"B250-GW01","WS-LC-0025","RES","320-10776-1","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","1500","ng/L","D","2.5","DL","","TRG","","","4.0","LOQ","YES","-99","","504.1","1.00","3.0",""
"B250-GW01","WS-LC-0025","RES","320-10776-1","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1300","ng/L","D","1.5","DL","","TRG","","","4.0","LOQ","YES","-99","","504.1","1.00","3.0",""
"B250-GW01","WS-LC-0025","RES","320-10776-1","TALSAC","STL00990","13C4 PFOA","73","ng/L","","-99","DL","","TRG","74","","-99","LOQ","YES","99.2","","504.1","1.00","0",""
"B250-GW01","WS-LC-0025","RES","320-10776-1","TALSAC","STL00991","13C4 PFOS","78","ng/L","","-99","DL","","TRG","82","","-99","LOQ","YES","94.8","","504.1","1.00","0",""
"B250-GW02","WS-LC-0025","RES","320-10776-2","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","210","ng/L","","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","506.3","1.00","1.5",""
"B250-GW02","WS-LC-0025","RES","320-10776-2","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","340","ng/L","","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","506.3","1.00","1.5",""
"B250-GW02","WS-LC-0025","RES","320-10776-2","TALSAC","STL00990","13C4 PFOA","63","ng/L","","-99","DL","","TRG","64","","-99","LOQ","YES","98.8","","506.3","1.00","0",""
"B250-GW02","WS-LC-0025","RES","320-10776-2","TALSAC","STL00991","13C4 PFOS","87","ng/L","","-99","DL","","TRG","92","","-99","LOQ","YES","94.4","","506.3","1.00","0",""
"B250-GW04","WS-LC-0025","RES","320-10776-3","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","5.2","ng/L","","1.2","DL","","TRG","","","1.9","LOQ","YES","-99","","514","1.00","1.5",""
"B250-GW04","WS-LC-0025","RES","320-10776-3","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","26","ng/L","","0.73","DL","","TRG","","","1.9","LOQ","YES","-99","","514","1.00","1.5",""
"B250-GW04","WS-LC-0025","RES","320-10776-3","TALSAC","STL00990","13C4 PFOA","72","ng/L","","-99","DL","","TRG","74","","-99","LOQ","YES","97.3","","514","1.00","0",""
"B250-GW04","WS-LC-0025","RES","320-10776-3","TALSAC","STL00991","13C4 PFOS","84","ng/L","","-99","DL","","TRG","91","","-99","LOQ","YES","93.0","","514","1.00","0",""
"EFA-GW07S","WS-LC-0025","RES","320-10776-4","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","5.3","ng/L","","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","502.5","1.00","1.5",""
"EFA-GW07S","WS-LC-0025","RES","320-10776-4","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","12","ng/L","","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","502.5","1.00","1.5",""
"EFA-GW07S","WS-LC-0025","RES","320-10776-4","TALSAC","STL00990","13C4 PFOA","48","ng/L","","-99","DL","","TRG","49","","-99","LOQ","YES","99.5","","502.5","1.00","0",""
"EFA-GW07S","WS-LC-0025","RES","320-10776-4","TALSAC","STL00991","13C4 PFOS","59","ng/L","","-99","DL","","TRG","62","","-99","LOQ","YES","95.1","","502.5","1.00","0",""
"EFA-GW07D","WS-LC-0025","RES","320-10776-5","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","4.5","ng/L","","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","506.1","1.00","1.5",""
"EFA-GW07D","WS-LC-0025","RES","320-10776-5","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","1.5","ng/L","U","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","506.1","1.00","1.5",""
"EFA-GW07D","WS-LC-0025","RES","320-10776-5","TALSAC","STL00990","13C4 PFOA","79","ng/L","","-99","DL","","TRG","80","","-99","LOQ","YES","98.8","","506.1","1.00","0",""
"EFA-GW07D","WS-LC-0025","RES","320-10776-5","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","117","","-99","LOQ","YES","94.4","","506.1","1.00","0",""
"B250-GW13","WS-LC-0025","RES","320-10776-6","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","4.4","ng/L","","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","503","1.00","1.5",""
"B250-GW13","WS-LC-0025","RES","320-10776-6","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.3","ng/L","","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","503","1.00","1.5",""
"B250-GW13","WS-LC-0025","RES","320-10776-6","TALSAC","STL00990","13C4 PFOA","87","ng/L","","-99","DL","","TRG","87","","-99","LOQ","YES","99.4","","503","1.00","0",""
"B250-GW13","WS-LC-0025","RES","320-10776-6","TALSAC","STL00991","13C4 PFOS","110","ng/L","","-99","DL","","TRG","120","","-99","LOQ","YES","95.0","","503","1.00","0",""
"EFA-FD02-104","WS-LC-0025","RES","320-10776-7","TALSAC","1763-23-1","Perfluorooctane Sulfonate (PFOS)","3.9","ng/L","","1.2","DL","","TRG","","","2.0","LOQ","YES","-99","","511.9","1.00","1.5",""
"EFA-FD02-104","WS-LC-0025","RES","320-10776-7","TALSAC","335-67-1","Perfluorooctanoic acid (PFOA)","2.2","ng/L","","0.73","DL","","TRG","","","2.0","LOQ","YES","-99","","511.9","1.00","1.5",""
"EFA-FD02-104","WS-LC-0025","RES","320-10776-7","TALSAC","STL00990","13C4

PFOA","67","ng/L","","-99","DL","","TRG","68","","-99","LOQ","YES","97.7","","511.9","1.00","0",""
"EFA-FD02-104","WS-LC-0025","RES","320-10776-7","TALSAC","STL00991","13C4
PFOS","98","ng/L","","-99","DL","","TRG","105","","-99","LOQ","YES","93.4","","511.9","1.00","0",""
"EFA-GW06","WS-LC-0025","RES","320-10776-8","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","820","ng/L","J","1.2","DL","","TRG","","","1.9","LOQ","YES","-99","","515.2","1.00","1.5",""
"EFA-GW06","WS-LC-0025","RES","320-10776-8","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","390","ng/L","J","0.73","DL","","TRG","","","1.9","LOQ","YES","-99","","515.2","1.00","1.5",""
"EFA-GW06","WS-LC-0025","RES","320-10776-8","TALSAC","STL00990","13C4
PFOA","75","ng/L","","-99","DL","","TRG","77","","-99","LOQ","YES","97.0","","515.2","1.00","0",""
"EFA-GW06","WS-LC-0025","RES","320-10776-8","TALSAC","STL00991","13C4
PFOS","66","ng/L","","-99","DL","","TRG","71","","-99","LOQ","YES","92.8","","515.2","1.00","0",""
"EFA-GW06MS","WS-LC-0025","RES","320-10776-8MS","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","848","ng/L","4","1.3","DL","","SPK","80","","2.0","LOQ","YES","37.7","EFA-
GW06","507.7","1.00","1.5",""
"EFA-GW06MS","WS-LC-0025","RES","320-10776-8MS","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","423","ng/L","4","0.74","DL","","SPK","86","","2.0","LOQ","YES","39.4","EFA-
GW06","507.7","1.00","1.5",""
"EFA-GW06MS","WS-LC-0025","RES","320-10776-8MS","TALSAC","STL00990","13C4
PFOA","78.7","ng/L","","-99","DL","","SPK","80","","-99","LOQ","YES","98.5","EFA-GW06","507.7","1.00","0",""
"EFA-GW06MS","WS-LC-0025","RES","320-10776-8MS","TALSAC","STL00991","13C4
PFOS","70.9","ng/L","","-99","DL","","SPK","75","","-99","LOQ","YES","94.2","EFA-GW06","507.7","1.00","0",""
"EFA-GW06MSD","WS-LC-0025","RES","320-10776-8MSD","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","830","ng/L","4","1.3","DL","","SPK","32","2","2.0","LOQ","YES","37.9","EFA-
GW06","504.4","1.00","1.5",""
"EFA-GW06MSD","WS-LC-0025","RES","320-10776-8MSD","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","406","ng/L","4","0.74","DL","","SPK","44","4","2.0","LOQ","YES","39.7","EFA-
GW06","504.4","1.00","1.5",""
"EFA-GW06MSD","WS-LC-0025","RES","320-10776-8MSD","TALSAC","STL00990","13C4
PFOA","84.9","ng/L","","-99","DL","","SPK","86","","-99","LOQ","YES","99.1","EFA-GW06","504.4","1.00","0",""
"EFA-GW06MSD","WS-LC-0025","RES","320-10776-8MSD","TALSAC","STL00991","13C4
PFOS","65.2","ng/L","","-99","DL","","SPK","69","","-99","LOQ","YES","94.8","EFA-GW06","504.4","1.00","0",""
"EFA-EB01-1014","WS-LC-0025","RES","320-10776-9","TALSAC","1763-23-1","Perfluorooctane Sulfonate
(PFOS)","1.5","ng/L","U","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","507.9","1.00","1.5",""
"EFA-EB01-1014","WS-LC-0025","RES","320-10776-9","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1.5","ng/L","U","0.74","DL","","TRG","","","2.0","LOQ","YES","-99","","507.9","1.00","1.5",""
"EFA-EB01-1014","WS-LC-0025","RES","320-10776-9","TALSAC","STL00990","13C4
PFOA","88","ng/L","","-99","DL","","TRG","90","","-99","LOQ","YES","98.4","","507.9","1.00","0",""
"EFA-EB01-1014","WS-LC-0025","RES","320-10776-9","TALSAC","STL00991","13C4
PFOS","98","ng/L","","-99","DL","","TRG","104","","-99","LOQ","YES","94.1","","507.9","1.00","0",""
"LCS 320-60488/2-A","WS-LC-0025","RES","LCS 320-60488/2-A","TALSAC","1763-23-1","Perfluorooctane
Sulfonate
(PFOS)","49.8","ng/L","","1.3","DL","","SPK","130","","2.0","LOQ","YES","38.2","","500.00","1.00","1.5",""
"LCS 320-60488/2-A","WS-LC-0025","RES","LCS 320-60488/2-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","44.7","ng/L","","0.75","DL","","SPK","112","","2.0","LOQ","YES","40.0","","500.00","1.00","1.5",""
"LCS 320-60488/2-A","WS-LC-0025","RES","LCS 320-60488/2-A","TALSAC","STL00990","13C4
PFOA","134","ng/L","","-99","DL","","SPK","134","","-99","LOQ","YES","100","","500.00","1.00","0",""
"LCS 320-60488/2-A","WS-LC-0025","RES","LCS 320-60488/2-A","TALSAC","STL00991","13C4
PFOS","118","ng/L","","-99","DL","","SPK","123","","-99","LOQ","YES","95.6","","500.00","1.00","0",""
"MB 320-60488/1-A","WS-LC-0025","RES","MB 320-60488/1-A","TALSAC","1763-23-1","Perfluorooctane
Sulfonate (PFOS)","1.5","ng/L","U","1.3","DL","","TRG","","","2.0","LOQ","YES","-99","","500.00","1.00","1.5",""
"MB 320-60488/1-A","WS-LC-0025","RES","MB 320-60488/1-A","TALSAC","335-67-1","Perfluorooctanoic acid
(PFOA)","1.5","ng/L","U","0.75","DL","","TRG","","","2.0","LOQ","YES","-99","","500.00","1.00","1.5",""
"MB 320-60488/1-A","WS-LC-0025","RES","MB 320-60488/1-A","TALSAC","STL00990","13C4
PFOA","121","ng/L","","-99","DL","","TRG","121","","-99","LOQ","YES","100","","500.00","1.00","0",""

"MB 320-60488/1-A","WS-LC-0025","RES","MB 320-60488/1-A","TALSAC","STL00991","13C4 PFOS","113","ng/L","","-99","DL","","TRG","118","","-99","LOQ","YES","95.6","","500.00","1.00","0",""
"13-CTO WE09","NAS Brunswick","B250-GW01","12/05/2014 10:25","AQ","320-10776-1","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/14/2015 10:45","TALSAC","COA","WET","NA","2","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","B250-GW02","12/05/2014 15:10","AQ","320-10776-2","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 17:43","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","B250-GW04","12/05/2014 16:10","AQ","320-10776-3","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 18:04","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-GW07S","12/06/2014 10:40","AQ","320-10776-4","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 18:25","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-GW07D","12/06/2014 16:40","AQ","320-10776-5","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 18:46","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","B250-GW13","12/07/2014 10:55","AQ","320-10776-6","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 19:07","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-FD02-104","12/07/2014 00:00","AQ","320-10776-7","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 19:28","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-GW06","12/07/2014 15:00","AQ","320-10776-8","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 20:11","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-GW06MS","12/07/2014 15:00","AQ","320-10776-8MS","MS","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 20:32","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-GW06MSD","12/07/2014 15:00","AQ","320-10776-8MSD","MSD","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 20:53","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","EFA-EB01-1014","12/07/2014 17:30","AQ","320-10776-9","NM","","0.30","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 21:14","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/09/2014 08:40","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","LCS 320-60488/2-A","","AQ","LCS 320-60488/2-A","LCS","","-99","WS-LC-0025","3535","RES","12/11/2014 14:21","01/14/2015 10:24","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/11/2014 14:21","12/10/2014 10:01",""
"13-CTO WE09","NAS Brunswick","MB 320-60488/1-A","","AQ","MB 320-60488/1-A","MB","","-99","WS-LC-0025","3535","RES","12/11/2014 14:21","01/13/2015 16:39","TALSAC","COA","WET","NA","1","NA","NA","","100","320-60488","320-60488","NA","320-62865","320-10776-1","12/11/2014 14:21","12/10/2014 10:01",""

TETRA TECH **INTERNAL CORRESPONDENCE**

TO: **J. ORIENT** **DATE:** **JANUARY 22, 2015**

FROM: **EDWARD SEDLMYER** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – SELECT VOC / PFOA / PFOS**
NAS BRUNSWICK CTO WE09
SAMPLE DELIVERY GROUP (SDG) – 320-10776-1

SAMPLES: 9/Aqueous / PFOA / PFOS

B250-GW01	B250-GW02	B250-GW04
B250-GW13	EFA-EB01-1014	EFA-FD02-104
EFA-GW06	EFA-GW07D	EFA-GW07S

Overview

The sample set for NAS Brunswick CTO WE09, SDG 320-10776-1 consists of eight (8) aqueous environmental samples and one (1) equipment blank analyzed for perfluorooctanoic acid (PFOA), and perfluorooctane sulfonate (PFOS). One field duplicate pair was associated with this SDG: B250-GW13 / EFA-FD02-104.

The samples were collected on December 5, 6, and 7, 2014 and analyzed by Test America Laboratories. All analyses were conducted in accordance with Standard Operating Procedure (SOP) WS-LC-0025 analytical method and reporting protocols. The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • LC/MS Tuning
* • Laboratory Method Blank Results
* • Initial and Continuing Calibrations
* • Surrogate Spike Recoveries
* • Matrix Spike/Matrix Spike Duplicate Sample (MS/MSD) Results
* • Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) Results
* • Field Duplicate Results
* • Detection Limits
* • Compound Identification
* • Compound Quantification

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains the documentation to support the findings as discussed in this data validation report. An EPA Region 1 tier II validation was performed on the data in this SDG. The text of this report has been formulated to address only those areas affecting data quality.

PFOA / PFOS

No laboratory issues were noted.

NOTES

The sample concentrations for MS/MSD spiked sample EFA-GW06 were greater than 4 times the spike amount for PFOA and PFOS. Therefore, the MS/MSD was not used to determine laboratory accuracy or precision.

EXECUTIVE SUMMARY

Laboratory Performance: None.

Other Factors Affecting Data Quality: None.

The data for these analyses were reviewed with reference to the EPA Functional Guidelines for Organic Data Validation (June 2008), EPA New England Environmental Data Review Supplement for Regional Data Review Elements Superfund Guidance/Procedures (April 2013), and the (DOD) QSM document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (July 2013).

Edward Sedlmyer

Tetra Tech
Edward Sedlmyer
Chemist/Data Validator

Tetra Tech
Joseph A. Samchuck
Data Validation Manager

Attachments:

1. Appendix A - Qualified Analytical Results
2. Appendix B - Results as Reported by the Laboratory
3. Appendix C - Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 standard deviations is greater than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed
Z3 = Tentatively Identified Compound aldol condensate

PROJ_NO: 02063	NSAMPLE	B250-GW01			B250-GW02			B250-GW04			B250-GW13		
SDG: 320-10776-1	LAB_ID	320-10776-1			320-10776-2			320-10776-3			320-10776-6		
FRACTION: OS	SAMP_DATE	12/5/2014			12/5/2014			12/5/2014			12/7/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		1300			340			26			2.3		
PERFLUOROOCTANE SULFONIC ACID		1500			210			5.2			4.4		

PROJ_NO: 02063	NSAMPLE	EFA-EB01-1014			EFA-FD02-104			EFA-GW06			EFA-GW07D		
SDG: 320-10776-1	LAB_ID	320-10776-9			320-10776-7			320-10776-8			320-10776-5		
FRACTION: OS	SAMP_DATE	12/7/2014			12/7/2014			12/7/2014			12/6/2014		
MEDIA: WATER	QC_TYPE	NM			NM			NM			NM		
	UNITS	NG/L			NG/L			NG/L			NG/L		
	PCT_SOLIDS	0.0			0.0			0.0			0.0		
	DUP_OF				B250-GW13								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		1.5	U		2.2			390			1.5	U	
PERFLUOROOCTANE SULFONIC ACID		1.5	U		3.9			820			4.5		

PROJ_NO: 02063	NSAMPLE	EFA-GW07S		
SDG: 320-10776-1	LAB_ID	320-10776-4		
FRACTION: OS	SAMP_DATE	12/6/2014		
MEDIA: WATER	QC_TYPE	NM		
	UNITS	NG/L		
	PCT_SOLIDS	0.0		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		12		
PERFLUOROOCTANE SULFONIC ACID		5.3		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: B250-GW01 Lab Sample ID: 320-10776-1

Matrix: Water Lab File ID: 13JAN15A4A_031.d

Analysis Method: WS-LC-0025 Date Collected: 12/05/2014 10:25

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 504.1(mL) Date Analyzed: 01/14/2015 10:45

Con. Extract Vol.: 1.00(mL) Dilution Factor: 2

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1300	D	4.0	3.0	1.5
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1500	D	4.0	3.0	2.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	82		25-150
STL00990	13C4 PFOA	74		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: B250-GW02 Lab Sample ID: 320-10776-2

Matrix: Water Lab File ID: 13JAN15A4A_016.d

Analysis Method: WS-LC-0025 Date Collected: 12/05/2014 15:10

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 506.3(mL) Date Analyzed: 01/13/2015 17:43

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	340		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	210		2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	92		25-150
STL00990	13C4 PFOA	64		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: B250-GW04 Lab Sample ID: 320-10776-3

Matrix: Water Lab File ID: 13JAN15A4A_017.d

Analysis Method: WS-LC-0025 Date Collected: 12/05/2014 16:10

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 514(mL) Date Analyzed: 01/13/2015 18:04

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	26		1.9	1.5	0.73
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.2		1.9	1.5	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	91		25-150
STL00990	13C4 PFOA	74		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: B250-GW13 Lab Sample ID: 320-10776-6

Matrix: Water Lab File ID: 13JAN15A4A_020.d

Analysis Method: WS-LC-0025 Date Collected: 12/07/2014 10:55

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 503(mL) Date Analyzed: 01/13/2015 19:07

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.3		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.4		2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	120		25-150
STL00990	13C4 PFOA	87		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: EFA-EB01-1014 Lab Sample ID: 320-10776-9

Matrix: Water Lab File ID: 13JAN15A4A_026.d

Analysis Method: WS-LC-0025 Date Collected: 12/07/2014 17:30

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 507.9(mL) Date Analyzed: 01/13/2015 21:14

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	104		25-150
STL00990	13C4 PFOA	90		25-150

FORM I

LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: EFA-FD02-104 Lab Sample ID: 320-10776-7

Matrix: Water Lab File ID: 13JAN15A4A_021.d

Analysis Method: WS-LC-0025 Date Collected: 12/07/2014 00:00

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 511.9(mL) Date Analyzed: 01/13/2015 19:28

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	2.2		2.0	1.5	0.73
1763-23-1	Perfluorooctane Sulfonate (PFOS)	3.9		2.0	1.5	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	105		25-150
STL00990	13C4 PFOA	68		25-150

FORM I

LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: EFA-GW06 Lab Sample ID: 320-10776-8

Matrix: Water Lab File ID: 13JAN15A4A_023.d

Analysis Method: WS-LC-0025 Date Collected: 12/07/2014 15:00

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 515.2(mL) Date Analyzed: 01/13/2015 20:11

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	390	J	1.9	1.5	0.73
1763-23-1	Perfluorooctane Sulfonate (PFOS)	820	J	1.9	1.5	1.2

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	71		25-150
STL00990	13C4 PFOA	77		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: EFA-GW07D Lab Sample ID: 320-10776-5

Matrix: Water Lab File ID: 13JAN15A4A_019.d

Analysis Method: WS-LC-0025 Date Collected: 12/06/2014 16:40

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 506.1(mL) Date Analyzed: 01/13/2015 18:46

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	4.5		2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	117		25-150
STL00990	13C4 PFOA	80		25-150

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: EFA-GW07S Lab Sample ID: 320-10776-4

Matrix: Water Lab File ID: 13JAN15A4A_018.d

Analysis Method: WS-LC-0025 Date Collected: 12/06/2014 10:40

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 502.5(mL) Date Analyzed: 01/13/2015 18:25

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	12		2.0	1.5	0.74
1763-23-1	Perfluorooctane Sulfonate (PFOS)	5.3		2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	62		25-150
STL00990	13C4 PFOA	49		25-150

Appendix C

Support Documentation

NAS BRUNSWICK
WATER DATA
320-10776-1

FRACTION	CHEMICAL	B250-GW13	UNITS	EFA-FD02-104	RPD	D
OS	PENTADECAFLUOROOCTANOIC ACID	2.3	NG/L	2.2	4.44	0.10
OS	PERFLUOROOCTANE SULFONIC ACID	4.4	NG/L	3.9	12.05	0.50

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

Job Number: 320-10776-1

Job Description: NAS Brunswick Maine 13-CTO WE09

For:
Tetra Tech, Inc.
Foster Plaza VII
661 Anderson Drive
Pittsburgh, PA 15220

Attention: Jeff Orient

Approved for release.
Jill Kellmann
Manager of Project Management
1/19/2015 11:49 AM

Designee for
Karen M Sellers, Project Manager II
880 Riverside Parkway, West Sacramento, CA, 95605
(916)374-4442
karen.sellers@testamericainc.com
01/19/2015

CASE NARRATIVE

Client: Tetra Tech, Inc.

Project: NAS Brunswick Maine 13-CTO WE09

Report Number: 320-10776-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

TestAmerica West Sacramento attests to the validity of the laboratory data generated by TestAmerica facilities reported herein. All analyses performed by TestAmerica facilities were done using established laboratory SOPs that incorporate QA/QC procedures described in the applicable methods. TestAmerica's operations groups have reviewed the data for compliance with the laboratory QA/QC plan, and data have been found to be compliant with laboratory protocols unless otherwise noted below.

TestAmerica utilizes USEPA approved methods and DOD QSM, where applicable, in all analytical work. The samples presented in this report were analyzed for the parameter(s) listed on the analytical methods summary page in accordance with the method(s) indicated. A summary of QC data for these analyses is included at the back of the report.

All parameters for which TestAmerica West Sacramento has certification were evaluated to the QSM specified reporting convention or to the client specified format if different from QSM. Parameters not certified under QSM, if any, were evaluated to the detection limit (DL) and include qualified results where applicable.

The sample(s) that contain constituents flagged with U are undetected. The result associated with this flag is the limit of detection (LOD).

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

This laboratory report is confidential and is intended for the sole use of TestAmerica and its client.

RECEIPT

The samples were received on 12/09/2014; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was -0.5 C. The temperature blank was received at -0.5 degrees Celsius but not frozen. Wet ice used as a cooling agent.

PFOA/PFOS

Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) failed the recovery criteria low for the MSD of sample EFA-GW06MSD (320-10776-8) in batch 320-62865. Refer to the QC report for details.

The presence of the '4' qualifier indicates analytes where the concentration in the unspiked sample exceeded four times the spiking amount.

Sample B250-GW01 (320-10776-1)[2X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Method Summary

Client: Tetra Tech, Inc.
Project/Site: NAS Brunswick Maine 13-CTO WE09

TestAmerica Job ID: 320-10776-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025	Perfluorinated Hydrocarbons	TAL SOP	TAL SAC

Protocol References:

TAL SOP = TestAmerica Laboratories, Standard Operating Procedure

Laboratory References:

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

Sample Summary

Client: Tetra Tech, Inc.
Project/Site: NAS Brunswick Maine 13-CTO WE09

TestAmerica Job ID: 320-10776-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-10776-1	B250-GW01	Water	12/05/14 10:25	12/09/14 08:40
320-10776-2	B250-GW02	Water	12/05/14 15:10	12/09/14 08:40
320-10776-3	B250-GW04	Water	12/05/14 16:10	12/09/14 08:40
320-10776-4	EFA-GW07S	Water	12/06/14 10:40	12/09/14 08:40
320-10776-5	EFA-GW07D	Water	12/06/14 16:40	12/09/14 08:40
320-10776-6	B250-GW13	Water	12/07/14 10:55	12/09/14 08:40
320-10776-7	EFA-FD02-104	Water	12/07/14 00:00	12/09/14 08:40
320-10776-8	EFA-GW06	Water	12/07/14 15:00	12/09/14 08:40
320-10776-9	EFA-EB01-1014	Water	12/07/14 17:30	12/09/14 08:40

Qualifiers

LCMS

Qualifier	Qualifier Description
D	The reported value is from a dilution.
U	Undetected at the Limit of Detection.
J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
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
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)

Tetra Tech, Inc. CHAIN OF CUSTODY | NUMBER No. 0541 | PAGE 1 OF 1

PROJECT NO: 112G02063	FACILITY: EFA / NAS Brunswick	PROJECT MANAGER: Jeff Orient	PHONE NUMBER: 412 921 7090
LABORATORY NAME AND CONTACT: Test America			
SAMPLERS (SIGNATURE)		FIELD OPERATIONS LEADER: Tim Evans	PHONE NUMBER: 412 921 7090
ADDRESS: 880 Riverside Pkwy			
CARRIER/WAYBILL NUMBER: FedEx AB# 8065 1897 7207		CITY, STATE: West Sacramento CA	

STANDARD TAT ☒
RUSH TAT ☐
☐ 24 hr. ☐ 48 hr. ☐ 72 hr. ☐ 7 day ☐ 14 day

DATE YEAR 2014	TIME	SAMPLE ID	LOCATION ID	TOP DEPTH (FT)	BOTTOM DEPTH (FT)	MATRIX (GW, SO, SW, SD, QC, ETC.)	COLLECTION METHOD GRAB (G) COMP (C)	No. OF CONTAINERS	CONTAINER TYPE PLASTIC (P) or GLASS (G)	PRESERVATIVE USED	TYPE OF ANALYSIS EFA/PFOS	COMMENTS
									P	1		
12/5	1025	B250-GW01	B250-MW-01	—	—	GW	G	1	1			
↓	1510	B250-GW02	B250-MW-02	—	—	GW	G	1	1			
↓	1610	B250-GW04	B250-MW04	—	—	GW	G	1	1			
12/6	1040	EFA-GW07S	EFA-07S	—	—	GW	G	1	1			
↓	1640	EFA-GW07D	EFA-07D	—	—	GW	G	1	1			
12/7	1055	B250-GW13	B250-MW13	—	—	GW	G	1	1			
↓	0000	EFA-FD02-10K	Field Duplicate	—	—	GW	G	1	1			
↓	1500	EFA-GW06	EFA-06	—	—	GW	G	3	3			MS/MSD
~~—~~	~~1705~~	~~EFA-RB01-1014~~	~~Rinsate Blank~~	~~QC~~	~~G~~	~~1~~	~~1~~					~~12/7/14~~
12/7	1730	EFA-EB01-1014	Equipment Rinsate	—	QC	G	1	1				

320-10776 Chain of Custody

1. RELINQUISHED BY:	DATE 12/8/14	TIME 1300	1. RECEIVED BY: FedEx	DATE 12/8/14	TIME 1300
2. RELINQUISHED BY:	DATE	TIME	2. RECEIVED BY:	DATE 12/9/14	TIME 840
3. RELINQUISHED BY:	DATE	TIME	3. RECEIVED BY:	DATE	TIME

COMMENTS

DISTRIBUTION: WHITE (ACCOMPANIES SAMPLE) YELLOW (FIELD COPY) PINK (FILE COPY)

4/02R
FORM NO. TtNUS-001

Page 382 of 383

01/19/2015

-0.5°

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 320-10776-1

Login Number: 10776

List Source: TestAmerica Sacramento

List Number: 1

Creator: Hytrek, Cheryl

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	False	Refer to Job Narrative for details.
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

PFC_IDA

Perfluorinated Hydrocarbons

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Acquity ID: 2.1 (mm)

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
B250-GW01	320-10776-1	74	82
B250-GW02	320-10776-2	64	92
B250-GW04	320-10776-3	74	91
EFA-GW07S	320-10776-4	49	62
EFA-GW07D	320-10776-5	80	117
B250-GW13	320-10776-6	87	120
EFA-FD02-104	320-10776-7	68	105
EFA-GW06	320-10776-8	77	71
EFA-EB01-1014	320-10776-9	90	104
	MB 320-60488/1-A	121	118
	LCS 320-60488/2-A	134	123
EFA-GW06 MS	320-10776-8 MS	80	75
EFA-GW06 MSD	320-10776-8 MSD	86	69

	QC LIMITS
PFOA = 13C4 PFOA	25-150
PFOS = 13C4 PFOS	25-150

Column to be used to flag recovery values

FORM II WS-LC-0025

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Instrument ID: A4 Start Date: 01/13/2015 13:28

Analysis Batch Number: 62865 End Date: 01/14/2015 11:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD 320-62865/4 IC		01/13/2015 13:28	1	13JAN15A4A_004.d	Acquity 2.1(mm)
STD 320-62865/5 IC		01/13/2015 13:50	1	13JAN15A4A_005.d	Acquity 2.1(mm)
STD 320-62865/6 IC		01/13/2015 14:11	1	13JAN15A4A_006.d	Acquity 2.1(mm)
STD 320-62865/7 IC		01/13/2015 14:32	1	13JAN15A4A_007.d	Acquity 2.1(mm)
STD 320-62865/8 IC		01/13/2015 14:53	1	13JAN15A4A_008.d	Acquity 2.1(mm)
STD 320-62865/9 IC		01/13/2015 15:14	1	13JAN15A4A_009.d	Acquity 2.1(mm)
STD 320-62865/10 IC		01/13/2015 15:35	1	13JAN15A4A_010.d	Acquity 2.1(mm)
CCB 320-62865/11		01/13/2015 15:57	1	13JAN15A4A_011.d	Acquity 2.1(mm)
ICV 320-62865/12		01/13/2015 16:18	1	13JAN15A4A_012.d	Acquity 2.1(mm)
MB 320-60488/1-A		01/13/2015 16:39	1	13JAN15A4A_013.d	Acquity 2.1(mm)
ZZZZZ		01/13/2015 17:00	1		Acquity 2.1(mm)
ZZZZZ		01/13/2015 17:21	1		Acquity 2.1(mm)
320-10776-2	B250-GW02	01/13/2015 17:43	1	13JAN15A4A_016.d	Acquity 2.1(mm)
320-10776-3	B250-GW04	01/13/2015 18:04	1	13JAN15A4A_017.d	Acquity 2.1(mm)
320-10776-4	EFA-GW07S	01/13/2015 18:25	1	13JAN15A4A_018.d	Acquity 2.1(mm)
320-10776-5	EFA-GW07D	01/13/2015 18:46	1	13JAN15A4A_019.d	Acquity 2.1(mm)
320-10776-6	B250-GW13	01/13/2015 19:07	1	13JAN15A4A_020.d	Acquity 2.1(mm)
320-10776-7	EFA-FD02-104	01/13/2015 19:28	1	13JAN15A4A_021.d	Acquity 2.1(mm)
CCV 320-62865/22		01/13/2015 19:50	1	13JAN15A4A_022.d	Acquity 2.1(mm)
320-10776-8	EFA-GW06	01/13/2015 20:11	1	13JAN15A4A_023.d	Acquity 2.1(mm)
320-10776-8 MS	EFA-GW06 MS	01/13/2015 20:32	1	13JAN15A4A_024.d	Acquity 2.1(mm)
320-10776-8 MSD	EFA-GW06 MSD	01/13/2015 20:53	1	13JAN15A4A_025.d	Acquity 2.1(mm)
320-10776-9	EFA-EB01-1014	01/13/2015 21:14	1	13JAN15A4A_026.d	Acquity 2.1(mm)
ZZZZZ		01/13/2015 21:36	1		Acquity 2.1(mm)
CCV 320-62865/28		01/13/2015 21:57	1	13JAN15A4A_028.d	Acquity 2.1(mm)
CCV 320-62865/29		01/14/2015 10:03	1	13JAN15A4A_029.d	Acquity 2.1(mm)
LCS 320-60488/2-A		01/14/2015 10:24	1	13JAN15A4A_030.d	Acquity 2.1(mm)
320-10776-1	B250-GW01	01/14/2015 10:45	2	13JAN15A4A_031.d	Acquity 2.1(mm)
CCV 320-62865/32		01/14/2015 11:07	1	13JAN15A4A_032.d	Acquity 2.1(mm)

FORM VI
LCMS INITIAL CALIBRATION DATA
EXTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1 Analy Batch No.: 62865

SDG No.:

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/13/2015 13:28 Calibration End Date: 01/13/2015 15:35 Calibration ID: 11124

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD 320-62865/4	13JAN15A4A_004.d
Level 2	STD 320-62865/5	13JAN15A4A_005.d
Level 3	STD 320-62865/6	13JAN15A4A_006.d
Level 4	STD 320-62865/7	13JAN15A4A_007.d
Level 5	STD 320-62865/8	13JAN15A4A_008.d
Level 6	STD 320-62865/9	13JAN15A4A_009.d
Level 7	STD 320-62865/10	13JAN15A4A_010.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4		B	M1	M2								
13C4 PFBA	14621 11497	14600 8932.5	12789 5952.9	12612	Ave		11572.1857				27.0		50.0			
13C5 PFPeA	26525 21021	25806 16794	24555 13203	26206	Ave		22015.6786				24.0		50.0			
13C2 PFHxA	46699 38432	45580 34192	48547 29580	47062	Ave		41441.5143				18.0		50.0			
13C4-PFHpA	38348 37914	38995 29106	39790 26001	37586	Ave		35391.4357				15.0		50.0			
18O2 PFHxS	76561 65321	74705 48195	76893 37012	70284	Ave		64138.8176				24.0		50.0			
13C4 PFOA	73409 61730	68886 50627	67243 45013	70955	Ave		62551.8143				17.0		50.0			
13C4 PFOS	70196 60055	71307 45682	69698 32699	66085	Ave		59388.6701				25.0		50.0			
13C5 PFNA	69836 69829	78565 59691	70573 48754	73628	Ave		67267.9000				15.0		50.0			
13C2 PFDA	102255 82475	93180 71235	102625 64215	88168	Ave		86307.2929				17.0		50.0			
13C8 FOSA	300778 271547	271622 203012	274986 177111	263450	Ave		251786.386				18.0		50.0			
13C2 PFUnA	100316 92896	100137 89853	101738 107149	97053	Ave		98448.9571				5.9		50.0			
13C2 PFDoA	112880 113202	116869 95755	116043 97579	127820	Ave		111449.764				10.0		50.0			
13C2-PFTeDA	112854 120430	115293 104067	117975 99788	117958	Ave		112623.443				6.9		50.0			
13C2-PFHxDA	160607 180029	178284 167816	184442 155006	187386	Ave		173366.950				7.1		50.0			

Note: The m1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1 Analy Batch No.: 62865

SDG No.:

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/13/2015 13:28 Calibration End Date: 01/13/2015 15:35 Calibration ID: 11124

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	13808 28635	39983 23479	36142	36089	31656	AveID		2.7534				33.0		35.0			
Perfluoropentanoic acid (PFPeA)	14594 24808	33549 21203	39075	34650	29789	AveID		1.3234				27.0		35.0			
Perfluorobutane Sulfonate (PFBS)	28688 57594	86189 46314	78694	82462	107288	AveID		1.1163				34.0		50.0			
Perfluorohexanoic acid (PFHxA)	13928 33436	45689 29400	45947	45568	39554	AveID		0.8880				29.0		35.0			
PFPeS (Perflouro-1-pentanesulfonate)	25102 53011	73393 39564	86651	72911	64719	AveID		0.9477				29.0		50.0			
Perfluoroheptanoic acid (PFHpA)	18868 42603	50705 38018	52032	51969	51875	AveID		1.2538				27.0		35.0			
Perfluorohexane Sulfonate (PFHxS)	33634 46631	66980 37108	78433	65436	65924	AveID		0.8952				23.0		35.0			
Perfluorooctanoic acid (PFOA)	58846 80689	104782 69784	112592	99731	92831	AveID		1.4358				20.0		35.0			
Perfluoro-1-heptanesulfonate (PFHpS)	30538 48795	70398 36743	77638	75853	68514	AveID		1.0024				26.0		50.0			
Perfluorooctane Sulfonate (PFOS)	34425 70830	84035 53565	107076	101688	90872	AveID		1.3494				30.0		35.0			
Perfluorononanoic acid (PFNA)	30836 86408	93515 71137	104759	102549	100022	AveID		1.2640				30.0		35.0			
PFNS (Perflouro-1-nonanesulfonate)	19446 37845	56921 28639	74544	63035	54595	AveID		0.8160				31.0		50.0			
Perfluorodecanoic acid (PFDA)	30952 82979	96906 71782	119914	106384	100285	AveID		1.0309				32.0		35.0			
Perfluorooctane Sulfonamide (FOSA)	71334 177010	221403 156508	242007	234045	229632	AveID		0.7746				31.0		35.0			
Perfluorodecane sulfonate (PFDS)	19506 36863	52354 25862	63573	63169	52452	AveID		0.7645				30.0		50.0			
Perfluoroundecanoic acid (PFUnA)	41190 84347	115013 73533	124651	110540	102229	AveID		0.9498				31.0		35.0			
Perfluorododecanoic acid (PFDoA)	29032 100364	119316 87548	120964	131833	124692	AveID		0.9141				32.0		35.0			
PFDoS (Perflouro-1-dodecanesulfonate)	9099.2 38427	49150 29122	61985	63612	57702	AveID		0.7662				39.0		50.0			
Perfluorotridecanoic Acid (PFTriA)	25846 69942	88768 62589	100860	95280	83083	AveID		0.6727				31.0		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1 Analy Batch No.: 62865

SDG No.:

Instrument ID: A4 GC Column: Acquity ID: 2.1(mm) Heated Purge: (Y/N) N

Calibration Start Date: 01/13/2015 13:28 Calibration End Date: 01/13/2015 15:35 Calibration ID: 11124

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3	LVL 4	LVL 5		B	M1	M2								
Perfluorotetradecanoic acid (PFTeA)	13982 56308	52449 51478	64606	66064	66929	AveID		0.4790				34.0		50.0			
Perfluoro-n-hexadecanoic acid (PFHxDA)	58752 158742	171654 138968	163727	163363	165717	AveID		1.3177				28.0		50.0			
Perfluoro-n-octandecanoic acid (PFODA)	47188 177452	184814 173725	215366	196488	202385	AveID		1.5448				33.0		50.0			

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab Sample ID: ICV 320-62865/12 Calibration Date: 01/13/2015 16:18

Instrument ID: A4 Calib Start Date: 01/13/2015 13:28

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/13/2015 15:35

Lab File ID: 13JAN15A4A_012.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	2.753	3.657		66.4	50.0	32.8	50.0
Perfluoropentanoic acid (PFPeA)	AveID	1.323	1.557		58.8	50.0	17.6	50.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.116	1.283		50.9	44.3	15.0	50.0
Perfluorohexanoic acid (PFHxA)	AveID	0.8880	1.066		60.0	50.0	20.1	50.0
Perfluoroheptanoic acid (PFHpA)	AveID	1.254	1.476		58.9	50.0	17.7	50.0
Perfluorohexane Sulfonate (PFHxS)	AveID	0.8952	1.021		53.9	47.3	14.1	50.0
Perfluorooctanoic acid (PFOA)	AveID	1.436	1.609		56.0	50.0	12.0	50.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	1.002	1.127		53.5	47.6	12.5	50.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.349	1.630		57.7	47.8	20.8	50.0
Perfluorononanoic acid (PFNA)	AveID	1.264	1.443		57.1	50.0	14.1	50.0
Perfluorodecanoic acid (PFDA)	AveID	1.031	1.257		61.0	50.0	22.0	50.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7746	0.7842		50.6	50.0	1.2	50.0
Perfluorodecane sulfonate (PFDS)	AveID	0.7645	0.9123		57.6	48.3	19.3	50.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9498	1.224		64.4	50.0	28.9	50.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9141	1.037		56.7	50.0	13.4	50.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.6727	0.8335		62.0	50.0	23.9	50.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.4790	0.5557		58.0	50.0	16.0	50.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.318	1.574		59.7	50.0	19.5	50.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.545	1.859		60.2	50.0	20.3	50.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab Sample ID: CCV 320-62865/22 Calibration Date: 01/13/2015 19:50

Instrument ID: A4 Calib Start Date: 01/13/2015 13:28

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/13/2015 15:35

Lab File ID: 13JAN15A4A_022.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	2.753	2.648		19.2	20.0	-3.8	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.323	1.481		22.4	20.0	11.9	40.0
Perfluorobutane Sulfonate (PFBS)	AveID	1.116				17.7		
Perfluorooctanoic acid (PFOA)	AveID	1.436	1.539		21.4	20.0	7.2	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.349	1.591		22.5	19.1	17.9	40.0
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7746	0.8676		22.4	20.0	12.0	40.0
Perfluorodecane sulfonate (PFDS)	AveID	0.7645	0.8798		22.2	19.3	15.1	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9498	1.191		25.1	20.0	25.4	40.0
Perfluorododecanoic acid (PFDoA)	AveID	0.9141	1.069		23.4	20.0	17.0	40.0
Perfluorotridecanoic Acid (PFTriA)	AveID	0.6727	0.8070		24.0	20.0	20.0	40.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.4790	0.5984		25.0	20.0	24.9	40.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.318	1.371		20.8	20.0	4.1	40.0
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.545	1.905		24.7	20.0	23.3	40.0
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	1.002			1.50	19.0		
Perfluorodecanoic acid (PFDA)	AveID	1.031			1.50	20.0		
Perfluoroheptanoic acid (PFHpA)	AveID	1.254			1.50	20.0		
Perfluorohexane Sulfonate (PFHxS)	AveID	0.8952			1.50	18.9		
Perfluorohexanoic acid (PFHxA)	AveID	0.8880			1.50	20.0		
Perfluorononanoic acid (PFNA)	AveID	1.264			1.50	20.0		

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab Sample ID: CCV 320-62865/28 Calibration Date: 01/13/2015 21:57

Instrument ID: A4 Calib Start Date: 01/13/2015 13:28

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/13/2015 15:35

Lab File ID: 13JAN15A4A_028.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	AveID	2.753	2.129		15.5	20.0	-22.7	40.0
Perfluoropentanoic acid (PFPeA)	AveID	1.323				20.0		
Perfluorooctanoic acid (PFOA)	AveID	1.436	1.415		19.7	20.0	-1.5	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.349	1.456		20.6	19.1	7.9	40.0
Perfluorotetradecanoic acid (PFTeA)	AveID	0.4790				20.0		
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.318				20.0		
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.545				20.0		
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	1.002			1.50	19.0		
Perfluorobutane Sulfonate (PFBS)	AveID	1.116			1.50	17.7		
Perfluorodecane sulfonate (PFDS)	AveID	0.7645			1.50	19.3		
Perfluorodecanoic acid (PFDA)	AveID	1.031			1.50	20.0		
Perfluorododecanoic acid (PFDoA)	AveID	0.9141			1.50	20.0		
Perfluoroheptanoic acid (PFHpA)	AveID	1.254			1.50	20.0		
Perfluorohexane Sulfonate (PFHxS)	AveID	0.8952			1.50	18.9		
Perfluorohexanoic acid (PFHxA)	AveID	0.8880			1.50	20.0		
Perfluorononanoic acid (PFNA)	AveID	1.264			1.50	20.0		
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7746			1.50	20.0		
Perfluorotridecanoic Acid (PFTriA)	AveID	0.6727			1.50	20.0		
Perfluoroundecanoic acid (PFUnA)	AveID	0.9498			1.50	20.0		

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab Sample ID: CCV 320-62865/29 Calibration Date: 01/14/2015 10:03

Instrument ID: A4 Calib Start Date: 01/13/2015 13:28

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/13/2015 15:35

Lab File ID: 13JAN15A4A_029.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorooctanoic acid (PFOA)	AveID	1.436	1.150		16.0	20.0	-19.9	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.349	1.373		19.4	19.1	1.7	40.0
Perfluoroundecanoic acid (PFUnA)	AveID	0.9498				20.0		
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.318				20.0		
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.545				20.0		
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	1.002			1.50	19.0		
Perfluorobutane Sulfonate (PFBS)	AveID	1.116			1.50	17.7		
Perfluorobutanoic acid (PFBA)	AveID	2.753			1.50	20.0		
Perfluorodecane sulfonate (PFDS)	AveID	0.7645			1.50	19.3		
Perfluorodecanoic acid (PFDA)	AveID	1.031			1.50	20.0		
Perfluorododecanoic acid (PFDoA)	AveID	0.9141			1.50	20.0		
Perfluoroheptanoic acid (PFHpA)	AveID	1.254			1.50	20.0		
Perfluorohexane Sulfonate (PFHxS)	AveID	0.8952			1.50	18.9		
Perfluorohexanoic acid (PFHxA)	AveID	0.8880			1.50	20.0		
Perfluorononanoic acid (PFNA)	AveID	1.264			1.50	20.0		
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7746			1.50	20.0		
Perfluoropentanoic acid (PFPeA)	AveID	1.323			1.50	20.0		
Perfluorotetradecanoic acid (PFTeA)	AveID	0.4790			1.50	20.0		
Perfluorotridecanoic Acid (PFTriA)	AveID	0.6727			1.50	20.0		

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab Sample ID: CCV 320-62865/32 Calibration Date: 01/14/2015 11:07

Instrument ID: A4 Calib Start Date: 01/13/2015 13:28

GC Column: Acquity ID: 2.10(mm) Calib End Date: 01/13/2015 15:35

Lab File ID: 13JAN15A4A_032.d Conc. Units: ng/mL

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorooctanoic acid (PFOA)	AveID	1.436	1.246		17.4	20.0	-13.2	40.0
Perfluorooctane Sulfonate (PFOS)	AveID	1.349	1.506		21.3	19.1	11.6	40.0
Perfluoro-n-hexadecanoic acid (PFHxDA)	AveID	1.318				20.0		
Perfluoro-n-octandecanoic acid (PFODA)	AveID	1.545				20.0		
Perfluoro-1-heptanesulfonate (PFHpS)	AveID	1.002			1.50	19.0		
Perfluorobutane Sulfonate (PFBS)	AveID	1.116			1.50	17.7		
Perfluorobutanoic acid (PFBA)	AveID	2.753			1.50	20.0		
Perfluorodecane sulfonate (PFDS)	AveID	0.7645			1.50	19.3		
Perfluorodecanoic acid (PFDA)	AveID	1.031			1.50	20.0		
Perfluorododecanoic acid (PFDoA)	AveID	0.9141			1.50	20.0		
Perfluoroheptanoic acid (PFHpA)	AveID	1.254			1.50	20.0		
Perfluorohexane Sulfonate (PFHxS)	AveID	0.8952			1.50	18.9		
Perfluorohexanoic acid (PFHxA)	AveID	0.8880			1.50	20.0		
Perfluorononanoic acid (PFNA)	AveID	1.264			1.50	20.0		
Perfluorooctane Sulfonamide (FOSA)	AveID	0.7746			1.50	20.0		
Perfluoropentanoic acid (PFPeA)	AveID	1.323			1.50	20.0		
Perfluorotetradecanoic acid (PFTeA)	AveID	0.4790			1.50	20.0		
Perfluorotridecanoic Acid (PFTriA)	AveID	0.6727			1.50	20.0		
Perfluoroundecanoic acid (PFUnA)	AveID	0.9498			1.50	20.0		

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Lab File ID: 13JAN15A4A_013.d Lab Sample ID: MB 320-60488/1-A

Matrix: Water Date Extracted: 12/11/2014 14:21

Instrument ID: A4 Date Analyzed: 01/13/2015 16:39

Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
B250-GW02	320-10776-2	13JAN15A4A_016.d	01/13/2015 17:43
B250-GW04	320-10776-3	13JAN15A4A_017.d	01/13/2015 18:04
EFA-GW07S	320-10776-4	13JAN15A4A_018.d	01/13/2015 18:25
EFA-GW07D	320-10776-5	13JAN15A4A_019.d	01/13/2015 18:46
B250-GW13	320-10776-6	13JAN15A4A_020.d	01/13/2015 19:07
EFA-FD02-104	320-10776-7	13JAN15A4A_021.d	01/13/2015 19:28
EFA-GW06	320-10776-8	13JAN15A4A_023.d	01/13/2015 20:11
EFA-GW06 MS	320-10776-8 MS	13JAN15A4A_024.d	01/13/2015 20:32
EFA-GW06 MSD	320-10776-8 MSD	13JAN15A4A_025.d	01/13/2015 20:53
EFA-EB01-1014	320-10776-9	13JAN15A4A_026.d	01/13/2015 21:14
	LCS 320-60488/2-A	13JAN15A4A_030.d	01/14/2015 10:24
B250-GW01	320-10776-1	13JAN15A4A_031.d	01/14/2015 10:45

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: Lab Sample ID: MB 320-60488/1-A

Matrix: Water Lab File ID: 13JAN15A4A_013.d

Analysis Method: WS-LC-0025 Date Collected:

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 500.00(mL) Date Analyzed: 01/13/2015 16:39

Con. Extract Vol.: 1.00(mL) Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	118		25-150
STL00990	13C4 PFOA	121		25-150

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 13JAN15A4A_030.d

Lab ID: LCS 320-60488/2-A Client ID:

COMPOUND	SPIKE ADDED (ng/L)	LCS CONCENTRATION (ng/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	40.0	44.7	112	60-140	
Perfluorooctane Sulfonate (PFOS)	38.2	49.8	130	60-140	
13C4 PFOS	95.6	118	123	25-150	
13C4 PFOA	100	134	134	25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 13JAN15A4A_024.d

Lab ID: 320-10776-8 MS Client ID: EFA-GW06 MS

COMPOUND	SPIKE ADDED (ng/L)	SAMPLE CONCENTRATION (ng/L)	MS CONCENTRATION (ng/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	39.4	390	423	86	60-140	4
Perfluorooctane Sulfonate (PFOS)	37.7	820	848	80	60-140	4
13C4 PFOS	94.2	66	70.9	75	25-150	
13C4 PFOA	98.5	75	78.7	80	25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Matrix: Water Level: Low Lab File ID: 13JAN15A4A_025.d

Lab ID: 320-10776-8 MSD Client ID: EFA-GW06 MSD

COMPOUND	SPIKE ADDED (ng/L)	MSD CONCENTRATION (ng/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	39.7	406	44	4	30	60-140	4
Perfluorooctane Sulfonate (PFOS)	37.9	830	32	2	30	60-140	4
13C4 PFOS	94.8	65.2	69			25-150	
13C4 PFOA	99.1	84.9	86			25-150	

Column to be used to flag recovery and RPD values

FORM III WS-LC-0025

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: Lab Sample ID: CCB 320-62865/11

Matrix: Water Lab File ID: 13JAN15A4A_011.d

Analysis Method: WS-LC-0025 Date Collected:

Extraction Method: Date Extracted:

Sample wt/vol: 1(mL) Date Analyzed: 01/13/2015 15:57

Con. Extract Vol.: Dilution Factor: 1

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/mL

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.5	U	2.0	1.5	0.75
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	U	2.0	1.5	1.3

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	111		25-150
STL00990	13C4 PFOA	122		25-150

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Batch Number: 60488 Batch Start Date: 12/11/14 14:21 Batch Analyst: Reed, Jonathan E

Batch Method: 3535 Batch End Date: 12/15/14 12:55

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	LCMPFCSU 00010	LCPFCSP 00014
MB 320-60488/1		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	
LCS 320-60488/2		3535, WS-LC-0025				500.00 mL	1.00 mL	50 uL	20 uL
320-10776-A-1	B250-GW01	3535, WS-LC-0025	T	547.59 g	43.45 g	504.1 mL	1.00 mL	50 uL	
320-10776-A-2	B250-GW02	3535, WS-LC-0025	T	549.30 g	43.00 g	506.3 mL	1.00 mL	50 uL	
320-10776-A-3	B250-GW04	3535, WS-LC-0025	T	557.01 g	43.02 g	514 mL	1.00 mL	50 uL	
320-10776-A-4	EFA-GW07S	3535, WS-LC-0025	T	545.95 g	43.44 g	502.5 mL	1.00 mL	50 uL	
320-10776-A-5	EFA-GW07D	3535, WS-LC-0025	T	548.85 g	42.72 g	506.1 mL	1.00 mL	50 uL	
320-10776-A-6	B250-GW13	3535, WS-LC-0025	T	545.91 g	42.96 g	503 mL	1.00 mL	50 uL	
320-10776-A-7	EFA-FD02-104	3535, WS-LC-0025	T	554.57 g	42.67 g	511.9 mL	1.00 mL	50 uL	
320-10776-A-8	EFA-GW06	3535, WS-LC-0025	T	558.72 g	43.54 g	515.2 mL	1.00 mL	50 uL	
320-10776-A-8 MS	EFA-GW06	3535, WS-LC-0025	T	550.60 g	42.93 g	507.7 mL	1.00 mL	50 uL	20 uL
320-10776-A-8 MSD	EFA-GW06	3535, WS-LC-0025	T	547.91 g	43.56 g	504.4 mL	1.00 mL	50 uL	20 uL
320-10776-A-9	EFA-EB01-1014	3535, WS-LC-0025	T	551.68 g	43.83 g	507.9 mL	1.00 mL	50 uL	

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Sacramento Job No.: 320-10776-1

SDG No.:

Client Sample ID: B250-GW01 Lab Sample ID: 320-10776-1

Matrix: Water Lab File ID: 13JAN15A4A_031.d

Analysis Method: WS-LC-0025 Date Collected: 12/05/2014 10:25

Extraction Method: 3535 Date Extracted: 12/11/2014 14:21

Sample wt/vol: 504.1(mL) Date Analyzed: 01/14/2015 10:45

Con. Extract Vol.: 1.00(mL) Dilution Factor: 2

Injection Volume: 15(uL) GC Column: Acquity ID: 2.1(mm)

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

Analysis Batch No.: 62865 Units: ng/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1300	D	4.0	3.0	1.5
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1500	D	4.0	3.0	2.5

CAS NO.	ISOTOPE DILUTION	%REC	Q	LIMITS
STL00991	13C4 PFOS	82		25-150
STL00990	13C4 PFOA	74		25-150

TestAmerica Sacramento
Target Compound Quantitation Report

Data File: \\Sacchrom\ChromData\A4\20150113-18689.b\13JAN15A4A_031.d
Lims ID: 320-10776-A-1-A Lab Sample ID:
Client ID: B250-GW01
Sample Type: Client
Inject. Date: 14-Jan-2015 10:45:56 ALS Bottle#: 3 Worklist Smp#: 31
Injection Vol: 15.0 ul Dil. Factor: 2.0000
Sample Info: 320-10776-A-1-A 60488
Misc. Info.: AcquityBEH 1.7u C18, 150x3.0mm, T=50C,A(4967-113F)
Operator ID: JRB Instrument ID: A4

Method: \\Sacchrom\ChromData\A4\20150113-18689.b\PFAC_A4.m
Limit Group: LC PFC ICAL
Last Update: 14-Jan-2015 11:40:29 Calib Date: 13-Jan-2015 15:35:56
Integrator: Picker
Quant Method: Isotopic Dilution Quant By: Initial Calibration
Last ICal File: \\Sacchrom\ChromData\A4\20150113-18689.b\13JAN15A4A_010.d

Column 1 : Acquity BEH C18 (2.10 mm) Det: F1:MRM
Process Host: XAWRK010

First Level Reviewer: barnettj Date: 14-Jan-2015 11:07:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ng/ml	Ratio(Limits)	%Rec	S/N	Flags
D 12 13C4 PFOA										
416.5 > 371.6	10.204	10.189	0.015		1149400	18.4		36.8	1009	
13 Perfluorooctanoic acid										
412.8 > 368.8	10.204	10.848	-0.644	1.000	21964135	332.7			110	
D 16 13C4 PFOS										
502.4 > 79.7	11.169	11.758	-0.589		1160990	19.5		40.9	1290	
15 Perfluorooctanoic Sulfonate										
498.9 > 79.7	11.169	11.763	-0.594	1.000	23971900	365.7			29.5	

$$\frac{23971900 \times 25 \times 2 \times 1000}{1160990 \times 1.349 \times 504.1} = 1518 \text{ ng/L}$$

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	NASB-EFA-MW07S	Monitoring well	3014394.98	387714.75	N6247008D1001	WE09	TETRA TECH NUS, INC.	EFA-GW07S-20141206	Ground water	Normal (Regular)	6-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1							N6247008D1001	WE09	TETRA TECH NUS, INC.	EFA-EB01-1014	Water for QC samples	Equipment blank	7-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	MW-B250-02	Monitoring well	3014815.23	386265.28	N6247008D1001	WE09	TETRA TECH NUS, INC.	B250-GW02-20141205	Ground water	Normal (Regular)	5-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	MW-B250-01	Monitoring well	3014582.97	386212.13	N6247008D1001	WE09	TETRA TECH NUS, INC.	B250-GW01-20141205	Ground water	Normal (Regular)	5-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	NASB-EFA-MW07D	Monitoring well	3014391.16	387712.6	N6247008D1001	WE09	TETRA TECH NUS, INC.	EFA-GW07D-20141206	Ground water	Normal (Regular)	6-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	MW-B250-04	Monitoring well	3014715.98	386578.13	N6247008D1001	WE09	TETRA TECH NUS, INC.	B250-GW04-20141205	Ground water	Normal (Regular)	5-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	MW-B250-13	Monitoring well	3014487.29	386514.65	N6247008D1001	WE09	TETRA TECH NUS, INC.	B250-GW13-20141207-D	Ground water	Field duplicate	7-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	MW-B250-13	Monitoring well	3014487.29	386514.65	N6247008D1001	WE09	TETRA TECH NUS, INC.	B250-GW13-20141207	Ground water	Normal (Regular)	7-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	BRUNSWICK_NAS	320-10776-1	RCRA CLOSURE	SITE 00011	NASB-EFA-MW06	Monitoring well	3014148.27	387670.6	N6247008D1001	WE09	TETRA TECH NUS, INC.	EFA-GW06-20141207	Ground water	Normal (Regular)	7-Dec-14	TA_WS-LC-0025	Perfluoroalkyl Compounds