign was in place and in acceptable condition.

3.2 Landfill Cap Maintenance

A visual inspection of the landfill cap was performed to assess the landfill for burrowing rodents, erosion, woody vegetation, and settlement. As shown on the O&M Checklist (Appendix A) and site photographs (Appendix B), the condition of the landfill cap appeared to be in acceptable condition.

4 GROUNDWATER MONITORING PROGRAM

Groundwater samples are collected on a five-quarter sampling interval in accordance with the SMP. Groundwater sampling was conducted on August 28, 2017 to provide information on groundwater quality, monitor contaminant migration in groundwater, and assess hydrogeologic site conditions, including groundwater flow. The next groundwater sampling event is scheduled to occur during the fourth quarter 2018.

4.1 Groundwater Monitoring Well Inspection

The integrity of each well was inspected, and the results recorded on a groundwater sampling purge log (Appendix C). As indicated on the purge logs, the monitoring wells are in acceptable condition and no significant problems were reported.

4.2 Water Level Measurements

Prior to collecting groundwater samples, water levels were measured to the nearest hundredth of a foot and recorded on a groundwater level data form (Appendix D). Monitoring well locations are presented on Figure 2-2.

Table 4-1 summarizes the groundwater levels and elevations from the site. As shown in Table 4-1, groundwater elevations ranged from 793.74 (MW-9) feet above mean sea level (amsl) to 794.84 (MW-4) feet amsl. Table 4-1 shows that the groundwater elevations measured in 2017 are approximately one foot lower than in 2016.

A potentiometric surface map is presented on Figure 4-1. As shown on Figure 4-1, the direction of groundwater flow in the vicinity of the landfill is generally toward the east.

4.3 Groundwater Sampling

Groundwater samples were collected from four groundwater monitoring wells (MW-3D, MW-4, MW-6, and MW-9) using low-flow groundwater purging and sampling procedures in accordance with the SMP.

Prior to collecting groundwater samples, pH, conductivity, turbidity, dissolved oxygen (DO), temperature, and oxidation-reduction potential (REDOX) were measured using a YSI Quarto water quality meter and recorded on groundwater sampling purge logs. Groundwater sampling purge logs are presented in Appendix D.

Groundwater samples were submitted to Test America – Buffalo by chain-of-custody procedures and analyzed for Target Analyte List (TAL) metals by USEPA Method 6010C. In addition, at the request of NYSDEC, groundwater samples were also analyzed for Perfluorinated Alkyl Substances (PFAS) by USEPA Method 537 Modified, and 1,4-Dioxane by USEPA Method 8260C SIM. The analytical data package is provided in Appendix E.

4.4 Groundwater Sampling Results

Groundwater sample results are summarized in Table 4-2 and Table 4-3.

As shown in Table 4-2, iron was detected in the groundwater samples from MW-3D (1,210 micrograms per liter (ug/L) at a concentration greater than the corresponding NYSDEC Class GA Standard of 300 ug/L. Table 4-2 shows that this is the highest concentration of iron at this well since April 2009. The concentrations of iron and sodium in MW-6 (404 ug/L and 26,600 ug/L, respectively) exceeded the corresponding NYSDEC Class GA Standards of 300 ug/L and 20,000 ug/L, respectively. As shown in Table 4-2 concentration of iron in the sample from MW-9 (2,700 ug/L) exceeded the corresponding NYSDEC Class GA Standard of 300 ug/L. Table 4-2 shows that these concentrations are within the range of historic exceedances from these wells.

No other metals were detected at concentrations greater than the applicable NYSDEC Class GA Standards.

At the request of NYSDEC, groundwater samples were also analyzed for PFAS and 1,4-dioxane. As shown in Table 4-3, PFAS was detected in groundwater sampled from MW-3D, MW-4, and MW-6 at concentrations less than the current NYSDEC Health Advisory Limit (HAL) of 70 nanograms per liter (ng/L). Table 4-3 shows that 1,4-dioxane was not detected in any of the groundwater samples during this sampling event.

5 RECOMMENDATIONS

Based on the data presented herein, there are no recommended changes to site operations or monitoring at this time.

6 SUMMARY

Landfill O&M activities were conducted in accordance with the SMP during the third quarter 2017. No significant issues were reported with the condition of the perimeter fence or the condition of the landfill. The next O&M and monitoring event is scheduled for the second quarter 2018.

Groundwater monitoring wells were in acceptable condition. The direction of groundwater flow in the vicinity of the landfill is toward the east. Iron and sodium were the only metals detected in groundwater samples from MW-3D, MW-6, and MW-9 at concentrations greater than the applicable NYSDEC Class GA Standards. Iron and sodium detections will continue to be monitored during the next sampling event in 2018.

At the request of NYSDEC, groundwater samples were analyzed for PFAS and 1,4-dioxane. None of the groundwater samples contained PFAS at concentrations greater than the applicable NYSDEC HAL. 1,4-dioxane was not detected in any of the samples collected during this monitoring event.

7 REFERENCES

Arcadis 2015. Site Management Plan, Tioga Castings Site, Oswego, Tioga County, NY. Site Number 7-54-012. January 2015.

TABLES



Table 4-1
Summary of Groundwater Elevations
Owego, New York
NYSDEC Site No. 7-54-012

Well	Measuring Point Elevation (feet)	2/5/2015		5/16/2016		8/28/2017	
		DTW (feet)	Elevation (feet)	DTW (feet)	Elevation (feet)	DTW (feet)	Elevation (feet)
MW-3D	812.42 (2)	18.36	794.06	17.18	795.24	18.08	794.34
MW-4	806.33 (1)	11.70	794.63	10.86	795.47	11.49	794.84
MW-6	815.53 (3)	21.51	794.02	20.03	795.50	21.21	794.32
MW-9	809.97 (4)	16.37	793.60	15.17	794.80	16.23	793.74

(1) - Source: Monitoring Plan: Tioga Casting (NYSDEC, April 25, 2005)

(2) - From Malcolm Pirnie, Inc. level survey performed 10/28/2010

(3) - From Malcolm Pirnie, Inc. level survey performed 2/28/2011

(4) - From Malcolm Pirnie, Inc. level survey performed 11/10/2014

Table 4-2
Summary of Groundwater Sample Results - Metals
Tioga Castings Site
Owego, New York
NYSDEC Site Number 7-54-012

Well Date Units	NYSDEC Class GA Standards	MW-3D 4/13/2009 ug/L	MW-3D 3/18/2010 ug/L	MW-3D 10/28/2010 ug/L	MW-3D 2/28/2011 ug/L	MW-3D 7/19/2012 ug/L	MW-3D 10/14/2013 ug/L	MW-3D 2/5/2015 ug/L
Aluminum		668	39.8 U	11.7 J	250.0 U	200.0 U	310	200 U
Antimony	3	6.7 U	6.8 U	8.0 U	15.0 U	20.0 U	20.0 U	20 U
Arsenic	25	3.0 U	5.6 U	4.2 U	15.0 U	10.0 U	10.0 U	15 U
Barium	1000	39.2 B	45.3 BE	56.7	43.6	51.0	46.0	39
Beryllium	3*	0.5 U	0.2 U	0.7 U	5.0 U	2.0 U	2.0 U	2 U
Cadmium	5 [10]	0.3 U	0.3 U	0.5 U	5.0 U	1.0 U	1.0 U	2 U
Calcium		42300	50000	54000	48600	55200	45800	44400
Chromium	50 [50]	3.8 B	0.9 U	1.1 U	5.0 U	1.6 J B	4.0 U	4 U
Cobalt		3.8 U	0.6 U	5.8 U	5.0 U	4.0 U	4.0 U	4 U
Copper	200	56.6	1.3 U	2.3 J	10.0 U	10.0 U	10.0 U	10 U
Iron	300	558	19.3 U	52.9	24.4 J	26.0 J	390	50 U
Lead	25 [25]	1.4 U	3.0 U	4.6 J	15.0 U	5.0 U	5.0 U	10 U
Magnesium		7490	9120	9680	9120	10000	8800	8800
Manganese	300	40.3 B	0.9 BE	2.2 J	1.2 J	2.4 J B	21.0	0.8 J
Mercury	0.7	NA	0.1 U	0.1 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	3.9 B	1.3 U	4.2 U	5.0 U	10.0 U	10.0 U	10 U
Potassium		1550 B	1610 BE	1490	1260	1500	1400	1200
Selenium	10	11.4 U	8.7 U	4.8 U	38.0 U	15.0 U	15.0 U	25 U
Silver	50	2.2 U	1.2 U	1.5 U	5.0 U	3.0 U	3.0 U	6 U
Sodium	20000	17300	16900	17400	15600	18400	15700	15400
Thallium	0.5*	3.0 U	10.2 U	2.4 U	15.0 U	20.0 U	20.0 U	20 U
Vanadium		4.7 U	1.1 U	6.1 U	5.0 U	5.0 U	5.0 U	5 U
Zinc	2000*	13.5 U	1.5 U	14.5 J	25.0 U	1.9 J	3.6 J	1.9 J

Notes:

* - NYSDEC Guidance Value.
1 - Duplicate sample from MW-4
U - Analyte not detected.
J - Greater than the MDL but below the CRDL
B - Greater than MDL but less than RL.
MDL - Method detection limit.
RL - Reporting limit.
E - Estimated value.
[25] - Site-specific cleanup goal.

Table 4-2
Summary of Groundwater Sample Results - Metals
Tioga Castings Site
Owego, New York
NYSDEC Site Number 7-54-012

Well Date Units	NYSDEC Class GA Standards	MW-3D 5/16/2016 ug/L	MW-3D 8/28/2017 ug/L	MW-4 8/2/2007 ug/L	MW-4 7/17/2008 ug/L	MW-4 4/13/2009 ug/L	MW-4 3/18/2010 ug/L	MW-4 10/28/2010 ug/L
Aluminum		200 U	678	40.0 U	32.6 B	754	39.8 U	10.6 J
Antimony	3	20 U	20 U	5.6 U	5.5 U	6.7 U	6.8 U	8.0 U
Arsenic	25	15 U	15 U	4.2 U	3.7 U	3.0 U	5.6 U	4.2 U
Barium	1000	40	54.3 J	40.0 B	38.3 B	60.9 B	42.6 BE	50.3
Beryllium	3*	2 U	2 U	0.27 U	0.3 U	0.5 U	0.2 U	0.7 U
Cadmium	5 [10]	2 U	4 U	0.36 U	0.7 B	0.3 U	0.5 BE	0.5 U
Calcium		43400 B	49200	42700 E	42400	40500	48000	47900
Chromium	50 [50]	4 U	10 U	0.84 U	0.9 U	3.4 B	0.9 U	1.1 U
Cobalt		4 U	50 U	0.89 U	1.1 U	3.8 U	0.6 U	5.8 U
Copper	200	10 U	25 U	1.4 B	1.3 U	49.7	1.3 U	2.0 U
Iron	300	46 BJ	1210	47.6 B	34 B	667	22.2 BE	33.4 J
Lead	25 [25]	10 U	10 U	2.9 U	2.9 U	1.4 U	3.0 U	2.6 U
Magnesium		8700	9110	8190 E	7830	7080	8820	8390
Manganese	300	1.8 J	71.3	0.79 B	1.2 B	79.4	1.5 BE	2.0 J
Mercury	0.7	0.2 U	0.2 U	0.12 U	0.1 U	NA	0.1 U	0.1 U
Nickel	100	10 U	40 U	1.2 U	1.0 U	4.5 B	1.3 U	4.2 U
Potassium		1300	1510 J	1020 BE	1860 B	1190 B	1130 BE	1230
Selenium	10	25 U	20 U	6.1 U	6.1 U	11.4 U	8.7 U	4.8 U
Silver	50	6 U	10 U	1.0 U	1.3 U	2.2 U	1.2 U	1.5 U
Sodium	20000	15200	15900	12000 E	12800	15200	16100	15000
Thallium	0.5*	20 U	20 U	7.0 U	5.9 U	3.0 U	10.2 U	2.4 U
Vanadium		5 U	50 U	0.78 U	1.0 U	4.7 U	1.1 U	6.1 U
Zinc	2000*	10 U	30 U	3.6 U	3.6 U	13.5 U	1.5 U	6.5 U

Notes:

* - NYSDEC Guidance Value.
1 - Duplicate sample from MW-4
U - Analyte not detected.
J - Greater than the MDL but below the CRDL
B - Greater than MDL but less than RL.
MDL - Method detection limit.
RL - Reporting limit.
E - Estimated value.
[25] - Site-specific cleanup goal.

Table 4-2
Summary of Groundwater Sample Results - Metals
Tioga Castings Site
Owego, New York
NYSDEC Site Number 7-54-012

Well Date Units	NYSDEC Class GA Standards	MW-4 2/28/2011 ug/L	MW-4 7/19/2012 ug/L	MW-4 10/14/2013 ug/L	MW-4 2/5/2015 ug/L	MW-4 5/16/2016 ug/L	MW-4 8/28/2017 ug/L	DUP ¹ 8/28/2017 ug/L
Aluminum		26.6 J	200.0 U	200.0 U	200 U	150 J	139 J	200 U
Antimony	3	15.0 U	20.0 U	20.0 U	20 U	20 U	20 U	20 U
Arsenic	25	15.0 U	10.0 U	10.0 U	15 U	15 U	15 U	15 U
Barium	1000	40.8	48.0	43.0	40	60	48.4 J	47.6 J
Beryllium	3*	5.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U	2 U
Cadmium	5 [10]	1.7 J	1.0 U	1.0 U	2.0 U	1 J	4 U	4 U
Calcium		43100	50900	46000	42300	42000 B	47300	47400
Chromium	50 [50]	5.0 U	1.6 J B	4.0 U	1.1 JB	4 U	10 U	10 U
Cobalt		5.0 U	4.0 U	4.0 U	4.0 U	4 U	50 U	50 U
Copper	200	10.0 U	10.0 U	10.0 U	10 U	3.9 J	25 U	25 U
Iron	300	57.3 J	50.0 U	34.0 J	70	380 B	185	150 U
Lead	25 [25]	15.0 U	5.0 U	5.0 U	10 U	10 U	10 U	10 U
Magnesium		8140	9400	8800	8700	8500	8790	8790
Manganese	300	2.2 J	0.7 J B	1.6 J	2.3 J	7.4	6.3 J	15 U
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	1.5 J	10.0 U	10.0 U	10 U	1.9 J	40 U	40 U
Potassium		1330	1300	1100	1100	23300	1260 J	1190 J
Selenium	10	38.0 U	15.0 U	15.0 U	25 U	25 U	20 U	20 U
Silver	50	5.0 U	2.7 J	3.0 U	6.0 U	6 U	10 U	10 U
Sodium	20000	13900	17400	15700	14600	25700	15500	15600
Thallium	0.5*	15.0 U	20.0 U	20.0 U	20 U	20 U	20 U	20 U
Vanadium		5.0 U	5.0 U	5.0 U	5.0 U	5 U	50 U	50 U
Zinc	2000*	25.0 U	1.5 J	10.0 U	2.3 J	3 J	30 U	30 U

Notes:

* - NYSDEC Guidance Value.
1 - Duplicate sample from MW-4
U - Analyte not detected.
J - Greater than the MDL but below the CRDL
B - Greater than MDL but less than RL.
MDL - Method detection limit.
RL - Reporting limit.
E - Estimated value.
[25] - Site-specific cleanup goal.

Table 4-2
Summary of Groundwater Sample Results - Metals
Tioga Castings Site
Owego, New York
NYSDEC Site Number 7-54-012

Well Date Units	NYSDEC Class GA Standards	MW-6 2/28/2011 ug/L	MW-6 7/24/2012 ug/L	MW-6 10/14/2013 ug/L	MW-6 2/6/2015 ug/L	MW-6 5/16/2016 ug/L	MW-6 8/28/2017 ug/L
Aluminum		49.5 J	520.0	310.0	360	200 U	240
Antimony	3	15.0 U	20.0 U	20.0 U	20 U	20 U	20 U
Arsenic	25	15.0 U	10.0 U	10.0 U	15 U	15 U	15 U
Barium	1000	53.1	61.0	62.0	70	54	73.6 J
Beryllium	3*	5.0 U	2.0 U	2.0 U	2.0 U	2 U	2 U
Cadmium	5 [10]	5.0 U	1.0 U	1.0 U	2.0 U	2 U	4 U
Calcium		54200	73500	54200	78700	48600 B	68900
Chromium	50 [50]	5.0 U	2.7 J B	4.0 U	4.0 U	4 U	10 U
Cobalt		5.0 U	4.0 U	4.0 U	4.0 U	4 U	50 U
Copper	200	10.0 U	10.0 U	10.0 U	10 U	10 U	25 U
Iron	300	98.8 J	670.0	330.0	350	120 B	404
Lead	25 [25]	15.0 U	5.0 U	5.0 U	10 U	10 U	10 U
Magnesium		9280	11300	10100	13200	9500	11700
Manganese	300	7.5 J	36.0 B	15.0	20	2.8 J	24.1
Mercury	0.7	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
Nickel	100	5.0 U	10.0 U	10.0 U	10 U	10.0 U	40.0 U
Potassium		2090.0	2300	2000	2400	2000	2310 J
Selenium	10	38.0 U	15.0 U	15.0 U	25 U	25 U	20 U
Silver	50	5 U	3.0 U	3.0 U	6.0 U	6 U	10 U
Sodium	20000	21900	26900	22400	22100	19900	26600
Thallium	0.5*	15.0 U	20.0 U	20.0 U	20 U	20 U	20 U
Vanadium		5 U	5.0 U	5.0 U	5.0 U	5 U	50 U
Zinc	2000*	25.0 U	4.6 J	2.8 J	3.2 J	10 U	30 U

Notes:

* - NYSDEC Guidance Value.
1 - Duplicate sample from MW-4
U - Analyte not detected.
J - Greater than the MDL but below the CRDL
B - Greater than MDL but less than RL.
MDL - Method detection limit.
RL - Reporting limit.
E - Estimated value.
[25] - Site-specific cleanup goal.

Table 4-2
Summary of Groundwater Sample Results - Metals
Tioga Castings Site
Owego, New York
NYSDEC Site Number 7-54-012

Well Date Units	NYSDEC Class GA Standards	MW-9 2/5/2015 ug/L	MW-9 5/16/2016 ug/L	MW-9 8/28/2017 ug/L
Aluminum		3000	810	1600
Antimony	3	20 U	20 U	20 U
Arsenic	25	15 U	15 U	15 U
Barium	1000	110	86	110 J
Beryllium	3*	2.0 U	2.0 U	2.0 U
Cadmium	5 [10]	2.0 U	2.0 U	4.0 U
Calcium		70600	74800 B	85300
Chromium	50 [50]	3.8 JB	1.6 J	10.0 U
Cobalt		4.0 U	4.0 U	50.0 U
Copper	200	5.1 J	2.2 J	25.0 U
Iron	300	2500	1100 B	2700
Lead	25 [25]	10 J	3 J	10 U
Magnesium		12100	11500	12500
Manganese	300	140	55	115
Mercury	0.7	0.2 U	0.2 U	0.2 U
Nickel	100	2.5 J	1.9 J	40.0 U
Potassium		4800	5700	4940 J
Selenium	10	25 U	25 U	20 U
Silver	50	6.0 U	6.0 U	10.0 U
Sodium	20000	8000	7100	7510
Thallium	0.5*	20.0 U	20.0 U	20.0 U
Vanadium		4.5 J	1.9 J	2.7 J
Zinc	2000*	13	4 J	30 U

Notes:

* - NYSDEC Guidance Value.

1 - Duplicate sample from MW-4

U - Analyte not detected.

J - Greater than the MDL but below the CRDL

B - Greater than MDL but less than RL.

MDL - Method detection limit.

RL - Reporting limit.

E - Estimated value.

[25] - Site-specific cleanup goal.

Table 4-3

Summary of Groundwater Sample Results - PFAS and 1,4-Dioxane

Tioga Castings Site

Owego, New York

NYSDEC Site Number 7-54-012

Well	NYSDEC Health Advisory Limit	MW-3D	MW-4	DUP ¹	MW-6	MW-9
Date		8/28/2017	8/28/2017	8/28/2017	8/28/2017	8/28/2017
Perfluorobutanesulfonic acid (PFBS) (ng/L)	70	2.00 U	1.44 J	1.49 J	2.91	2.00 U
Perfluorohexanesulfonic acid (PFHxS) (ng/L)	70	4.16	4.09	4.26	17.70	2.00 U
Perfluoroheptanoic acid (PFHpA) (ng/L)	70	2.00 U	2.00 U	2.00	2.00 U	2.00 U
Perfluorooctanoic acid (PFOA) (ng/L)	70	2.00 U	2.00 U	2.00	2.00 U	2.00 U
Perfluorooctanesulfonic acid (PFOS) (ng/L)	70	1.81 J	2.00 U	1.31 J	9.32	2.00 U
Perfluorononanoic acid (PFNA) (ng/L)	70	2.00 U	2.00 U	2.00 U	2.00 U	2.00 U
Total PFAS (ng/L)	70	5.97	5.53	7.06	29.93	2.00 U
1,4-Dioxane (ug/L)		0.4 U	0.40 U	0.40 U	0.40 U	0.40 U

Notes:

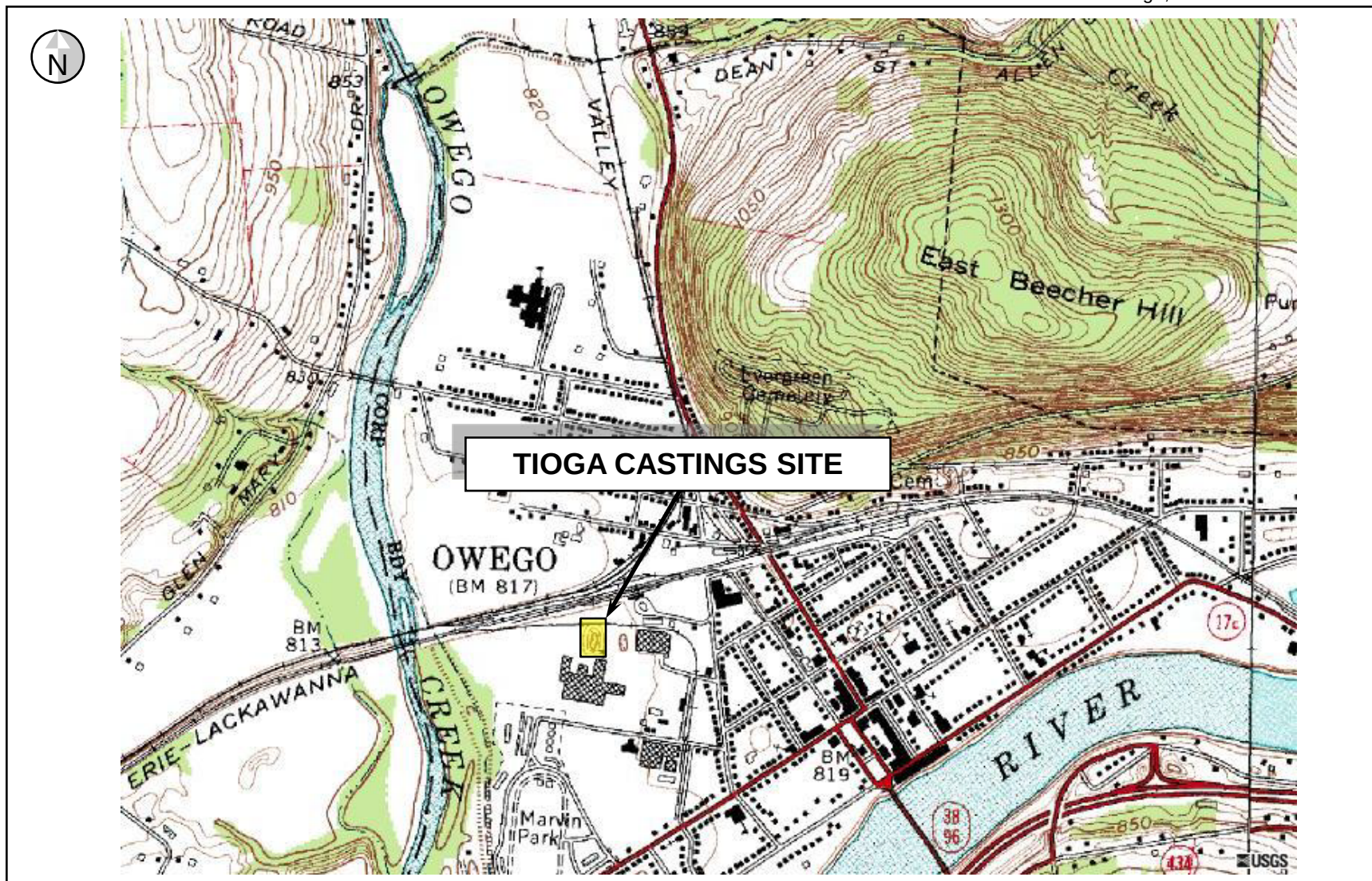
1 - Duplicate sample from MW-4

U - Analyte not detected.

J - Estimated value

FIGURES





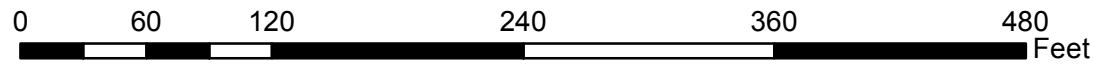
Source: USGS 7.5-minute Series Topographic Quadrangle, OWEGO (1990).

G:\GISMOD\00266403.0000\Site Map.mxd
G:\PROJECT\00266403.0000\Reports\4th Qtr 2014-drilling\Figure 2-2.pdf



Legend

- Monitoring Well
- Abandoned Well
- Former Casting Facility
- On-Site Landfill/Site Boundary
- Approximate Parcel Boundary



Note: Site feature boundaries are approximate.

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE NUMBER 754012

Tioga Casting Facility, Owego, New York

SITE FEATURES



FIGURE

2-2

G:\GISMOD\00266403.0000\PortMap3rdQtr2017.mxd
G:\PROJECT\00266403.0000\Reports\3rd Qtr 2017\Figure 4-1.pdf



Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS

Legend

- Monitoring Well
- Abandoned Well
- Former Casting Facility
- On-Site Landfill/Site Boundary
- Approximate Parcel Boundary
- Groundwater Potentiometric Contour
- 794.63 Feet Above Mean Sea Level

0 60 120 240 360 480 Feet



NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
SITE NUMBER 754012

Tioga Casting Facility, Owego, New York

POTENTIOMETRIC MAP
August 28, 2017



FIGURE

4-1

Note: Site feature boundaries are approximate.

APPENDIX A

Operation and Maintenance Check List



TIOGA CASTINGS SITE LANDFILL

Post-Closure Operation and Maintenance Checklist

Inspected by: J. Mullins

Date: 8/28/2017 Time: 12:00

Weather Conditions: Sunny, 70 F.

LANDFILL COVER SYSTEM

Erosion	<u> </u>	YES	<u> X </u>	NO
Holes or Cracks in Cover	<u> </u>	YES	<u> X </u>	NO
Cap Settlement	<u> </u>	YES	<u> X </u>	NO
Ponded Water or Wet Areas	<u> </u>	YES	<u> X </u>	NO
Burrowing Rodents	<u> </u>	YES	<u> X </u>	NO
Sparse Vegetation/Bare Soil	<u> </u>	YES	<u> X </u>	NO
Brush or Other Woody Vegetation,	<u> </u>	YES	<u> X </u>	NO
Excessive Weeds in Grass	<u> </u>	YES	<u> X </u>	NO
Grass Mowed	<u> X </u>	YES	<u> </u>	NO

DRAINAGE DITCHES

Erosion	<u> </u>	YES	<u> X </u>	NO
Obstructions	<u> </u>	YES	<u> X </u>	NO
Sediment Accumulation	<u> </u>	YES	<u> X </u>	NO
Evidence of Surcharging	<u> </u>	YES	<u> X </u>	NO
Presence of Brush	<u> </u>	YES	<u> X </u>	NO

Comments: _____

Continued

FENCING

Gates and Locks	<u> X </u>	OK	<u> </u>	OTHER
Posts	<u> X </u>	OK	<u> </u>	OTHER
Top Tension Wire	<u> X </u>	OK	<u> </u>	OTHER
Barbed Wire	<u> X </u>	OK	<u> </u>	OTHER

Comments: _____

MONITORING WELLS

Capped and Locked	<u> X </u>	YES	<u> </u>	NO
Casing Damage	<u> </u>	YES	<u> X </u>	NO

Comments: _____

INSPECTOR'S SIGNATURE

J. Mullins

DATE 8/28/2017

APPENDIX B

Photograph Log



Appendix B - Project Photographs

Tioga Castings Site
Owego, New York
Site Number 7-54-012



Photo: 1

Date:

August 28, 2017

Description:

Center of Landfill Cap – Facing
Northeast



Photo: 2

Date:

August 28, 2017

Description:

Center of Landfill Cap – Facing
Southwest

Appendix B - Project Photographs

Tioga Castings Site
Owego, New York
Site Number 7-54-012



Photo: 3

Date:

August 28, 2017

Description:

Landfill Gate



Photo: 4

Date:

August 28, 2017

Description:

West Side of Landfill – Facing
South

Appendix B - Project Photographs

Tioga Castings Site
Owego, New York
Site Number 7-54-012



Photo: 5

Date:

August 28, 2017

Description:

MW-3D



Photo: 6

Date:

August 28, 2017

Description:

MW-4

Appendix B - Project Photographs

Tioga Castings Site
Owego, New York
Site Number 7-54-012



Photo: 7

Date:
August 28, 2017

Description:
MW-6



Photo: 8

Date:
August 28, 2017

Description:
MW-9

APPENDIX C

Groundwater Sampling Purge Logs



WELL NUMBER: MW-3D **DATE:** 8/28/2017
PROJECT NAME: Tioga Castings
PROJECT NUMBER: 00266403.0000
SAMPLERS: J. Mullins

A: Total Casing and Screen Length: 25.13'
B: Casing Internal Diameter: 2"
C: Water Level Below Top of Casing: 18.08'
D: Volume of Water in Casing: 1.12 gallons

$$v = 0.0408 (B)^2 \times (A-C) = D$$

$$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \quad \text{gal.}$$

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1407	1412	1417	1422								
Gallons	0.00	0.25	0.50	0.75								
Depth to Water (ft)	18.08	18.08	18.08	18.08								
pH	7.41	7.17	7.14	7.14								
Conductivity (mS/cm)	0.310	0.314	0.313	0.313								
Turbidity (NTU)	18.6	16.8	15.3	15.4								
Dissolved Oxygen (mg/l)	3.83	2.99	2.94	2.95								
Temperature (°C)	25.06	23.94	23.93	23.93								
Redox (mV)	149	163	163	163								

Notes: Sampled at 1425, collected MS/MSD

WELL NUMBER: MW-4 **DATE:** 8/28/2017
PROJECT NAME: Tioga Castings
PROJECT NUMBER: 00266403.0000
SAMPLERS: J. Mullins

A: Total Casing and Screen Length: 16.08'
B: Casing Internal Diameter: 2"
C: Water Level Below Top of Casing: 11.49'
D: Volume of Water in Casing: 0.73 gallons

$$v = 0.0408 (B)^2 \times (A-C) = D$$

$$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \quad \text{gal.}$$

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1240	1245	1250	1255	1300							
Gallons	0.00	0.25	0.50	0.75	1.00							
Depth to Water (ft)	11.49	11.49	11.50	11.50	11.50							
pH	7.07	7.04	7.04	7.04	7.05							
Conductivity (mS/cm)	0.363	0.360	0.361	0.363	0.362							
Turbidity (NTU)	8.11	8.68	8.69	8.71	8.73							
Dissolved Oxygen (mg/l)	6.79	4.71	4.48	4.45	4.43							
Temperature (°C)	13.98	14.34	14.39	14.39	14.39							
Redox (mV)	134	149.0	156	158	159							

Notes: Sampled at 1305, collected DUP-120170828

WELL NUMBER: MW-6 **DATE:** 8/28/2017
PROJECT NAME: Tioga Castings
PROJECT NUMBER: 00266403.0000
SAMPLERS: J. Mullins

A: Total Casing and Screen Length: 27.28'
B: Casing Internal Diameter: 2"
C: Water Level Below Top of Casing: 21.21'
D: Volume of Water in Casing: 0.97 gallons

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

$$v = 0.0408 (B)^2 \times (A-C) = D$$

$$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \quad \text{gal.}$$

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1625	1630	1635	1640	1645	1650						
Gallons	0.0	0.4	0.8	1.2	1.6	2.0						
Depth to Water (ft)	21.21	21.21	21.21	21.21	21.21	21.21						
pH	7.51	7.04	6.89	6.91	6.93	6.91						
Conductivity (mS/cm)	0.418	0.461	0.488	0.503	0.509	0.509						
Turbidity (NTU)	39.7	38.0	28.8	19.9	16.6	16.6						
Dissolved Oxygen (mg/l)	5.45	4.99	4.82	4.78	4.76	4.76						
Temperature (°C)	13.28	13.96	12.96	12.83	12.83	12.83						
Redox (mV)	165	184	193	195	196	198						

Notes: Sampled at 1655

WELL NUMBER: MW-9 **DATE:** 8/28/2017
PROJECT NAME: Tioga Castings
PROJECT NUMBER: 00266403.0000
SAMPLERS: J. Mullins

A: Total Casing and Screen Length: 23.36'
B: Casing Internal Diameter: 2"
C: Water Level Below Top of Casing: 16.23'
D: Volume of Water in Casing: 1.14 gallons

$$v = 0.0408 (B)^2 \times (A-C) = D$$

$$v = 0.0408 (\quad)^2 \times (\quad - \quad) = \quad \text{gal.}$$

Well I.D.	Vol. Gal./ft.
1"	0.04
2"	0.17
3"	0.38
4"	0.66
5"	1.04
6"	1.50
8"	2.60

PARAMETER	ACCUMULATED VOLUME PURGED											
Time	1525	1530	1535	1540								
Gallons	0.00	0.50	0.85	1.15								
Depth to Water (ft)	16.23	16.23	16.23	16.23								
pH	6.98	6.85	6.84	6.84								
Conductivity (mS/cm)	0.448	0.447	0.456	0.454								
Turbidity (NTU)	20.6	15.5	14.7	14.7								
Dissolved Oxygen (mg/l)	4.75	4.15	4.14	4.14								
Temperature (°C)	19.12	18.99	18.95	18.95								
Redox (mV)	171	179	183	184								

Notes: Sampled at 1550

APPENDIX D

Groundwater Level Data Form



DATE: 8/28/2017
PERSONNEL: J. Mullins

Notes:
 NM - Not Measured
 TOC - Top of Casing

APPENDIX E

Analytical Data Package



ANALYTICAL REPORT

Job Number: 460-140059-1

Job Description: NYSDEC-Standby TIOGA CASTINGS

For:
ARCADIS U.S. Inc
855 Route 146
Suite 210
Clifton Park, NY 12065
Attention: Mr. Jeremy Wyckoff



Approved for release.
Judy L. Stone
Senior Project Manager
9/14/2017 3:18 PM

Judy L. Stone, Senior Project Manager
10 Hazelwood Drive, Amherst, NY, 14228-2298
(484)685-0868
judy.stone@testamericainc.com
09/14/2017

The test results in this report meet all NELAP requirements for analytes for which accreditation is required or available. Any exceptions to the NELAP requirements are noted in this report. Pursuant to NELAP, this report may not be reproduced, except in full, without the written approval of the laboratory. All questions regarding this test report should be directed to the TestAmerica Project Manager who has signed this report. TestAmerica Buffalo NELAC Certifications: CADPH 01169CA, FLDOH E87672, ILEPA 200003, KSDOH E-10187, LADEQ 30708, MDH 036-999-337, NHELAP 2973, NJDEP NY455, NHDOH 10026, ORELAP NY200003, PADEP 68-00281, TXCEQ T-104704412-10-1

Table of Contents

Cover Title Page	1
Data Summaries	5
Report Narrative	5
Sample Summary	6
Detection Summary	7
Method Summary	10
Client Sample Results	11
Surrogate Summary	24
Isotope Dilution Summary	25
QC Sample Results	26
Definitions	35
QC Association	36
Chronicle	40
Certification Summary	44
Organic Sample Data	45
GC/MS VOA	45
8260C_SIM	45
8260C_SIM QC Summary	46
8260C_SIM Sample Data	55
Standards Data	82
8260C_SIM ICAL Data	82
8260C_SIM CCAL Data	101
Raw QC Data	104
8260C_SIM Tune Data	104
8260C_SIM Blank Data	110
8260C_SIM LCS/LCSD Data	113

Table of Contents

8260C_SIM MS/MSD Data	119
8260C_SIM Run Logs	125
LCMS	127
Method PFAS	127
Method PFAS QC Summary	128
Method PFAS Sample Data	133
Standards Data	169
Method PFAS ICAL Data	169
Method PFAS CCAL Data	222
Raw QC Data	254
Method PFAS Blank Data	254
Method PFAS LCS/LCSD Data	260
Method PFAS MS/MSD Data	265
Method PFAS Run Logs	278
Method PFAS Prep Data	281
Inorganic Sample Data	302
Metals Data	302
Met Cover Page	303
Met Sample Data	304
Met QC Data	318
Met ICV/CCV	318
Met CRQL	325
Met Blanks	326
Met ICSA/ICSAB	334
Met MS/MSD/PDS	336
Met Dup/Trip	341

Table of Contents

Met LCS/LCSD	343
Met Serial Dilution	346
Met MDL	349
Met Linear Ranges	357
Met Preparation Log	359
Met Analysis Run Log	363
Met Raw Data	385
Met Prep Data	1350
Shipping and Receiving Documents	1358
Client Chain of Custody	1359
Sample Receipt Checklist	1362

Job Narrative
460-140059-1

Receipt

The samples were received on 8/30/2017 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 5.8° C.

Receipt Exceptions

Per laboratory policy, the Trip Blank sample date/time was added to reflect the latest date/time of the sampling event.

GC/MS VOA

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

Metals

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

LCMS

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

Organic Prep

Method(s) PFAS Prep: Sediment is present in these samples: MW-3D (460-140059-1), MW-3D (460-140059-1[MS]), MW-3D (460-140059-1[MSD]), MW-9 (460-140059-4) and DUP-1-20170828 (460-140059-5).

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

VOA Prep

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

Sample Summary

Client: ARCADIS U.S. Inc

TestAmerica Job ID: 460-140059-1

Project/Site: NYSDEC-Standby TIOGA CASTINGS

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
460-140059-1	MW-3D	Water	08/28/17 14:25	08/30/17 10:00
460-140059-2	MW-4	Water	08/28/17 13:05	08/30/17 10:00
460-140059-3	MW-6	Water	08/28/17 16:55	08/30/17 10:00
460-140059-4	MW-9	Water	08/28/17 15:50	08/30/17 10:00
460-140059-5	DUP-1-20170828	Water	08/28/17 00:00	08/30/17 10:00
460-140059-6	EB-TUBING	Water	08/28/17 12:35	08/30/17 10:00
460-140059-7	EB-PROBE	Water	08/28/17 12:25	08/30/17 10:00
460-140059-8	FB-20170828	Water	08/28/17 13:30	08/30/17 10:00
460-140059-9	TRIP BLANK	Water	08/28/17 14:25	08/30/17 10:00

Detection Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-3D

Lab Sample ID: 460-140059-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	4.16		2.00	0.87	ng/L	1		WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.81	J	2.00	1.28	ng/L	1		WS-LC-0025 At1	Total/NA
Aluminum	678		200	91.1	ug/L	1		6010C	Total/NA
Barium	54.3	J	200	8.6	ug/L	1		6010C	Total/NA
Calcium	49200		5000	354	ug/L	1		6010C	Total/NA
Iron	1210		150	92.1	ug/L	1		6010C	Total/NA
Potassium	1510	J	5000	167	ug/L	1		6010C	Total/NA
Magnesium	9110		5000	311	ug/L	1		6010C	Total/NA
Manganese	71.3		15.0	3.1	ug/L	1		6010C	Total/NA
Sodium	15900		5000	407	ug/L	1		6010C	Total/NA
Aluminum	386		200	91.1	ug/L	1		6010C	Dissolved
Barium	47.6	J	200	8.6	ug/L	1		6010C	Dissolved
Calcium	46900		5000	354	ug/L	1		6010C	Dissolved
Iron	414		150	92.1	ug/L	1		6010C	Dissolved
Potassium	1320	J	5000	167	ug/L	1		6010C	Dissolved
Magnesium	8920		5000	311	ug/L	1		6010C	Dissolved
Manganese	18.8		15.0	3.1	ug/L	1		6010C	Dissolved
Sodium	14600		5000	407	ug/L	1		6010C	Dissolved

Client Sample ID: MW-4

Lab Sample ID: 460-140059-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.44	J	2.00	0.92	ng/L	1		WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.09		2.00	0.87	ng/L	1		WS-LC-0025 At1	Total/NA
Aluminum	139	J	200	91.1	ug/L	1		6010C	Total/NA
Barium	48.4	J	200	8.6	ug/L	1		6010C	Total/NA
Calcium	47300		5000	354	ug/L	1		6010C	Total/NA
Iron	185		150	92.1	ug/L	1		6010C	Total/NA
Potassium	1260	J	5000	167	ug/L	1		6010C	Total/NA
Magnesium	8790		5000	311	ug/L	1		6010C	Total/NA
Manganese	6.3	J	15.0	3.1	ug/L	1		6010C	Total/NA
Sodium	15500		5000	407	ug/L	1		6010C	Total/NA
Aluminum	154	J	200	91.1	ug/L	1		6010C	Dissolved
Barium	47.0	J	200	8.6	ug/L	1		6010C	Dissolved
Calcium	45900		5000	354	ug/L	1		6010C	Dissolved
Potassium	1130	J	5000	167	ug/L	1		6010C	Dissolved
Magnesium	8820		5000	311	ug/L	1		6010C	Dissolved
Manganese	3.8	J	15.0	3.1	ug/L	1		6010C	Dissolved
Sodium	14200		5000	407	ug/L	1		6010C	Dissolved

Client Sample ID: MW-6

Lab Sample ID: 460-140059-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	2.91		2.00	0.92	ng/L	1		WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	17.7		2.00	0.87	ng/L	1		WS-LC-0025 At1	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Edison

Detection Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-6 (Continued)

Lab Sample ID: 460-140059-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	9.32		2.00	1.28	ng/L	1		WS-LC-0025 At1	Total/NA
Aluminum	240		200	91.1	ug/L	1		6010C	Total/NA
Barium	73.6	J	200	8.6	ug/L	1		6010C	Total/NA
Calcium	68900		5000	354	ug/L	1		6010C	Total/NA
Iron	404		150	92.1	ug/L	1		6010C	Total/NA
Potassium	2310	J	5000	167	ug/L	1		6010C	Total/NA
Magnesium	11700		5000	311	ug/L	1		6010C	Total/NA
Manganese	24.1		15.0	3.1	ug/L	1		6010C	Total/NA
Sodium	26600		5000	407	ug/L	1		6010C	Total/NA
Aluminum	616		200	91.1	ug/L	1		6010C	Dissolved
Barium	69.7	J	200	8.6	ug/L	1		6010C	Dissolved
Calcium	63900		5000	354	ug/L	1		6010C	Dissolved
Iron	849		150	92.1	ug/L	1		6010C	Dissolved
Potassium	2140	J	5000	167	ug/L	1		6010C	Dissolved
Magnesium	11100		5000	311	ug/L	1		6010C	Dissolved
Manganese	48.5		15.0	3.1	ug/L	1		6010C	Dissolved
Sodium	23400		5000	407	ug/L	1		6010C	Dissolved

Client Sample ID: MW-9

Lab Sample ID: 460-140059-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Aluminum	1600		200	91.1	ug/L	1		6010C	Total/NA
Barium	110	J	200	8.6	ug/L	1		6010C	Total/NA
Calcium	85300		5000	354	ug/L	1		6010C	Total/NA
Iron	2700		150	92.1	ug/L	1		6010C	Total/NA
Potassium	4940	J	5000	167	ug/L	1		6010C	Total/NA
Magnesium	12500		5000	311	ug/L	1		6010C	Total/NA
Manganese	115		15.0	3.1	ug/L	1		6010C	Total/NA
Sodium	7510		5000	407	ug/L	1		6010C	Total/NA
Vanadium	3.0	J	50.0	2.5	ug/L	1		6010C	Total/NA
Zinc	11.4	J	30.0	9.0	ug/L	1		6010C	Total/NA
Aluminum	1230		200	91.1	ug/L	1		6010C	Dissolved
Barium	96.1	J	200	8.6	ug/L	1		6010C	Dissolved
Calcium	78200		5000	354	ug/L	1		6010C	Dissolved
Iron	1910		150	92.1	ug/L	1		6010C	Dissolved
Potassium	4340	J	5000	167	ug/L	1		6010C	Dissolved
Magnesium	11600		5000	311	ug/L	1		6010C	Dissolved
Manganese	83.2		15.0	3.1	ug/L	1		6010C	Dissolved
Sodium	6480		5000	407	ug/L	1		6010C	Dissolved
Vanadium	2.7	J	50.0	2.5	ug/L	1		6010C	Dissolved

Client Sample ID: DUP-1-20170828

Lab Sample ID: 460-140059-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.49	J	2.00	0.92	ng/L	1		WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.26		2.00	0.87	ng/L	1		WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.31	J	2.00	1.28	ng/L	1		WS-LC-0025 At1	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Edison

Detection Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: DUP-1-20170828 (Continued)

Lab Sample ID: 460-140059-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Barium	47.6	J	200	8.6	ug/L	1			6010C	Total/NA
Calcium	47400		5000	354	ug/L	1			6010C	Total/NA
Potassium	1190	J	5000	167	ug/L	1			6010C	Total/NA
Magnesium	8790		5000	311	ug/L	1			6010C	Total/NA
Sodium	15600		5000	407	ug/L	1			6010C	Total/NA
Aluminum	260		200	91.1	ug/L	1			6010C	Dissolved
Barium	47.4	J	200	8.6	ug/L	1			6010C	Dissolved
Calcium	46400		5000	354	ug/L	1			6010C	Dissolved
Iron	183		150	92.1	ug/L	1			6010C	Dissolved
Potassium	1120	J	5000	167	ug/L	1			6010C	Dissolved
Magnesium	8740		5000	311	ug/L	1			6010C	Dissolved
Manganese	6.9	J	15.0	3.1	ug/L	1			6010C	Dissolved
Sodium	14200		5000	407	ug/L	1			6010C	Dissolved

Client Sample ID: EB-TUBING

Lab Sample ID: 460-140059-6

No Detections.

Client Sample ID: EB-PROBE

Lab Sample ID: 460-140059-7

No Detections.

Client Sample ID: FB-20170828

Lab Sample ID: 460-140059-8

No Detections.

Client Sample ID: TRIP BLANK

Lab Sample ID: 460-140059-9

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Edison

Method Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method	Method Description	Protocol	Laboratory
8260C SIM	Volatile Organic Compounds (GC/MS)	SW846	TAL EDI
WS-LC-0025 At1	Perfluorinated Alkyl Substances	TAL-SAC	TAL SAC
6010C	Metals (ICP)	SW846	TAL EDI
7470A	Mercury (CVAA)	SW846	TAL EDI

Protocol References:

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

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

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

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-3D

Date Collected: 08/28/17 14:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-1

Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	—		08/31/17 11:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	114		71 - 144					08/31/17 11:20	1
4-Bromofluorobenzene	95		72 - 133					08/31/17 11:20	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L	—	09/08/17 09:40	09/09/17 17:12	1
Perfluorohexanesulfonic acid (PFHxS)	4.16		2.00	0.87	ng/L		09/08/17 09:40	09/09/17 17:12	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 17:12	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 17:12	1
Perfluorooctanesulfonic acid (PFOS)	1.81	J	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 17:12	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 17:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				09/08/17 09:40	09/09/17 17:12	1
13C4-PFHpA	95		25 - 150				09/08/17 09:40	09/09/17 17:12	1
13C4 PFOA	86		25 - 150				09/08/17 09:40	09/09/17 17:12	1
13C4 PFOS	98		25 - 150				09/08/17 09:40	09/09/17 17:12	1
13C5 PFNA	82		25 - 150				09/08/17 09:40	09/09/17 17:12	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L	—	09/06/17 09:57	09/07/17 12:58	1
Aluminum	678		200	91.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 12:58	1
Barium	54.3	J	200	8.6	ug/L		09/06/17 09:57	09/07/17 12:58	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 12:58	1
Calcium	49200		5000	354	ug/L		09/06/17 09:57	09/07/17 12:58	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 12:58	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 12:58	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Iron	1210		150	92.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Potassium	1510	J	5000	167	ug/L		09/06/17 09:57	09/07/17 12:58	1
Magnesium	9110		5000	311	ug/L		09/06/17 09:57	09/07/17 12:58	1
Manganese	71.3		15.0	3.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Sodium	15900		5000	407	ug/L		09/06/17 09:57	09/07/17 12:58	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 12:58	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 12:58	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 12:58	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 12:58	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 12:58	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 12:58	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-3D

Date Collected: 08/28/17 14:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-1

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Aluminum	386		200	91.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Arsenic	15.0	U	15.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Barium	47.6	J	200	8.6	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Beryllium	2.0	U	2.0	0.97	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Calcium	46900		5000	354	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Cadmium	4.0	U	4.0	1.8	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Cobalt	50.0	U	50.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Chromium	10.0	U	10.0	3.3	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Copper	25.0	U	25.0	8.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Iron	414		150	92.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Potassium	1320	J	5000	167	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Magnesium	8920		5000	311	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Manganese	18.8		15.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Sodium	14600		5000	407	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Nickel	40.0	U	40.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Lead	10.0	U	10.0	4.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Antimony	20.0	U	20.0	7.4	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Selenium	20.0	U	20.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Thallium	20.0	U	20.0	7.1	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Vanadium	50.0	U	50.0	2.5	ug/L	—	09/09/17 21:30	09/11/17 18:42	1
Zinc	30.0	U	30.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 18:42	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 13:26	09/11/17 14:42	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 15:51	09/11/17 17:00	1

Client Sample ID: MW-4

Date Collected: 08/28/17 13:05

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-2

Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	—		08/31/17 11:43	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	119		71 - 144					08/31/17 11:43	1
4-Bromofluorobenzene	96		72 - 133					08/31/17 11:43	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.44	J	2.00	0.92	ng/L	—	09/08/17 09:40	09/09/17 18:07	1
Perfluorohexanesulfonic acid (PFHxS)	4.09		2.00	0.87	ng/L	—	09/08/17 09:40	09/09/17 18:07	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L	—	09/08/17 09:40	09/09/17 18:07	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L	—	09/08/17 09:40	09/09/17 18:07	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-4
Date Collected: 08/28/17 13:05
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-2
Matrix: Water

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 18:07	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 18:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				09/08/17 09:40	09/09/17 18:07	1
13C4-PFHpA	97		25 - 150				09/08/17 09:40	09/09/17 18:07	1
13C4 PFOA	83		25 - 150				09/08/17 09:40	09/09/17 18:07	1
13C4 PFOS	98		25 - 150				09/08/17 09:40	09/09/17 18:07	1
13C5 PFNA	78		25 - 150				09/08/17 09:40	09/09/17 18:07	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:14	1
Aluminum	139	J	200	91.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:14	1
Barium	48.4	J	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:14	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:14	1
Calcium	47300		5000	354	ug/L		09/06/17 09:57	09/07/17 13:14	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:14	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:14	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Iron	185		150	92.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Potassium	1260	J	5000	167	ug/L		09/06/17 09:57	09/07/17 13:14	1
Magnesium	8790		5000	311	ug/L		09/06/17 09:57	09/07/17 13:14	1
Manganese	6.3	J	15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Sodium	15500		5000	407	ug/L		09/06/17 09:57	09/07/17 13:14	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:14	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:14	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:14	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 13:14	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 13:14	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:14	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/09/17 21:30	09/11/17 18:53	1
Aluminum	154	J	200	91.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/09/17 21:30	09/11/17 18:53	1
Barium	47.0	J	200	8.6	ug/L		09/09/17 21:30	09/11/17 18:53	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/09/17 21:30	09/11/17 18:53	1
Calcium	45900		5000	354	ug/L		09/09/17 21:30	09/11/17 18:53	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/09/17 21:30	09/11/17 18:53	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Chromium	10.0	U	10.0	3.3	ug/L		09/09/17 21:30	09/11/17 18:53	1
Copper	25.0	U	25.0	8.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Iron	150	U	150	92.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Potassium	1130	J	5000	167	ug/L		09/09/17 21:30	09/11/17 18:53	1
Magnesium	8820		5000	311	ug/L		09/09/17 21:30	09/11/17 18:53	1
Manganese	3.8	J	15.0	3.1	ug/L		09/09/17 21:30	09/11/17 18:53	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-4
Date Collected: 08/28/17 13:05
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-2
Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sodium	14200		5000	407	ug/L		09/09/17 21:30	09/11/17 18:53	1
Nickel	40.0	U	40.0	9.0	ug/L		09/09/17 21:30	09/11/17 18:53	1
Lead	10.0	U	10.0	4.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Antimony	20.0	U	20.0	7.4	ug/L		09/09/17 21:30	09/11/17 18:53	1
Selenium	20.0	U	20.0	4.4	ug/L		09/09/17 21:30	09/11/17 18:53	1
Thallium	20.0	U	20.0	7.1	ug/L		09/09/17 21:30	09/11/17 18:53	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/09/17 21:30	09/11/17 18:53	1
Zinc	30.0	U	30.0	9.0	ug/L		09/09/17 21:30	09/11/17 18:53	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 13:26	09/11/17 15:10	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 15:51	09/11/17 17:17	1

Client Sample ID: MW-6
Date Collected: 08/28/17 16:55
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-3
Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L			08/31/17 12:06	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		71 - 144					08/31/17 12:06	1
4-Bromofluorobenzene	95		72 - 133					08/31/17 12:06	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.91		2.00	0.92	ng/L		09/08/17 09:40	09/09/17 18:26	1
Perfluorohexanesulfonic acid (PFHxS)	17.7		2.00	0.87	ng/L		09/08/17 09:40	09/09/17 18:26	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 18:26	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 18:26	1
Perfluorooctanesulfonic acid (PFOS)	9.32		2.00	1.28	ng/L		09/08/17 09:40	09/09/17 18:26	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 18:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				09/08/17 09:40	09/09/17 18:26	1
13C4-PFHxS	95		25 - 150				09/08/17 09:40	09/09/17 18:26	1
13C4 PFOA	85		25 - 150				09/08/17 09:40	09/09/17 18:26	1
13C4 PFOS	95		25 - 150				09/08/17 09:40	09/09/17 18:26	1
13C5 PFNA	82		25 - 150				09/08/17 09:40	09/09/17 18:26	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:18	1
Aluminum	240		200	91.1	ug/L		09/06/17 09:57	09/07/17 13:18	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-6
Date Collected: 08/28/17 16:55
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-3
Matrix: Water

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:18	1
Barium	73.6	J	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:18	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:18	1
Calcium	68900		5000	354	ug/L		09/06/17 09:57	09/07/17 13:18	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:18	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:18	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Iron	404		150	92.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Potassium	2310	J	5000	167	ug/L		09/06/17 09:57	09/07/17 13:18	1
Magnesium	11700		5000	311	ug/L		09/06/17 09:57	09/07/17 13:18	1
Manganese	24.1		15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Sodium	26600		5000	407	ug/L		09/06/17 09:57	09/07/17 13:18	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:18	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:18	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:18	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 13:18	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 13:18	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:18	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/09/17 21:30	09/11/17 18:57	1
Aluminum	616		200	91.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/09/17 21:30	09/11/17 18:57	1
Barium	69.7	J	200	8.6	ug/L		09/09/17 21:30	09/11/17 18:57	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/09/17 21:30	09/11/17 18:57	1
Calcium	63900		5000	354	ug/L		09/09/17 21:30	09/11/17 18:57	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/09/17 21:30	09/11/17 18:57	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Chromium	10.0	U	10.0	3.3	ug/L		09/09/17 21:30	09/11/17 18:57	1
Copper	25.0	U	25.0	8.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Iron	849		150	92.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Potassium	2140	J	5000	167	ug/L		09/09/17 21:30	09/11/17 18:57	1
Magnesium	11100		5000	311	ug/L		09/09/17 21:30	09/11/17 18:57	1
Manganese	48.5		15.0	3.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Sodium	23400		5000	407	ug/L		09/09/17 21:30	09/11/17 18:57	1
Nickel	40.0	U	40.0	9.0	ug/L		09/09/17 21:30	09/11/17 18:57	1
Lead	10.0	U	10.0	4.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Antimony	20.0	U	20.0	7.4	ug/L		09/09/17 21:30	09/11/17 18:57	1
Selenium	20.0	U	20.0	4.4	ug/L		09/09/17 21:30	09/11/17 18:57	1
Thallium	20.0	U	20.0	7.1	ug/L		09/09/17 21:30	09/11/17 18:57	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/09/17 21:30	09/11/17 18:57	1
Zinc	30.0	U	30.0	9.0	ug/L		09/09/17 21:30	09/11/17 18:57	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 13:26	09/11/17 15:12	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-6
Date Collected: 08/28/17 16:55
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-3
Matrix: Water

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 15:51	09/11/17 17:19	1

Client Sample ID: MW-9
Date Collected: 08/28/17 15:50
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-4
Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L			08/31/17 12:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		71 - 144					08/31/17 12:29	1
4-Bromofluorobenzene	94		72 - 133					08/31/17 12:29	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L		09/08/17 09:40	09/09/17 18:44	1
Perfluorohexanesulfonic acid (PFHxS)	2.00	U	2.00	0.87	ng/L		09/08/17 09:40	09/09/17 18:44	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 18:44	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 18:44	1
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 18:44	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 18:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				09/08/17 09:40	09/09/17 18:44	1
13C4-PFHxS	96		25 - 150				09/08/17 09:40	09/09/17 18:44	1
13C4 PFOA	82		25 - 150				09/08/17 09:40	09/09/17 18:44	1
13C4 PFOS	93		25 - 150				09/08/17 09:40	09/09/17 18:44	1
13C5 PFNA	77		25 - 150				09/08/17 09:40	09/09/17 18:44	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:21	1
Aluminum	1600		200	91.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:21	1
Barium	110	J	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:21	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:21	1
Calcium	85300		5000	354	ug/L		09/06/17 09:57	09/07/17 13:21	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:21	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:21	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Iron	2700		150	92.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Potassium	4940	J	5000	167	ug/L		09/06/17 09:57	09/07/17 13:21	1
Magnesium	12500		5000	311	ug/L		09/06/17 09:57	09/07/17 13:21	1
Manganese	115		15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Sodium	7510		5000	407	ug/L		09/06/17 09:57	09/07/17 13:21	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:21	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:21	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:21	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:21	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-9
Date Collected: 08/28/17 15:50
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-4
Matrix: Water

Method: 6010C - Metals (ICP) (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Thallium	20.0	U	20.0	7.1	ug/L	—	09/06/17 09:57	09/07/17 13:21	1
Vanadium	3.0	J	50.0	2.5	ug/L	—	09/06/17 09:57	09/07/17 13:21	1
Zinc	11.4	J	30.0	9.0	ug/L	—	09/06/17 09:57	09/07/17 13:21	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Aluminum	1230		200	91.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Arsenic	15.0	U	15.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Barium	96.1	J	200	8.6	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Beryllium	2.0	U	2.0	0.97	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Calcium	78200		5000	354	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Cadmium	4.0	U	4.0	1.8	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Cobalt	50.0	U	50.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Chromium	10.0	U	10.0	3.3	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Copper	25.0	U	25.0	8.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Iron	1910		150	92.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Potassium	4340	J	5000	167	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Magnesium	11600		5000	311	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Manganese	83.2		15.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Sodium	6480		5000	407	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Nickel	40.0	U	40.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Lead	10.0	U	10.0	4.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Antimony	20.0	U	20.0	7.4	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Selenium	20.0	U	20.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Thallium	20.0	U	20.0	7.1	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Vanadium	2.7	J	50.0	2.5	ug/L	—	09/09/17 21:30	09/11/17 19:01	1
Zinc	30.0	U	30.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 19:01	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 13:26	09/11/17 15:14	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 15:51	09/11/17 17:21	1

Client Sample ID: DUP-1-20170828

Date Collected: 08/28/17 00:00
Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-5
Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	—		08/31/17 12:52	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	127		71 - 144					08/31/17 12:52	1
4-Bromofluorobenzene	96		72 - 133					08/31/17 12:52	1

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: DUP-1-20170828

Lab Sample ID: 460-140059-5

Date Collected: 08/28/17 00:00

Matrix: Water

Date Received: 08/30/17 10:00

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.49	J	2.00	0.92	ng/L		09/08/17 09:40	09/09/17 19:03	1
Perfluorohexanesulfonic acid (PFHxS)	4.26		2.00	0.87	ng/L		09/08/17 09:40	09/09/17 19:03	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 19:03	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 19:03	1
Perfluorooctanesulfonic acid (PFOS)	1.31	J	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 19:03	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 19:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				09/08/17 09:40	09/09/17 19:03	1
13C4-PFHxS	99		25 - 150				09/08/17 09:40	09/09/17 19:03	1
13C4 PFOA	87		25 - 150				09/08/17 09:40	09/09/17 19:03	1
13C4 PFOS	99		25 - 150				09/08/17 09:40	09/09/17 19:03	1
13C5 PFNA	85		25 - 150				09/08/17 09:40	09/09/17 19:03	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:25	1
Aluminum	200	U	200	91.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:25	1
Barium	47.6	J	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:25	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:25	1
Calcium	47400		5000	354	ug/L		09/06/17 09:57	09/07/17 13:25	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:25	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:25	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Iron	150	U	150	92.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Potassium	1190	J	5000	167	ug/L		09/06/17 09:57	09/07/17 13:25	1
Magnesium	8790		5000	311	ug/L		09/06/17 09:57	09/07/17 13:25	1
Manganese	15.0	U	15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Sodium	15600		5000	407	ug/L		09/06/17 09:57	09/07/17 13:25	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:25	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:25	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:25	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 13:25	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 13:25	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:25	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:17	1
Aluminum	260		200	91.1	ug/L		09/09/17 21:30	09/11/17 19:17	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/09/17 21:30	09/11/17 19:17	1
Barium	47.4	J	200	8.6	ug/L		09/09/17 21:30	09/11/17 19:17	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/09/17 21:30	09/11/17 19:17	1
Calcium	46400		5000	354	ug/L		09/09/17 21:30	09/11/17 19:17	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:17	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: DUP-1-20170828

Lab Sample ID: 460-140059-5

Date Collected: 08/28/17 00:00

Matrix: Water

Date Received: 08/30/17 10:00

Method: 6010C - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Cobalt	50.0	U	50.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Chromium	10.0	U	10.0	3.3	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Copper	25.0	U	25.0	8.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Iron	183		150	92.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Potassium	1120	J	5000	167	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Magnesium	8740		5000	311	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Manganese	6.9	J	15.0	3.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Sodium	14200		5000	407	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Nickel	40.0	U	40.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Lead	10.0	U	10.0	4.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Antimony	20.0	U	20.0	7.4	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Selenium	20.0	U	20.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Thallium	20.0	U	20.0	7.1	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Vanadium	50.0	U	50.0	2.5	ug/L	—	09/09/17 21:30	09/11/17 19:17	1
Zinc	30.0	U	30.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 19:17	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 13:26	09/11/17 15:15	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 15:51	09/11/17 17:26	1

Client Sample ID: EB-TUBING

Lab Sample ID: 460-140059-6

Date Collected: 08/28/17 12:35

Matrix: Water

Date Received: 08/30/17 10:00

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	—		08/31/17 13:39	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	123		71 - 144					08/31/17 13:39	1
4-Bromofluorobenzene	95		72 - 133					08/31/17 13:39	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Perfluorohexanesulfonic acid (PFHxS)	2.00	U	2.00	0.87	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L	—	09/08/17 09:40	09/09/17 19:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				09/08/17 09:40	09/09/17 19:21	1
13C4-PFHxS	101		25 - 150				09/08/17 09:40	09/09/17 19:21	1
13C4 PFHpA	89		25 - 150				09/08/17 09:40	09/09/17 19:21	1
13C4 PFOA	101		25 - 150				09/08/17 09:40	09/09/17 19:21	1
13C4 PFOS	86		25 - 150				09/08/17 09:40	09/09/17 19:21	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: EB-PROBE

Date Collected: 08/28/17 12:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-7

Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L			08/31/17 14:02	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	124		71 - 144					08/31/17 14:02	1
4-Bromofluorobenzene	95		72 - 133					08/31/17 14:02	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L		09/08/17 09:40	09/09/17 19:58	1
Perfluorohexanesulfonic acid (PFHxS)	2.00	U	2.00	0.87	ng/L		09/08/17 09:40	09/09/17 19:58	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 19:58	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 19:58	1
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 19:58	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 19:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				09/08/17 09:40	09/09/17 19:58	1
13C4-PFHxA	95		25 - 150				09/08/17 09:40	09/09/17 19:58	1
13C4 PFOA	79		25 - 150				09/08/17 09:40	09/09/17 19:58	1
13C4 PFOS	85		25 - 150				09/08/17 09:40	09/09/17 19:58	1
13C5 PFNA	75		25 - 150				09/08/17 09:40	09/09/17 19:58	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:29	1
Aluminum	200	U	200	91.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:29	1
Barium	200	U	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:29	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:29	1
Calcium	5000	U	5000	354	ug/L		09/06/17 09:57	09/07/17 13:29	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:29	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:29	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Iron	150	U	150	92.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Potassium	5000	U	5000	167	ug/L		09/06/17 09:57	09/07/17 13:29	1
Magnesium	5000	U	5000	311	ug/L		09/06/17 09:57	09/07/17 13:29	1
Manganese	15.0	U	15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Sodium	5000	U	5000	407	ug/L		09/06/17 09:57	09/07/17 13:29	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:29	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:29	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:29	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 13:29	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 13:29	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:29	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:21	1
Aluminum	200	U	200	91.1	ug/L		09/09/17 21:30	09/11/17 19:21	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: EB-PROBE

Date Collected: 08/28/17 12:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-7

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	15.0	U	15.0	4.4	ug/L		09/09/17 21:30	09/11/17 19:21	1
Barium	200	U	200	8.6	ug/L		09/09/17 21:30	09/11/17 19:21	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/09/17 21:30	09/11/17 19:21	1
Calcium	5000	U	5000	354	ug/L		09/09/17 21:30	09/11/17 19:21	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:21	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Chromium	10.0	U	10.0	3.3	ug/L		09/09/17 21:30	09/11/17 19:21	1
Copper	25.0	U	25.0	8.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Iron	150	U	150	92.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Potassium	5000	U	5000	167	ug/L		09/09/17 21:30	09/11/17 19:21	1
Magnesium	5000	U	5000	311	ug/L		09/09/17 21:30	09/11/17 19:21	1
Manganese	15.0	U	15.0	3.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Sodium	5000	U	5000	407	ug/L		09/09/17 21:30	09/11/17 19:21	1
Nickel	40.0	U	40.0	9.0	ug/L		09/09/17 21:30	09/11/17 19:21	1
Lead	10.0	U	10.0	4.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Antimony	20.0	U	20.0	7.4	ug/L		09/09/17 21:30	09/11/17 19:21	1
Selenium	20.0	U	20.0	4.4	ug/L		09/09/17 21:30	09/11/17 19:21	1
Thallium	20.0	U	20.0	7.1	ug/L		09/09/17 21:30	09/11/17 19:21	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/09/17 21:30	09/11/17 19:21	1
Zinc	30.0	U	30.0	9.0	ug/L		09/09/17 21:30	09/11/17 19:21	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 13:26	09/11/17 15:21	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 15:51	09/11/17 17:28	1

Client Sample ID: FB-20170828

Date Collected: 08/28/17 13:30

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-8

Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L			08/31/17 10:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		71 - 144					08/31/17 10:34	1
4-Bromofluorobenzene	97		72 - 133					08/31/17 10:34	1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L		09/08/17 09:40	09/09/17 20:16	1
Perfluorohexanesulfonic acid (PFHxS)	2.00	U	2.00	0.87	ng/L		09/08/17 09:40	09/09/17 20:16	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 20:16	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 20:16	1
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 20:16	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 20:16	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: FB-20170828

Lab Sample ID: 460-140059-8

Date Collected: 08/28/17 13:30

Matrix: Water

Date Received: 08/30/17 10:00

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	107		25 - 150	09/08/17 09:40	09/09/17 20:16	1
13C4-PFHpA	103		25 - 150	09/08/17 09:40	09/09/17 20:16	1
13C4 PFOA	92		25 - 150	09/08/17 09:40	09/09/17 20:16	1
13C4 PFOS	98		25 - 150	09/08/17 09:40	09/09/17 20:16	1
13C5 PFNA	86		25 - 150	09/08/17 09:40	09/09/17 20:16	1

Method: 6010C - Metals (ICP)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:45	1
Aluminum	200	U	200	91.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:45	1
Barium	200	U	200	8.6	ug/L		09/06/17 09:57	09/07/17 13:45	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 13:45	1
Calcium	5000	U	5000	354	ug/L		09/06/17 09:57	09/07/17 13:45	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 13:45	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 13:45	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Iron	150	U	150	92.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Potassium	5000	U	5000	167	ug/L		09/06/17 09:57	09/07/17 13:45	1
Magnesium	5000	U	5000	311	ug/L		09/06/17 09:57	09/07/17 13:45	1
Manganese	15.0	U	15.0	3.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Sodium	5000	U	5000	407	ug/L		09/06/17 09:57	09/07/17 13:45	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:45	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 13:45	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 13:45	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 13:45	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 13:45	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 13:45	1

Method: 6010C - Metals (ICP) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:25	1
Aluminum	200	U	200	91.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/09/17 21:30	09/11/17 19:25	1
Barium	200	U	200	8.6	ug/L		09/09/17 21:30	09/11/17 19:25	1
Beryllium	2.0	U	2.0	0.97	ug/L		09/09/17 21:30	09/11/17 19:25	1
Calcium	5000	U	5000	354	ug/L		09/09/17 21:30	09/11/17 19:25	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/09/17 21:30	09/11/17 19:25	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Chromium	10.0	U	10.0	3.3	ug/L		09/09/17 21:30	09/11/17 19:25	1
Copper	25.0	U	25.0	8.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Iron	150	U	150	92.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Potassium	5000	U	5000	167	ug/L		09/09/17 21:30	09/11/17 19:25	1
Magnesium	5000	U	5000	311	ug/L		09/09/17 21:30	09/11/17 19:25	1
Manganese	15.0	U	15.0	3.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Sodium	5000	U	5000	407	ug/L		09/09/17 21:30	09/11/17 19:25	1
Nickel	40.0	U	40.0	9.0	ug/L		09/09/17 21:30	09/11/17 19:25	1
Lead	10.0	U	10.0	4.1	ug/L		09/09/17 21:30	09/11/17 19:25	1
Antimony	20.0	U	20.0	7.4	ug/L		09/09/17 21:30	09/11/17 19:25	1

TestAmerica Edison

Client Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: FB-20170828

Date Collected: 08/28/17 13:30

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-8

Matrix: Water

Method: 6010C - Metals (ICP) - Dissolved (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Selenium	20.0	U	20.0	4.4	ug/L	—	09/09/17 21:30	09/11/17 19:25	1
Thallium	20.0	U	20.0	7.1	ug/L	—	09/09/17 21:30	09/11/17 19:25	1
Vanadium	50.0	U	50.0	2.5	ug/L	—	09/09/17 21:30	09/11/17 19:25	1
Zinc	30.0	U	30.0	9.0	ug/L	—	09/09/17 21:30	09/11/17 19:25	1

Method: 7470A - Mercury (CVAA)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 13:26	09/11/17 15:22	1

Method: 7470A - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L	—	09/11/17 15:51	09/11/17 17:29	1

Client Sample ID: TRIP BLANK

Date Collected: 08/28/17 14:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-9

Matrix: Water

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	—		08/31/17 10:57	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	112		71 - 144					08/31/17 10:57	1
4-Bromofluorobenzene	96		72 - 133					08/31/17 10:57	1

Surrogate Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)					
Lab Sample ID	Client Sample ID	12DCE	BFB				
		(71-144)	(72-133)				
460-140059-1	MW-3D	114	95				
460-140059-1 MS	MW-3D	115	98				
460-140059-1 MSD	MW-3D	121	93				
460-140059-2	MW-4	119	96				
460-140059-3	MW-6	123	95				
460-140059-4	MW-9	123	94				
460-140059-5	DUP-1-20170828	127	96				
460-140059-6	EB-TUBING	123	95				
460-140059-7	EB-PROBE	124	95				
460-140059-8	FB-20170828	112	97				
460-140059-9	TRIP BLANK	112	96				
LCS 460-460041/3	Lab Control Sample	110	96				
LCSD 460-460041/4	Lab Control Sample Dup	112	99				
MB 460-460041/7	Method Blank	115	99				

Surrogate Legend

12DCE = 1,2-Dichloroethane-d4 (Surr)

BFB = 4-Bromofluorobenzene

Isotope Dilution Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)							
		³⁰ O2 PFHx (25-150)	¹³ C4-PFHp (25-150)	³ C4 PFO (25-150)	³ C4 PFO (25-150)	³ C5 PFNA (25-150)			
460-140059-1	MW-3D	103	95	86	98	82			
460-140059-1 MS	MW-3D	99	93	82	96	79			
460-140059-1 MSD	MW-3D	101	96	84	96	82			
460-140059-2	MW-4	103	97	83	98	78			
460-140059-3	MW-6	99	95	85	95	82			
460-140059-4	MW-9	99	96	82	93	77			
460-140059-5	DUP-1-20170828	102	99	87	99	85			
460-140059-6	EB-TUBING	106	101	89	101	86			
460-140059-7	EB-PROBE	95	95	79	85	75			
460-140059-8	FB-20170828	107	103	92	98	86			
LCS 320-183352/2-A	Lab Control Sample	98	92	80	96	78			
MB 320-183352/1-A	Method Blank	96	90	79	94	79			

Surrogate Legend

¹⁸O2 PFHxS = ¹⁸O2 PFHxS
¹³C4-PFHpA = ¹³C4-PFHpA
¹³C4 PFOA = ¹³C4 PFOA
¹³C4 PFOS = ¹³C4 PFOS
¹³C5 PFNA = ¹³C5 PFNA

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 8260C SIM - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 460-460041/7

Matrix: Water

Analysis Batch: 460041

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	0.40	U	0.40	0.20	ug/L	-		08/31/17 09:48	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
1,2-Dichloroethane-d4 (Surr)	115		71 - 144					08/31/17 09:48	1
4-Bromofluorobenzene	99		72 - 133					08/31/17 09:48	1

Lab Sample ID: LCS 460-460041/3

Matrix: Water

Analysis Batch: 460041

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte		Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits	
1,4-Dioxane		5.00	5.32		ug/L	-	106	66 - 135	
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
1,2-Dichloroethane-d4 (Surr)	110		71 - 144						
4-Bromofluorobenzene	96		72 - 133						

Lab Sample ID: LCSD 460-460041/4

Matrix: Water

Analysis Batch: 460041

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
1,4-Dioxane		5.00	4.77		ug/L	-	95	66 - 135	11	30
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	112		71 - 144							
4-Bromofluorobenzene	99		72 - 133							

Lab Sample ID: 460-140059-1 MS

Matrix: Water

Analysis Batch: 460041

Client Sample ID: MW-3D

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
1,4-Dioxane	0.40	U	5.00	4.21		ug/L	-	84	66 - 135	
Surrogate	MS %Recovery	MS Qualifier	Limits							
1,2-Dichloroethane-d4 (Surr)	115		71 - 144							
4-Bromofluorobenzene	98		72 - 133							

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 460041

Client Sample ID: MW-3D

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
1,4-Dioxane	0.40	U	5.00	4.65		ug/L	-	93	66 - 135	10	30

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 8260C SIM - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 460041

Client Sample ID: MW-3D

Prep Type: Total/NA

Surrogate	MSD %Recovery	MSD Qualifier	Limits
1,2-Dichloroethane-d4 (Surr)	121		71 - 144
4-Bromofluorobenzene	93		72 - 133

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances

Lab Sample ID: MB 320-183352/1-A

Matrix: Water

Analysis Batch: 183747

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 183352

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.00	U	2.00	0.92	ng/L		09/08/17 09:40	09/09/17 16:36	1
Perfluorohexanesulfonic acid (PFHxS)	2.00	U	2.00	0.87	ng/L		09/08/17 09:40	09/09/17 16:36	1
Perfluoroheptanoic acid (PFHpA)	2.00	U	2.00	0.80	ng/L		09/08/17 09:40	09/09/17 16:36	1
Perfluorooctanoic acid (PFOA)	2.00	U	2.00	0.75	ng/L		09/08/17 09:40	09/09/17 16:36	1
Perfluorooctanesulfonic acid (PFOS)	2.00	U	2.00	1.28	ng/L		09/08/17 09:40	09/09/17 16:36	1
Perfluorononanoic acid (PFNA)	2.00	U	2.00	0.65	ng/L		09/08/17 09:40	09/09/17 16:36	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150				09/08/17 09:40	09/09/17 16:36	1
13C4-PFHpa	90		25 - 150				09/08/17 09:40	09/09/17 16:36	1
13C4 PFOA	79		25 - 150				09/08/17 09:40	09/09/17 16:36	1
13C4 PFOS	94		25 - 150				09/08/17 09:40	09/09/17 16:36	1
13C5 PFNA	79		25 - 150				09/08/17 09:40	09/09/17 16:36	1

Lab Sample ID: LCS 320-183352/2-A

Matrix: Water

Analysis Batch: 183747

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 183352

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	17.7	18.26		ng/L		103	72 - 151
Perfluorohexanesulfonic acid (PFHxS)	18.2	15.26		ng/L		84	73 - 157
Perfluoroheptanoic acid (PFHpA)	20.0	16.98		ng/L		85	71 - 138
Perfluorooctanoic acid (PFOA)	20.0	18.55		ng/L		93	70 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	15.11		ng/L		81	69 - 144
Perfluorononanoic acid (PFNA)	20.0	16.56		ng/L		83	73 - 147
Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits				
18O2 PFHxS	98		25 - 150				
13C4-PFHpa	92		25 - 150				
13C4 PFOA	80		25 - 150				
13C4 PFOS	96		25 - 150				
13C5 PFNA	78		25 - 150				

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: WS-LC-0025 At1 - Perfluorinated Alkyl Substances (Continued)

Lab Sample ID: 460-140059-1 MS

Matrix: Water

Analysis Batch: 183747

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 183352

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	2.00	U	14.7	15.64		ng/L		107	55 - 147
Perfluorohexanesulfonic acid (PFHxS)	4.16		15.1	16.84		ng/L		84	58 - 138
Perfluoroheptanoic acid (PFHpA)	2.00	U	16.6	14.28		ng/L		86	63 - 135
Perfluorooctanoic acid (PFOA)	2.00	U	16.6	15.32		ng/L		92	63 - 141
Perfluorooctanesulfonic acid (PFOS)	1.81	J	15.4	12.98		ng/L		73	47 - 162
Perfluorononanoic acid (PFNA)	2.00	U	16.6	13.16		ng/L		79	71 - 140
Isotope Dilution	MS %Recovery	MS Qualifier	Limits						
18O2 PFHxS	99		25 - 150						
13C4-PFHpa	93		25 - 150						
13C4 PFOA	82		25 - 150						
13C4 PFOS	96		25 - 150						
13C5 PFNA	79		25 - 150						

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 183747

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 183352

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	2.00	U	15.0	16.44		ng/L		110	55 - 147	5	30
Perfluorohexanesulfonic acid (PFHxS)	4.16		15.4	17.22		ng/L		85	58 - 138	2	30
Perfluoroheptanoic acid (PFHpA)	2.00	U	17.0	15.03		ng/L		89	63 - 135	5	30
Perfluorooctanoic acid (PFOA)	2.00	U	17.0	16.65		ng/L		98	63 - 141	8	30
Perfluorooctanesulfonic acid (PFOS)	1.81	J	15.7	14.50		ng/L		81	47 - 162	11	30
Perfluorononanoic acid (PFNA)	2.00	U	17.0	13.74		ng/L		81	71 - 140	4	30
Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits								
18O2 PFHxS	101		25 - 150								
13C4-PFHpa	96		25 - 150								
13C4 PFOA	84		25 - 150								
13C4 PFOS	96		25 - 150								
13C5 PFNA	82		25 - 150								

Method: 6010C - Metals (ICP)

Lab Sample ID: MB 460-461037/1-A

Matrix: Water

Analysis Batch: 461321

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 461037

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Silver	10.0	U	10.0	1.8	ug/L		09/06/17 09:57	09/07/17 12:54	1
Aluminum	200	U	200	91.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Arsenic	15.0	U	15.0	4.4	ug/L		09/06/17 09:57	09/07/17 12:54	1
Barium	200	U	200	8.6	ug/L		09/06/17 09:57	09/07/17 12:54	1

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: MB 460-461037/1-A

Matrix: Water

Analysis Batch: 461321

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 461037

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Beryllium	2.0	U	2.0	0.97	ug/L		09/06/17 09:57	09/07/17 12:54	1
Calcium	5000	U	5000	354	ug/L		09/06/17 09:57	09/07/17 12:54	1
Cadmium	4.0	U	4.0	1.8	ug/L		09/06/17 09:57	09/07/17 12:54	1
Cobalt	50.0	U	50.0	3.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Chromium	10.0	U	10.0	3.3	ug/L		09/06/17 09:57	09/07/17 12:54	1
Copper	25.0	U	25.0	8.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Iron	150	U	150	92.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Potassium	5000	U	5000	167	ug/L		09/06/17 09:57	09/07/17 12:54	1
Magnesium	5000	U	5000	311	ug/L		09/06/17 09:57	09/07/17 12:54	1
Manganese	15.0	U	15.0	3.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Sodium	5000	U	5000	407	ug/L		09/06/17 09:57	09/07/17 12:54	1
Nickel	40.0	U	40.0	9.0	ug/L		09/06/17 09:57	09/07/17 12:54	1
Lead	10.0	U	10.0	4.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Antimony	20.0	U	20.0	7.4	ug/L		09/06/17 09:57	09/07/17 12:54	1
Selenium	20.0	U	20.0	4.4	ug/L		09/06/17 09:57	09/07/17 12:54	1
Thallium	20.0	U	20.0	7.1	ug/L		09/06/17 09:57	09/07/17 12:54	1
Vanadium	50.0	U	50.0	2.5	ug/L		09/06/17 09:57	09/07/17 12:54	1
Zinc	30.0	U	30.0	9.0	ug/L		09/06/17 09:57	09/07/17 12:54	1

Lab Sample ID: LCS 460-461037/2-A

Matrix: Water

Analysis Batch: 461321

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 461037

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	50.0	54.81		ug/L		110	80 - 120
Aluminum	2000	2013		ug/L		101	80 - 120
Arsenic	2000	1943		ug/L		97	80 - 120
Barium	2000	2097		ug/L		105	80 - 120
Beryllium	50.0	50.13		ug/L		100	80 - 120
Calcium	20000	19950		ug/L		100	80 - 120
Cadmium	50.0	53.49		ug/L		107	80 - 120
Cobalt	500	534.9		ug/L		107	80 - 120
Chromium	200	210.9		ug/L		105	80 - 120
Copper	250	247.8		ug/L		99	80 - 120
Iron	1000	990.2		ug/L		99	80 - 120
Potassium	20000	19460		ug/L		97	80 - 120
Magnesium	20000	19560		ug/L		98	80 - 120
Manganese	500	524.1		ug/L		105	80 - 120
Sodium	20000	20070		ug/L		100	80 - 120
Nickel	500	524.9		ug/L		105	80 - 120
Lead	500	538.0		ug/L		108	80 - 120
Antimony	500	496.6		ug/L		99	80 - 120
Selenium	2000	1986		ug/L		99	80 - 120
Thallium	2000	2212		ug/L		111	80 - 120
Vanadium	500	511.9		ug/L		102	80 - 120
Zinc	500	539.6		ug/L		108	80 - 120

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 460-140059-1 MS

Matrix: Water

Analysis Batch: 461321

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 461037

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	10.0	U	50.0	56.90		ug/L		114	75 - 125
Aluminum	678		2000	2820		ug/L		107	75 - 125
Arsenic	15.0	U	2000	2028		ug/L		101	75 - 125
Barium	54.3	J	2000	2208		ug/L		108	75 - 125
Beryllium	2.0	U	50.0	52.12		ug/L		104	75 - 125
Calcium	49200		20000	68660		ug/L		97	75 - 125
Cadmium	4.0	U	50.0	54.65		ug/L		109	75 - 125
Cobalt	50.0	U	500	546.6		ug/L		109	75 - 125
Chromium	10.0	U	200	216.9		ug/L		108	75 - 125
Copper	25.0	U	250	259.3		ug/L		104	75 - 125
Iron	1210		1000	2204		ug/L		99	75 - 125
Potassium	1510	J	20000	21670		ug/L		101	75 - 125
Magnesium	9110		20000	28910		ug/L		99	75 - 125
Manganese	71.3		500	603.2		ug/L		106	75 - 125
Sodium	15900		20000	36400		ug/L		103	75 - 125
Nickel	40.0	U	500	535.0		ug/L		107	75 - 125
Lead	10.0	U	500	548.4		ug/L		110	75 - 125
Antimony	20.0	U	500	517.8		ug/L		104	75 - 125
Selenium	20.0	U	2000	2062		ug/L		103	75 - 125
Thallium	20.0	U	2000	2259		ug/L		113	75 - 125
Vanadium	50.0	U	500	527.9		ug/L		106	75 - 125
Zinc	30.0	U	500	555.0		ug/L		111	75 - 125

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 461321

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 461037

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Silver	10.0	U	50.0	55.84		ug/L		112	75 - 125	2	20
Aluminum	678		2000	2768		ug/L		105	75 - 125	2	20
Arsenic	15.0	U	2000	1980		ug/L		99	75 - 125	2	20
Barium	54.3	J	2000	2160		ug/L		105	75 - 125	2	20
Beryllium	2.0	U	50.0	51.04		ug/L		102	75 - 125	2	20
Calcium	49200		20000	68210		ug/L		95	75 - 125	1	20
Cadmium	4.0	U	50.0	53.35		ug/L		107	75 - 125	2	20
Cobalt	50.0	U	500	535.8		ug/L		107	75 - 125	2	20
Chromium	10.0	U	200	212.9		ug/L		106	75 - 125	2	20
Copper	25.0	U	250	255.6		ug/L		102	75 - 125	1	20
Iron	1210		1000	2152		ug/L		94	75 - 125	2	20
Potassium	1510	J	20000	21280		ug/L		99	75 - 125	2	20
Magnesium	9110		20000	28500		ug/L		97	75 - 125	1	20
Manganese	71.3		500	591.3		ug/L		104	75 - 125	2	20
Sodium	15900		20000	35980		ug/L		101	75 - 125	1	20
Nickel	40.0	U	500	523.2		ug/L		105	75 - 125	2	20
Lead	10.0	U	500	537.6		ug/L		108	75 - 125	2	20
Antimony	20.0	U	500	501.1		ug/L		100	75 - 125	3	20
Selenium	20.0	U	2000	2014		ug/L		101	75 - 125	2	20
Thallium	20.0	U	2000	2213		ug/L		111	75 - 125	2	20

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 461321

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 461037

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vanadium	50.0	U	500	517.5		ug/L		104	75 - 125	2	20
Zinc	30.0	U	500	542.8		ug/L		109	75 - 125	2	20

Lab Sample ID: 460-140059-1 DU

Matrix: Water

Analysis Batch: 461321

Client Sample ID: MW-3D

Prep Type: Total/NA

Prep Batch: 461037

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Silver	10.0	U	10.0	U	ug/L		NC	20
Aluminum	678		683.9		ug/L		0.9	20
Arsenic	15.0	U	15.0	U	ug/L		NC	20
Barium	54.3	J	53.62	J	ug/L		1	20
Beryllium	2.0	U	2.0	U	ug/L		NC	20
Calcium	49200		49270		ug/L		0.1	20
Cadmium	4.0	U	4.0	U	ug/L		NC	20
Cobalt	50.0	U	50.0	U	ug/L		NC	20
Chromium	10.0	U	10.0	U	ug/L		NC	20
Copper	25.0	U	25.0	U	ug/L		NC	20
Iron	1210		1217		ug/L		0.3	20
Potassium	1510	J	1535	J	ug/L		2	20
Magnesium	9110		9143		ug/L		0.4	20
Manganese	71.3		70.21		ug/L		1	20
Sodium	15900		15890		ug/L		0.06	20
Nickel	40.0	U	40.0	U	ug/L		NC	20
Lead	10.0	U	10.0	U	ug/L		NC	20
Antimony	20.0	U	20.0	U	ug/L		NC	20
Selenium	20.0	U	20.0	U	ug/L		NC	20
Thallium	20.0	U	20.0	U	ug/L		NC	20
Vanadium	50.0	U	50.0	U	ug/L		NC	20
Zinc	30.0	U	30.0	U	ug/L		NC	20

Lab Sample ID: 460-140059-1 MS

Matrix: Water

Analysis Batch: 462059

Client Sample ID: MW-3D

Prep Type: Dissolved

Prep Batch: 461830

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Silver	10.0	U	50.0	50.02		ug/L		100	75 - 125
Aluminum	386		2000	2355		ug/L		98	75 - 125
Arsenic	15.0	U	2000	1911		ug/L		96	75 - 125
Barium	47.6	J	2000	2085		ug/L		102	75 - 125
Beryllium	2.0	U	50.0	50.91		ug/L		102	75 - 125
Calcium	46900		20000	65480		ug/L		93	75 - 125
Cadmium	4.0	U	50.0	51.66		ug/L		103	75 - 125
Cobalt	50.0	U	500	515.1		ug/L		103	75 - 125
Chromium	10.0	U	200	195.8		ug/L		98	75 - 125
Copper	25.0	U	250	245.5		ug/L		98	75 - 125
Iron	414		1000	1308		ug/L		89	75 - 125
Potassium	1320	J	20000	20350		ug/L		95	75 - 125
Magnesium	8920		20000	28000		ug/L		95	75 - 125

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 6010C - Metals (ICP) (Continued)

Lab Sample ID: 460-140059-1 MS

Matrix: Water

Analysis Batch: 462059

Client Sample ID: MW-3D

Prep Type: Dissolved

Prep Batch: 461830

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Manganese	18.8		500	504.6		ug/L		97	75 - 125
Sodium	14600		20000	33760		ug/L		96	75 - 125
Nickel	40.0	U	500	524.5		ug/L		105	75 - 125
Lead	10.0	U	500	485.8		ug/L		97	75 - 125
Antimony	20.0	U	500	489.1		ug/L		98	75 - 125
Selenium	20.0	U	2000	1980		ug/L		99	75 - 125
Thallium	20.0	U	2000	2193		ug/L		110	75 - 125
Vanadium	50.0	U	500	501.0		ug/L		100	75 - 125
Zinc	30.0	U	500	510.0		ug/L		102	75 - 125

Lab Sample ID: 460-140059-1 MSD

Matrix: Water

Analysis Batch: 462059

Client Sample ID: MW-3D

Prep Type: Dissolved

Prep Batch: 461830

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Silver	10.0	U	50.0	51.29		ug/L		103	75 - 125	3	20
Aluminum	386		2000	2427		ug/L		102	75 - 125	3	20
Arsenic	15.0	U	2000	1977		ug/L		99	75 - 125	3	20
Barium	47.6	J	2000	2148		ug/L		105	75 - 125	3	20
Beryllium	2.0	U	50.0	51.84		ug/L		104	75 - 125	2	20
Calcium	46900		20000	65430		ug/L		93	75 - 125	0	20
Cadmium	4.0	U	50.0	53.00		ug/L		106	75 - 125	3	20
Cobalt	50.0	U	500	531.3		ug/L		106	75 - 125	3	20
Chromium	10.0	U	200	199.2		ug/L		100	75 - 125	2	20
Copper	25.0	U	250	249.9		ug/L		100	75 - 125	2	20
Iron	414		1000	1275		ug/L		86	75 - 125	3	20
Potassium	1320	J	20000	20770		ug/L		97	75 - 125	2	20
Magnesium	8920		20000	28270		ug/L		97	75 - 125	1	20
Manganese	18.8		500	514.1		ug/L		99	75 - 125	2	20
Sodium	14600		20000	34190		ug/L		98	75 - 125	1	20
Nickel	40.0	U	500	540.8		ug/L		108	75 - 125	3	20
Lead	10.0	U	500	504.0		ug/L		101	75 - 125	4	20
Antimony	20.0	U	500	504.9		ug/L		101	75 - 125	3	20
Selenium	20.0	U	2000	2047		ug/L		102	75 - 125	3	20
Thallium	20.0	U	2000	2273		ug/L		114	75 - 125	4	20
Vanadium	50.0	U	500	514.1		ug/L		103	75 - 125	3	20
Zinc	30.0	U	500	527.2		ug/L		105	75 - 125	3	20

Method: 7470A - Mercury (CVAA)

Lab Sample ID: MB 460-462037/1-A

Matrix: Water

Analysis Batch: 462095

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 462037

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 13:26	09/11/17 14:39	1

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Method: 7470A - Mercury (CVAA) (Continued)

Lab Sample ID: LCS 460-462037/2-A
Matrix: Water
Analysis Batch: 462095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 462037
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	1.00	1.01		ug/L		101	80 - 120

Lab Sample ID: 460-140059-1 MS
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Total/NA
Prep Batch: 462037
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	0.20	U	1.00	1.01		ug/L		101	80 - 120

Lab Sample ID: 460-140059-1 MSD
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Total/NA
Prep Batch: 462037
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.20	U	1.00	0.977		ug/L		98	80 - 120	3	20

Lab Sample ID: 460-140059-1 DU
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Total/NA
Prep Batch: 462037
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	DU Result	DU Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.20	U		0.20	U	ug/L				NC	20

Lab Sample ID: LCS 460-462067/2-A
Matrix: Water
Analysis Batch: 462095

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 462067
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Mercury	1.00	1.04		ug/L		104	80 - 120

Lab Sample ID: MB 460-462064/1-B
Matrix: Water
Analysis Batch: 462095

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 462067

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Mercury	0.20	U	0.20	0.17	ug/L		09/11/17 15:51	09/11/17 16:56	1

Lab Sample ID: 460-140059-1 MS
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Dissolved
Prep Batch: 462067
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	Limits
Mercury	0.20	U	1.00	0.994		ug/L		99	80 - 120

Lab Sample ID: 460-140059-1 MSD
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Dissolved
Prep Batch: 462067
%Rec.

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
Mercury	0.20	U	1.00	0.998		ug/L		100	80 - 120	0	20

TestAmerica Edison

QC Sample Results

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Lab Sample ID: 460-140059-1 DU
Matrix: Water
Analysis Batch: 462095

Client Sample ID: MW-3D
Prep Type: Dissolved
Prep Batch: 462067

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	Limit
Mercury	0.20	U	0.20	U	ug/L	-	NC	20

Definitions/Glossary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Analyzed for but not detected.

LCMS

Qualifier	Qualifier Description
U	Analyzed for but not detected.
J	Indicates an estimated value.

Metals

Qualifier	Qualifier Description
U	Indicates analyzed for but not detected.
J	Sample result is greater than the MDL but below the CRDL

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
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)

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

GC/MS VOA

Analysis Batch: 460041

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	8260C SIM	
460-140059-2	MW-4	Total/NA	Water	8260C SIM	
460-140059-3	MW-6	Total/NA	Water	8260C SIM	
460-140059-4	MW-9	Total/NA	Water	8260C SIM	
460-140059-5	DUP-1-20170828	Total/NA	Water	8260C SIM	
460-140059-6	EB-TUBING	Total/NA	Water	8260C SIM	
460-140059-7	EB-PROBE	Total/NA	Water	8260C SIM	
460-140059-8	FB-20170828	Total/NA	Water	8260C SIM	
460-140059-9	TRIP BLANK	Total/NA	Water	8260C SIM	
MB 460-460041/7	Method Blank	Total/NA	Water	8260C SIM	
LCS 460-460041/3	Lab Control Sample	Total/NA	Water	8260C SIM	
LCSD 460-460041/4	Lab Control Sample Dup	Total/NA	Water	8260C SIM	
460-140059-1 MS	MW-3D	Total/NA	Water	8260C SIM	
460-140059-1 MSD	MW-3D	Total/NA	Water	8260C SIM	

LCMS

Prep Batch: 183352

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	PFAS Prep	
460-140059-2	MW-4	Total/NA	Water	PFAS Prep	
460-140059-3	MW-6	Total/NA	Water	PFAS Prep	
460-140059-4	MW-9	Total/NA	Water	PFAS Prep	
460-140059-5	DUP-1-20170828	Total/NA	Water	PFAS Prep	
460-140059-6	EB-TUBING	Total/NA	Water	PFAS Prep	
460-140059-7	EB-PROBE	Total/NA	Water	PFAS Prep	
460-140059-8	FB-20170828	Total/NA	Water	PFAS Prep	
MB 320-183352/1-A	Method Blank	Total/NA	Water	PFAS Prep	
LCS 320-183352/2-A	Lab Control Sample	Total/NA	Water	PFAS Prep	
460-140059-1 MS	MW-3D	Total/NA	Water	PFAS Prep	
460-140059-1 MSD	MW-3D	Total/NA	Water	PFAS Prep	

Analysis Batch: 183747

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-2	MW-4	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-3	MW-6	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-4	MW-9	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-5	DUP-1-20170828	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-6	EB-TUBING	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-7	EB-PROBE	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-8	FB-20170828	Total/NA	Water	WS-LC-0025 At1	183352
MB 320-183352/1-A	Method Blank	Total/NA	Water	WS-LC-0025 At1	183352

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

LCMS (Continued)

Analysis Batch: 183747 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-183352/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-1 MS	MW-3D	Total/NA	Water	WS-LC-0025 At1	183352
460-140059-1 MSD	MW-3D	Total/NA	Water	WS-LC-0025 At1	183352

Metals

Prep Batch: 461037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	3010A	
460-140059-2	MW-4	Total/NA	Water	3010A	
460-140059-3	MW-6	Total/NA	Water	3010A	
460-140059-4	MW-9	Total/NA	Water	3010A	
460-140059-5	DUP-1-20170828	Total/NA	Water	3010A	
460-140059-7	EB-PROBE	Total/NA	Water	3010A	
460-140059-8	FB-20170828	Total/NA	Water	3010A	
MB 460-461037/1-A	Method Blank	Total/NA	Water	3010A	
LCS 460-461037/2-A	Lab Control Sample	Total/NA	Water	3010A	
460-140059-1 MS	MW-3D	Total/NA	Water	3010A	
460-140059-1 MSD	MW-3D	Total/NA	Water	3010A	
460-140059-1 DU	MW-3D	Total/NA	Water	3010A	

Analysis Batch: 461321

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	6010C	461037
460-140059-2	MW-4	Total/NA	Water	6010C	461037
460-140059-3	MW-6	Total/NA	Water	6010C	461037
460-140059-4	MW-9	Total/NA	Water	6010C	461037
460-140059-5	DUP-1-20170828	Total/NA	Water	6010C	461037
460-140059-7	EB-PROBE	Total/NA	Water	6010C	461037
460-140059-8	FB-20170828	Total/NA	Water	6010C	461037
MB 460-461037/1-A	Method Blank	Total/NA	Water	6010C	461037
LCS 460-461037/2-A	Lab Control Sample	Total/NA	Water	6010C	461037
460-140059-1 MS	MW-3D	Total/NA	Water	6010C	461037
460-140059-1 MSD	MW-3D	Total/NA	Water	6010C	461037
460-140059-1 DU	MW-3D	Total/NA	Water	6010C	461037

Filtration Batch: 461829

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	FILTRATION	
460-140059-2	MW-4	Dissolved	Water	FILTRATION	
460-140059-3	MW-6	Dissolved	Water	FILTRATION	
460-140059-4	MW-9	Dissolved	Water	FILTRATION	
460-140059-5	DUP-1-20170828	Dissolved	Water	FILTRATION	
460-140059-7	EB-PROBE	Dissolved	Water	FILTRATION	
460-140059-8	FB-20170828	Dissolved	Water	FILTRATION	
460-140059-1 MS	MW-3D	Dissolved	Water	FILTRATION	
460-140059-1 MSD	MW-3D	Dissolved	Water	FILTRATION	

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Metals (Continued)

Prep Batch: 461830

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	3010A	461829
460-140059-2	MW-4	Dissolved	Water	3010A	461829
460-140059-3	MW-6	Dissolved	Water	3010A	461829
460-140059-4	MW-9	Dissolved	Water	3010A	461829
460-140059-5	DUP-1-20170828	Dissolved	Water	3010A	461829
460-140059-7	EB-PROBE	Dissolved	Water	3010A	461829
460-140059-8	FB-20170828	Dissolved	Water	3010A	461829
460-140059-1 MS	MW-3D	Dissolved	Water	3010A	461829
460-140059-1 MSD	MW-3D	Dissolved	Water	3010A	461829

Prep Batch: 462037

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Total/NA	Water	7470A	
460-140059-2	MW-4	Total/NA	Water	7470A	
460-140059-3	MW-6	Total/NA	Water	7470A	
460-140059-4	MW-9	Total/NA	Water	7470A	
460-140059-5	DUP-1-20170828	Total/NA	Water	7470A	
460-140059-7	EB-PROBE	Total/NA	Water	7470A	
460-140059-8	FB-20170828	Total/NA	Water	7470A	
MB 460-462037/1-A	Method Blank	Total/NA	Water	7470A	
LCS 460-462037/2-A	Lab Control Sample	Total/NA	Water	7470A	
460-140059-1 MS	MW-3D	Total/NA	Water	7470A	
460-140059-1 MSD	MW-3D	Total/NA	Water	7470A	
460-140059-1 DU	MW-3D	Total/NA	Water	7470A	

Analysis Batch: 462059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	6010C	461830
460-140059-2	MW-4	Dissolved	Water	6010C	461830
460-140059-3	MW-6	Dissolved	Water	6010C	461830
460-140059-4	MW-9	Dissolved	Water	6010C	461830
460-140059-5	DUP-1-20170828	Dissolved	Water	6010C	461830
460-140059-7	EB-PROBE	Dissolved	Water	6010C	461830
460-140059-8	FB-20170828	Dissolved	Water	6010C	461830
460-140059-1 MS	MW-3D	Dissolved	Water	6010C	461830
460-140059-1 MSD	MW-3D	Dissolved	Water	6010C	461830

Filtration Batch: 462064

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	FILTRATION	
460-140059-2	MW-4	Dissolved	Water	FILTRATION	
460-140059-3	MW-6	Dissolved	Water	FILTRATION	
460-140059-4	MW-9	Dissolved	Water	FILTRATION	
460-140059-5	DUP-1-20170828	Dissolved	Water	FILTRATION	
460-140059-7	EB-PROBE	Dissolved	Water	FILTRATION	
460-140059-8	FB-20170828	Dissolved	Water	FILTRATION	
MB 460-462064/1-B	Method Blank	Dissolved	Water	FILTRATION	
460-140059-1 MS	MW-3D	Dissolved	Water	FILTRATION	
460-140059-1 MSD	MW-3D	Dissolved	Water	FILTRATION	
460-140059-1 DU	MW-3D	Dissolved	Water	FILTRATION	

QC Association Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Metals (Continued)

Prep Batch: 462067

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	7470A	462064
460-140059-2	MW-4	Dissolved	Water	7470A	462064
460-140059-3	MW-6	Dissolved	Water	7470A	462064
460-140059-4	MW-9	Dissolved	Water	7470A	462064
460-140059-5	DUP-1-20170828	Dissolved	Water	7470A	462064
460-140059-7	EB-PROBE	Dissolved	Water	7470A	462064
460-140059-8	FB-20170828	Dissolved	Water	7470A	462064
MB 460-462064/1-B	Method Blank	Dissolved	Water	7470A	462064
LCS 460-462067/2-A	Lab Control Sample	Total/NA	Water	7470A	
460-140059-1 MS	MW-3D	Dissolved	Water	7470A	462064
460-140059-1 MSD	MW-3D	Dissolved	Water	7470A	462064
460-140059-1 DU	MW-3D	Dissolved	Water	7470A	462064

Analysis Batch: 462095

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
460-140059-1	MW-3D	Dissolved	Water	7470A	462067
460-140059-1	MW-3D	Total/NA	Water	7470A	462037
460-140059-2	MW-4	Dissolved	Water	7470A	462067
460-140059-2	MW-4	Total/NA	Water	7470A	462037
460-140059-3	MW-6	Dissolved	Water	7470A	462067
460-140059-3	MW-6	Total/NA	Water	7470A	462037
460-140059-4	MW-9	Dissolved	Water	7470A	462067
460-140059-4	MW-9	Total/NA	Water	7470A	462037
460-140059-5	DUP-1-20170828	Dissolved	Water	7470A	462067
460-140059-5	DUP-1-20170828	Total/NA	Water	7470A	462037
460-140059-7	EB-PROBE	Dissolved	Water	7470A	462067
460-140059-7	EB-PROBE	Total/NA	Water	7470A	462037
460-140059-8	FB-20170828	Dissolved	Water	7470A	462067
460-140059-8	FB-20170828	Total/NA	Water	7470A	462037
MB 460-462037/1-A	Method Blank	Total/NA	Water	7470A	462037
MB 460-462064/1-B	Method Blank	Dissolved	Water	7470A	462067
LCS 460-462037/2-A	Lab Control Sample	Total/NA	Water	7470A	462037
LCS 460-462067/2-A	Lab Control Sample	Total/NA	Water	7470A	462067
460-140059-1 MS	MW-3D	Dissolved	Water	7470A	462067
460-140059-1 MS	MW-3D	Total/NA	Water	7470A	462037
460-140059-1 MSD	MW-3D	Dissolved	Water	7470A	462067
460-140059-1 MSD	MW-3D	Total/NA	Water	7470A	462037
460-140059-1 DU	MW-3D	Dissolved	Water	7470A	462067
460-140059-1 DU	MW-3D	Total/NA	Water	7470A	462037

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-3D

Date Collected: 08/28/17 14:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 11:20	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 17:12	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 18:42	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 12:58	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:00	RBS	TAL EDI
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 14:42	RBS	TAL EDI

Client Sample ID: MW-4

Date Collected: 08/28/17 13:05

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 11:43	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 18:07	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 18:53	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:14	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:17	RBS	TAL EDI
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:10	RBS	TAL EDI

Client Sample ID: MW-6

Date Collected: 08/28/17 16:55

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 12:06	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 18:26	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI

TestAmerica Edison

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: MW-6

Date Collected: 08/28/17 16:55

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Dissolved	Analysis	6010C		1	462059	09/11/17 18:57	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:18	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:19	RBS	TAL EDI
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:12	RBS	TAL EDI

Client Sample ID: MW-9

Date Collected: 08/28/17 15:50

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 12:29	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 18:44	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 19:01	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:21	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:21	RBS	TAL EDI
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:14	RBS	TAL EDI

Client Sample ID: DUP-1-20170828

Date Collected: 08/28/17 00:00

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 12:52	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 19:03	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 19:17	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:25	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:26	RBS	TAL EDI

TestAmerica Edison

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:15	RBS	TAL EDI

Client Sample ID: EB-TUBING

Lab Sample ID: 460-140059-6

Date Collected: 08/28/17 12:35

Matrix: Water

Date Received: 08/30/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 13:39	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 19:21	SER	TAL SAC

Client Sample ID: EB-PROBE

Lab Sample ID: 460-140059-7

Date Collected: 08/28/17 12:25

Matrix: Water

Date Received: 08/30/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 14:02	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 19:58	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 19:21	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:29	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:28	RBS	TAL EDI
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:21	RBS	TAL EDI

Client Sample ID: FB-20170828

Lab Sample ID: 460-140059-8

Date Collected: 08/28/17 13:30

Matrix: Water

Date Received: 08/30/17 10:00

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 10:34	SZD	TAL EDI
Total/NA	Prep	PFAS Prep			183352	09/08/17 09:40	CCB	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1	183747	09/09/17 20:16	SER	TAL SAC
Dissolved	Filtration	FILTRATION			461829	09/09/17 21:10	GAE	TAL EDI
Dissolved	Prep	3010A			461830	09/09/17 21:30	GAE	TAL EDI
Dissolved	Analysis	6010C		1	462059	09/11/17 19:25	YZH	TAL EDI
Total/NA	Prep	3010A			461037	09/06/17 09:57	MDC	TAL EDI
Total/NA	Analysis	6010C		1	461321	09/07/17 13:45	CDC	TAL EDI
Dissolved	Filtration	FILTRATION			462064	09/11/17 15:39	RBS	TAL EDI
Dissolved	Prep	7470A			462067	09/11/17 15:51	RBS	TAL EDI
Dissolved	Analysis	7470A		1	462095	09/11/17 17:29	RBS	TAL EDI

Lab Chronicle

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Client Sample ID: FB-20170828

Date Collected: 08/28/17 13:30

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	7470A			462037	09/11/17 13:26	RBS	TAL EDI
Total/NA	Analysis	7470A		1	462095	09/11/17 15:22	RBS	TAL EDI

Client Sample ID: TRIP BLANK

Date Collected: 08/28/17 14:25

Date Received: 08/30/17 10:00

Lab Sample ID: 460-140059-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C SIM		1	460041	08/31/17 10:57	SZD	TAL EDI

Laboratory References:

TAL EDI = TestAmerica Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

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

Accreditation/Certification Summary

Client: ARCADIS U.S. Inc
Project/Site: NYSDEC-Standby TIOGA CASTINGS

TestAmerica Job ID: 460-140059-1

Laboratory: TestAmerica Edison

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	11452	04-01-18

Laboratory: TestAmerica Buffalo

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	10026	03-31-18

Laboratory: TestAmerica Sacramento

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

Authority	Program	EPA Region	Identification Number	Expiration Date
New York	NELAP	2	11666	04-01-18

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
WS-LC-0025 At1	PFAS Prep	Water	Perfluorobutanesulfonic acid (PFBS)
WS-LC-0025 At1	PFAS Prep	Water	Perfluoroheptanoic acid (PFHpA)
WS-LC-0025 At1	PFAS Prep	Water	Perfluorohexanesulfonic acid (PFHxS)
WS-LC-0025 At1	PFAS Prep	Water	Perfluorononanoic acid (PFNA)
WS-LC-0025 At1	PFAS Prep	Water	Perfluorooctanesulfonic acid (PFOS)
WS-LC-0025 At1	PFAS Prep	Water	Perfluorooctanoic acid (PFOA)

Arcadis CE, Inc.

855 Route 146

Suite 210

Clifton Park, New York 12065

Tel 518 250 7300

Fax 518 250 7301

www.arcadis.com

A decorative graphic consisting of three thin orange lines. One line is horizontal, extending from the left edge of the page towards the right. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.