



October 3, 2016

Mr. Kevin Gregory
Director, Consultant Management Bureau
NYS Dept. of Transportation
POD # 33
50 Wolf Road
Albany, NY 12232

Attention: Mr. Tony Palumbo

**Re: PIN HMFR.00.302
Stewart Air National Guard Base Site | Site 336089
Newburgh, Orange County, New York
June 2016 PFCs Sampling**

Dear Mr. Palumbo:

The following letter report summarizes the field investigative procedures and results of the sampling conducted in June 2016 by HDR Engineering, Inc. (HDR) on behalf of New York State at the above-referenced site (Figure 1).

The following summarizes sampling of catch basins, an outfall, and existing monitoring wells on the Stewart Air National Guard Base Site, only, for evaluation of conditions at the site and as an aid in determining locations for installation of groundwater monitoring wells. Results for sampling conducted on the commercial side of the Stewart International Airport property has been presented under separate cover.

Sampling was conducted in accordance with HDR's original scope of work, approved by the New York State Department of Transportation (NYSDOT) on June 15, 2016, as well as the request for additional sampling added later to include outfalls and the former demolition and burning facility (DBF) on the commercial side, which was approved on June 23, 2016.

Field Investigative Procedures

On June 22, 23 and 28, 2016, HDR collected groundwater samples from select monitoring wells and surface water samples from select catch basins and an outfall within the Stewart Air National Guard Base Site as identified by the New York State Department of Environmental Conservation (NYSDEC). In addition, quality control/quality assurance

(QA/QC) samples were collected. Sampling information is included in the field notes provided as Attachment A.

Prior to commencement of sampling, field instrumentation was calibrated according to the respective manufacturer's standards, and instrumentation and re-useable equipment were decontaminated using perfluorinated chemical (PFC)-free water and alconox. Sampling was conducted in accordance with the PFCs Sampling Checklist, which was attached to our scope of work. NYSDEC was on-site providing oversight of all field investigation activities conducted.

Groundwater samples were collected from six groundwater monitoring wells (TE#1 through TE#6) shown on Figure 2. Each well was purged using low-flow sampling techniques with a peristaltic pump and stainless steel-weighted high density polyethylene (HDPE) and silicon tubing. Note at monitoring well TE#5, the depth to water was more than what the peristaltic pump could lift; therefore, a Waterra pump was used at this location. The Waterra pump used contained all stainless steel parts including the foot valve. Groundwater samples were collected directly from the tubing upon stabilization of the field parameters (temperature, turbidity, dissolved oxygen (DO), pH, specific conductivity, total dissolved solids (TDS), and oxidation-reduction potential (ORP)). Samples were transferred to clean, HDPE, laboratory-supplied containers for analysis of PFCs.

Surface water samples were collected from:

- Nine of the ten catch basins identified by NYSDEC (CB-1A, CB-2; CB#2, CB#5; C-4, C-8, C-15, C-48, and #4). One of the catch basins, identified to investigate the oil/water (O/W) separator and waste storage tank, was dry. Note that the map symbol identifies CB#5 as CB#4; however, the call out box provided by NYSDEC labels this location as CB#5, which was what was used to label the sample for laboratory analysis. This location is part of the two (along with CB#2) that encompass the area to investigate Hangar 100. Also note the map identified two CB#2 locations. The one mentioned above and one other location. At this location the call out box provided by NYSDEC labels it as C-2, which was what was used to label the sample for laboratory analysis. This location investigates the central eastern portion of the site. Similarly, the map symbol identifies C-15 as C-13; however, the call out box provided by NYSDEC labels this location as C-15, which was what was used to label the sample for laboratory analysis. This sample was collected to investigate Hangar 300.
- One of the four manhole access points within the 48" pipe that traverses the site (17KMH-1). The point that could be sampled was the third in line as you go from north to south from Route 17K, located just north of Hangar 101. The other three

manhole covers could not be found and potentially pre-date current site improvements (i.e., asphalt pavement or concrete).

- One of the four outfalls identified by NYSDEC on the ANG property, Outfall 001, (ANGOF-001). The other three outfalls (Outfalls 004, 005, and 006) were dry.

Surface water samples were collected from each of the catch basins and from the 48" pipe manhole access point by lifting the grate or cover and using decontaminated stainless steel dip buckets, lowered down to the water surface/collection point with nylon rope. Note that the catch basin grate at location CB#5 could not be removed therefore the stainless steel dip bucket could not be used. A peristaltic pump with HDPE and silicon tubing was used to collect the sample at this location. The outfall sample was collected by direct filling the sample containers. Surface water samples were transferred to clean, HDPE, laboratory-supplied containers for analysis of PFCs. As recommended by NYSDEC the samples were collected during low flow/dry weather conditions, to avoid potential dilution of samples. Field parameters of temperature, turbidity, DO, pH, specific conductivity, TDS, and ORP were collected during sampling at each location (see Attachment A).

QAI/QC One (1) groundwater field duplicate was collected from monitoring well TE-4 and one surface water duplicate was collected from catch basin C-4. The duplicate samples were collected at the same time and for the same parameters as the respective parent samples. The duplicate samples were given "fictitious" sample IDs as to not indicate to the laboratory that they were duplicate samples. One matrix spike/matrix spike duplicate (MS/MSD) sample was collected for each matrix (i.e., one for groundwater [TE-6] and one for surface water [C-8]). Equipment rinseate (field) blanks and decontamination water blanks were collected once per day of sampling. The field blanks collected in association with the groundwater sampling were performed by rinsing the dedicated ¼" or ½" HDPE and silicon tubing and decontaminated stainless steel weight nuts, hose clamps and/or check valve. The field blanks associated with the catch basin and manhole sampling were performed by rinsing the decontaminated stainless steel buckets. Rinse water was then transferred to the laboratory-supplied sample containers. Water used for decontamination was direct-filled into the laboratory-supplied containers. Note that although requested, trip blanks were not collected. As directed by the laboratory, analysis of trip blanks requires an extraction and is therefore not applicable to the project.

Results

Aqueous samples were analyzed by the subcontracted laboratory TestAmerica, Inc. to maintain continuity with previous sampling conducted on the site by NYSDEC.

TestAmerica's Denver laboratory analyzed the samples under SOP WS-LC-0025, Modified Method 537 UCMR List. The analyte lists includes the following six PFCs: perfluorobutane sulfonate (PFBS), perfluoroheptanoic acid (PFHpA), perfluorononanoic acid (PFNA), perfluorooctanoic acid (PFOA), perfluorohexane sulfonate (PFHxS), and perfluorooctanesulfonic acid (PFOS). Samples were analyzed at a 15 day turnaround time and delivered in a Category B data package with NYSDEC EQulS EDD. Results are summarized on Tables 1 and 2 for groundwater and surface water, respectively. Results are also displayed graphically on Figure 2.

Groundwater results from the sampling of the monitoring wells are presented on Table 1 and were compared to the EPA lifetime health advisory of 70 nanograms per liter (ng/l) for the sum of PFOA and PFOS. Field parameters are provided in the field notes presented in Attachment A. A copy of the analytical laboratory data is presented in Attachment B.

Note that the existing wells sampled are constructed of polyvinyl chloride (PVC). At the recommendation of the NYSDEC, the samples were collected for screening purposes and with the assumption that any interference from the PVC would only potentially contribute very low level concentrations. This assumption is supported by non-detectable levels of PFOS and PFOA in wells TE#2, TE#3, TE#4 and TE#5, which are constructed of PVC.

Detectable concentrations of one or more of the six PFCs analyzed were identified in monitoring wells TE#1, TE#2 and TE#6. In the samples collected from TE#1 and TE#6, the respective sums of PFOA and PFOS were greater than the EPA health advisory of 70 ng/l for the sum of PFOA and PFOS. TE#1, which required dilution prior to analysis, exhibited the highest concentrations of PFOA (480 ng/l) and PFOS (3,160 ng/l) of the groundwater samples analyzed; the sum of these analytes was 3,640 ng/l. This well is located on the western side of the site near catch basin CB-1A. Concentrations detected in TE#6 were an order of magnitude lower; the sum of the PFOA (26 ng/l) and PFOS (190 ng/l) concentrations detected was 216 ng/l. TE#6 is located on the northern side of the site near catch basin #4. Although the sample collected from TE#2 revealed very low-level and/or estimated concentrations of select PFCs, PFOA and PFOS were not detected at the respective analytical reporting limits. The remaining groundwater samples, collected from TE#3, TE#4, the duplicate of TE#4 (TE DUP), and TE#5, did not reveal detectable concentrations of any of the PFCs analyzed at the respective analytical reporting limits.

Surface water results from the sampling of the catch basins, 48" pipe access point, and outfall are presented on Table 2 and were compared to the EPA lifetime health advisory of 70 ng/l for the sum of PFOA and PFOS. Field parameters are provided in

the field notes presented in Attachment A. A copy of the analytical laboratory data is presented in Attachment B.

Detectable concentrations of one or more of the six PFCs analyzed were identified in all surface water samples with the exception of catch basin #4. The concentrations detected in the remaining samples exceeded the EPA lifetime health advisory value of 70 ng/l for the sum of PFOA and PFOS with the exception of ANGOF-001, CB-2 and C-48.

In the sample collected from the 48" pipe access point (17KMH-1), the concentrations of PFOA and PFOS individually were less than 70 ng/l; however, the sum of the two (94 ng/l) was greater than the EPA health advisory 70 ng/l for the sum of PFOA and PFOS. In the samples collected from CB#5, C-8, and C-15 the concentrations of PFOA were less than 70 ng/l but the concentrations of PFOS (120, 180, and 430 ng/l, respectively) in the respective samples were greater than 70 ng/l; therefore, the respective sums (135, 194, and 463 ng/l, respectively) were greater than the EPA health advisory of 70 ng/l for the sum of PFOA and PFOS. In the samples collected from CB-1A, CB#2, and C-4 (including CBDUP, the duplicate sample of C-4), the individual concentrations of PFOA and PFOS in the respective samples were greater than 70 ng/l; therefore, the respective sums (840, 250, 7,900, and 8,470 (duplicate sample) ng/l, respectively, were greater than the EPA lifetime health advisory at these locations. Note that sample C-4 and its duplicate (CBDUP) required dilution prior to analysis.

Overall, detectable concentrations of PFOA in surface water ranged from 14 (estimated below the quantitation limit) to 910 ng/l and concentrations of PFOS ranged from 14 (estimated below the quantitation limit) to 8,470 ng/l (diluted sample) with the highest concentrations found in sample C-4 (and its duplicate CBDUP), which were an order of magnitude higher than the concentrations detected in the remaining locations that exhibited concentrations that exceeded the EPA lifetime health advisory. C-4 is located at Building 105 (Former Fire Station). The locations with the second highest concentrations were found at CB-1A and CB#2. CB-1A and CB#2 are located northwest (Apron) and north (Hangar 100) of the Former Fire Station, respectively.

QAQC sampling was conducted as discussed above. There were no detectable concentrations of any of the PFCs analyzed in the equipment rinseate (field blank) samples or the decontamination water blank samples collected. Duplicate samples were collected from groundwater monitoring well TE#4 (TE DUP) and catch basin C-4 (CBDUP). The relative percent differences (RPDs) were calculated using the following formula:

$$\% \text{ RPD} = \frac{X_1 - X_2}{(X_1 + X_2)/2} * 100\%$$

where, X1 is the original value (parent sample), and
 X2 is the duplicate value

RPD was not calculated for results where both samples were non-detect as good reproducibility is implied in this instance, as was the case for the groundwater duplicate. Detectable concentrations were present for all six analytes in the surface water samples and it's duplicate. The RPDs ranged from 1.26 to 16%. The results of the RPD calculation indicate the results are within precision standards for both sampling and laboratory protocols.

MS/MSD samples were collected from groundwater monitoring well TE#6 and surface water catch basin C-8. The lab indicated that PFOS failed the low range of the recovery criteria for the MS sample result for the surface water sample. The percent recovery was 61% and the acceptable range is between 70 to 130%. The MSD sample result; however, was within the acceptable range of recovery indicating a potential issue with sample homogeneity and not necessarily a matrix effect; therefore, this likely does not impact the usability of the data. MS/MSD results associated with the groundwater sample were all within acceptable limits.

Additional laboratory QC results (e.g., surrogate recovery, lab control sample, method blank, internal standard and retention time) were also all within acceptable limits.

If you have any questions or need additional information, please do not hesitate to contact me.

Sincerely,

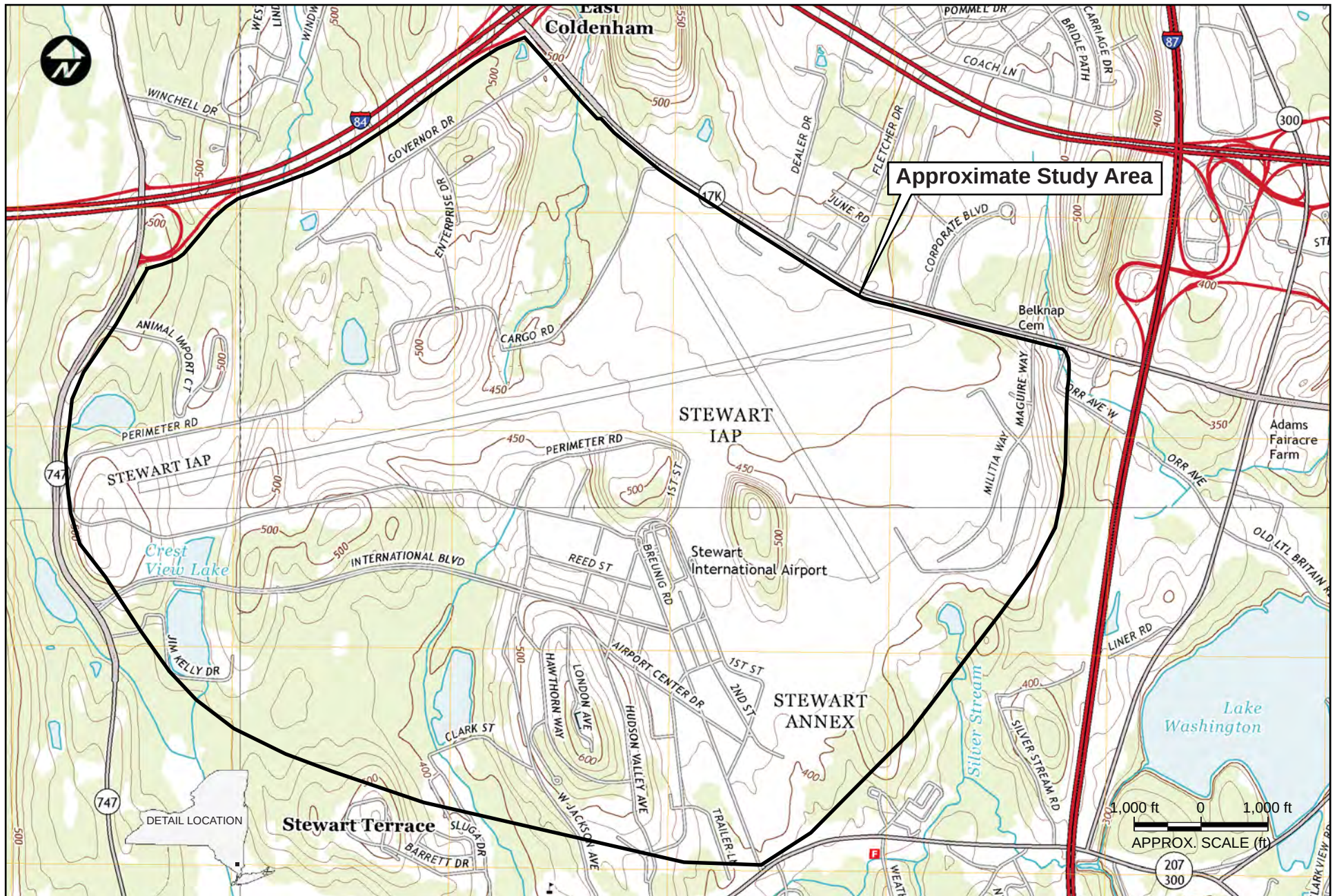


Melissa E. LaMacchia
 Associate | Project Manager

cc: J. Bass, NYSDOT

Attachments

FIGURES

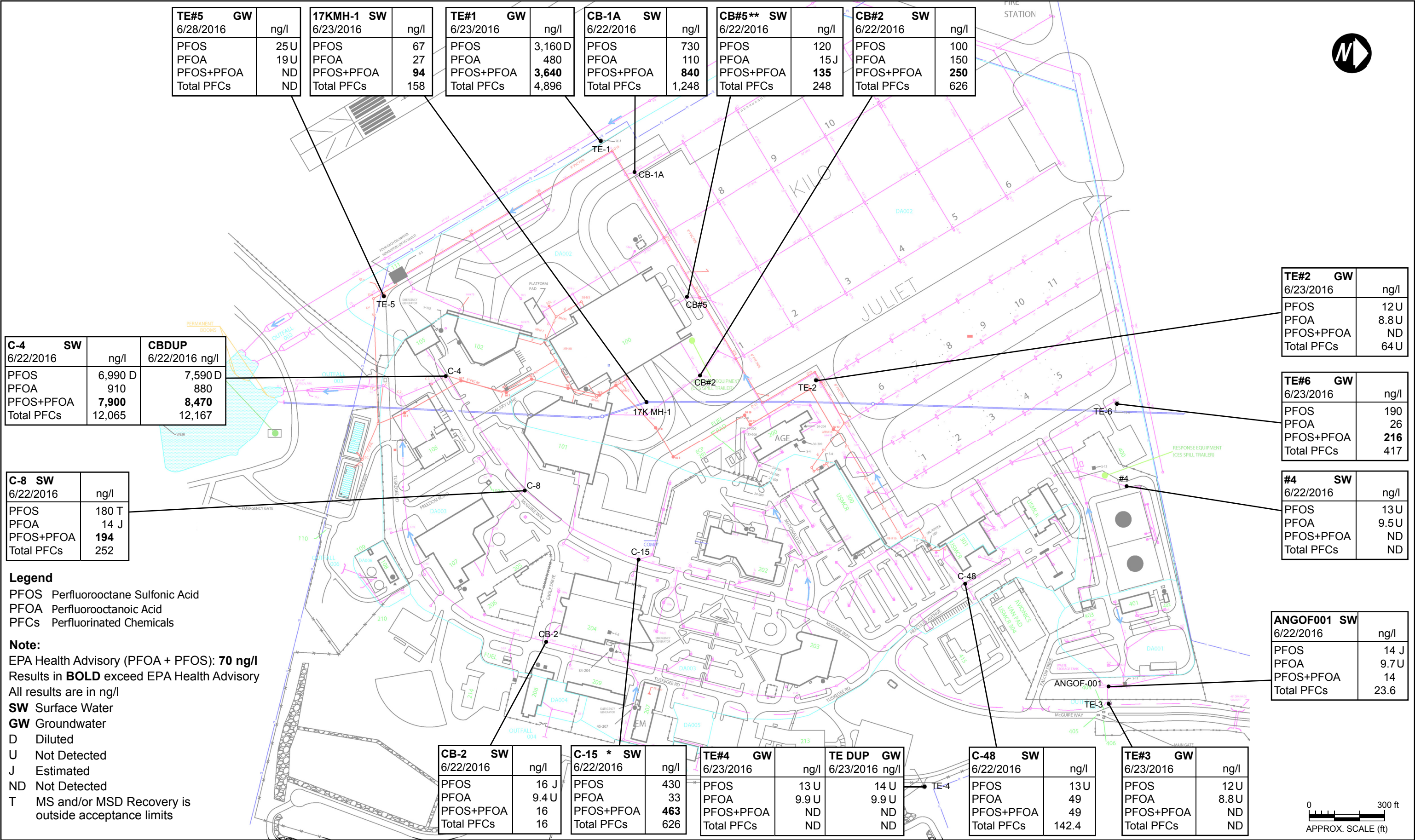


HDR Engineering, Inc.
1 International Blvd.
Mahwah, NJ 07495

Map source: USGS 7.5-min. Quadrangle Series:
Cornwall-on-Hudson, NY, 2013; Maybrook, NY, 2013;
Newburgh, NY, 2013; Walden, NY, 2013.

Approximate Study Area Location
Stewart International Airport - Stewart Air National Guard Base Site
Newburgh, NY

Figure
1



TABLES



TABLE 1 - PFCs IN GROUNDWATER
STEWART AIR NATIONAL GUARD BASE SITE MONITORING WELLS

Location ID Date Unit		EPA Health Advisory (ng/l)	TE#1 6/23/2016 ng/l	TE#2 6/23/2016 ng/l	TE#3 6/23/2016 ng/l	TE#4 6/23/2016 ng/l	TE DUP (DUP of TE#4) 6/23/2016 ng/l	TE#5 6/28/2016 ng/l	TE#6 6/23/2016 ng/l
Analyte	CAS_RN								
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	180	16 J	7.4 U	8.3 U	8.4 U	16 U	34
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	300	21 J	12 U	13 U	13 U	25 U	78
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	740	27	6.3 U	7 U	7.1 U	13 U	89
Perfluorononanoic Acid (PFNA)	375-95-1	NS	36 J	16 U	16 U	18 U	18 U	33 U	16 U
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	3,160 D	12 U	12 U	13 U	14 U	25 U	190
Perfluorooctanoic acid (PFOA)	335-67-1	NS	480	8.8 U	8.8 U	9.9 U	9.9 U	19 U	26
Sum of PFOS + PFOA		70	3,640	ND	ND	ND	ND	ND	216

General Notes:

ng/l - nanograms per liter
NS - no applicable standard
ND - not detected

Qualifier Notes:

U -- Not detected above the reporting detection limit
J -- Estimated Concentration
D -- Diluted sample

Comparison Criteria:

NS - No applicable standard for this parameter
bold - indicates exceedance of EPA Drinking
Water Health Advisory for PFOA and PFOS



TABLE 2 - PFCs IN SURFACE WATER
STEWART AIR NATIONAL GUARD BASE SITE CATCH BASINS, OUTFALL AND MANHOLE ACCESS POINT

Location ID Date Unit		EPA Health Advisory (ng/l)	ANGOF-001 6/28/2016 ng/l	17KMH-1 6/23/2016 ng/l	#4 6/22/2016 ng/l	C-4 6/22/2016 ng/l	CBDUP (Dup of C-4) 6/22/2016 ng/l	C-48 6/22/2016 ng/l
Analyte	CAS_RN							
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	8.1 U	8.4 U	8 U	660	590	8 U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	13 U	37	13 U	800	790	84
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	9.6 U	27 J	6.7 U	2,640 D	2,250 D	9.4 J
Perfluorononanoic Acid (PFNA)	375-95-1	NS	17 U	18 U	17 U	65	67	17 U
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	14 J	67	13 U	6,990 D	7,590 D	13 U
Perfluorooctanoic acid (PFOA)	335-67-1	NS	9.7 U	27	9.5 U	910	880	49
Sum of PFOS + PFOA		70	14	94	ND	7,900	8,470	49

General Notes:

ng/l - nanograms per liter
NS - no applicable standard
ND - not detected

Qualifier Notes:

U -- Not detected above the reporting detection limit.
J -- Estimated Concentration
D -- Diluted sample

Comparison Criteria:

NS - No applicable standard for this parameter
bold - indicates exceedance of EPA Drinking Water Health Advisory for PFOA and PFOS



TABLE 2 - PFCs IN SURFACE WATER
STEWART AIR NATIONAL GUARD BASE SITE CATCH BASINS, OUTFALL AND MANHOLE ACCESS POINT

Location ID Date Unit		EPA Health Advisory (ng/l)	C-8 6/22/2016 ng/l	CB#5 6/22/2016 ng/l	C-15 6/22/2016 ng/l	CB-1A 6/22/2016 ng/l	CB#2 6/22/2016 ng/l	CB-2 6/22/2016 ng/l
Analyte	CAS_RN							
Perfluorobutane Sulfonate (PFBS)	29420-43-3	NS	7.8 U	7.8 U	17 J	45	8 U	8 U
Perfluoroheptanoic Acid (PFHpA)	375-85-9	NS	13 U	80	36	93	330	13 U
Perfluorohexane Sulfonate (PFHxS)	108427-53-8	NS	58	33	110	270	46	6.7 U
Perfluorononanoic Acid (PFNA)	375-95-1	NS	16 U	16 U	17 U	17 U	17 U	17 U
Perfluorooctane Sulfonic Acid (PFOS)	1763-23-1	NS	180 Y	120	430	730	100	16 J
Perfluorooctanoic acid (PFOA)	335-67-1	NS	14 J	15 J	33	110	150	9.4 U
Sum of PFOS + PFOA		0.07	194	135	463	840	250	16

General Notes:

ng/l - nanograms per liter

NS - no applicable standard

ND - not detected

catch basin location C-13, had been mislabeled as C-15 and catch basin location CB#4 had been mislabeled as CB#5; all locations were sampled (and labeled) as identified by NYSDEC on the proposed sampling location map

Qualifier Notes:

U -- Not detected above the reporting detection limit.

J -- Estimated Concentration

T -- MS and/or MSD Recovery is outside acceptance limits

Comparison Criteria:

NS - No applicable standard for this parameter

bold - indicates exceedance of EPA Drinking Water Health Advisory for PFOA and PFOS

ATTACHMENT A

SWF ANG Catch Basin Sampling

6-22-16 Wed.
warm sunny 80°

Check auto cal of Horiba U-53 (#FA00725)
From Eco Rental Solutions

reads 0.0 NTU on 0.0 std.

reads 4.44 pH on 4.0 pH std.

reads 4.55 mS/cm on 4.49 mS/cm std.

NYSDEC (Sarah) requests no water level meter use

6/23/16

Check Cal. on Horiba U-53

reads 0.92 NTU on 0.0 std.

reads 4.50 pH on 4.00 std.

reads 4.44 mS/cm on 4.49 std.

6/28/16 YSI Cal Check

2.87 NTU on 0.0 std

4.48 pH on 4.00 std.

4.51 mS/cm on 4.49 std.



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Wednesday June 22, 2016

Weather Hazy 80° Breezy

1000 - Arrive on site ANG
John Ifflowitz (HDA)
Scott Englert (HDA)
Sarah Sancier (NYSDEC)

1005 - Meet w/ Mike Oettinger of ANG, discuss plans for Syph catch basins and manholes (40")

1010 - H/S briefing

1015 - Organize and Prepre for Syphs
Decan SS dip buckets w/ Alimony, potash water (potash spring) and DI rinse (potash spring)

1040 - Mobilize to CB-2
lift grate off - little flow from North
water level from north side of CB 9.24'

Sarah of NYSDEC requested no water levels because of potential materials in probe
Agree to forgo water levels moving forward.

1050 - collect field blank w/ Lab water rinse of 1 qt SS dip bucket

FB-1 @ 1050

1110 - collect decan water blank - potash spring DI water

WB-1 @ 1110

1115 - collect Syph CB-2 @ 1115

Temp 19.72, Ph 6.34, Cond 0.484 mS/cm, TDS 113, TDS 0.314 g/L, DO 9.08 mg/L
ORP +285 mV

1130 Mobilize to C-15

1155 Collect CB-15 @ 1155 low low flow in basin only collect 1 bottle
No water quality parameters due to low flow conditions,

1205 - Mobilize to C-8, remove grate, small dip from bottom pipe insert will be targeted sample. no standing/floating water on bottom of basin.

Collect CB-8 ⁽¹⁾ ; CB-8 ⁽²⁾

1220 collect C-8 @ 1220 ; C-8 MS/MSD

Temp 23.92, Ph 5.15, ORP +307, Turb 6.93, DO 9.52, Cond 0.419, TDS 0.245 ⁽¹⁾ 0.449 ⁽²⁾

1250 Collect C-4 @ 1250 ; Duplicate CB DUP @ 0900

Temp 19.38, Ph 7.45, ORP +159, Cond 1.23, Turb 1.78, DO 22.51, TDS 0.789 g/L

1315 Collect CB-1A @ 1315 S bucket lost to basin Depth to basin bottom 17.25

Temp 23.62, Ph 6.99, ORP +189, Turb 19.3, DO 16.35, — not enough water for all parameters

1330 Mobilize to CB#5, catch basin grate is frozen in place, standing shallow water will attempt to collect sample w/ peristaltic pump w/ silicon pump tubing
ADPE drop line tube. Note: silicon tube is "C-Flex"

1345 collect CB#5 @ 1345

Temp 20.76, Ph 8.09, ORP +133, Cond 0.142, ^{turb} 7.77, DO 20.25 mg/L, TDS 0.092 g/L
D/W from center of Grate 5.02 feet

1400 collect CB#2 @ 1400

Temp 21.10, Ph 8.15, ORP +169, Cond 0.356, Turb 0.70, DO 14.58, TDS 0.231
D/W from center of Grate 6.20 ft.



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1415 Return to parking lot, decant made 55 buckets and per: line weights
1430 Lunch Break

1445 mobilize to #4 @ fuel farm, low water little to no flow
will attempt dip bucket sample.

1450 collect #4 @ 1450

Temp 20.42, Ph 8.59, ORP +148, Cond. 632, turb 8.03, DO 24.92, TDS .409

Depth to water from surface of grate - 7.35 feet

1500 Mobilize to ¹¹ C-48, low water next to no flow
will attempt dip bucket sample from small paved d.v. under steep ladder

1508 collect C-48 @ 1508 1 Sample bottle due to low water conditions
No water quality parameters due to low water conditions

1520 Mobilize to Old Sewer CB near entrance gate.
Dry No Sample, upgraded catch basin is also Dry

1530 Complete paperwork and decan 55 buckets for following day
manhole (48") samples. Samples to remain in the custody of John H. Manta.

1550 Call into Pm. Melissa Lamecia with daily report.

1600 Depart site

Note Chris Enkert off site @ 1535

Sarah Sanchez (NYSDEC) off site @ 1530 ¹¹

Mike Oettinger (ANG) off site @ 1525

Weather 80° Breezy w/ Gusts 20 mph P Cloudy

 6/22/16
John H. Manta



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Thursday June 23, 2016
Weather Hazy 70° light breeze

0750 Arrive on Site @ Security

0800 Get escort to Sigs parking lot, brief for days Supts

John I. Housley (HDA)
Chris Engert (HDE)
Sarah Swier (NYSDEC)
Mike Oettinger (ANG)

0810 H&S tailgate briefing

0820 Mobilize to the northern most 17K manhole location with stream terrace.
location cannot be found, may have been paved over

0835 Attempt to locate second manhole location from 17K, adjacent to building 200
location cannot be found may be paved over

0842 3rd manhole from 17K has been located upon opening bottom alignment
is correct also, 2 smaller pipes enter manhole NE pipe & SE pipe 1-2' diam
1-12" NW adjacent to steps. bottom invert of 48" has primary flow
1-2' pipes (NE & SE) contributing flow.

0900 Collect 17K MH-1 @ 0900 invert/DTW @ 22.5 feet
Temp 22.81, Ph 5.48, ORP +264, Cond 3.01, Turb 2.02, DO 11.14, TOS 2.02

0915 Attempt to locate 17K manhole inside Huger lot - do not exist likely predate
huger construction. only flow drainage system in huger.

0935 Mobilize to monitoring well TE#6 @ north end of ANG adjacent to fuel farm.

0946 Initial DTW = 15.7 feet

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TE#6 peripump purge ~~20~~ 450 mL/min

time	Vol	temp	pH	ORP	Cond	turb	DO	TDS
0955	450	19.79	7.73	+115	.646	8.36	11.82	0.414
~~900~~		13.52	7.27	+98	.716	5.94	4.22	0.456
1005		13.17	7.08	+89	.713	.07	3.87	0.457
1010		13.15	7.06	+90	.712	0	3.74	0.456
1015		13.13	7.05	+87	.711	0	3.87	0.455

1018 Collect TE#6 @ 1018 ; TE#6 MS/MSD

1030 Mobilize to TE#2

TE#2 peripump purge DTW @ 19.71 feet (north side)

time	Vol	temp	pH	ORP	Cond	turb	DO	TDS
1050		16.56	7.16	-51	.741	3.75	4.28	.474
1055		15.91	6.99	-62	.742	2.10	1.72	.475
1100		15.79	6.98	-61	.741	2.09	1.62	.474
1105		15.70	6.93	-61	.740	0.97	1.46	.474
1110		15.71	6.92	-60	.741	0.90	1.36	.474

Stable

1115 Collect Sample TE#2 @ 1115

1130 Setting up on TE#1

DTW: 22.27 ft

Q ≈ 300 mL/min near lower depth range of peripump to be able to draw from ~ 25 ft bgs

time	Vol	temp	pH	ORP	Cond	turb	DO	TDS
1155		15.84	7.32	-7	0.629	2.26	5.02	0.403
1200		15.70	7.30	-6	0.633	4.40	3.35	0.405
1205		17.67	7.23	-2	0.656	4.23	1.63	0.421
1210		17.82	7.22	-1	0.641	2.71	1.60	0.411
1215		17.84	7.20	φ	0.635	2.34	1.54	0.406
1220		18.02	7.20	φ	0.636	2.87	1.44	0.407

Start purge

1225 Collect TE#1 @ 1225



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1245 mobilize to TE#5 DTW @ 43.51' (north side)
notable to sample with per. pump -

1255 mobilize to TE#4 DTW @ 23.61' (north side)

1305 Begin purging @ 350 ml/min

Time	Vol	Temp	pH	ORP	Cond	Turb	DO	TDS
1308		20.75	7.79	+9	.692	9.05	5.33	.441
1312		16.57	7.65	+26	.742	1.02	3.75	.473
1317		14.80	7.46	+48	.774	0.98	0.82	.494
1322		14.58	7.29	+63	.813	0.73	0.95	.520
1328		15.25	7.20	+71	.801	0.06	1.07	.513

1335 Sample TE#4 @ 1335 and TEDUP @ 1112

1345 Mobilize to TE#3 DTW @ 12.95' (north side)

1355 Start purge @ TE#3

Time	Vol	Temp	pH	ORP	Cond	turb	DO	TDS
1357		15.67	7.53	+81	1.09	0.00	27.56	0.694
1402		15.32	7.50	+93	1.09	0.00	16.29	0.695
1407		14.62	7.41	+114	1.09	0.00	7.59	0.700
1412		14.53	7.37	+124	1.11	0.00	7.21	0.708
1417		14.41	7.31	+131	1.10	0.00	7.32	0.907
1422		14.25	7.24	+138	1.10	0.00	7.48	0.704
1427		14.08	7.18	+145	1.10	0.00	7.91	0.701
1432		13.84	7.16	+150	1.09	0.00	7.81	0.695
1438		14.70	7.44	+136	1.07	0.00	8.04	0.682

Sampled due to yield problems

Sample @ 1440 TE#3 @ 1440

1455 Mobilize to Stearns/pump lot collect FB-2 - HDPE tube, Silicon (C-fluor) tube, SS nut weights, hose clamp, SS dip bucket

1505 collect FB-2 @ 1505

1520 collect WB-2 @ 1520 distilled water blank (water for decon etc.)



Project:

Computed:

Date: 6/23/16

Subject:

Checked:

Date:

Task:

Page:

7

of:

7

Job #:

No:

- 1535 - Pack up equipment and depart ANG Site.
- 1540 - Purchase Ice for sample shipping @ Gulf States, package samples, and complete lab/shipping paperwork for shipping
- 1645 - Ship 2 coolers to Test America Denver for priority overnight delivery
- FedEx delivery #s 783432396717
783432396728

Weather - Clear 70°F

 6-23-16





Project: SWF/ANG PCL

Computed:

Date: 6/28/16

Subject: SWF ANG well : outfall syphs

Checked:

Date:

Task:

Page:

1 of 2

Job #:

No:

1000 Arrive on site and check in w/ Security
John H. Hovick HPR
Scott Engbert HDR

1030 Escorted to parking/staging lot by Mike Ottenger ANG
Activities today Syph TE#5 w/ wettern pump
Syph Outfalls- 001, 004, 005 & 006
Weather - Overcast, 69°F, occasional light drizzle

1040 Mobilize to TE#5, prepare to collect Equipment Blank can wettern pump: tube

1055 Collect Field blank FB-3 @ 1055

1112 Begin pumping TE#5 @ 420 m/min DTW @ 40.60 feet

Time	Temp	pH	ORP	Cond	Turb	DO	TDS
1123	21.34	5.78	+167	2.69	314	6.13	1.81 g/L
1128	18.12	7.06	+59	.949	71.5	3.26	.616
1135	16.05	7.06	+63	.890	141	2.97	.569
1145	15.50	7.01	+67	.904	210	2.61	.578
1200	15.22	6.97	+71	.904	227	2.28	.579

1204 Collect TE#5 @ 1204

1215 mobilize to Outfall 006 - most, no strings or flung water to Syph
Photos

1225 mobilize to Outfall 005 - dry photos

1232 mobilize to Outfall 004 - dry to most, no strings or flung water to syph, photos

1242 mobilize to outfall 001 - wet, low flow, use SS dip bucket to collect

1245 Sample ~~Syph~~ ANG-OF-001 @ 1245

Temp	pH	ORP	Cond	Turb	DO	TDS
17.17	8.29	115	.516	84.7	18.08	.330



Project: SWF/ANG PEC Computed: Date: 6/24/16
Subject: SWF ANG well iat full sys Checked: Date:
Task: Page: 2 of 2
Job #: No:

1300 John IFlowits & Scott Englet depart ANG site for FedEx
1320 Prepare supplies for shipping
1355 Ship Supply to Test Area. Driver for Air delivery
FedEx track # 783465458876
1400 Depart site for day

Weather ~80° Pclearing, slight breeze



ATTACHMENT B

ANALYTICAL REPORT

Job Number: 280-84914-1

Job Description: Stewart International Airport (PFAS)

For:

HDR Inc

1 International Blvd, 10th Floor

Mahwah, NJ 07495

Attention: Ms. Melissa LaMacchia



Approved for release.
Sapna Nayyar
Project Manager I
6/30/2016 7:50 PM

Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
06/30/2016

Job Number: 280-84914-1

Job Description: Stewart International Airport (PFAS)

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



Approved for release.
Sapna Nayyar
Project Manager I
6/30/2016 7:50 PM

Sapna Nayyar

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CASE NARRATIVE

Client: HDR Inc

Project: Stewart International Airport (PFAS)

Report Number: 280-84914-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

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.

RECEIPT

The samples were received on 06/25/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the 2 coolers at receipt time were 3.3° C and 5.8° C.

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

PERFLUORINATED HYDROCARBONS (PFC)

Samples CBDUP (280-84914-1), 17KMH-1 (280-84914-2), TE#6 (280-84914-3), TE#2 (280-84914-4), TE#1 (280-84914-5), TE#4 (280-84914-6), TE DUP (280-84914-7), TE#3 (280-84914-8), FB-2 (280-84914-9), WB-2 (280-84914-10), FB-1 (280-84914-11), WB-1 (280-84914-12), CB-2 (280-84914-13), CB-15 (280-84914-14), C-8 (280-84914-15), C-4 (280-84914-16), CB-1A (280-84914-17), CB#5 (280-84914-18), CB#2 (280-84914-19), #4 (280-84914-20) and C-48 (280-84914-21) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 06/29/2016 and analyzed on 06/30/2016.

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: HPLC methanol used instead of LCMS methanol because the company is not supplying LCMS methanol anymore. Batch: 331820 Prep method: 3535 Analytical method: PFC

A deviation from the Standard Operating Procedure (SOP) occurred. Details are as follows: HPLC methanol used instead of LCMS methanol because the company is not supplying LCMS methanol anymore. Batch: 331826 Prep method: 3535 Analytical method: PFC

The following samples: CB-2 (280-84914-13), CB-15 (280-84914-14), CB-1A (280-84914-17), CB#2 (280-84914-19), #4 (280-84914-20) and C-48 (280-84914-21) was decanted prior to preparation and as a result, the original sample containers could not be solvent rinsed. Batch: 331826 Prep method: 3535 Analytical method: PFC

Perfluorooctanesulfonic acid (PFOS) failed the recovery criteria low for the MS of sample C-8MS (280-84914-15) in batch 280-332053.

Samples CBDUP (280-84914-1)[5X], TE#1 (280-84914-5)[2X] and C-4 (280-84914-16)[5X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

No other difficulties were encountered during the PFC analysis.

All other quality control parameters were within the acceptance limits.

Sample Summary

Client: HDR Inc

TestAmerica Job ID: 280-84914-1

Project/Site: Stewart International Airport (PFAS)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-84914-1	CBDUP	Water	06/22/16 09:00	06/25/16 09:45
280-84914-2	17KMH-1	Water	06/23/16 09:00	06/25/16 09:45
280-84914-3	TE#6	Water	06/23/16 10:18	06/25/16 09:45
280-84914-4	TE#2	Water	06/23/16 11:15	06/25/16 09:45
280-84914-5	TE#1	Water	06/23/16 12:25	06/25/16 09:45
280-84914-6	TE#4	Water	06/23/16 13:35	06/25/16 09:45
280-84914-7	TE DUP	Water	06/23/16 11:12	06/25/16 09:45
280-84914-8	TE#3	Water	06/23/16 14:40	06/25/16 09:45
280-84914-9	FB-2	Water	06/23/16 15:05	06/25/16 09:45
280-84914-10	WB-2	Water	06/23/16 15:20	06/25/16 09:45
280-84914-11	FB-1	Water	06/22/16 10:50	06/25/16 09:45
280-84914-12	WB-1	Water	06/22/16 11:10	06/25/16 09:45
280-84914-13	CB-2	Water	06/22/16 11:15	06/25/16 09:45
280-84914-14	CB-15	Water	06/22/16 11:55	06/25/16 09:45
280-84914-15	C-8	Water	06/22/16 12:20	06/25/16 09:45
280-84914-16	C-4	Water	06/22/16 12:50	06/25/16 09:45
280-84914-17	CB-1A	Water	06/22/16 13:15	06/25/16 09:45
280-84914-18	CB#5	Water	06/22/16 13:45	06/25/16 09:45
280-84914-19	CB#2	Water	06/22/16 14:00	06/25/16 09:45
280-84914-20	#4	Water	06/22/16 14:50	06/25/16 09:45
280-84914-21	C-48	Water	06/22/16 15:08	06/25/16 09:45

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CBDUP

Lab Sample ID: 280-84914-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.59		0.018	0.0074	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.79		0.027	0.012	ug/L	1			DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.067		0.036	0.016	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.88		0.018	0.0088	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS) - DL	2.25	D	0.13	0.031	ug/L	5			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	7.59	D	0.13	0.060	ug/L	5			DV-LC-0012	Total/NA

Client Sample ID: 17KMH-1

Lab Sample ID: 280-84914-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.037		0.030	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.027	J	0.030	0.0071	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.067		0.030	0.014	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.027		0.020	0.0099	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: TE#6

Lab Sample ID: 280-84914-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.034		0.019	0.0078	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.078		0.028	0.012	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.089		0.028	0.0066	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.19		0.028	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.026		0.019	0.0092	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: TE#2

Lab Sample ID: 280-84914-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.016	J	0.018	0.0074	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.021	J	0.027	0.012	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.027		0.027	0.0063	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: TE#1

Lab Sample ID: 280-84914-5

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.18		0.019	0.0078	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.30		0.028	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.74		0.028	0.0066	ug/L	1			DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.036	J	0.038	0.017	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.48		0.019	0.0093	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	3.16	D	0.057	0.025	ug/L	2			DV-LC-0012	Total/NA

Client Sample ID: TE#4

Lab Sample ID: 280-84914-6

No Detections.

Client Sample ID: TE DUP

Lab Sample ID: 280-84914-7

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: TE#3

Lab Sample ID: 280-84914-8

No Detections.

Client Sample ID: FB-2

Lab Sample ID: 280-84914-9

No Detections.

Client Sample ID: WB-2

Lab Sample ID: 280-84914-10

No Detections.

Client Sample ID: FB-1

Lab Sample ID: 280-84914-11

No Detections.

Client Sample ID: WB-1

Lab Sample ID: 280-84914-12

No Detections.

Client Sample ID: CB-2

Lab Sample ID: 280-84914-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	0.016	J	0.029	0.013	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: CB-15

Lab Sample ID: 280-84914-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.017	J	0.020	0.0082	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.036		0.030	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.11		0.030	0.0069	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.43		0.030	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.033		0.020	0.0097	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: C-8

Lab Sample ID: 280-84914-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexane Sulfonate (PFHxS)	0.058		0.028	0.0066	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.18	F1	0.028	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.014	J	0.019	0.0093	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: C-4

Lab Sample ID: 280-84914-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.66		0.018	0.0074	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.80		0.027	0.012	ug/L	1			DV-LC-0012	Total/NA
Perfluorononanoic acid (PFNA)	0.065		0.036	0.016	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.91		0.018	0.0088	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS) - DL	2.64	D	0.13	0.031	ug/L	5			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS) - DL	6.99	D	0.13	0.060	ug/L	5			DV-LC-0012	Total/NA

Client Sample ID: CB-1A

Lab Sample ID: 280-84914-17

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CB-1A (Continued)

Lab Sample ID: 280-84914-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutane Sulfonate (PFBS)	0.045		0.019	0.0079	ug/L	1			DV-LC-0012	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.093		0.029	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.27		0.029	0.0067	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.73		0.029	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.11		0.019	0.0094	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: CB#5

Lab Sample ID: 280-84914-18

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.080		0.028	0.012	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.033		0.028	0.0066	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.12		0.028	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.015	J	0.019	0.0092	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: CB#2

Lab Sample ID: 280-84914-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.33		0.029	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.046		0.029	0.0068	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.10		0.029	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.15		0.019	0.0095	ug/L	1			DV-LC-0012	Total/NA

Client Sample ID: #4

Lab Sample ID: 280-84914-20

No Detections.

Client Sample ID: C-48

Lab Sample ID: 280-84914-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluoroheptanoic acid (PFHpA)	0.084		0.029	0.013	ug/L	1			DV-LC-0012	Total/NA
Perfluorohexane Sulfonate (PFHxS)	0.0094	J	0.029	0.0068	ug/L	1			DV-LC-0012	Total/NA
Perfluorooctanoic acid (PFOA)	0.049		0.019	0.0095	ug/L	1			DV-LC-0012	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

Client: HDR Inc

TestAmerica Job ID: 280-84914-1

Project/Site: Stewart International Airport (PFAS)

Method	Method Description	Protocol	Laboratory
DV-LC-0012	Perfluorinated Hydrocarbons	TAL-DEN	TAL DEN

Protocol References:

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CBDUP

Date Collected: 06/22/16 09:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-1

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.59		0.018	0.0074	ug/L		06/29/16 11:23	06/30/16 09:21	1
Perfluoroheptanoic acid (PFHpA)	0.79		0.027	0.012	ug/L		06/29/16 11:23	06/30/16 09:21	1
Perfluorononanoic acid (PFNA)	0.067		0.036	0.016	ug/L		06/29/16 11:23	06/30/16 09:21	1
Perfluorooctanoic acid (PFOA)	0.88		0.018	0.0088	ug/L		06/29/16 11:23	06/30/16 09:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				06/29/16 11:23	06/30/16 09:21	1
13C8 PFOS	109		45 - 130				06/29/16 11:23	06/30/16 09:21	1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexane Sulfonate (PFHxS)	2.25	D	0.13	0.031	ug/L		06/29/16 11:23	06/30/16 15:30	5
Perfluorooctanesulfonic acid (PFOS)	7.59	D	0.13	0.060	ug/L		06/29/16 11:23	06/30/16 15:30	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	101	D	60 - 155				06/29/16 11:23	06/30/16 15:30	5
13C8 PFOS	114	D	45 - 130				06/29/16 11:23	06/30/16 15:30	5

Client Sample ID: 17KMH-1

Date Collected: 06/23/16 09:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-2

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084	ug/L		06/29/16 11:23	06/30/16 09:34	1
Perfluoroheptanoic acid (PFHpA)	0.037		0.030	0.013	ug/L		06/29/16 11:23	06/30/16 09:34	1
Perfluorohexane Sulfonate (PFHxS)	0.027	J	0.030	0.0071	ug/L		06/29/16 11:23	06/30/16 09:34	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L		06/29/16 11:23	06/30/16 09:34	1
Perfluorooctanesulfonic acid (PFOS)	0.067		0.030	0.014	ug/L		06/29/16 11:23	06/30/16 09:34	1
Perfluorooctanoic acid (PFOA)	0.027		0.020	0.0099	ug/L		06/29/16 11:23	06/30/16 09:34	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	106		60 - 155				06/29/16 11:23	06/30/16 09:34	1
13C8 PFOS	103		45 - 130				06/29/16 11:23	06/30/16 09:34	1

Client Sample ID: TE#6

Date Collected: 06/23/16 10:18

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-3

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.034		0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 09:46	1
Perfluoroheptanoic acid (PFHpA)	0.078		0.028	0.012	ug/L		06/29/16 11:23	06/30/16 09:46	1
Perfluorohexane Sulfonate (PFHxS)	0.089		0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 09:46	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		06/29/16 11:23	06/30/16 09:46	1
Perfluorooctanesulfonic acid (PFOS)	0.19		0.028	0.013	ug/L		06/29/16 11:23	06/30/16 09:46	1

TestAmerica Denver

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: TE#6

Date Collected: 06/23/16 10:18

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-3

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.026		0.019	0.0092	ug/L		06/29/16 11:23	06/30/16 09:46	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	104		60 - 155				06/29/16 11:23	06/30/16 09:46	1
13C8 PFOS	100		45 - 130				06/29/16 11:23	06/30/16 09:46	1

Client Sample ID: TE#2

Date Collected: 06/23/16 11:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-4

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.016	J	0.018	0.0074	ug/L		06/29/16 11:23	06/30/16 10:23	1
Perfluoroheptanoic acid (PFHpA)	0.021	J	0.027	0.012	ug/L		06/29/16 11:23	06/30/16 10:23	1
Perfluorohexane Sulfonate (PFHxS)	0.027		0.027	0.0063	ug/L		06/29/16 11:23	06/30/16 10:23	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		06/29/16 11:23	06/30/16 10:23	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012	ug/L		06/29/16 11:23	06/30/16 10:23	1
Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088	ug/L		06/29/16 11:23	06/30/16 10:23	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				06/29/16 11:23	06/30/16 10:23	1
13C8 PFOS	103		45 - 130				06/29/16 11:23	06/30/16 10:23	1

Client Sample ID: TE#1

Date Collected: 06/23/16 12:25

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-5

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.18		0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 10:35	1
Perfluoroheptanoic acid (PFHpA)	0.30		0.028	0.013	ug/L		06/29/16 11:23	06/30/16 10:35	1
Perfluorohexane Sulfonate (PFHxS)	0.74		0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 10:35	1
Perfluorononanoic acid (PFNA)	0.036	J	0.038	0.017	ug/L		06/29/16 11:23	06/30/16 10:35	1
Perfluorooctanoic acid (PFOA)	0.48		0.019	0.0093	ug/L		06/29/16 11:23	06/30/16 10:35	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	104		60 - 155				06/29/16 11:23	06/30/16 10:35	1
13C8 PFOS	97		45 - 130				06/29/16 11:23	06/30/16 10:35	1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanesulfonic acid (PFOS)	3.16	D	0.057	0.025	ug/L		06/29/16 11:23	06/30/16 15:43	2
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102	D	60 - 155				06/29/16 11:23	06/30/16 15:43	2
13C8 PFOS	108	D	45 - 130				06/29/16 11:23	06/30/16 15:43	2

TestAmerica Denver

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: TE#4

Date Collected: 06/23/16 13:35

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-6

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083	ug/L		06/29/16 11:23	06/30/16 10:47	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 10:47	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		06/29/16 11:23	06/30/16 10:47	1
Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018	ug/L		06/29/16 11:23	06/30/16 10:47	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 10:47	1
Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099	ug/L		06/29/16 11:23	06/30/16 10:47	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	107		60 - 155	06/29/16 11:23	06/30/16 10:47	1
13C8 PFOS	98		45 - 130	06/29/16 11:23	06/30/16 10:47	1

Client Sample ID: TE DUP

Date Collected: 06/23/16 11:12

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-7

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084	ug/L		06/29/16 11:23	06/30/16 11:12	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 11:12	1
Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.030	0.0071	ug/L		06/29/16 11:23	06/30/16 11:12	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L		06/29/16 11:23	06/30/16 11:12	1
Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.030	0.014	ug/L		06/29/16 11:23	06/30/16 11:12	1
Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099	ug/L		06/29/16 11:23	06/30/16 11:12	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155	06/29/16 11:23	06/30/16 11:12	1
13C8 PFOS	100		45 - 130	06/29/16 11:23	06/30/16 11:12	1

Client Sample ID: TE#3

Date Collected: 06/23/16 14:40

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-8

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0074	U	0.018	0.0074	ug/L		06/29/16 11:23	06/30/16 11:24	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012	ug/L		06/29/16 11:23	06/30/16 11:24	1
Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063	ug/L		06/29/16 11:23	06/30/16 11:24	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		06/29/16 11:23	06/30/16 11:24	1
Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012	ug/L		06/29/16 11:23	06/30/16 11:24	1
Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088	ug/L		06/29/16 11:23	06/30/16 11:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	105		60 - 155	06/29/16 11:23	06/30/16 11:24	1
13C8 PFOS	105		45 - 130	06/29/16 11:23	06/30/16 11:24	1

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: FB-2

Date Collected: 06/23/16 15:05

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-9

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0079	U	0.019	0.0079	ug/L		06/29/16 11:23	06/30/16 11:37	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 11:37	1
Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067	ug/L		06/29/16 11:23	06/30/16 11:37	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 11:37	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 11:37	1
Perfluorooctanoic acid (PFOA)	0.0094	U	0.019	0.0094	ug/L		06/29/16 11:23	06/30/16 11:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155	06/29/16 11:23	06/30/16 11:37	1
13C8 PFOS	98		45 - 130	06/29/16 11:23	06/30/16 11:37	1

Client Sample ID: WB-2

Date Collected: 06/23/16 15:20

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-10

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080	ug/L		06/29/16 11:23	06/30/16 11:49	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 11:49	1
Perfluorohexane Sulfonate (PFHxS)	0.0068	U	0.029	0.0068	ug/L		06/29/16 11:23	06/30/16 11:49	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 11:49	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 11:49	1
Perfluorooctanoic acid (PFOA)	0.0095	U	0.019	0.0095	ug/L		06/29/16 11:23	06/30/16 11:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155	06/29/16 11:23	06/30/16 11:49	1
13C8 PFOS	106		45 - 130	06/29/16 11:23	06/30/16 11:49	1

Client Sample ID: FB-1

Date Collected: 06/22/16 10:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-11

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 12:26	1
Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012	ug/L		06/29/16 11:23	06/30/16 12:26	1
Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 12:26	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		06/29/16 11:23	06/30/16 12:26	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013	ug/L		06/29/16 11:23	06/30/16 12:26	1
Perfluorooctanoic acid (PFOA)	0.0092	U	0.019	0.0092	ug/L		06/29/16 11:23	06/30/16 12:26	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	104		60 - 155	06/29/16 11:23	06/30/16 12:26	1
13C8 PFOS	98		45 - 130	06/29/16 11:23	06/30/16 12:26	1

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: WB-1

Date Collected: 06/22/16 11:10

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-12

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 12:38	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.028	0.013	ug/L		06/29/16 11:23	06/30/16 12:38	1
Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 12:38	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		06/29/16 11:23	06/30/16 12:38	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013	ug/L		06/29/16 11:23	06/30/16 12:38	1
Perfluorooctanoic acid (PFOA)	0.0093	U	0.019	0.0093	ug/L		06/29/16 11:23	06/30/16 12:38	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	104		60 - 155	06/29/16 11:23	06/30/16 12:38	1
13C8 PFOS	100		45 - 130	06/29/16 11:23	06/30/16 12:38	1

Client Sample ID: CB-2

Date Collected: 06/22/16 11:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-13

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080	ug/L		06/29/16 11:23	06/30/16 12:50	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 12:50	1
Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067	ug/L		06/29/16 11:23	06/30/16 12:50	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 12:50	1
Perfluorooctanesulfonic acid (PFOS)	0.016	J	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 12:50	1
Perfluorooctanoic acid (PFOA)	0.0094	U	0.019	0.0094	ug/L		06/29/16 11:23	06/30/16 12:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155	06/29/16 11:23	06/30/16 12:50	1
13C8 PFOS	100		45 - 130	06/29/16 11:23	06/30/16 12:50	1

Client Sample ID: CB-15

Date Collected: 06/22/16 11:55

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-14

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.017	J	0.020	0.0082	ug/L		06/29/16 11:23	06/30/16 13:03	1
Perfluoroheptanoic acid (PFHpA)	0.036		0.030	0.013	ug/L		06/29/16 11:23	06/30/16 13:03	1
Perfluorohexane Sulfonate (PFHxS)	0.11		0.030	0.0069	ug/L		06/29/16 11:23	06/30/16 13:03	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		06/29/16 11:23	06/30/16 13:03	1
Perfluorooctanesulfonic acid (PFOS)	0.43		0.030	0.013	ug/L		06/29/16 11:23	06/30/16 13:03	1
Perfluorooctanoic acid (PFOA)	0.033		0.020	0.0097	ug/L		06/29/16 11:23	06/30/16 13:03	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	99		60 - 155	06/29/16 11:23	06/30/16 13:03	1
13C8 PFOS	92		45 - 130	06/29/16 11:23	06/30/16 13:03	1

TestAmerica Denver

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: C-8

Date Collected: 06/22/16 12:20

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-15

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 13:27	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.028	0.013	ug/L		06/29/16 11:23	06/30/16 13:27	1
Perfluorohexane Sulfonate (PFHxS)	0.058		0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 13:27	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		06/29/16 11:23	06/30/16 13:27	1
Perfluorooctanesulfonic acid (PFOS)	0.18	F1	0.028	0.013	ug/L		06/29/16 11:23	06/30/16 13:27	1
Perfluorooctanoic acid (PFOA)	0.014	J	0.019	0.0093	ug/L		06/29/16 11:23	06/30/16 13:27	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102		60 - 155				06/29/16 11:23	06/30/16 13:27	1
13C8 PFOS	107		45 - 130				06/29/16 11:23	06/30/16 13:27	1

Client Sample ID: C-4

Date Collected: 06/22/16 12:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-16

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.66		0.018	0.0074	ug/L		06/29/16 11:23	06/30/16 14:04	1
Perfluoroheptanoic acid (PFHpA)	0.80		0.027	0.012	ug/L		06/29/16 11:23	06/30/16 14:04	1
Perfluorononanoic acid (PFNA)	0.065		0.036	0.016	ug/L		06/29/16 11:23	06/30/16 14:04	1
Perfluorooctanoic acid (PFOA)	0.91		0.018	0.0088	ug/L		06/29/16 11:23	06/30/16 14:04	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				06/29/16 11:23	06/30/16 14:04	1
13C8 PFOS	98		45 - 130				06/29/16 11:23	06/30/16 14:04	1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - DL

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexane Sulfonate (PFHxS)	2.64	D	0.13	0.031	ug/L		06/29/16 11:23	06/30/16 15:55	5
Perfluorooctanesulfonic acid (PFOS)	6.99	D	0.13	0.060	ug/L		06/29/16 11:23	06/30/16 15:55	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102	D	60 - 155				06/29/16 11:23	06/30/16 15:55	5
13C8 PFOS	113	D	45 - 130				06/29/16 11:23	06/30/16 15:55	5

Client Sample ID: CB-1A

Date Collected: 06/22/16 13:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-17

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.045		0.019	0.0079	ug/L		06/29/16 11:23	06/30/16 14:17	1
Perfluoroheptanoic acid (PFHpA)	0.093		0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:17	1
Perfluorohexane Sulfonate (PFHxS)	0.27		0.029	0.0067	ug/L		06/29/16 11:23	06/30/16 14:17	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 14:17	1
Perfluorooctanesulfonic acid (PFOS)	0.73		0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:17	1

TestAmerica Denver

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CB-1A

Date Collected: 06/22/16 13:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-17

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctanoic acid (PFOA)	0.11		0.019	0.0094	ug/L		06/29/16 11:23	06/30/16 14:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102		60 - 155				06/29/16 11:23	06/30/16 14:17	1
13C8 PFOS	100		45 - 130				06/29/16 11:23	06/30/16 14:17	1

Client Sample ID: CB#5

Date Collected: 06/22/16 13:45

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-18

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078	ug/L		06/29/16 11:23	06/30/16 14:29	1
Perfluoroheptanoic acid (PFHpA)	0.080		0.028	0.012	ug/L		06/29/16 11:23	06/30/16 14:29	1
Perfluorohexane Sulfonate (PFHxS)	0.033		0.028	0.0066	ug/L		06/29/16 11:23	06/30/16 14:29	1
Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016	ug/L		06/29/16 11:23	06/30/16 14:29	1
Perfluorooctanesulfonic acid (PFOS)	0.12		0.028	0.013	ug/L		06/29/16 11:23	06/30/16 14:29	1
Perfluorooctanoic acid (PFOA)	0.015	J	0.019	0.0092	ug/L		06/29/16 11:23	06/30/16 14:29	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				06/29/16 11:23	06/30/16 14:29	1
13C8 PFOS	105		45 - 130				06/29/16 11:23	06/30/16 14:29	1

Client Sample ID: CB#2

Date Collected: 06/22/16 14:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-19

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080	ug/L		06/29/16 11:23	06/30/16 14:41	1
Perfluoroheptanoic acid (PFHpA)	0.33		0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:41	1
Perfluorohexane Sulfonate (PFHxS)	0.046		0.029	0.0068	ug/L		06/29/16 11:23	06/30/16 14:41	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 14:41	1
Perfluorooctanesulfonic acid (PFOS)	0.10		0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:41	1
Perfluorooctanoic acid (PFOA)	0.15		0.019	0.0095	ug/L		06/29/16 11:23	06/30/16 14:41	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102		60 - 155				06/29/16 11:23	06/30/16 14:41	1
13C8 PFOS	104		45 - 130				06/29/16 11:23	06/30/16 14:41	1

Client Sample ID: #4

Date Collected: 06/22/16 14:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-20

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080	ug/L		06/29/16 11:23	06/30/16 14:53	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:53	1

TestAmerica Denver

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: #4

Date Collected: 06/22/16 14:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-20

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067	ug/L		06/29/16 11:23	06/30/16 14:53	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 14:53	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 14:53	1
Perfluorooctanoic acid (PFOA)	0.0095	U	0.019	0.0095	ug/L		06/29/16 11:23	06/30/16 14:53	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	97		60 - 155	06/29/16 11:23	06/30/16 14:53	1
13C8 PFOS	100		45 - 130	06/29/16 11:23	06/30/16 14:53	1

Client Sample ID: C-48

Date Collected: 06/22/16 15:08

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-21

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080	ug/L		06/29/16 11:23	06/30/16 15:06	1
Perfluoroheptanoic acid (PFHpA)	0.084		0.029	0.013	ug/L		06/29/16 11:23	06/30/16 15:06	1
Perfluorohexane Sulfonate (PFHxS)	0.0094	J	0.029	0.0068	ug/L		06/29/16 11:23	06/30/16 15:06	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L		06/29/16 11:23	06/30/16 15:06	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013	ug/L		06/29/16 11:23	06/30/16 15:06	1
Perfluorooctanoic acid (PFOA)	0.049		0.019	0.0095	ug/L		06/29/16 11:23	06/30/16 15:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	100		60 - 155	06/29/16 11:23	06/30/16 15:06	1
13C8 PFOS	97		45 - 130	06/29/16 11:23	06/30/16 15:06	1

Surrogate Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Surrogate Recovery (Acceptance Limits)	
		3C8 PFO/ (60-155)	3C8 PFO: (45-130)
280-84914-1 - DL	CBDUP	101 D	114 D
280-84914-1	CBDUP	103	109
280-84914-2	17KMH-1	106	103
280-84914-3	TE#6	104	100
280-84914-3 MS	TE#6	105	101
280-84914-3 MSD	TE#6	102	104
280-84914-4	TE#2	103	103
280-84914-5	TE#1	104	97
280-84914-5 - DL	TE#1	102 D	108 D
280-84914-6	TE#4	107	98
280-84914-7	TE DUP	103	100
280-84914-8	TE#3	105	105
280-84914-9	FB-2	103	98
280-84914-10	WB-2	103	106
280-84914-11	FB-1	104	98
280-84914-12	WB-1	104	100
280-84914-13	CB-2	103	100
280-84914-14	CB-15	99	92
280-84914-15	C-8	102	107
280-84914-15 MS	C-8	104	100
280-84914-15 MSD	C-8	102	120
280-84914-16	C-4	103	98
280-84914-16 - DL	C-4	102 D	113 D
280-84914-17	CB-1A	102	100
280-84914-18	CB#5	103	105
280-84914-19	CB#2	102	104
280-84914-20	#4	97	100
280-84914-21	C-48	100	97
DLCK 280-328740/14	Lab Control Sample	105	106
LCS 280-331820/2-A	Lab Control Sample	105	102
LCS 280-331826/2-A	Lab Control Sample	102	100
MB 280-331820/1-A	Method Blank	104	105
MB 280-331826/1-A	Method Blank	102	101

Surrogate Legend

13C8 PFOA = 13C8 PFOA

13C8 PFOS = 13C8 PFOS

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Lab Sample ID: DLCK 280-328740/14

Matrix: Water

Analysis Batch: 328740

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.443	0.419		ug/L		95	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.500	0.433		ug/L		87	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.473	0.446		ug/L		94	70 - 130
Perfluorononanoic acid (PFNA)	0.500	0.439		ug/L		88	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.478	0.456		ug/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	0.500	0.459		ug/L		92	70 - 130

Surrogate	DLCK %Recovery	DLCK Qualifier	Limits
13C8 PFOA	105		60 - 155
13C8 PFOS	106		45 - 130

Lab Sample ID: MB 280-331820/1-A

Matrix: Water

Analysis Batch: 332053

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 331820

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		06/29/16 11:23	06/30/16 08:57	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 08:57	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		06/29/16 11:23	06/30/16 08:57	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		06/29/16 11:23	06/30/16 08:57	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 08:57	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		06/29/16 11:23	06/30/16 08:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	104		60 - 155	06/29/16 11:23	06/30/16 08:57	1
13C8 PFOS	105		45 - 130	06/29/16 11:23	06/30/16 08:57	1

Lab Sample ID: LCS 280-331820/2-A

Matrix: Water

Analysis Batch: 332053

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 331820

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.139		ug/L		79	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.200		ug/L		100	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.175		ug/L		93	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.176		ug/L		88	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.167		ug/L		87	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.187		ug/L		94	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C8 PFOA	105		60 - 155
13C8 PFOS	102		45 - 130

TestAmerica Denver

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 280-84914-3 MS

Matrix: Water

Analysis Batch: 332053

Client Sample ID: TE#6

Prep Type: Total/NA

Prep Batch: 331820

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.034		0.179	0.172		ug/L		77	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.078		0.202	0.282		ug/L		100	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.089		0.191	0.273		ug/L		96	70 - 132
Perfluorononanoic acid (PFNA)	0.016	U	0.202	0.187		ug/L		92	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.19		0.193	0.350		ug/L		85	70 - 130
Perfluorooctanoic acid (PFOA)	0.026		0.202	0.226		ug/L		99	70 - 130
Surrogate	MS %Recovery	MS Qualifier	Limits						
13C8 PFOA	105		60 - 155						
13C8 PFOS	101		45 - 130						

Lab Sample ID: 280-84914-3 MSD

Matrix: Water

Analysis Batch: 332053

Client Sample ID: TE#6

Prep Type: Total/NA

Prep Batch: 331820

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perfluorobutane Sulfonate (PFBS)	0.034		0.166	0.169		ug/L		81	70 - 134	2	30
Perfluoroheptanoic acid (PFHpA)	0.078		0.188	0.253		ug/L		93	70 - 135	11	30
Perfluorohexane Sulfonate (PFHxS)	0.089		0.178	0.242		ug/L		86	70 - 132	12	30
Perfluorononanoic acid (PFNA)	0.016	U	0.188	0.168		ug/L		89	69 - 143	11	30
Perfluorooctanesulfonic acid (PFOS)	0.19		0.180	0.319		ug/L		75	70 - 130	9	30
Perfluorooctanoic acid (PFOA)	0.026		0.188	0.205		ug/L		95	70 - 130	10	30
Surrogate	MSD %Recovery	MSD Qualifier	Limits								
13C8 PFOA	102		60 - 155								
13C8 PFOS	104		45 - 130								

Lab Sample ID: MB 280-331826/1-A

Matrix: Water

Analysis Batch: 332053

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 331826

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		06/29/16 11:23	06/30/16 12:01	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 12:01	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		06/29/16 11:23	06/30/16 12:01	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		06/29/16 11:23	06/30/16 12:01	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		06/29/16 11:23	06/30/16 12:01	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		06/29/16 11:23	06/30/16 12:01	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102		60 - 155				06/29/16 11:23	06/30/16 12:01	1
13C8 PFOS	101		45 - 130				06/29/16 11:23	06/30/16 12:01	1

TestAmerica Denver

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCS 280-331826/2-A

Matrix: Water

Analysis Batch: 332053

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 331826

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.157		ug/L		89	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.196		ug/L		98	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.179		ug/L		95	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.188		ug/L		94	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.163		ug/L		85	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.183		ug/L		92	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits				
13C8 PFOA	102		60 - 155				
13C8 PFOS	100		45 - 130				

Lab Sample ID: 280-84914-15 MS

Matrix: Water

Analysis Batch: 332053

Client Sample ID: C-8

Prep Type: Total/NA

Prep Batch: 331826

Analyte	Sample	Sample	Spike	MS	MS	Unit	D	%Rec.		
	Result	Qualifier	Added	Result	Qualifier			Limits		
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.173	0.133		ug/L		77	70 - 134	
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.195	0.209		ug/L		107	70 - 135	
Perfluorohexane Sulfonate (PFHxS)	0.058		0.184	0.223		ug/L		90	70 - 132	
Perfluorononanoic acid (PFNA)	0.016	U	0.195	0.179		ug/L		92	69 - 143	
Perfluorooctanesulfonic acid (PFOS)	0.18	F1	0.186	0.297	F1	ug/L		61	70 - 130	
Perfluorooctanoic acid (PFOA)	0.014	J	0.195	0.204		ug/L		98	70 - 130	
					</					

Lab Sample ID: 280-84914-15 MSD

Matrix: Water

Analysis Batch: 332053

Client Sample ID: C-8

Prep Type: Total/NA

Prep Batch: 331826

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	Limit
Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.165	0.138		ug/L		84	70 - 134	4	30
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.186	0.202		ug/L		108	70 - 135	3	30
Perfluorohexane Sulfonate (PFHxS)	0.058		0.176	0.214		ug/L		88	70 - 132	4	30
Perfluorononanoic acid (PFNA)	0.016	U	0.186	0.176		ug/L		94	69 - 143	2	30
Perfluorooctanesulfonic acid (PFOS)	0.18	F1	0.178	0.393		ug/L		117	70 - 130	28	30
Perfluorooctanoic acid (PFOA)	0.014	J	0.186	0.203		ug/L		101	70 - 130	1	30

TestAmerica Denver

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: 280-84914-15 MSD

Matrix: Water

Analysis Batch: 332053

Client Sample ID: C-8

Prep Type: Total/NA

Prep Batch: 331826

<i>Surrogate</i>	<i>MSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C8 PFOA	102		60 - 155
13C8 PFOS	120		45 - 130

Definitions/Glossary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Qualifiers

LCMS

Qualifier	Qualifier Description
D	Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

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, 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)

QC Association Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

LCMS

Analysis Batch: 328740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-328740/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	

Prep Batch: 331820

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-84914-1 - DL	CBDUP	Total/NA	Water	3535	
280-84914-1	CBDUP	Total/NA	Water	3535	
280-84914-2	17KMH-1	Total/NA	Water	3535	
280-84914-3	TE#6	Total/NA	Water	3535	
280-84914-3 MS	TE#6	Total/NA	Water	3535	
280-84914-3 MSD	TE#6	Total/NA	Water	3535	
280-84914-4	TE#2	Total/NA	Water	3535	
280-84914-5	TE#1	Total/NA	Water	3535	
280-84914-5 - DL	TE#1	Total/NA	Water	3535	
280-84914-6	TE#4	Total/NA	Water	3535	
280-84914-7	TE DUP	Total/NA	Water	3535	
280-84914-8	TE#3	Total/NA	Water	3535	
280-84914-9	FB-2	Total/NA	Water	3535	
280-84914-10	WB-2	Total/NA	Water	3535	
LCS 280-331820/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 280-331820/1-A	Method Blank	Total/NA	Water	3535	

Prep Batch: 331826

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-84914-11	FB-1	Total/NA	Water	3535	
280-84914-12	WB-1	Total/NA	Water	3535	
280-84914-13	CB-2	Total/NA	Water	3535	
280-84914-14	CB-15	Total/NA	Water	3535	
280-84914-15	C-8	Total/NA	Water	3535	
280-84914-15 MS	C-8	Total/NA	Water	3535	
280-84914-15 MSD	C-8	Total/NA	Water	3535	
280-84914-16	C-4	Total/NA	Water	3535	
280-84914-16 - DL	C-4	Total/NA	Water	3535	
280-84914-17	CB-1A	Total/NA	Water	3535	
280-84914-18	CB#5	Total/NA	Water	3535	
280-84914-19	CB#2	Total/NA	Water	3535	
280-84914-20	#4	Total/NA	Water	3535	
280-84914-21	C-48	Total/NA	Water	3535	
LCS 280-331826/2-A	Lab Control Sample	Total/NA	Water	3535	
MB 280-331826/1-A	Method Blank	Total/NA	Water	3535	

Analysis Batch: 332053

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-84914-1	CBDUP	Total/NA	Water	DV-LC-0012	331820
280-84914-1 - DL	CBDUP	Total/NA	Water	DV-LC-0012	331820
280-84914-2	17KMH-1	Total/NA	Water	DV-LC-0012	331820
280-84914-3	TE#6	Total/NA	Water	DV-LC-0012	331820
280-84914-3 MS	TE#6	Total/NA	Water	DV-LC-0012	331820
280-84914-3 MSD	TE#6	Total/NA	Water	DV-LC-0012	331820
280-84914-4	TE#2	Total/NA	Water	DV-LC-0012	331820
280-84914-5	TE#1	Total/NA	Water	DV-LC-0012	331820
280-84914-5 - DL	TE#1	Total/NA	Water	DV-LC-0012	331820

TestAmerica Denver

QC Association Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

LCMS (Continued)

Analysis Batch: 332053 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-84914-6	TE#4	Total/NA	Water	DV-LC-0012	331820
280-84914-7	TE DUP	Total/NA	Water	DV-LC-0012	331820
280-84914-8	TE#3	Total/NA	Water	DV-LC-0012	331820
280-84914-9	FB-2	Total/NA	Water	DV-LC-0012	331820
280-84914-10	WB-2	Total/NA	Water	DV-LC-0012	331820
280-84914-11	FB-1	Total/NA	Water	DV-LC-0012	331826
280-84914-12	WB-1	Total/NA	Water	DV-LC-0012	331826
280-84914-13	CB-2	Total/NA	Water	DV-LC-0012	331826
280-84914-14	CB-15	Total/NA	Water	DV-LC-0012	331826
280-84914-15	C-8	Total/NA	Water	DV-LC-0012	331826
280-84914-15 MS	C-8	Total/NA	Water	DV-LC-0012	331826
280-84914-15 MSD	C-8	Total/NA	Water	DV-LC-0012	331826
280-84914-16	C-4	Total/NA	Water	DV-LC-0012	331826
280-84914-16 - DL	C-4	Total/NA	Water	DV-LC-0012	331826
280-84914-17	CB-1A	Total/NA	Water	DV-LC-0012	331826
280-84914-18	CB#5	Total/NA	Water	DV-LC-0012	331826
280-84914-19	CB#2	Total/NA	Water	DV-LC-0012	331826
280-84914-20	#4	Total/NA	Water	DV-LC-0012	331826
280-84914-21	C-48	Total/NA	Water	DV-LC-0012	331826
LCS 280-331820/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	331820
LCS 280-331826/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	331826
MB 280-331820/1-A	Method Blank	Total/NA	Water	DV-LC-0012	331820
MB 280-331826/1-A	Method Blank	Total/NA	Water	DV-LC-0012	331826

Lab Chronicle

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CBDUP

Date Collected: 06/22/16 09:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.1 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	279.1 mL	5 mL	332053	06/30/16 09:21	AGCM	TAL DEN
Total/NA	Prep	3535	DL		279.1 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012	DL	5	279.1 mL	5 mL	332053	06/30/16 15:30	AGCM	TAL DEN

Client Sample ID: 17KMH-1

Date Collected: 06/23/16 09:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246.1 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	246.1 mL	5 mL	332053	06/30/16 09:34	AGCM	TAL DEN

Client Sample ID: TE#6

Date Collected: 06/23/16 10:18

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.2 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	265.2 mL	5 mL	332053	06/30/16 09:46	AGCM	TAL DEN

Client Sample ID: TE#2

Date Collected: 06/23/16 11:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.6 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	276.6 mL	5 mL	332053	06/30/16 10:23	AGCM	TAL DEN

Client Sample ID: TE#1

Date Collected: 06/23/16 12:25

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.3 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	263.3 mL	5 mL	332053	06/30/16 10:35	AGCM	TAL DEN
Total/NA	Prep	3535	DL		263.3 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012	DL	2	263.3 mL	5 mL	332053	06/30/16 15:43	AGCM	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: TE#4

Date Collected: 06/23/16 13:35

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			247.9 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	247.9 mL	5 mL	332053	06/30/16 10:47	AGCM	TAL DEN

Client Sample ID: TE DUP

Date Collected: 06/23/16 11:12

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			246 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	246 mL	5 mL	332053	06/30/16 11:12	AGCM	TAL DEN

Client Sample ID: TE#3

Date Collected: 06/23/16 14:40

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	277 mL	5 mL	332053	06/30/16 11:24	AGCM	TAL DEN

Client Sample ID: FB-2

Date Collected: 06/23/16 15:05

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.5 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	259.5 mL	5 mL	332053	06/30/16 11:37	AGCM	TAL DEN

Client Sample ID: WB-2

Date Collected: 06/23/16 15:20

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.1 mL	5 mL	331820	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	258.1 mL	5 mL	332053	06/30/16 11:49	AGCM	TAL DEN

Client Sample ID: FB-1

Date Collected: 06/22/16 10:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	265 mL	5 mL	332053	06/30/16 12:26	AGCM	TAL DEN

Lab Chronicle

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: WB-1

Date Collected: 06/22/16 11:10

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	264 mL	5 mL	332053	06/30/16 12:38	AGCM	TAL DEN

Client Sample ID: CB-2

Date Collected: 06/22/16 11:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.0 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	259.0 mL	5 mL	332053	06/30/16 12:50	AGCM	TAL DEN

Client Sample ID: CB-15

Date Collected: 06/22/16 11:55

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			252.7 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	252.7 mL	5 mL	332053	06/30/16 13:03	AGCM	TAL DEN

Client Sample ID: C-8

Date Collected: 06/22/16 12:20

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.8 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	263.8 mL	5 mL	332053	06/30/16 13:27	AGCM	TAL DEN

Client Sample ID: C-4

Date Collected: 06/22/16 12:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			277.9 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	277.9 mL	5 mL	332053	06/30/16 14:04	AGCM	TAL DEN
Total/NA	Prep	3535	DL		277.9 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012	DL	5	277.9 mL	5 mL	332053	06/30/16 15:55	AGCM	TAL DEN

Client Sample ID: CB-1A

Date Collected: 06/22/16 13:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.5 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN

TestAmerica Denver

Lab Chronicle

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Client Sample ID: CB-1A

Date Collected: 06/22/16 13:15

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	DV-LC-0012		1	259.5 mL	5 mL	332053	06/30/16 14:17	AGCM	TAL DEN

Client Sample ID: CB#5

Date Collected: 06/22/16 13:45

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			264.9 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	264.9 mL	5 mL	332053	06/30/16 14:29	AGCM	TAL DEN

Client Sample ID: CB#2

Date Collected: 06/22/16 14:00

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			257.4 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	257.4 mL	5 mL	332053	06/30/16 14:41	AGCM	TAL DEN

Client Sample ID: #4

Date Collected: 06/22/16 14:50

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.2 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	258.2 mL	5 mL	332053	06/30/16 14:53	AGCM	TAL DEN

Client Sample ID: C-48

Date Collected: 06/22/16 15:08

Date Received: 06/25/16 09:45

Lab Sample ID: 280-84914-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.9 mL	5 mL	331826	06/29/16 11:23	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1	256.9 mL	5 mL	332053	06/30/16 15:06	AGCM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Certification Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-84914-1

Laboratory: TestAmerica Denver

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-17
A2LA	ISO/IEC 17025		2907.01	10-31-17
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	04-05-17
Arizona	State Program	9	AZ0713	12-19-16
Arkansas DEQ	State Program	6	88-0687	06-01-17
California	State Program	9	2513	08-31-16
Connecticut	State Program	1	PH-0686	09-30-16
Florida	NELAP	4	E87667	06-30-16
Georgia	State Program	4	N/A	01-09-17
Illinois	NELAP	5	200017	04-30-17
Iowa	State Program	7	370	11-30-16
Kansas	NELAP	7	E-10166	07-31-16
Louisiana	NELAP	6	02096	06-30-16
Maine	State Program	1	CO0002	03-03-17
Minnesota	NELAP	5	8-999-405	12-31-16
Nevada	State Program	9	CO0026	07-31-16
New Hampshire	NELAP	1	205310	04-28-17
New Jersey	NELAP	2	CO004	06-30-17
New York	NELAP	2	11964	04-01-17
North Carolina (WW/SW)	State Program	4	358	12-31-16
North Dakota	State Program	8	R-034	01-09-17
Oklahoma	State Program	6	8614	08-31-16
Oregon	NELAP	10	4025	01-09-17
Pennsylvania	NELAP	3	68-00664	07-31-16
South Carolina	State Program	4	72002001	01-09-17
Texas	NELAP	6	T104704183-15-11	09-30-16
USDA	Federal		P330-13-00202	07-02-16
Utah	NELAP	8	CO00026	07-31-16
Virginia	NELAP	3	460232	06-14-17
Washington	State Program	10	C583	08-03-16
West Virginia DEP	State Program	3	354	11-30-16
Wisconsin	State Program	5	999615430	08-31-16
Wyoming (UST)	A2LA	8	2907.01	10-31-17

Laboratory: TestAmerica Sacramento

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
A2LA	DoD ELAP		2928-01	01-31-17
Alaska (UST)	State Program	10	UST-055	12-18-16
Arizona	State Program	9	AZ0708	08-11-16
Arkansas DEQ	State Program	6	88-0691	06-17-17
California	State Program	9	2897	01-31-17
Colorado	State Program	8	CA00044	08-31-16
Connecticut	State Program	1	PH-0691	06-30-17
Florida	NELAP	4	E87570	06-30-17
Hawaii	State Program	9	N/A	01-31-17
Illinois	NELAP	5	200060	03-17-17
Kansas	NELAP	7	E-10375	07-31-16

* Certification renewal pending - certification considered valid.

TestAmerica Denver

Certification Summary

Client: HDR Inc

TestAmerica Job ID: 280-84914-1

Project/Site: Stewart International Airport (PFAS)

Laboratory: TestAmerica Sacramento (Continued)

All certifications held by this laboratory are listed. Not all certifications are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Louisiana	NELAP	6	30612	06-30-17
Maine	State Program	1	CA0004	04-18-18
Michigan	State Program	5	9947	01-31-18
Nevada	State Program	9	CA00044	07-31-16
New Jersey	NELAP	2	CA005	06-30-17
New York	NELAP	2	11666	04-01-17
Oregon	NELAP	10	4040	01-29-17
Pennsylvania	NELAP	3	68-01272	03-31-17
Texas	NELAP	6	T104704399	07-31-17
US Fish & Wildlife	Federal		LE148388-0	10-31-16
USDA	Federal		P330-11-00436	12-30-17
USEPA UCMR	Federal	1	CA00044	11-06-16
Utah	NELAP	8	CA00044	02-28-17
Virginia	NELAP	3	460278	03-14-17
Washington	State Program	10	C581	05-05-17
West Virginia (DW)	State Program	3	9930C	12-31-16
Wyoming	State Program	8	8TMS-L	01-29-17

Method PFC

Perfluronated Hydrocarbons (LC/MS)
by Method PFC

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver

Job No.: 280-84914-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): Gemini-NX ID: _____

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
CBDUP	280-84914-1	103	109
CBDUP DL	280-84914-1 DL	101 D	114 D
17KMH-1	280-84914-2	106	103
TE#6	280-84914-3	104	100
TE#2	280-84914-4	103	103
TE#1	280-84914-5	104	97
TE#1 DL	280-84914-5 DL	102 D	108 D
TE#4	280-84914-6	107	98
TE DUP	280-84914-7	103	100
TE#3	280-84914-8	105	105
FB-2	280-84914-9	103	98
WB-2	280-84914-10	103	106
FB-1	280-84914-11	104	98
WB-1	280-84914-12	104	100
CB-2	280-84914-13	103	100
CB-15	280-84914-14	99	92
C-8	280-84914-15	102	107
C-4	280-84914-16	103	98
C-4 DL	280-84914-16 DL	102 D	113 D
CB-1A	280-84914-17	102	100
CB#5	280-84914-18	103	105
CB#2	280-84914-19	102	104
#4	280-84914-20	97	100
C-48	280-84914-21	100	97
	MB 280-331820/1-A	104	105
	MB 280-331826/1-A	102	101
	LCS 280-331820/2-A	105	102
	LCS 280-331826/2-A	102	100
TE#6 MS	280-84914-3 MS	105	101
C-8 MS	280-84914-15 MS	104	100
TE#6 MSD	280-84914-3 MSD	102	104
C-8 MSD	280-84914-15 MSD	102	120

PFOA = 13C8 PFOA
PFOS = 13C8 PFOS

QC LIMITS
60-155
45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID: _____

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
	DLCK 280-328740/14	105	106

PFOA = 13C8 PFOA
PFOS = 13C8 PFOS

QC LIMITS
60-155
45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20010.d
 Lab ID: LCS 280-331820/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.139	79	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.200	100	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.175	93	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.176	88	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.167	87	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.187	94	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20025.d
 Lab ID: LCS 280-331826/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.157	89	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.196	98	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.179	95	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.188	94	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.163	85	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.183	92	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20014.d
 Lab ID: 280-84914-3 MS Client ID: TE#6 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.179	0.034	0.172	77	70-134	
Perfluoroheptanoic acid (PFHpA)	0.202	0.078	0.282	100	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.191	0.089	0.273	96	70-132	
Perfluorononanoic acid (PFNA)	0.202	0.016 U	0.187	92	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.193	0.19	0.350	85	70-130	
Perfluorooctanoic acid (PFOA)	0.202	0.026	0.226	99	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20032b.d
 Lab ID: 280-84914-15 MS Client ID: C-8 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.173	0.0078 U	0.133	77	70-134	
Perfluoroheptanoic acid (PFHpA)	0.195	0.013 U	0.209	107	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.184	0.058	0.223	90	70-132	
Perfluorononanoic acid (PFNA)	0.195	0.016 U	0.179	92	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.186	0.18	0.297	61	70-130	F1
Perfluorooctanoic acid (PFOA)	0.195	0.014 J	0.204	98	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20015.d
 Lab ID: 280-84914-3 MSD Client ID: TE#6 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.166	0.169	81	2	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.188	0.253	93	11	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.178	0.242	86	12	30	70-132	
Perfluorononanoic acid (PFNA)	0.188	0.168	89	11	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.180	0.319	75	9	30	70-130	
Perfluorooctanoic acid (PFOA)	0.188	0.205	95	10	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F20033.d
 Lab ID: 280-84914-15 MSD Client ID: C-8 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.165	0.138	84	4	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.186	0.202	108	3	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.176	0.214	88	4	30	70-132	
Perfluorononanoic acid (PFNA)	0.186	0.176	94	2	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.178	0.393	117	28	30	70-130	
Perfluorooctanoic acid (PFOA)	0.186	0.203	101	1	30	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F06019.d
 Lab ID: DLCK 280-328740/14 Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.419	95	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.433	87	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.446	94	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.439	88	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.456	95	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.459	92	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Lab File ID: PC516F20024.d Lab Sample ID: MB 280-331826/1-A
 Matrix: Water Date Extracted: 06/29/2016 11:23
 Instrument ID: LC_LCMS5 Date Analyzed: 06/30/2016 12:01
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-331826/2-A	PC516F20025 .d	06/30/2016 12:14
FB-1	280-84914-11	PC516F20026 .d	06/30/2016 12:26
WB-1	280-84914-12	PC516F20027 .d	06/30/2016 12:38
CB-2	280-84914-13	PC516F20028 .d	06/30/2016 12:50
CB-15	280-84914-14	PC516F20029 .d	06/30/2016 13:03
C-8	280-84914-15	PC516F20031 .d	06/30/2016 13:27
C-8 MS	280-84914-15 MS	PC516F20032 b.d	06/30/2016 13:40
C-8 MSD	280-84914-15 MSD	PC516F20033 .d	06/30/2016 13:52
C-4	280-84914-16	PC516F20034 .d	06/30/2016 14:04
CB-1A	280-84914-17	PC516F20035 .d	06/30/2016 14:17
CB#5	280-84914-18	PC516F20036 .d	06/30/2016 14:29
CB#2	280-84914-19	PC516F20037 .d	06/30/2016 14:41
#4	280-84914-20	PC516F20038 .d	06/30/2016 14:53
C-48	280-84914-21	PC516F20039 .d	06/30/2016 15:06
C-4 DL	280-84914-16 DL	PC516F20043 .d	06/30/2016 15:55

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Lab File ID: PC516F20009.d Lab Sample ID: MB 280-331820/1-A
 Matrix: Water Date Extracted: 06/29/2016 11:23
 Instrument ID: LC_LCMS5 Date Analyzed: 06/30/2016 08:57
 Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-331820/2-A	PC516F20010 .d	06/30/2016 09:09
CBDUP	280-84914-1	PC516F20011 .d	06/30/2016 09:21
17KMH-1	280-84914-2	PC516F20012 .d	06/30/2016 09:34
TE#6	280-84914-3	PC516F20013 .d	06/30/2016 09:46
TE#6 MS	280-84914-3 MS	PC516F20014 .d	06/30/2016 09:58
TE#6 MSD	280-84914-3 MSD	PC516F20015 .d	06/30/2016 10:11
TE#2	280-84914-4	PC516F20016 .d	06/30/2016 10:23
TE#1	280-84914-5	PC516F20017 .d	06/30/2016 10:35
TE#4	280-84914-6	PC516F20018 .d	06/30/2016 10:47
TE DUP	280-84914-7	PC516F20020 .d	06/30/2016 11:12
TE#3	280-84914-8	PC516F20021 .d	06/30/2016 11:24
FB-2	280-84914-9	PC516F20022 .d	06/30/2016 11:37
WB-2	280-84914-10	PC516F20023 .d	06/30/2016 11:49
CBDUP DL	280-84914-1 DL	PC516F20041 .d	06/30/2016 15:30
TE#1 DL	280-84914-5 DL	PC516F20042 .d	06/30/2016 15:43

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		27989040	4.19	22165860	5.83	2309602	6.26
UPPER LIMIT		41983560	4.69	33248790	6.33	3464403	6.76
LOWER LIMIT		13994520	3.69	11082930	5.33	1154801	5.76
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		28978482	4.19	21836187	5.96	2386106	6.43
ICV 280-328740/13		32017793	4.47	23574022	5.89	2511258	6.30
DLCK 280-328740/14		20323348	4.20	23600887	5.89	2616206	6.30
CCV 280-332053/3		31855403	4.15	19849630	5.80	2625847	6.23
MB 280-331820/1-A		34913445	4.06	21948304	5.75	2626851	6.20
LCS 280-331820/2-A		32111228	4.04	20996533	5.74	2445576	6.18
280-84914-1	CBDUP	33418406	4.00	16411928	5.71	2106876	6.15
280-84914-2	17KMH-1	30535704	4.00	22776263	5.71	2604394	6.16
280-84914-3	TE#6	34023907	4.00	21174342	5.71	2755554	6.15
280-84914-3 MS	TE#6 MS	33078332	3.99	20593414	5.71	2554953	6.15
280-84914-3 MSD	TE#6 MSD	32239820	3.99	19912148	5.71	2587112	6.15
280-84914-4	TE#2	33743102	3.99	22161594	5.71	2617964	6.14
280-84914-5	TE#1	32274251	3.98	18242385	5.70	2359439	6.14
280-84914-6	TE#4	32899197	3.97	20879397	5.69	2656246	6.13
CCV 280-332053/14		27592290	4.02	18885610	5.71	2292340	6.16
280-84914-7	TE DUP	33829139	3.99	21569106	5.70	2648176	6.14
280-84914-8	TE#3	33016159	3.99	21716889	5.71	2605743	6.15
280-84914-9	FB-2	32652538	3.99	21519896	5.71	2524409	6.14
280-84914-10	WB-2	32288044	4.00	20402170	5.70	2579825	6.14
MB 280-331826/1-A		32221875	3.95	21227528	5.70	2586906	6.14
LCS 280-331826/2-A		31469543	3.99	20760927	5.71	2330207	6.15
280-84914-11	FB-1	31963665	4.03	21778768	5.72	2555816	6.17
280-84914-12	WB-1	31474304	4.01	20553626	5.71	2688235	6.16
280-84914-13	CB-2	33152609	4.01	21631307	5.71	2454915	6.15
280-84914-14	CB-15	23138826	4.07	20009615	5.71	2382114	6.15
CCV 280-332053/25		27727152	4.07	18432363	5.71	2447731	6.16
280-84914-15	C-8	15038305	4.01	18620826	5.73	2468272	6.17
280-84914-15 MS	C-8 MS	15924833	3.99	17654611	5.71	2344898	6.15
280-84914-15 MSD	C-8 MSD	14759333	3.99	17792592	5.71	2312978	6.16
280-84914-16	C-4	32004126	4.01	15530384	5.71	1835978	6.15

BA = 13C4 PFBA (IS)
 HXA = 13C2 PFHxA (IS)
 HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		27989040	4.19	22165860	5.83	2309602	6.26
UPPER LIMIT		41983560	4.69	33248790	6.33	3464403	6.76
LOWER LIMIT		13994520	3.69	11082930	5.33	1154801	5.76
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-84914-17	CB-1A	33486840	4.02	21379433	5.72	2663254	6.17
280-84914-18	CB#5	14977677	3.98	13037195	5.73	2004427	6.18
280-84914-19	CB#2	33978981	4.00	20286614	5.72	2416705	6.18
280-84914-20	#4	29307132	4.04	22603326	5.73	2621081	6.18
280-84914-21	C-48	32031882	3.98	21655953	5.71	2564432	6.16
CCV 280-332053/35		25865026	4.07	18985734	5.73	2324952	6.17
280-84914-1 DL	CBDUP DL	4354452*	4.05	3972490*	5.73	551358*	6.18
280-84914-5 DL	TE#1 DL	16050672	4.03	9828666	5.72	1097419	6.17
280-84914-16 DL	C-4 DL	5808101*	4.09	3870061*	5.75	450037*	6.19
CCV 280-332053/39		27716624	4.10	18397605	5.73	2232031	6.17

BA = 13C4 PFBA (IS)
 HXA = 13C2 PFHxA (IS)
 HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		29955425	6.60	8404326	6.87	21941427	6.89
UPPER LIMIT		44933138	7.10	12606489	7.37	32912141	7.39
LOWER LIMIT		14977713	6.10	4202163	6.37	10970714	6.39
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		34004746	6.78	9303800	7.07	25696131	7.09
ICV 280-328740/13		33074850	6.63	9669285	6.90	25183863	6.91
DLCK 280-328740/14		34601296	6.62	9456457	6.88	27571989	6.90
CCV 280-332053/3		30604837	6.58	9066084	6.85	23344347	6.87
MB 280-331820/1-A		33961593	6.54	9803713	6.81	27507557	6.83
LCS 280-331820/2-A		30038302	6.52	9124100	6.79	24685346	6.81
280-84914-1	CBDUP	23506234	6.50	4669134	6.77	13110916	6.79
280-84914-2	17KMH-1	34223056	6.50	8459076	6.77	27192230	6.79
280-84914-3	TE#6	33018695	6.49	8614229	6.76	25610862	6.78
280-84914-3 MS	TE#6 MS	29832280	6.49	8878214	6.76	23771250	6.78
280-84914-3 MSD	TE#6 MSD	29726297	6.49	8661414	6.76	23241409	6.77
280-84914-4	TE#2	32749568	6.48	7705423	6.75	24306103	6.77
280-84914-5	TE#1	27393198	6.48	5344496	6.75	16332090	6.77
280-84914-6	TE#4	32072875	6.47	9228333	6.74	26864271	6.76
CCV 280-332053/14		30489028	6.50	8598328	6.77	22843017	6.79
280-84914-7	TE DUP	33431549	6.48	9394869	6.75	26124552	6.77
280-84914-8	TE#3	32310358	6.48	8655020	6.75	26318390	6.77
280-84914-9	FB-2	32647659	6.49	9067426	6.75	26585990	6.77
280-84914-10	WB-2	32282083	6.48	8896444	6.75	25338953	6.77
MB 280-331826/1-A		32680273	6.48	9238004	6.75	25998218	6.77
LCS 280-331826/2-A		30701565	6.49	9137129	6.76	22565677	6.78
280-84914-11	FB-1	31852452	6.50	9277298	6.77	25725942	6.79
280-84914-12	WB-1	33286749	6.49	9139288	6.77	24981882	6.78
280-84914-13	CB-2	32813015	6.49	8297768	6.76	25296334	6.78
280-84914-14	CB-15	32538987	6.49	7706654	6.76	23548293	6.78
CCV 280-332053/25		29797467	6.50	8689539	6.78	20842826	6.80
280-84914-15	C-8	31272281	6.51	8172512	6.78	24933440	6.79
280-84914-15 MS	C-8 MS	29273443	6.49	7894453	6.76	22450516	6.78
280-84914-15 MSD	C-8 MSD	29439007	6.50	7101549	6.77	23288796	6.79
280-84914-16	C-4	21741850	6.49	4777971	6.76	12260936	6.79

OA = 13C4 PFOA (IS)
 PFOS = 13C4 PFOS (IS)
 NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		29955425	6.60	8404326	6.87	21941427	6.89
UPPER LIMIT		44933138	7.10	12606489	7.37	32912141	7.39
LOWER LIMIT		14977713	6.10	4202163	6.37	10970714	6.39
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-84914-17	CB-1A	34128451	6.51	8682197	6.78	27019338	6.80
280-84914-18	CB#5	24314564	6.51	7581689	6.78	20009894	6.80
280-84914-19	CB#2	31690611	6.52	8396216	6.79	26440760	6.81
280-84914-20	#4	35844234	6.52	8621876	6.79	28493566	6.81
280-84914-21	C-48	33652006	6.50	8904585	6.77	26290033	6.79
CCV 280-332053/35		29728142	6.51	8343823	6.78	21818061	6.80
280-84914-1 DL	CBDUP DL	6239284*	6.52	1333370*	6.79	3887332*	6.81
280-84914-5 DL	TE#1 DL	15702547	6.51	3060923	6.78	9258459	6.80
280-84914-16 DL	C-4 DL	6118685*	6.54	1451980*	6.81	3710172*	6.83
CCV 280-332053/39		29427440	6.51	8569708	6.78	20948081	6.80

OA = 13C4 PFOA (IS)
 PFOS = 13C4 PFOS (IS)
 NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24627236	7.13	14935970	7.34	31753371	7.51
UPPER LIMIT		36940854	7.63	22403955	7.84	47630057	8.01
LOWER LIMIT		12313618	6.63	7467985	6.84	15876686	7.01
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		26344510	7.33	15946426	7.54	35155268	7.71
ICV 280-328740/13		27322567	7.16	17486001	7.37	34783992	7.55
DLCK 280-328740/14		28251355	7.13	17474457	7.34	35228011	7.51
CCV 280-332053/3		26495545	7.12	16364124	7.33	32876141	7.51
MB 280-331820/1-A		29608942	7.07	17997247	7.28	30124484	7.46
LCS 280-331820/2-A		27377661	7.05	14707370	7.26	21126815	7.44
280-84914-1	CBDUP	22502453	7.04	12915155	7.24	19896542	7.42
280-84914-2	17KMH-1	27946097	7.04	14416113	7.24	24983378	7.42
280-84914-3	TE#6	24152604	7.03	12126697	7.24	20717061	7.42
280-84914-3 MS	TE#6 MS	25233066	7.03	12874996	7.23	22384754	7.41
280-84914-3 MSD	TE#6 MSD	24004740	7.02	12634551	7.23	20809602	7.41
280-84914-4	TE#2	20560819	7.02	11692606	7.22	19871185	7.40
280-84914-5	TE#1	18131126	7.02	9388814	7.22	17260535	7.40
280-84914-6	TE#4	26441490	7.01	13475782	7.22	22136412	7.39
CCV 280-332053/14		24636761	7.04	15110820	7.24	31072934	7.42
280-84914-7	TE DUP	26648410	7.02	15794028	7.23	24457580	7.41
280-84914-8	TE#3	24601044	7.02	13160692	7.22	21580819	7.40
280-84914-9	FB-2	28330527	7.02	15577875	7.23	19670065	7.41
280-84914-10	WB-2	26774458	7.02	15209398	7.22	24273297	7.40
MB 280-331826/1-A		26486459	7.02	15617980	7.22	26705630	7.40
LCS 280-331826/2-A		25773124	7.03	15815023	7.24	27500515	7.42
280-84914-11	FB-1	27569605	7.04	16738019	7.24	29928983	7.42
280-84914-12	WB-1	27410943	7.03	16013847	7.23	25559506	7.41
280-84914-13	CB-2	23449108	7.03	12341227	7.23	19888504	7.41
280-84914-14	CB-15	21499402	7.03	11961981	7.23	21814686	7.41
CCV 280-332053/25		24369323	7.05	14265403	7.25	30516121	7.43
280-84914-15	C-8	24636658	7.04	13430213	7.25	24090130	7.42
280-84914-15 MS	C-8 MS	22761983	7.03	11423223	7.23	20042512	7.41
280-84914-15 MSD	C-8 MSD	24245148	7.03	12651500	7.24	21325062	7.42
280-84914-16	C-4	21729922	7.03	12549584	7.23	20421509	7.41

DA = 13C2 PFDA (IS)
 UNA = 13C2 PUnA (IS)
 DOA = 13C2 PFDaA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24627236	7.13	14935970	7.34	31753371	7.51
UPPER LIMIT		36940854	7.63	22403955	7.84	47630057	8.01
LOWER LIMIT		12313618	6.63	7467985	6.84	15876686	7.01
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-84914-17	CB-1A	28229899	7.05	16141756	7.25	29827657	7.42
280-84914-18	CB#5	19886063	7.05	12146298	7.25	22711980	7.43
280-84914-19	CB#2	25996481	7.05	14116311	7.26	25605591	7.44
280-84914-20	#4	26371695	7.05	15064715	7.26	26165071	7.44
280-84914-21	C-48	26485079	7.04	15692664	7.24	29613588	7.41
CCV 280-332053/35		23101549	7.04	14462130	7.25	29977866	7.43
280-84914-1 DL	CBDUP DL	4595142*	7.05	2284112*	7.26	3566301*	7.44
280-84914-5 DL	TE#1 DL	8670763	7.05	4675613	7.25	8335772	7.43
280-84914-16 DL	C-4 DL	4306163*	7.06	2311180*	7.27	3809949*	7.45
CCV 280-332053/39		23876173	7.05	13639793	7.25	29657438	7.43

DA = 13C2 PFDA (IS)
 UNA = 13C2 PFUnA (IS)
 DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24015655	7.61				
UPPER LIMIT		36023483	8.11				
LOWER LIMIT		12007828	7.11				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		26245096	7.82				
ICV 280-328740/13		26768431	7.64				
DLCK 280-328740/14		27255655	7.61				
CCV 280-332053/3		26634663	7.59				
MB 280-331820/1-A		1031042	7.57				
LCS 280-331820/2-A		612360	7.55				
280-84914-1	CBDUP	1780283	7.54				
280-84914-2	17KMH-1	1118766	7.55				
280-84914-3	TE#6	863653	7.54				
280-84914-3 MS	TE#6 MS	1037251	7.54				
280-84914-3 MSD	TE#6 MSD	1345324	7.54				
280-84914-4	TE#2	1171191	7.54				
280-84914-5	TE#1	1398890	7.53				
280-84914-6	TE#4	1119234	7.53				
CCV 280-332053/14		23803203	7.56				
280-84914-7	TE DUP	1368591	7.54				
280-84914-8	TE#3	1209256	7.54				
280-84914-9	FB-2	338092	7.56				
280-84914-10	WB-2	706629	7.55				
MB 280-331826/1-A		939483*	7.54				
LCS 280-331826/2-A		975346	7.57				
280-84914-11	FB-1	875749	7.56				
280-84914-12	WB-1	802133	7.56				
280-84914-13	CB-2	2100646	7.57				
280-84914-14	CB-15	1972477	7.56				
CCV 280-332053/25		24794698	7.58				
280-84914-15	C-8	2388049	7.57				
280-84914-15 MS	C-8 MS	2842335	7.56				
280-84914-15 MSD	C-8 MSD	1861088	7.56				
280-84914-16	C-4	2159707	7.56				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24015655	7.61				
UPPER LIMIT		36023483	8.11				
LOWER LIMIT		12007828	7.11				
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-84914-17	CB-1A	901909	7.57				
280-84914-18	CB#5	1101733*	7.58				
280-84914-19	CB#2	1108104	7.59				
280-84914-20	#4	943012	7.59				
280-84914-21	C-48	1251593	7.57				
CCV 280-332053/35		23777834	7.58				
280-84914-1 DL	CBDUP DL	407452*	7.58				
280-84914-5 DL	TE#1 DL	746194	7.58				
280-84914-16 DL	C-4 DL	521991*	7.59				
CCV 280-332053/39		24384961	7.58				

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CBDUP</u>	Lab Sample ID: <u>280-84914-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20011.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>279.1 (mL)</u>	Date Analyzed: <u>06/30/2016 09:21</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.59		0.018	0.0074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.79		0.027	0.012
375-95-1	Perfluorononanoic acid (PFNA)	0.067		0.036	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.88		0.018	0.0088

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	109		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20011.d
 Lims ID: 280-84914-B-1-A Lab Sample ID: 280-84914-1
 Client ID: CBDUP
 Sample Type: Client
 Inject. Date: 30-Jun-2016 09:21:47 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-1-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer Date: 30-Jun-2016 12:12:18

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.153	-0.152		33418406	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.327	-0.095	0.851	38631902	33.2			
298.9 > 98.9	5.241	5.327	-0.086	0.852	11951973		3.23(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.800	-0.095		16411928	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.235	-0.095	0.945	90033812	44.1			
363.0 > 168.9	6.140	6.235	-0.095	0.945	22962533		3.92(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.234	-0.085		2106876	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.234	-0.085	1.000	121306674	141.9			RE
398.9 > 98.9	6.149	6.234	-0.085	1.000	38781093		3.13(1.30-2.41)		RE
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.584	-0.086	1.000	19644263	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.584	-0.085		23506234	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.584	-0.085	1.000	120217824	49.4			
413.0 > 169.0	6.499	6.584	-0.085	1.000	38225117		3.14(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.847	-0.076	1.000	3121034	10.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.847	-0.076		4669134	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.752	6.847	-0.095	0.997	218538883	384.7			E
498.9 > 98.9	6.762	6.847	-0.085	0.999	102543082		2.13(1.31-2.43)		E

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.867	-0.076		13110916	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.877	-0.085	1.000	5580239	3.77			
463.0 > 218.9	6.801	6.877	-0.075	1.001	811880		6.87(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.121	-0.086		22502453	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.328	-0.085		12915155	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.422	7.507	-0.085		19896542	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.586	-0.048		1780283	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20011.d

Injection Date: 30-Jun-2016 09:21:47

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-1-A

Lab Sample ID: 280-84914-1

Client ID: CBDUP

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

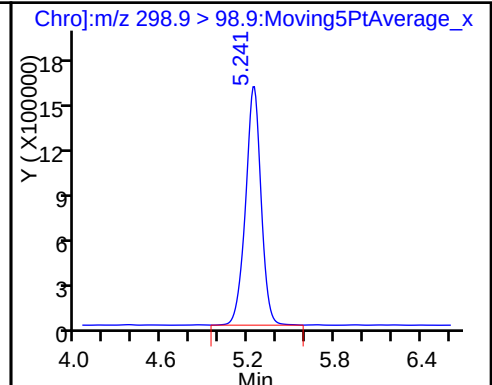
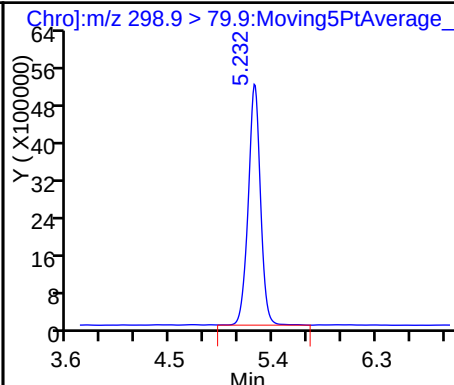
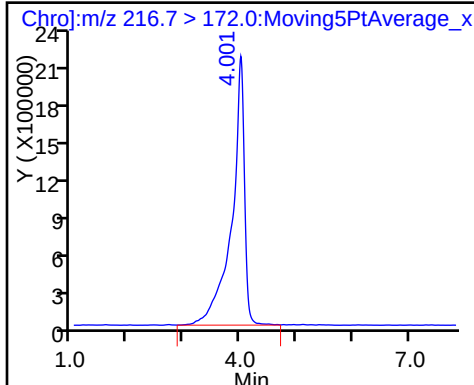
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

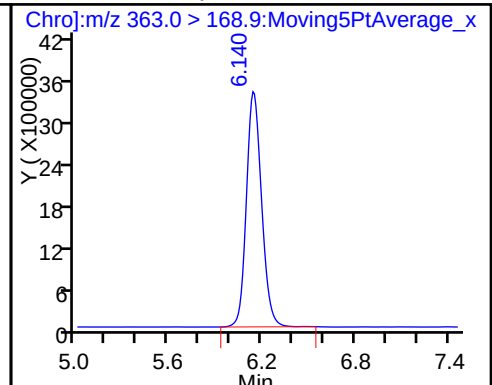
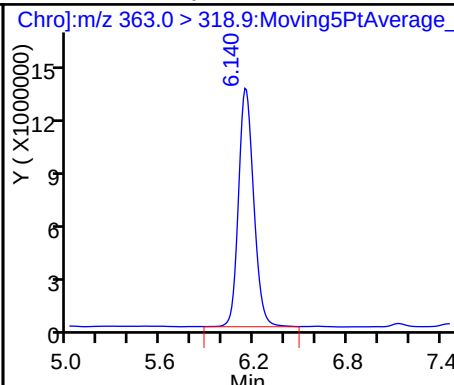
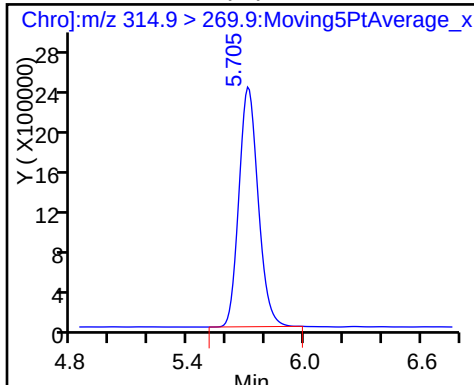
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

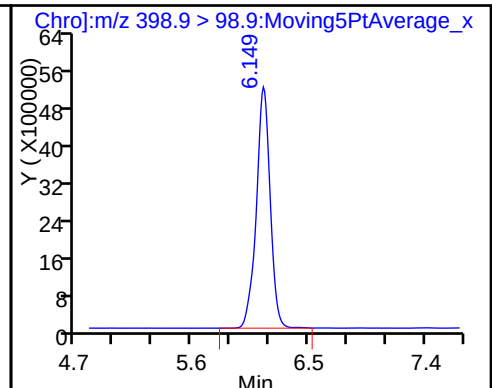
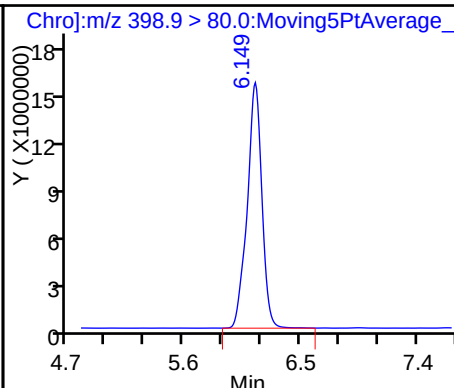
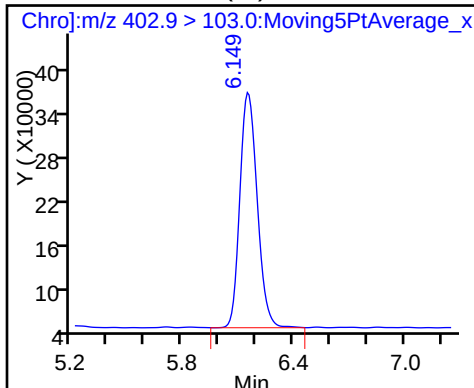
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

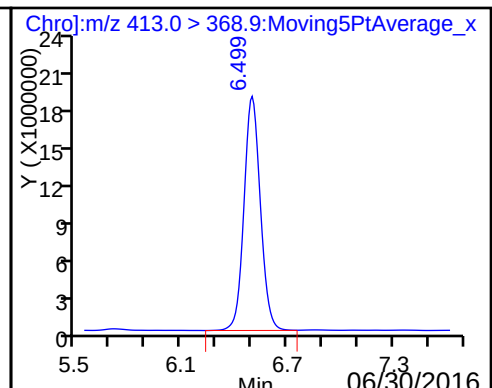
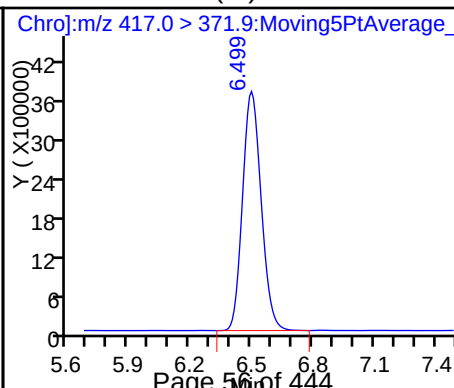
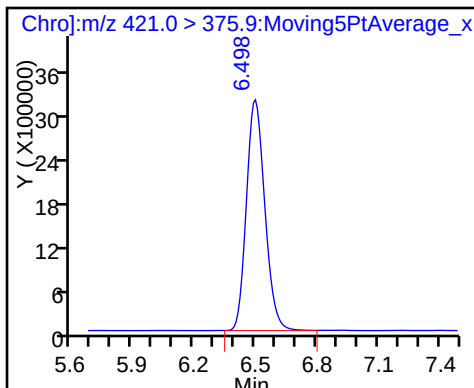
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

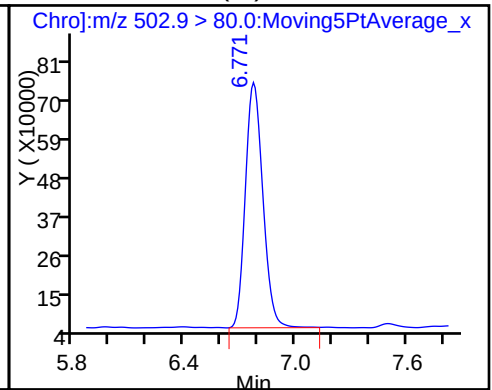
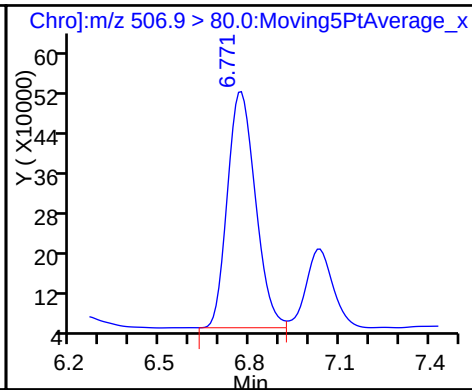
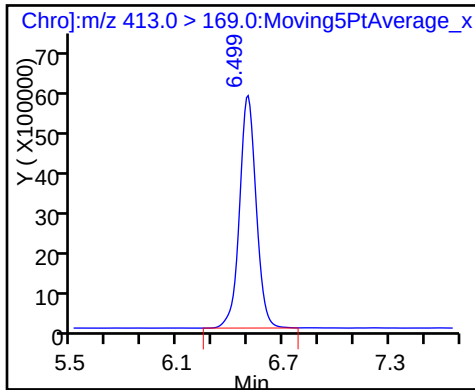
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

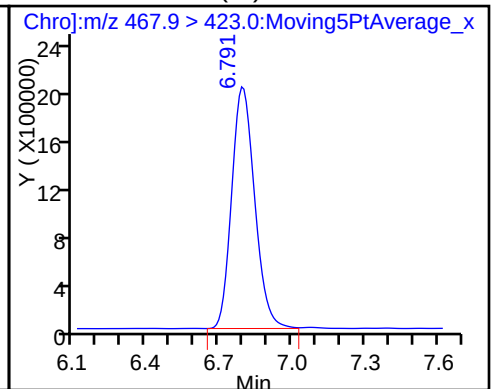
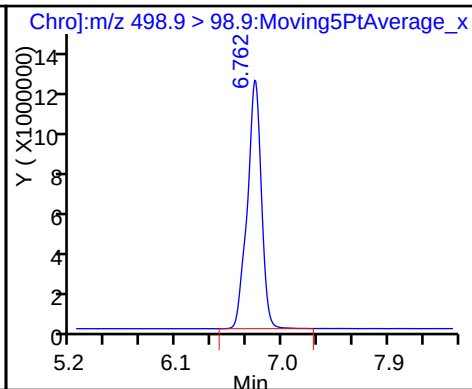
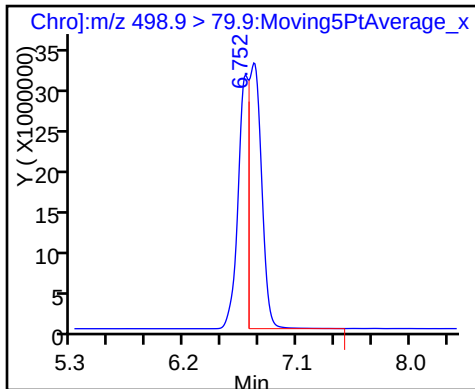
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

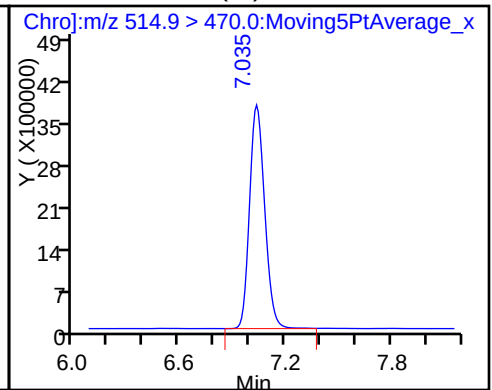
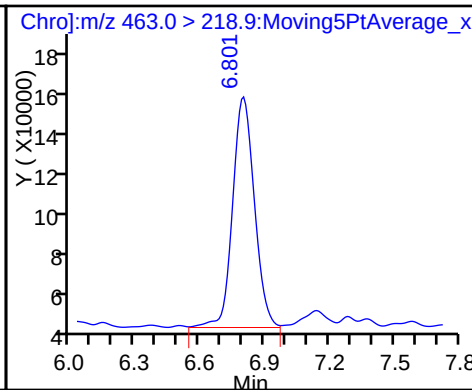
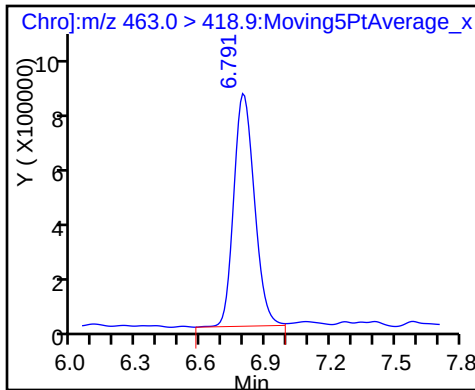
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

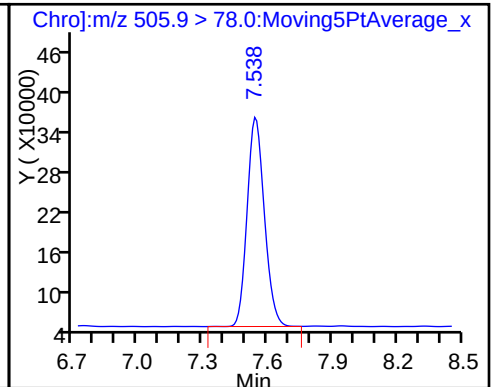
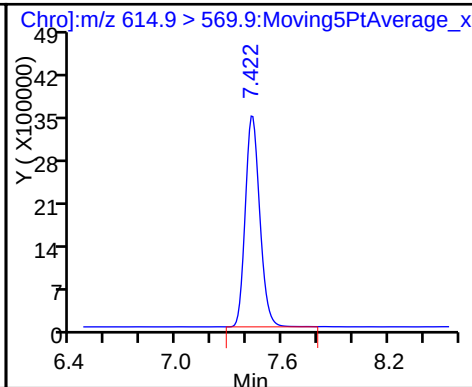
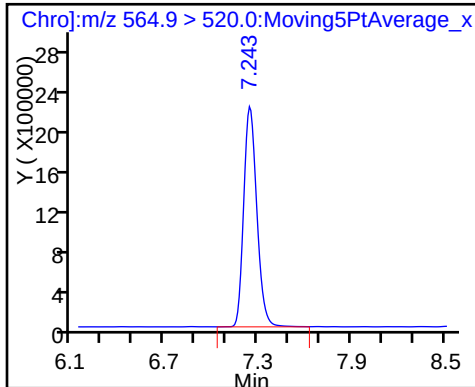
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CBDUP DL</u>	Lab Sample ID: <u>280-84914-1 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20041.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>279.1(mL)</u>	Date Analyzed: <u>06/30/2016 15:30</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>5</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	2.25	D	0.13	0.031
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	7.59	D	0.13	0.060

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	101	D	60-155
STL01054	13C8 PFOS	114	D	45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20041.d
 Lims ID: 280-84914-B-1-A Lab Sample ID: 280-84914-1
 Client ID: CBDUP
 Sample Type: Client
 Inject. Date: 30-Jun-2016 15:30:47 ALS Bottle#: 0 Worklist Smp#: 36
 Injection Vol: 25.0 ul Dil. Factor: 5.0000
 Sample Info: 280-84914-b-1-a, Sample
 Misc. Info.: 5X
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 17:19:23 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ

Process Host: XAWRK033

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.048	4.153	-0.105		4354452	2.00			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.270	5.327	-0.057	0.853	8160993	5.36			
298.9 > 98.9	5.270	5.327	-0.057	0.853	2695352		3.03(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.800	-0.067		3972490	2.00			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.234	-0.057		551358	1.89			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.168	6.234	-0.066	0.999	28160895	25.1			R
398.9 > 98.9	6.168	6.234	-0.066	0.999	9380204		3.00(1.30-2.41)		R
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.235	-0.066	0.946	23233906	8.56			
363.0 > 168.9	6.169	6.235	-0.066	0.946	6054036		3.84(3.35-6.23)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.584	-0.067	1.000	5179502	2.01			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.584	-0.066		6239284	2.00			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.584	-0.066	1.000	31304139	9.63			
413.0 > 169.0	6.518	6.584	-0.066	1.000	9343750		3.35(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.847	-0.057	1.000	937840	2.17			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.847	-0.057		1333370	1.91			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.781	6.847	-0.066	0.999	68751751	84.7			R
498.9 > 98.9	6.790	6.847	-0.057	1.000	25501006		2.70(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.867	-0.057		3887332	2.00			
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.877	-0.066	1.000	1786097	0.7791			
463.0 > 218.9	6.810	6.877	-0.066	1.000	257726		6.93(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.121	-0.067		4595142	2.00			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.328	-0.066		2284112	2.00			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.441	7.507	-0.066		3566301	2.00			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.576	7.586	-0.010		407452	2.00			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20041.d

Injection Date: 30-Jun-2016 15:30:47

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-1-A

Lab Sample ID: 280-84914-1

Client ID: CBDUP

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 36

Injection Vol: 25.0 ul

Dil. Factor: 5.0000

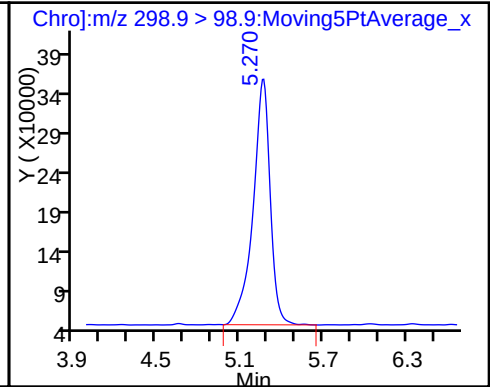
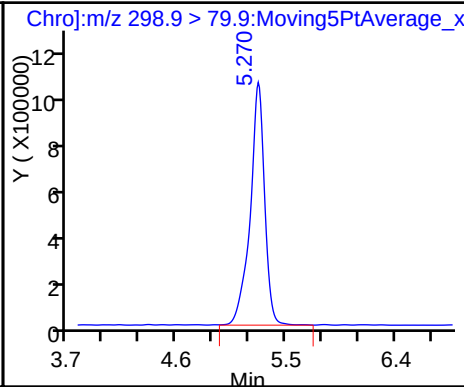
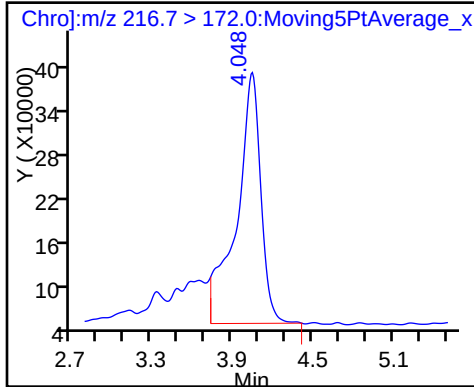
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

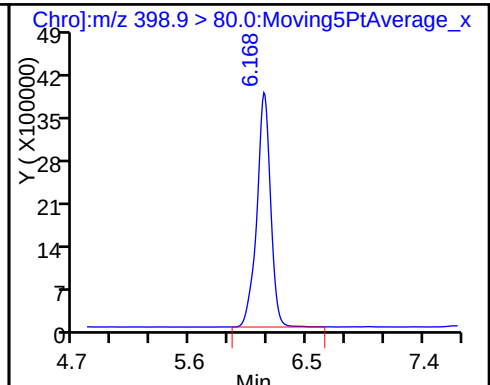
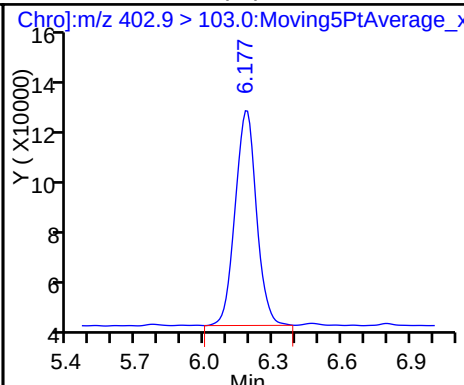
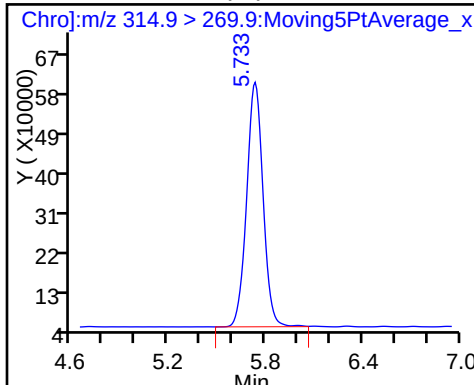
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

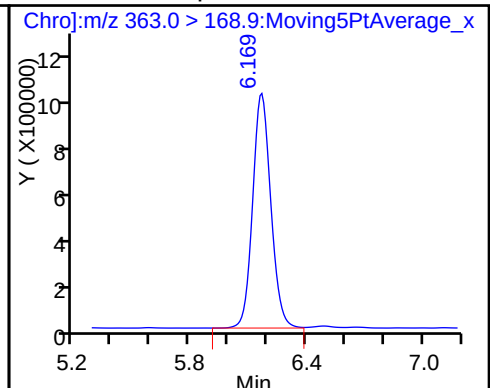
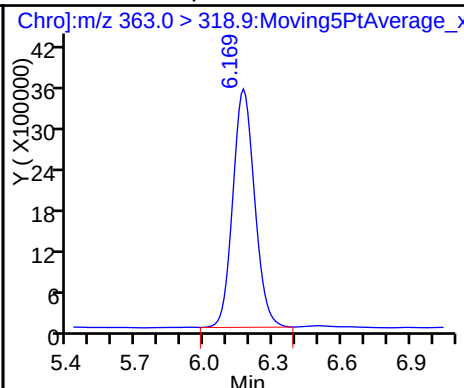
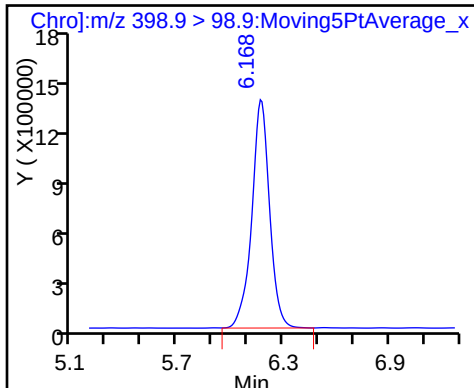
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate

8 Perfluoroheptanoic acid

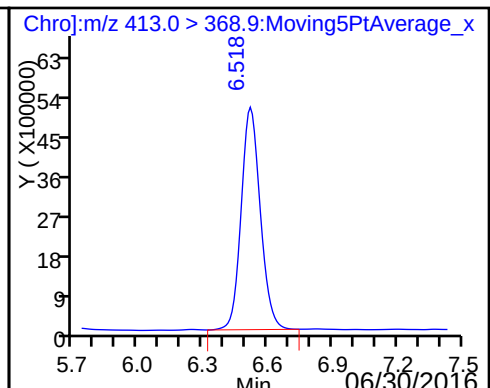
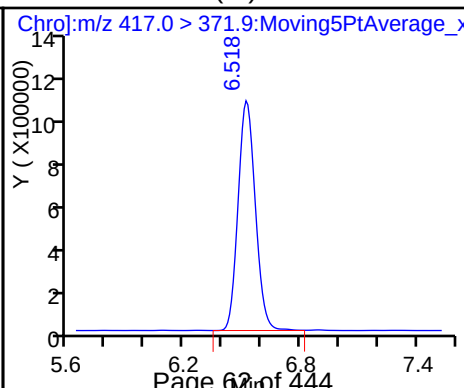
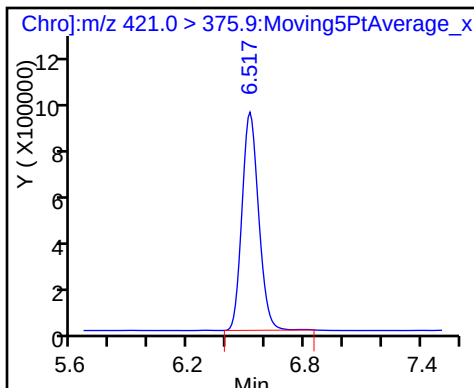
8 Perfluoroheptanoic acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

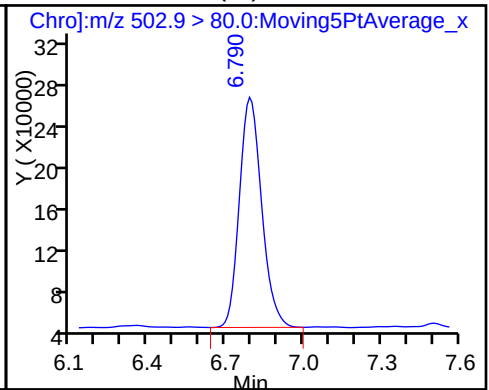
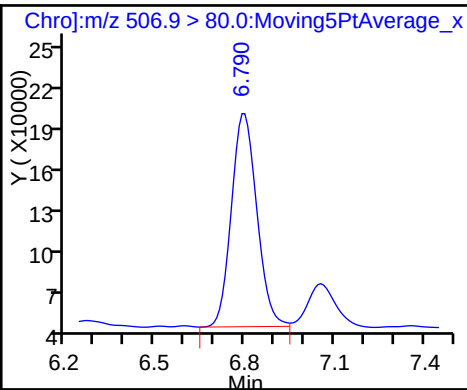
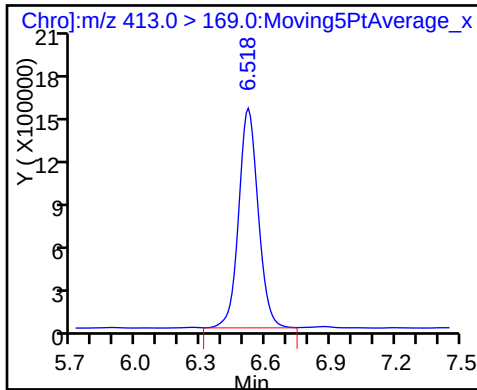
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

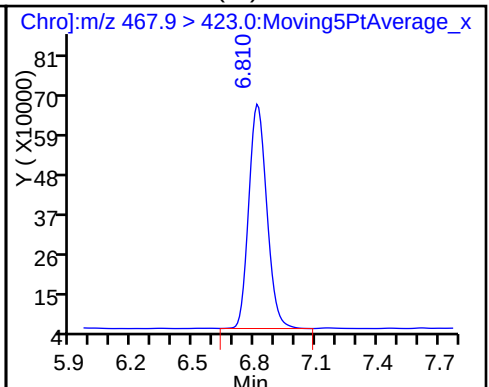
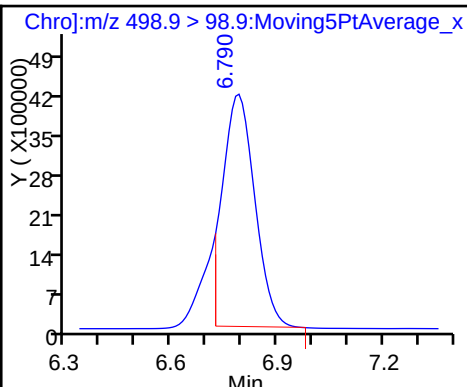
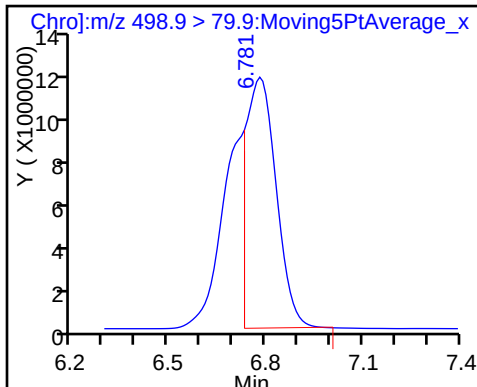
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

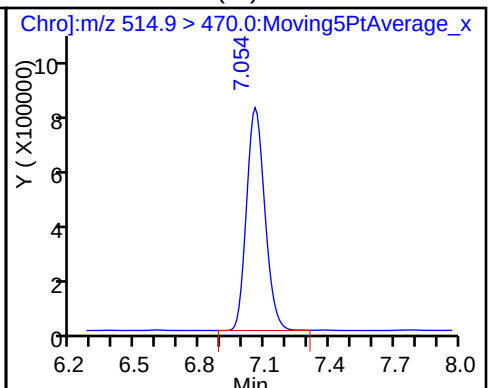
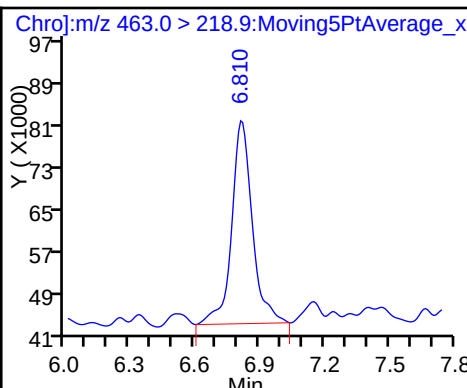
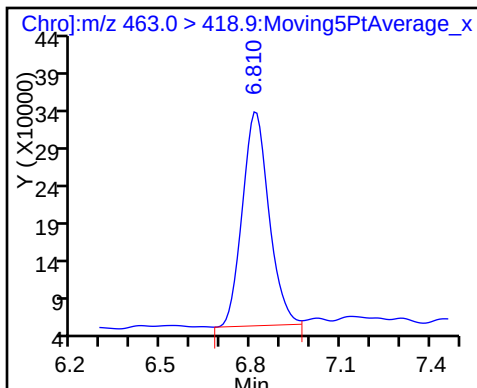
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

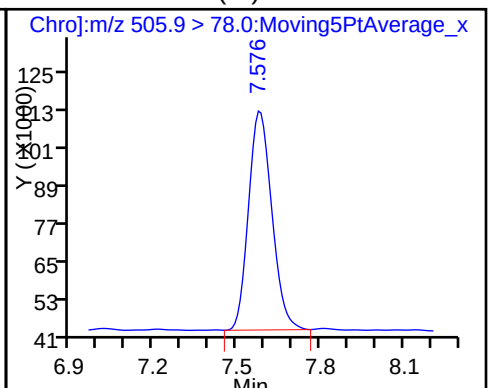
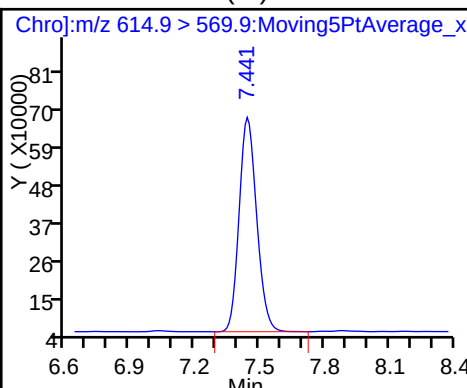
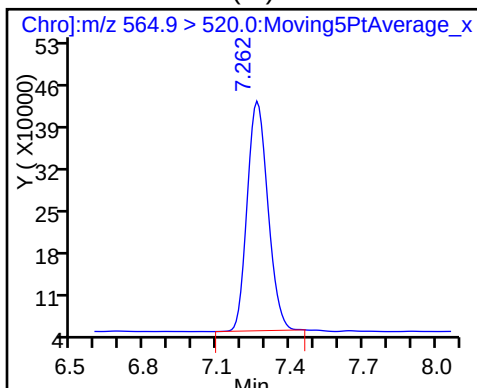
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>17KMH-1</u>	Lab Sample ID: <u>280-84914-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20012.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 09:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>246.1 (mL)</u>	Date Analyzed: <u>06/30/2016 09:34</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.037		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.027	J	0.030	0.0071
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.067		0.030	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.027		0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	106		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20012.d
 Lims ID: 280-84914-A-2-A Lab Sample ID: 280-84914-2
 Client ID: 17KMH-1
 Sample Type: Client
 Inject. Date: 30-Jun-2016 09:34:05 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-2-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyera

Date: 30-Jun-2016 12:12:44

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.001 4.153 -0.152 30535704 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.260 5.327 -0.067 0.854 389807 0.2789

298.9 > 98.9 5.260 5.327 -0.067 0.854 150071 2.60(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.714 5.800 -0.086 22776263 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 6.235 -0.085 0.946 5446727 1.80

363.0 > 168.9 6.150 6.235 -0.085 0.946 1391135 3.92(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.158 6.234 -0.076 2604394 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.149 6.234 -0.085 0.998 1486605 1.32

398.9 > 98.9 6.159 6.234 -0.075 1.000 524548 2.83(1.30-2.41)

R
R

\$ 14 13C8 PFOA

421.0 > 375.9 6.498 6.584 -0.086 1.000 29457626 10.6

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.499 6.584 -0.085 34223056 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 6.584 -0.085 1.000 5009077 1.34

413.0 > 169.0 6.499 6.584 -0.085 1.000 1716187 2.92(2.86-5.31)

\$ 18 13C8 PFOS

506.9 > 80.0 6.771 6.847 -0.076 1.000 5324922 9.84

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.771 6.847 -0.076 8459076 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.762 6.847 -0.085 0.999 3446387 3.28

498.9 > 98.9 6.762 6.847 -0.085 0.999 939744 3.67(1.31-2.43)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.867	-0.076		27192230	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.877	-0.085	1.000	601559	0.1544			
463.0 > 218.9	6.782	6.877	-0.094	0.999	102819		5.85(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.121	-0.086		27946097	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.328	-0.085		14416113	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.422	7.507	-0.085		24983378	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.548	7.586	-0.038		1118766	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20012.d

Injection Date: 30-Jun-2016 09:34:05

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-2-A

Lab Sample ID: 280-84914-2

Client ID: 17KMH-1

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 7

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

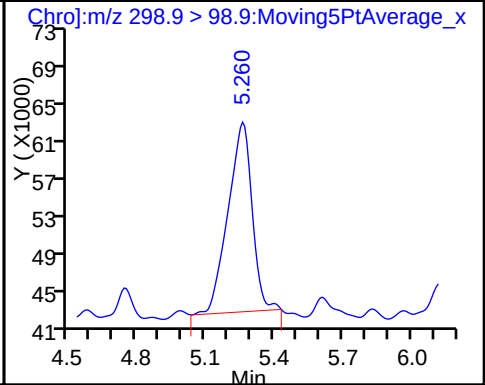
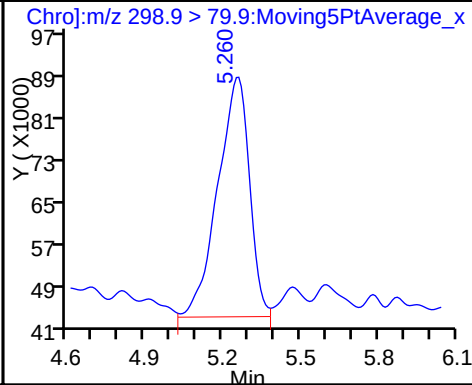
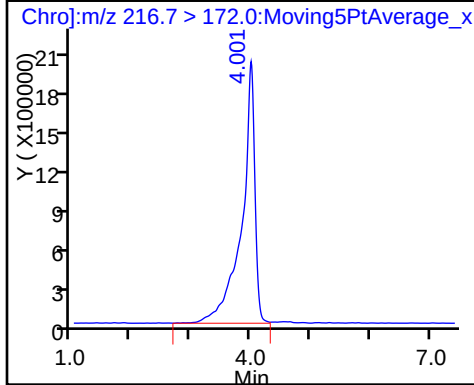
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

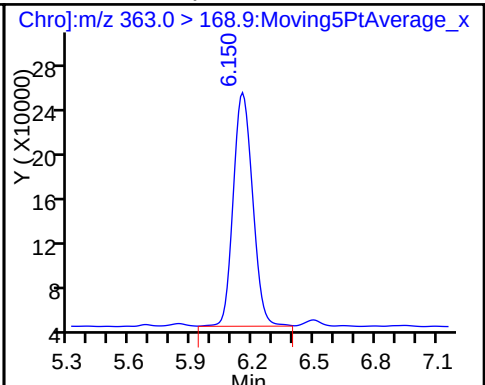
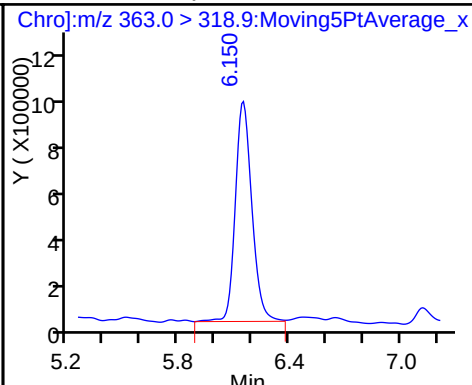
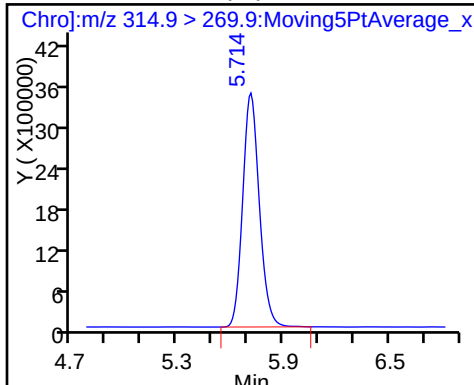
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

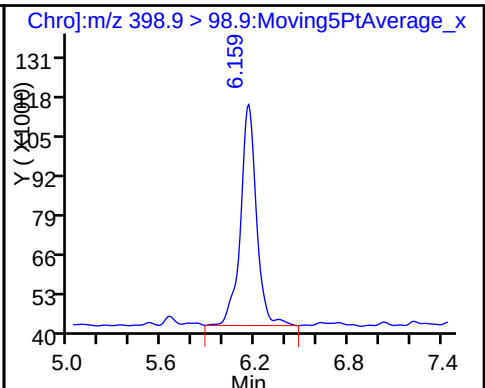
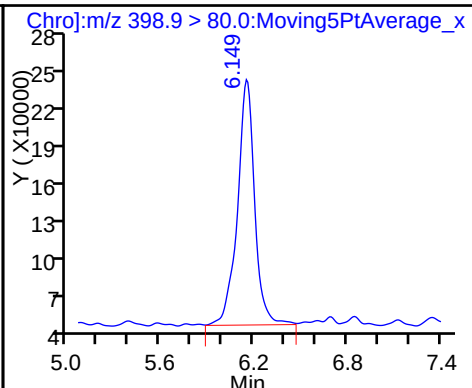
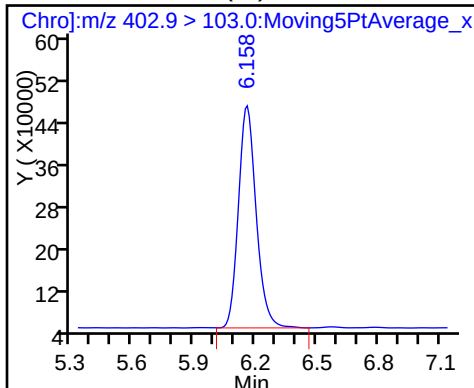
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

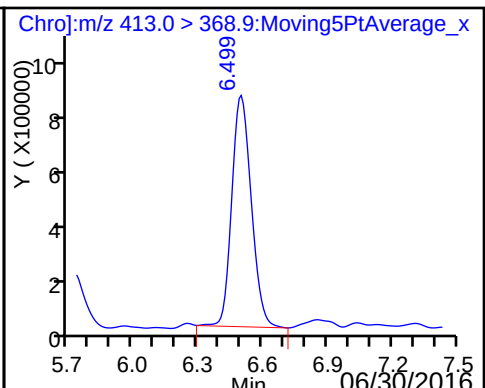
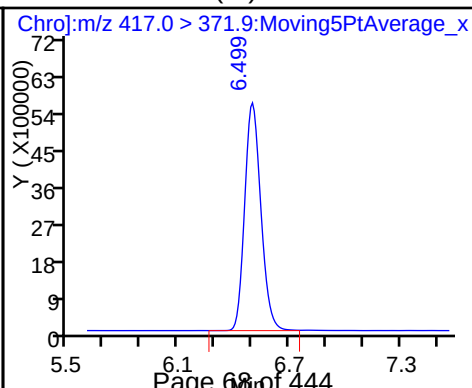
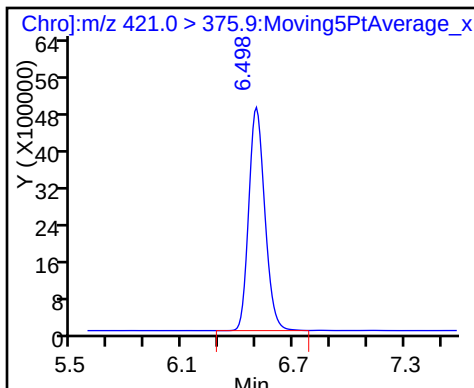
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

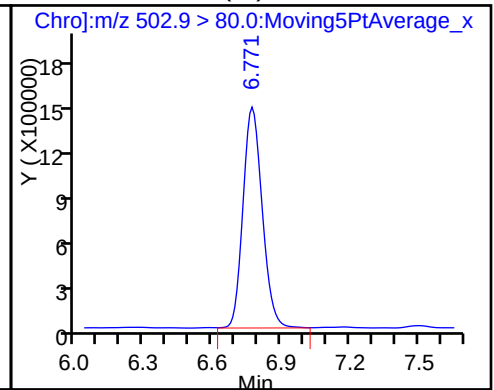
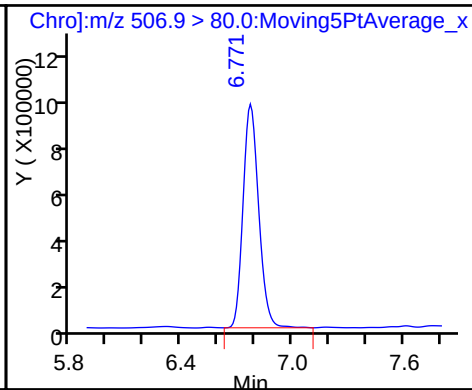
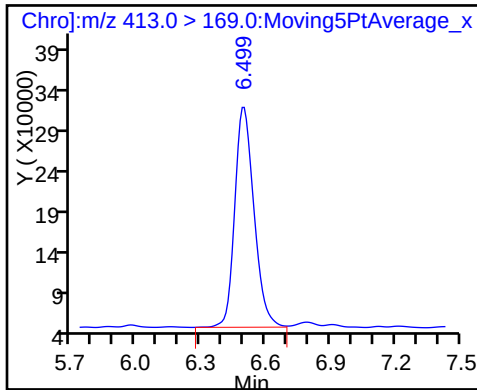
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

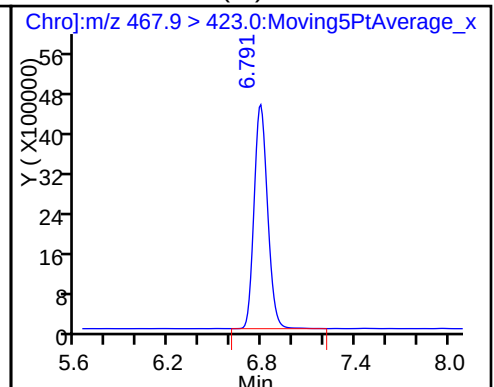
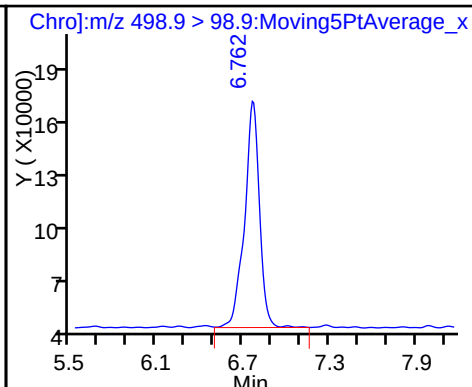
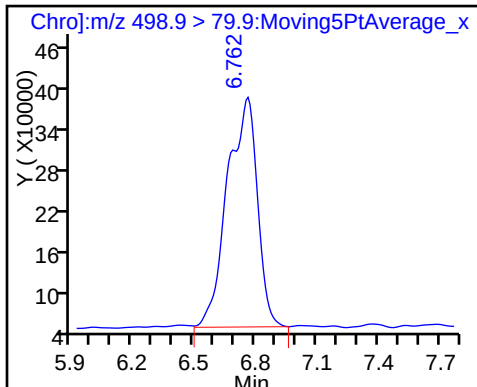
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

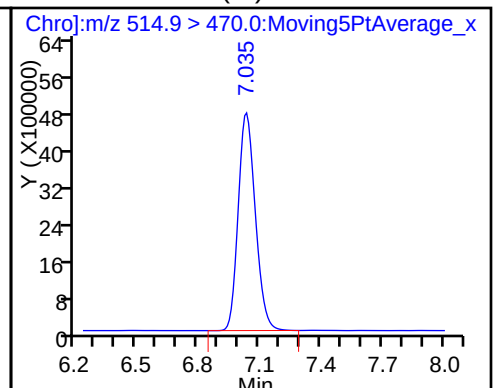
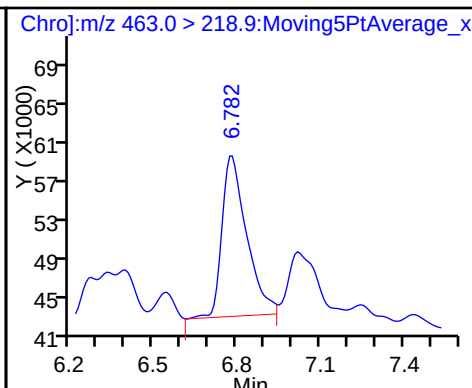
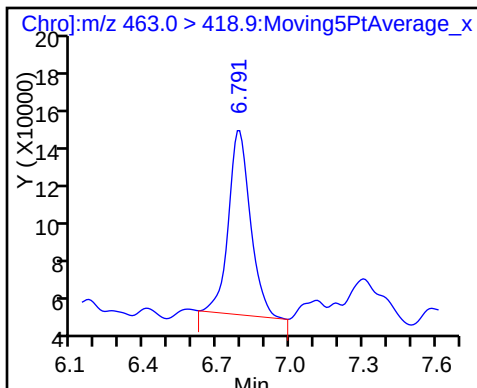
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

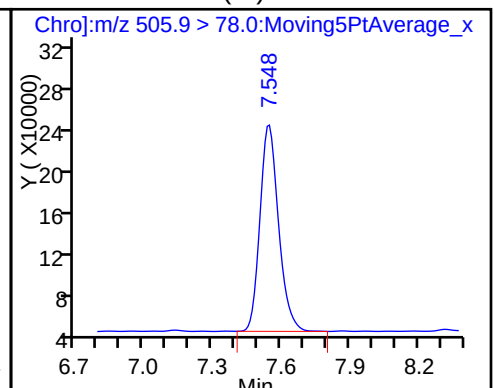
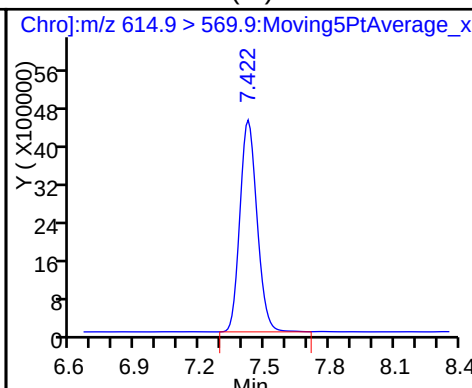
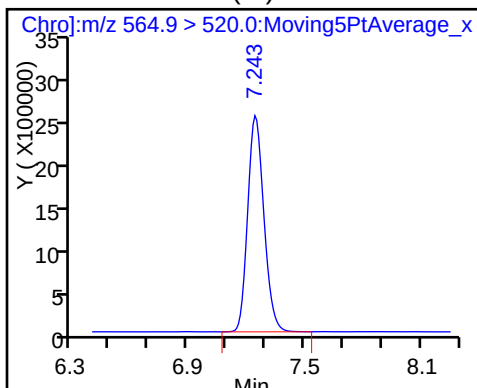
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#6</u>	Lab Sample ID: <u>280-84914-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20013.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 10:18</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>265.2 (mL)</u>	Date Analyzed: <u>06/30/2016 09:46</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.034		0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.078		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.089		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.19		0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.026		0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20013.d
 Lims ID: 280-84914-D-3-A Lab Sample ID: 280-84914-3
 Client ID: TE#6
 Sample Type: Client
 Inject. Date: 30-Jun-2016 09:46:24 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-d-3-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyera

Date: 30-Jun-2016 12:13:16

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.153	-0.152		34023907	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.011	4.162	-0.151	1.002	52736777	14.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.213	-0.094	0.896	110852641	44.6			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.327	-0.086	0.852	2763802	1.82			
298.9 > 98.9	5.241	5.327	-0.086	0.852	918106		3.01(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.327	-0.086	0.852	2763802	1.82			
298.9 > 98.9	5.241	5.327	-0.086	0.852	918106		3.01(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.800	-0.086		21174342	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.800	-0.086	1.000	35634845	17.8			
313.0 > 118.6	5.714	5.800	-0.086	1.000	989797		36.00(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.235	-0.085	0.948	11999459	4.16			
363.0 > 168.9	6.140	6.235	-0.095	0.946	3147528		3.81(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.234	-0.085		2755554	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.234	-0.085	1.000	5393158	4.74			R
398.9 > 98.9	6.149	6.234	-0.085	1.000	1658587		3.25(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.234	-0.085	1.000	5393158	4.74			
398.9 > 98.9	6.149	6.234	-0.085	1.000	1658587		3.25(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.584	-0.095	1.000	27717453	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.584	-0.095		33018695	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.584	-0.095	1.000	4869457	1.35			
413.0 > 169.0	6.489	6.584	-0.095	1.000	1545566		3.15(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.847	-0.086	1.000	5280009	9.58			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.847	-0.085		8614229	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.847	-0.085	1.000	10359882	9.81			R
498.9 > 98.9	6.762	6.847	-0.085	1.000	3120193		3.32(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.867	-0.085		25610862	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.877	-0.094	1.000	737288	0.2141			
463.0 > 218.9	6.772	6.877	-0.104	0.999	99163		7.44(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.121	-0.095		24152604	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.111				ND			
513.0 > 219.0		7.111							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.328	-0.085		12126697	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.319				ND			
563.0 > 268.9		7.319							
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.507	-0.085		20717061	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.498				ND			
613.0 > 168.9		7.498							
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.586	-0.048		863653	10.0			S

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20013.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.587				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.658				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.791				ND			
712.9 > 169.0		7.791							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20013.d

Injection Date: 30-Jun-2016 09:46:24

Instrument ID: LC_LCMS5

Lims ID: 280-84914-D-3-A

Lab Sample ID: 280-84914-3

Client ID: TE#6

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 8

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

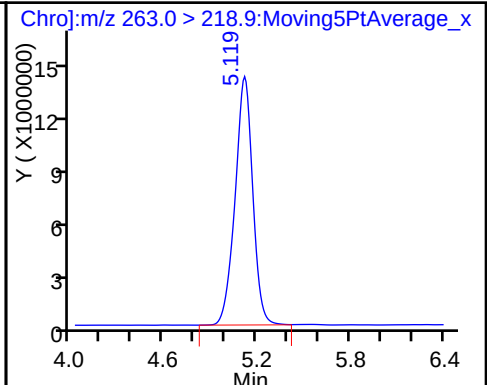
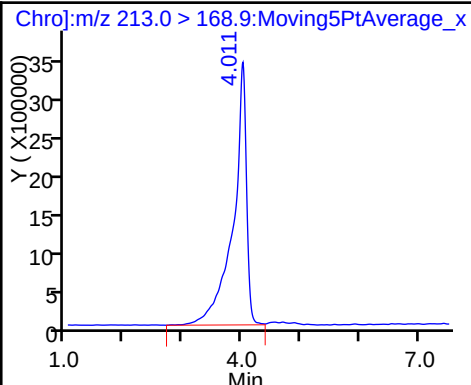
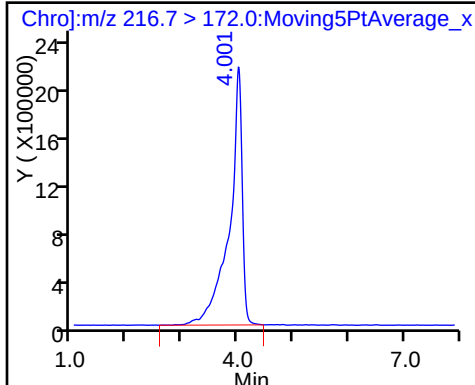
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Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

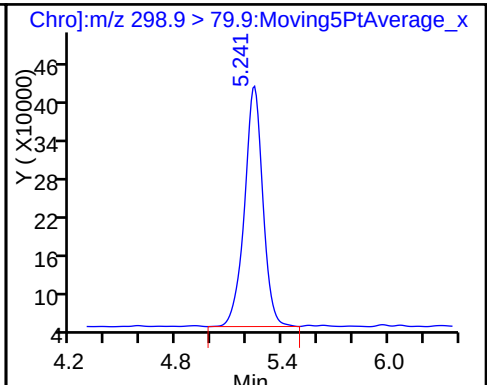
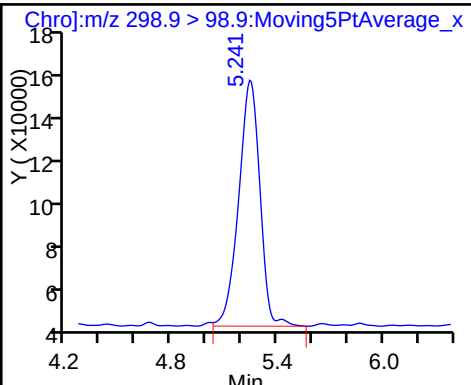
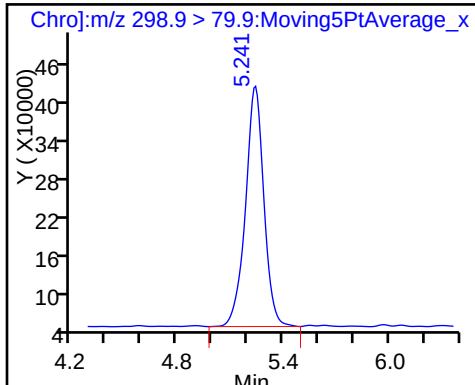
3 Perfluoropentanoic acid



4 Perfluorobutane Sulfonate

4 Perfluorobutane Sulfonate

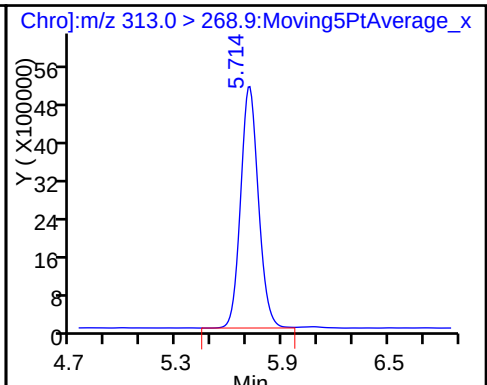
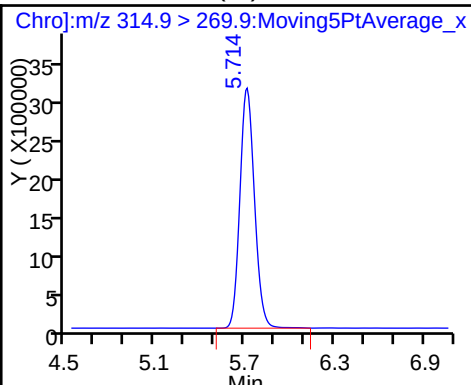
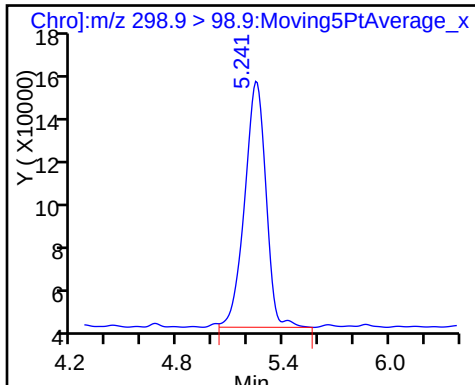
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

* 6 13C2 PFHxA (IS)

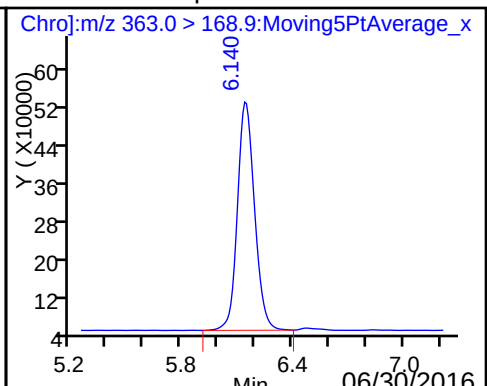
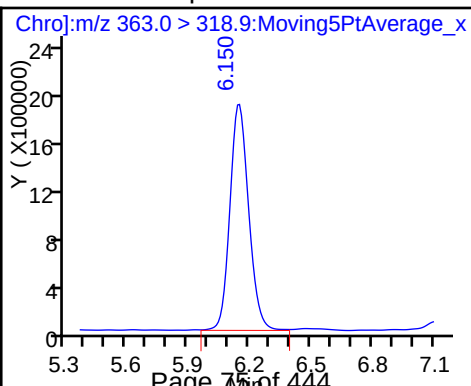
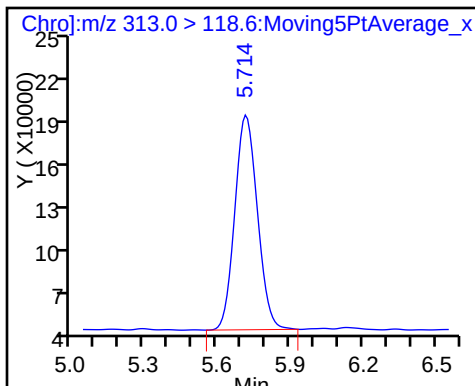
7 Perfluorohexanoic acid



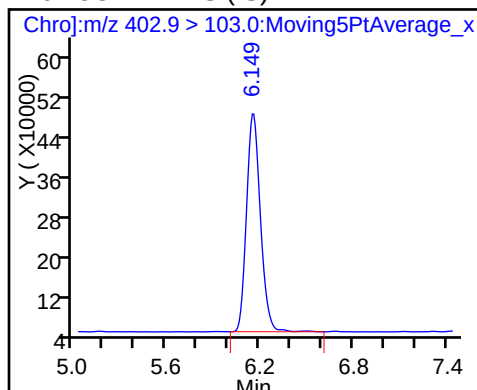
7 Perfluorohexanoic acid

8 Perfluoroheptanoic acid

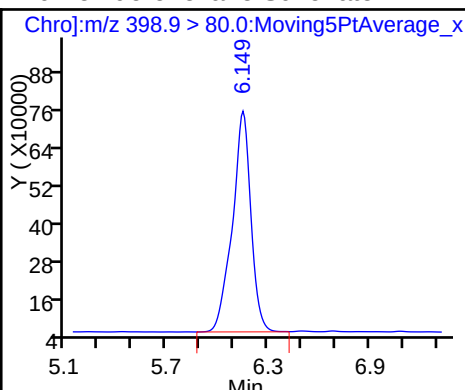
8 Perfluoroheptanoic acid



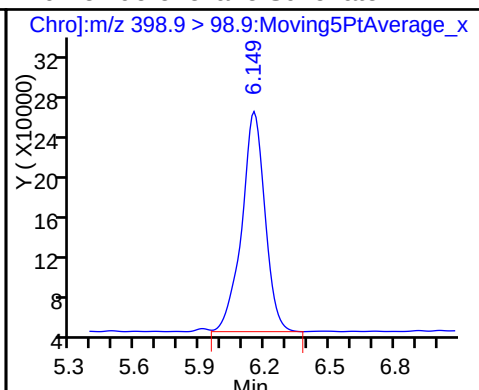
* 9 18O2 PFHxS (IS)



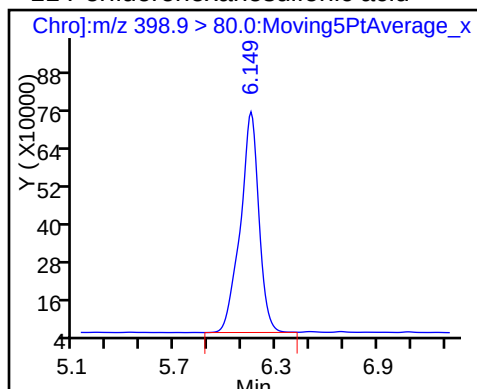
10 Perfluorohexane Sulfonate



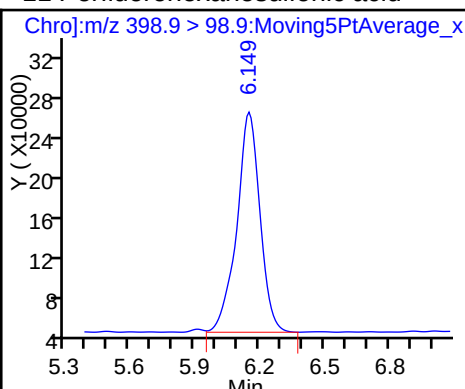
10 Perfluorohexane Sulfonate



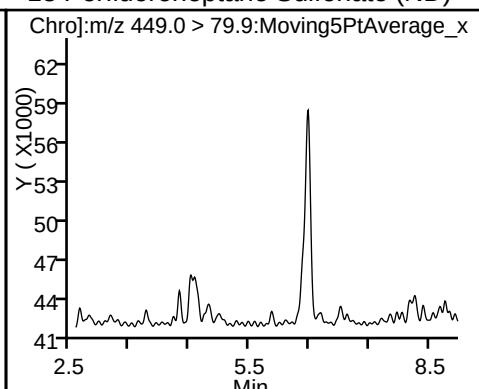
11 Perfluorohexanesulfonic acid



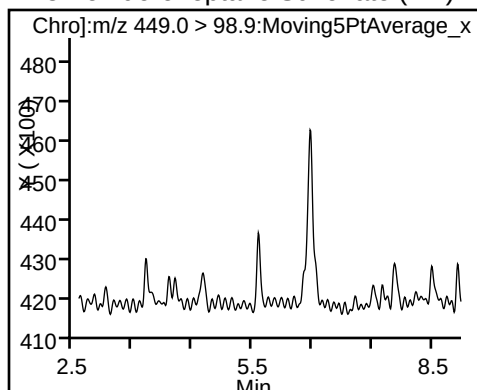
11 Perfluorohexanesulfonic acid



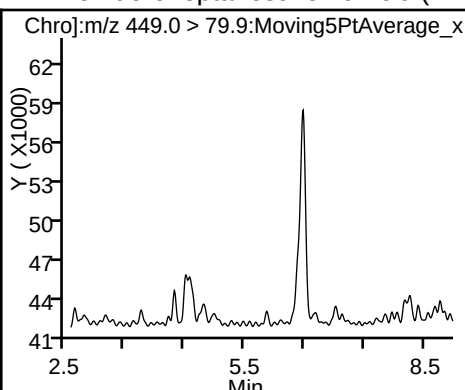
13 Perfluoroheptane Sulfonate (ND)



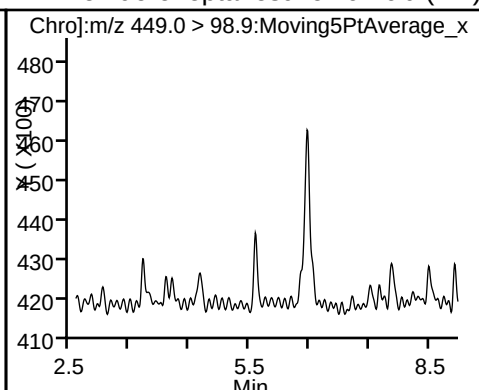
13 Perfluoroheptane Sulfonate (ND)



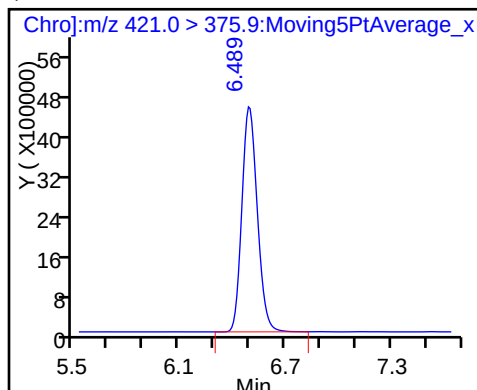
12 Perfluoroheptanesulfonic Acid (ND)



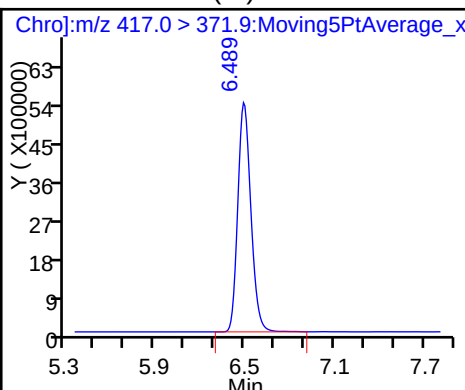
12 Perfluoroheptanesulfonic Acid (ND)



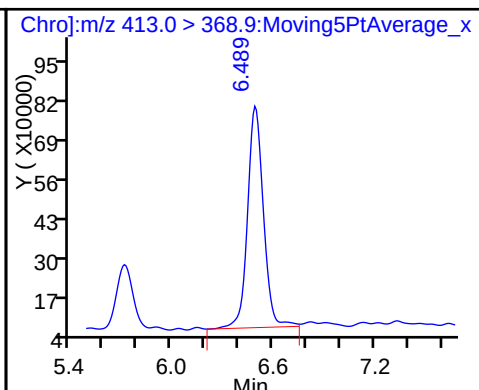
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



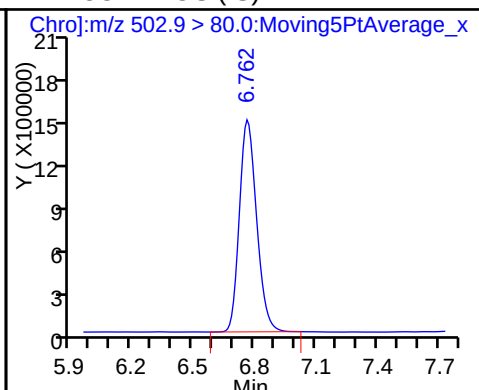
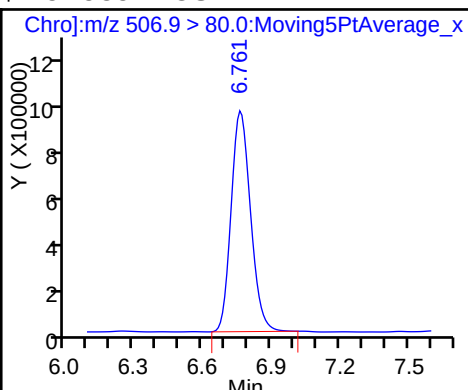
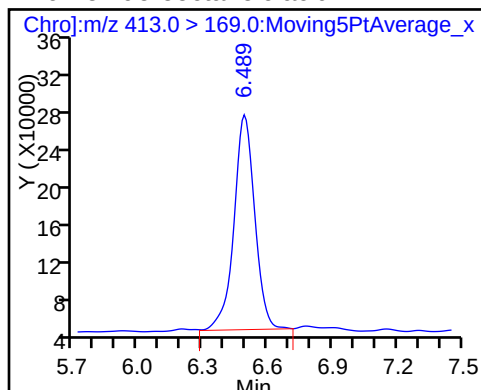
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

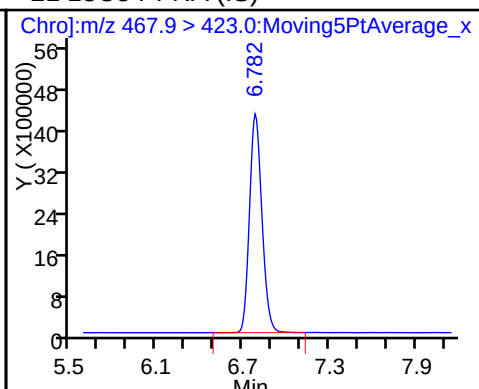
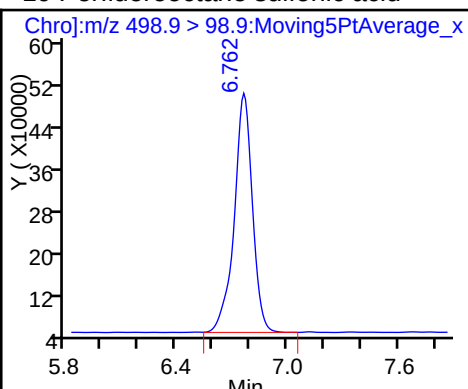
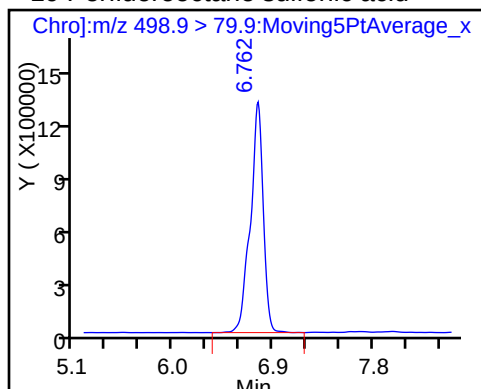
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

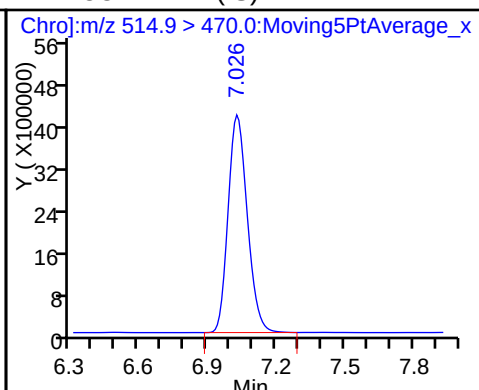
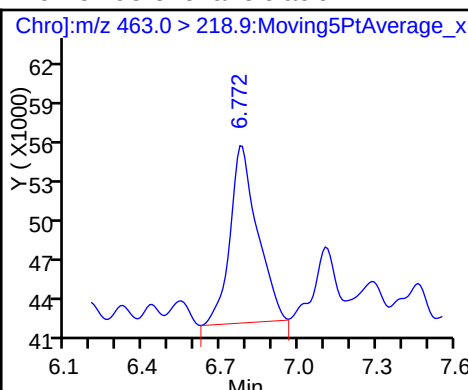
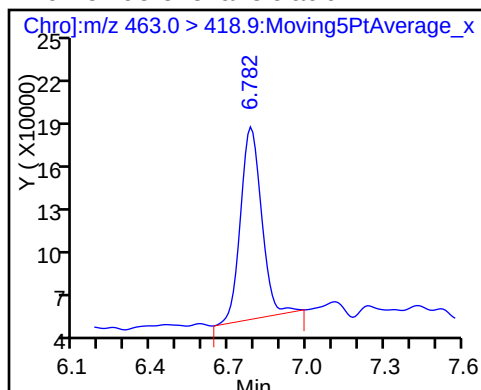
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

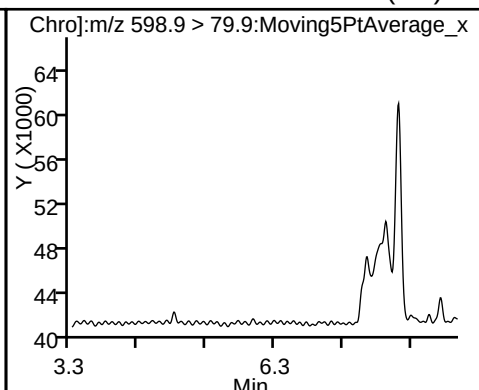
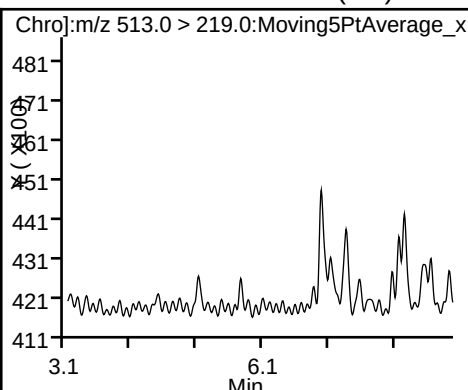
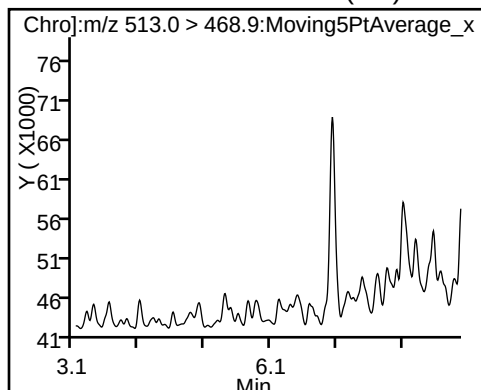
* 22 13C2 PFDA (IS)



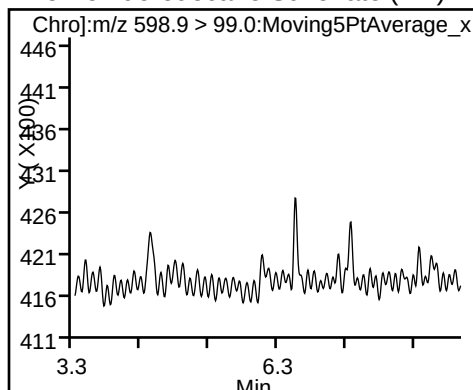
23 Perfluorodecanoic acid (ND)

23 Perfluorodecanoic acid (ND)

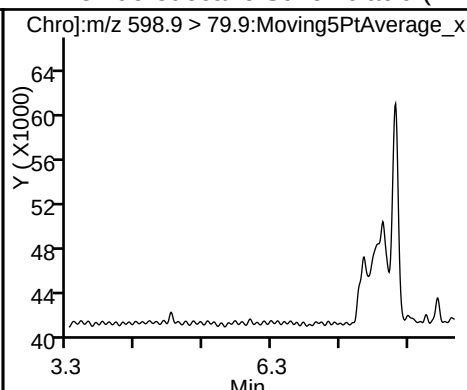
25 Perfluorodecane Sulfonate (ND)



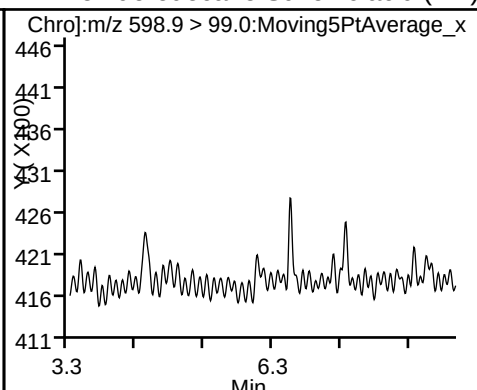
25 Perfluorodecane Sulfonate (ND)



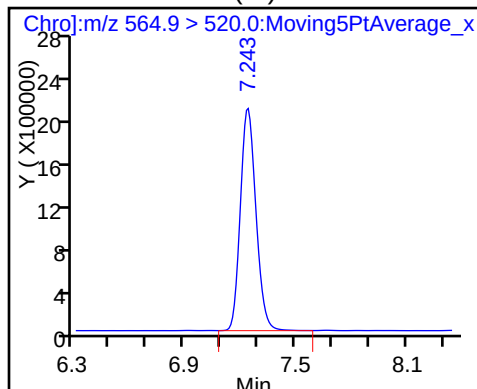
24 Perfluorodecane Sulfonic acid (ND)



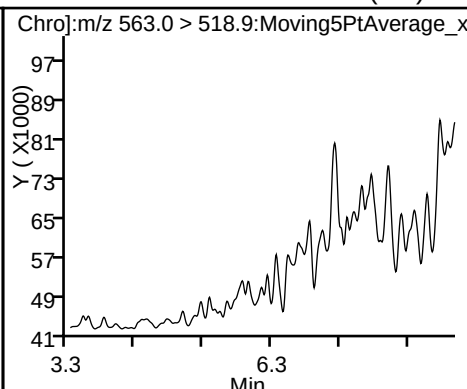
24 Perfluorodecane Sulfonic acid (ND)



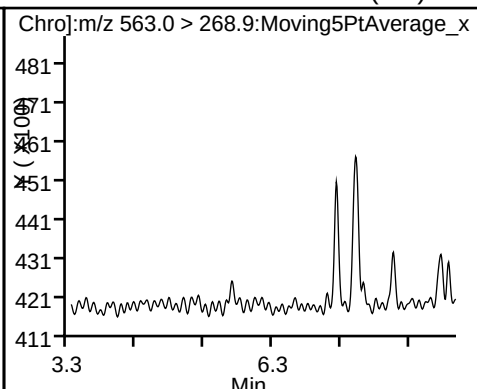
* 26 13C2 PFUnA (IS)



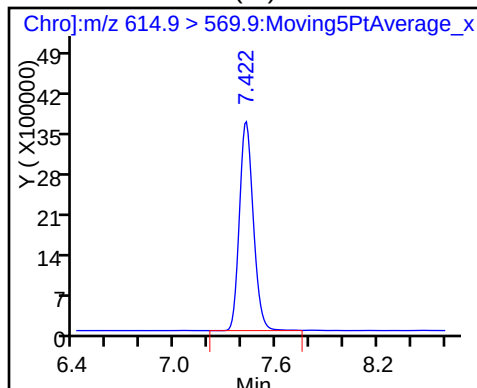
27 Perfluoroundecanoic acid (ND)



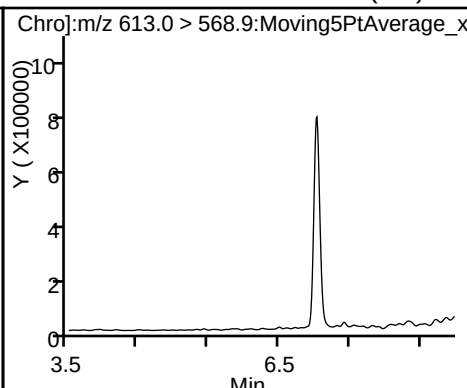
27 Perfluoroundecanoic acid (ND)



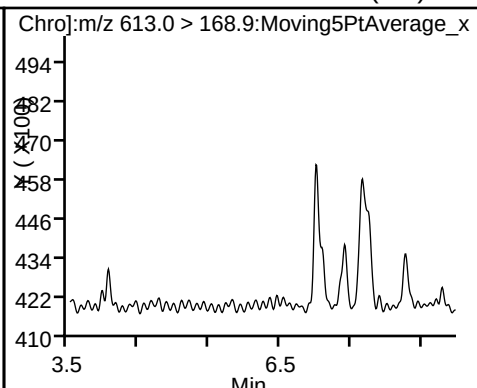
* 28 13C2 PFDaA (IS)



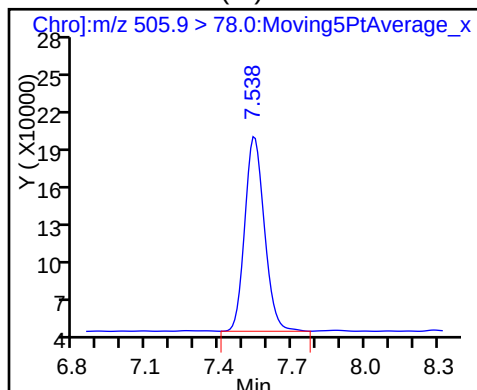
29 Perfluorododecanoic acid (ND)



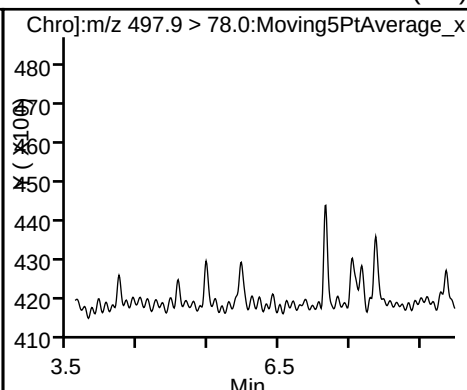
29 Perfluorododecanoic acid (ND)



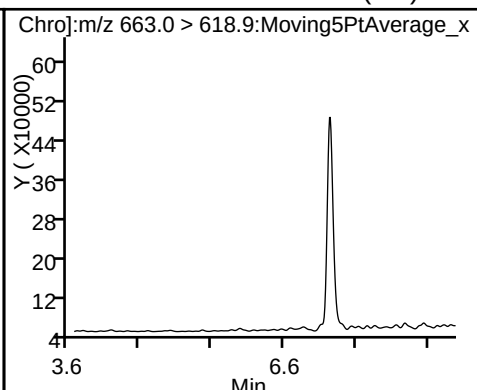
* 31 13C8 FOSA (IS)



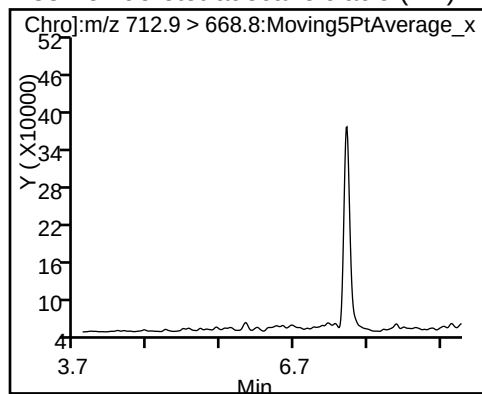
32 Perfluorooctane Sulfonamide (ND)



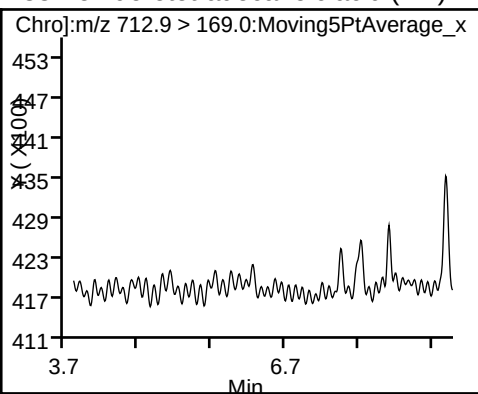
30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#2</u>	Lab Sample ID: <u>280-84914-4</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20016.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 11:15</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>276.6(mL)</u>	Date Analyzed: <u>06/30/2016 10:23</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.016	J	0.018	0.0074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.021	J	0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.027		0.027	0.0063
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	103		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20016.d
 Lims ID: 280-84914-B-4-A Lab Sample ID: 280-84914-4
 Client ID: TE#2
 Sample Type: Client
 Inject. Date: 30-Jun-2016 10:23:17 ALS Bottle#: 0 Worklist Smp#: 11
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-4-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:14:44

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.153	-0.161		33743102	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.327	-0.095	0.852	1302900	0.9085			
298.9 > 98.9	5.222	5.327	-0.105	0.851	513174		2.54(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.800	-0.095		22161594	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.131	6.235	-0.104	0.946	3374497	1.16			
363.0 > 168.9	6.131	6.235	-0.104	0.946	684728		4.93(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.139	6.234	-0.095		2617964	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.064	6.234	-0.170	0.988	1676740	1.49			R
398.9 > 98.9	6.102	6.234	-0.132	0.994	625566		2.68(1.30-2.41)		R
\$ 14 13C8 PFOA									
421.0 > 375.9	6.480	6.584	-0.104	1.000	27347371	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.480	6.584	-0.104		32749568	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.480	6.584	-0.104	1.000	1217004	0.2875			R
413.0 > 169.0	6.489	6.584	-0.095	1.001	492083		2.47(2.86-5.31)		R
\$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.847	-0.095	1.000	4874130	9.89			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.847	-0.095		7705423	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.847				ND			
498.9 > 98.9		6.847							

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.867	-0.095		24306103	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.877				ND			
463.0 > 218.9		6.877							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.121	-0.105		20560819	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.328	-0.104		11692606	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.403	7.507	-0.104		19871185	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.586	-0.048		1171191	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20016.d

Injection Date: 30-Jun-2016 10:23:17

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-4-A

Lab Sample ID: 280-84914-4

Client ID: TE#2

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 11

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

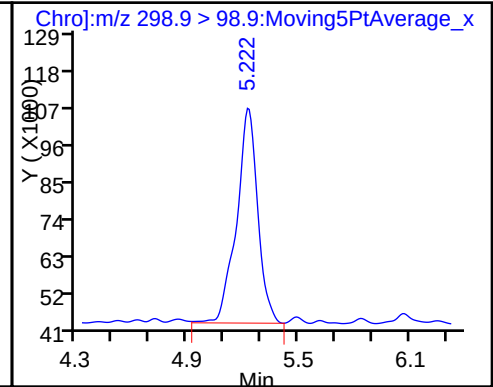
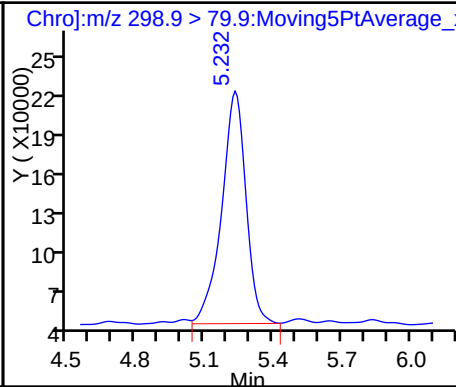
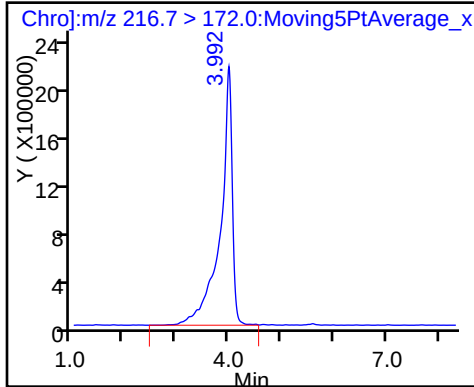
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

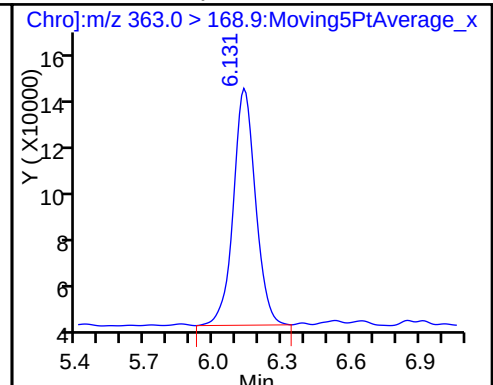
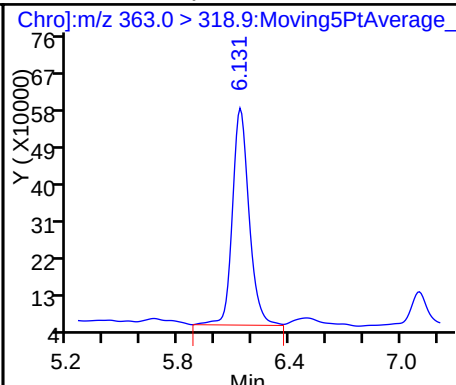
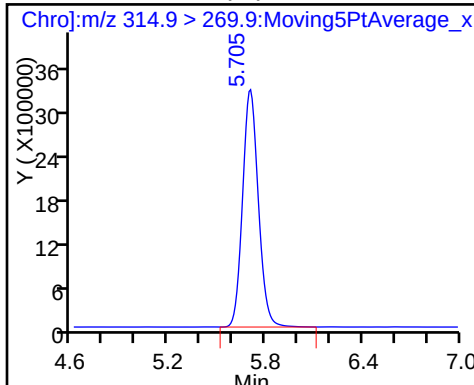
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

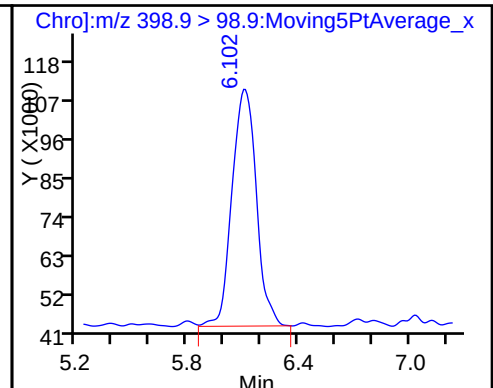
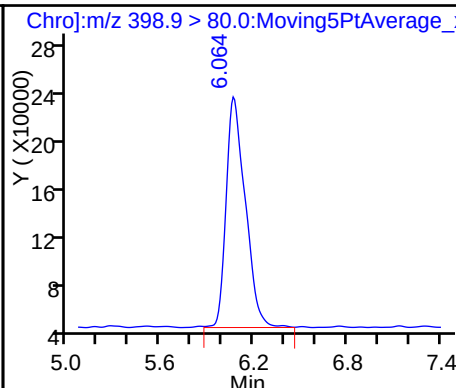
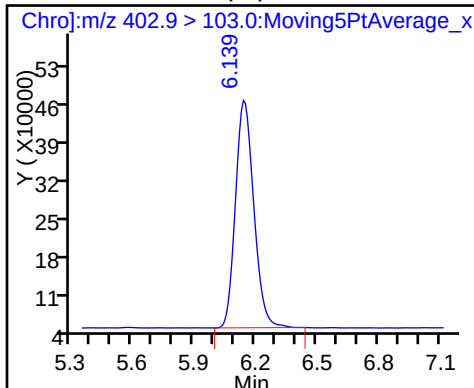
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

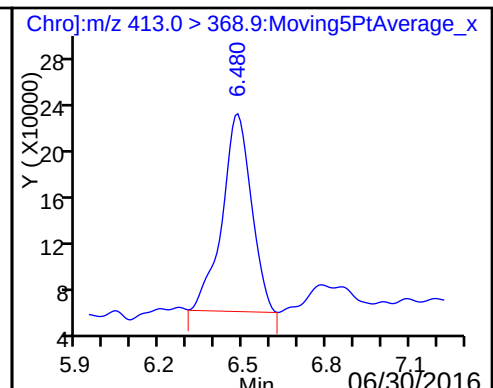
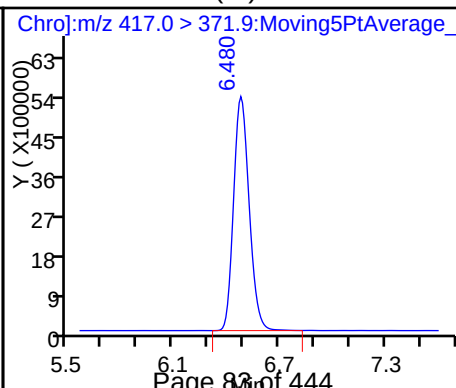
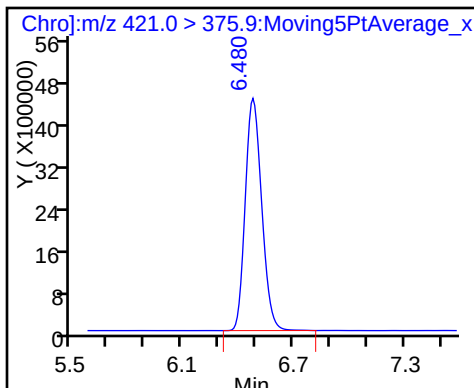
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

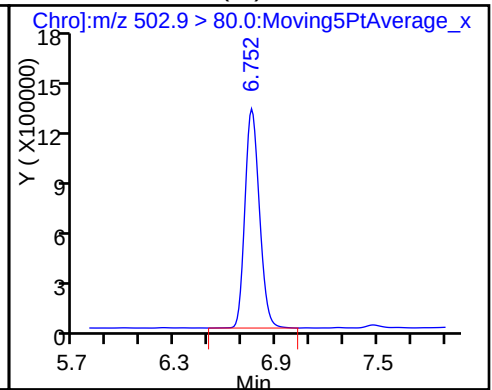
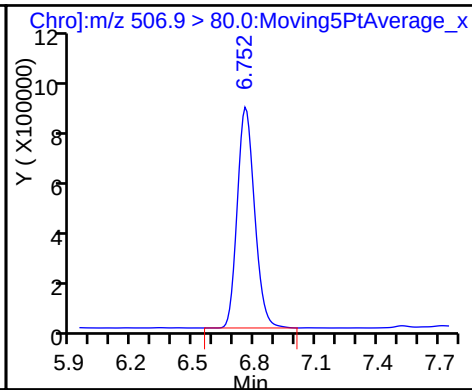
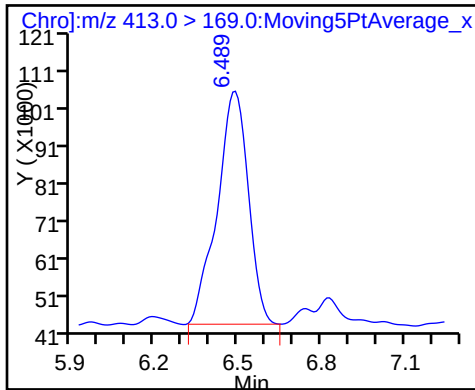
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

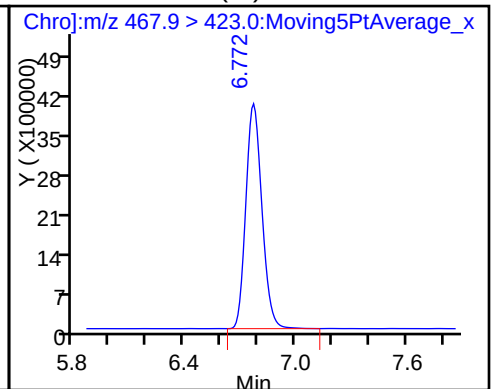
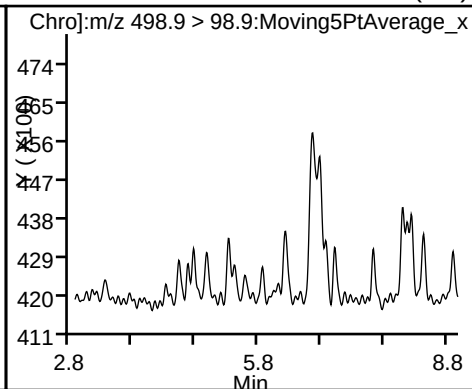
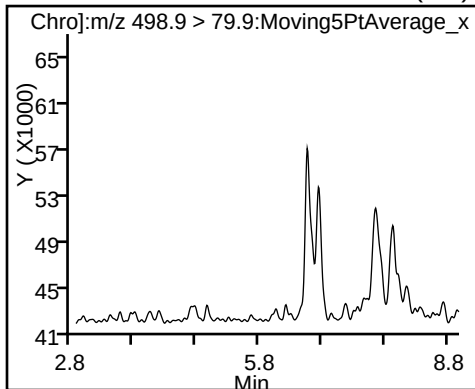
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

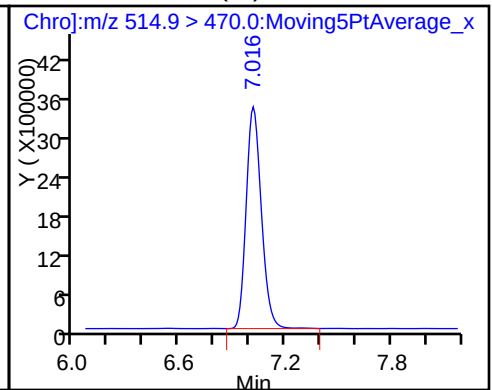
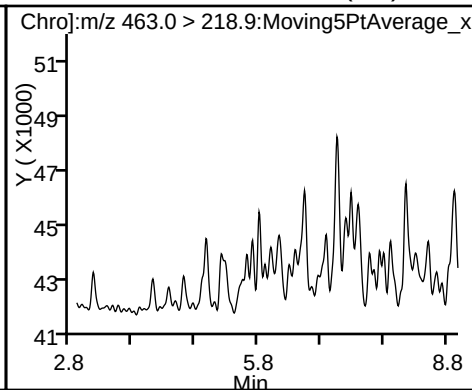
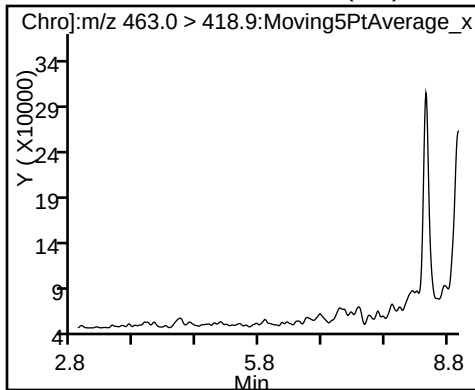
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

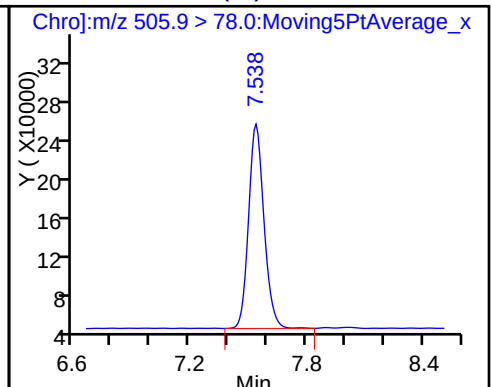
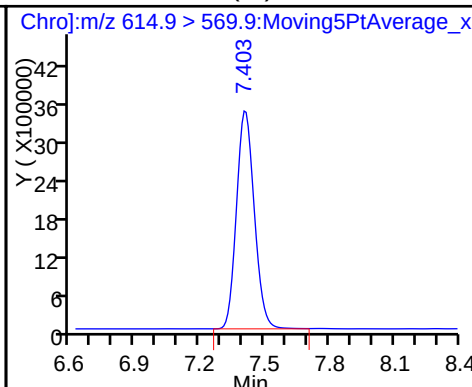
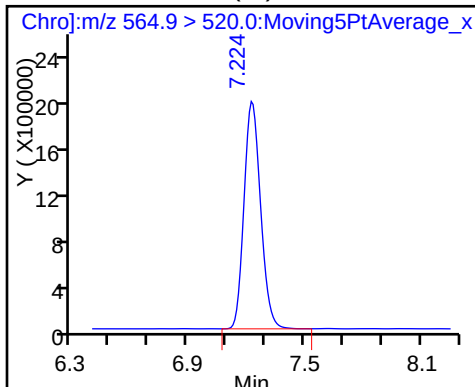
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#1</u>	Lab Sample ID: <u>280-84914-5</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20017.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 12:25</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>263.3(mL)</u>	Date Analyzed: <u>06/30/2016 10:35</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.18		0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.30		0.028	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.74		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.036	J	0.038	0.017
335-67-1	Perfluorooctanoic acid (PFOA)	0.48		0.019	0.0093

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	97		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20017.d
 Lims ID: 280-84914-B-5-A Lab Sample ID: 280-84914-5
 Client ID: TE#1
 Sample Type: Client
 Inject. Date: 30-Jun-2016 10:35:35 ALS Bottle#: 0 Worklist Smp#: 12
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-5-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer Date: 30-Jun-2016 12:15:06

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.982	4.153	-0.171		32274251	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.327	-0.095	0.852	12615006	9.68			
298.9 > 98.9	5.222	5.327	-0.105	0.851	4134243		3.05(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.695	5.800	-0.105		18242385	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.131	6.235	-0.104	0.946	37470794	15.7			
363.0 > 168.9	6.131	6.235	-0.104	0.946	9527683		3.93(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.139	6.234	-0.095		2359439	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.140	6.234	-0.094	1.000	37461922	39.1			R
398.9 > 98.9	6.140	6.234	-0.094	1.000	12527562		2.99(1.30-2.41)		R
\$ 14 13C8 PFOA									
421.0 > 375.9	6.480	6.584	-0.104	1.000	23122308	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.480	6.584	-0.104		27393198	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.480	6.584	-0.104	1.000	71707632	25.2			
413.0 > 169.0	6.480	6.584	-0.104	1.000	21829067		3.28(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.847	-0.095	1.000	3174958	9.29			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.847	-0.095		5344496	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.752	6.847	-0.095	1.000	112193672	172.5			RE
498.9 > 98.9	6.752	6.847	-0.095	1.000	35936591		3.12(1.31-2.43)		RE

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.867	-0.095		16332090	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.772	6.877	-0.104	1.000	3489978	1.87			
463.0 > 218.9	6.782	6.877	-0.094	1.001	513146		6.80(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.121	-0.105		18131126	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.328	-0.104		9388814	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.403	7.507	-0.104		17260535	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.586	-0.057		1398890	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20017.d

Injection Date: 30-Jun-2016 10:35:35

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-5-A

Lab Sample ID: 280-84914-5

Client ID: TE#1

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 12

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

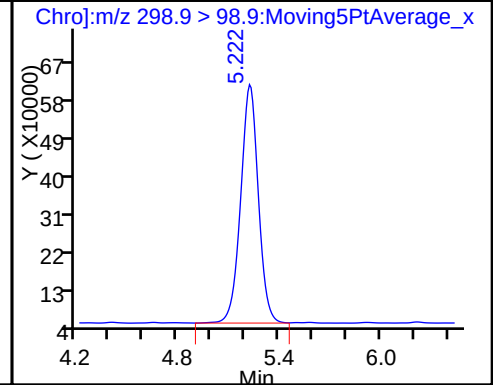
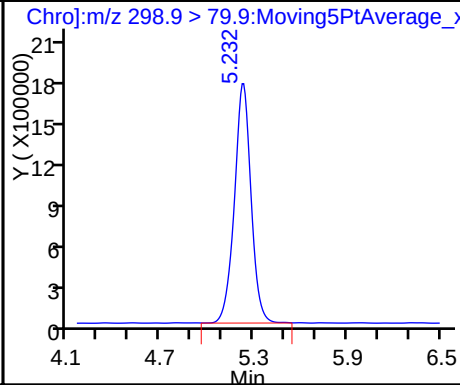
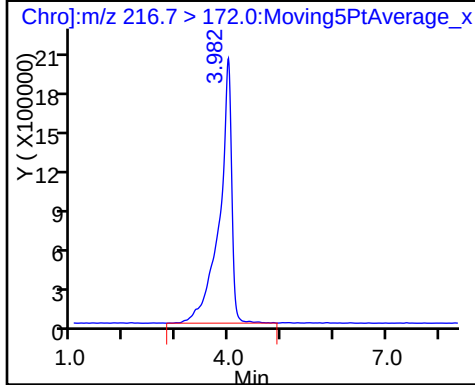
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

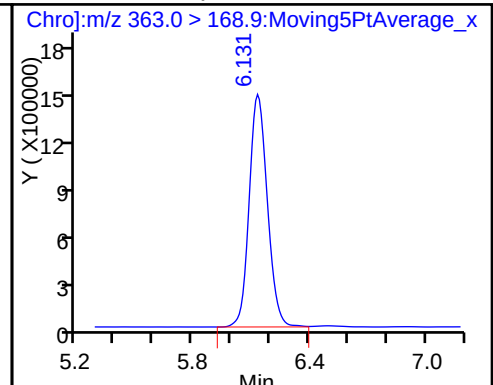
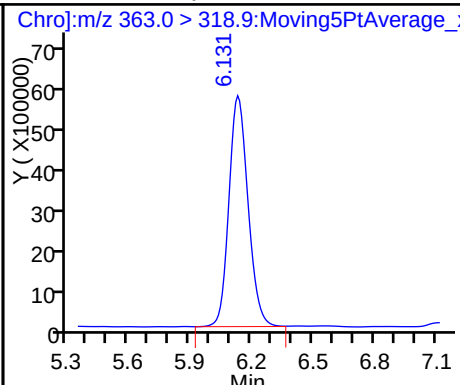
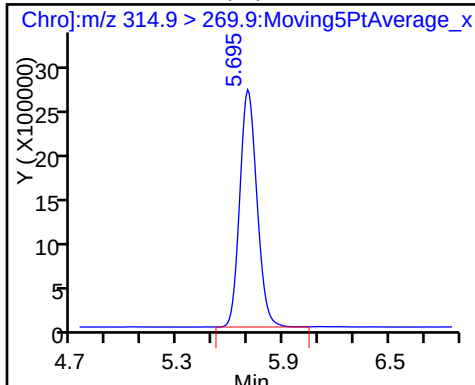
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

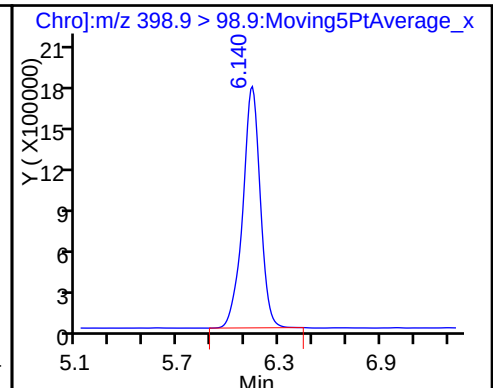
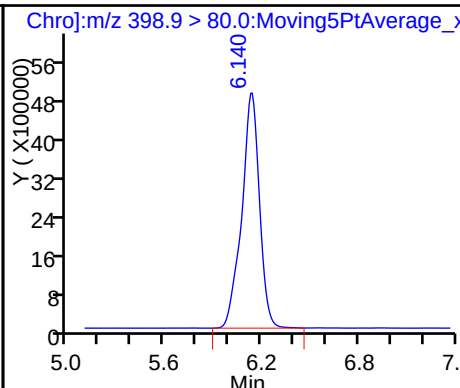
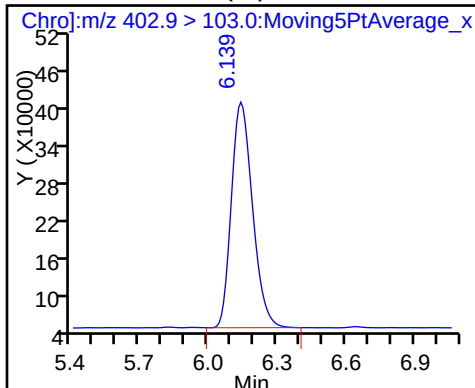
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

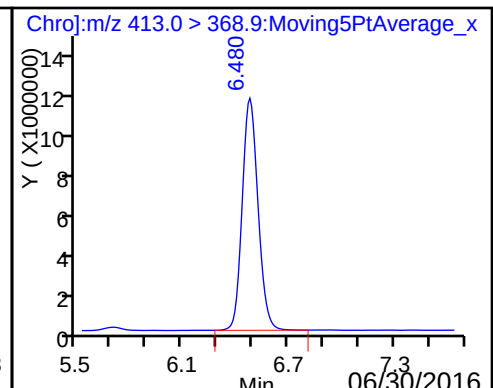
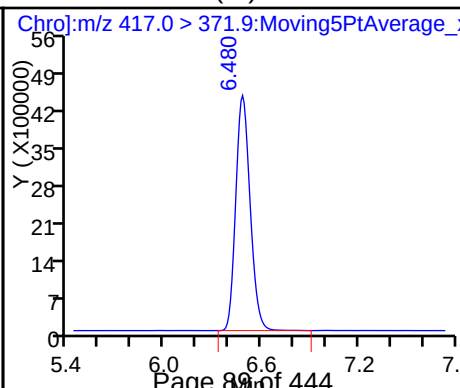
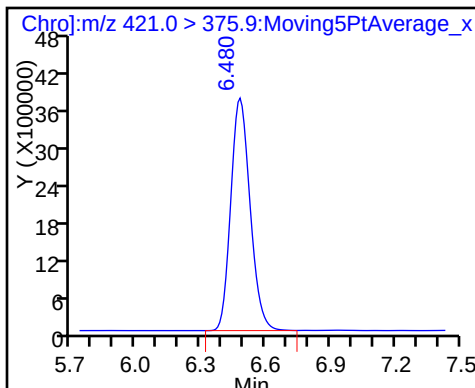
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

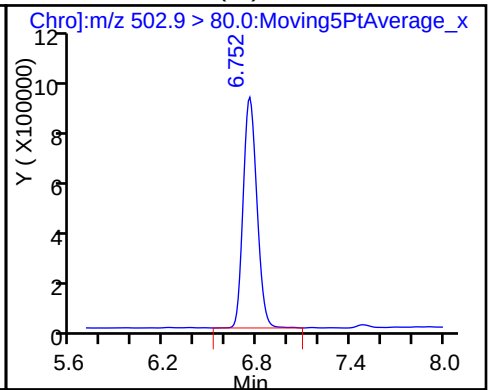
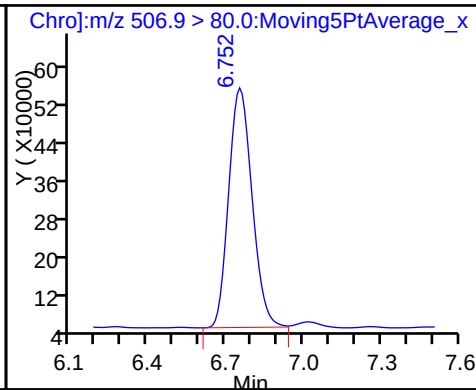
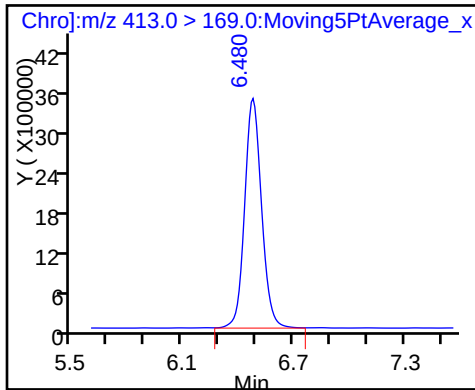
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

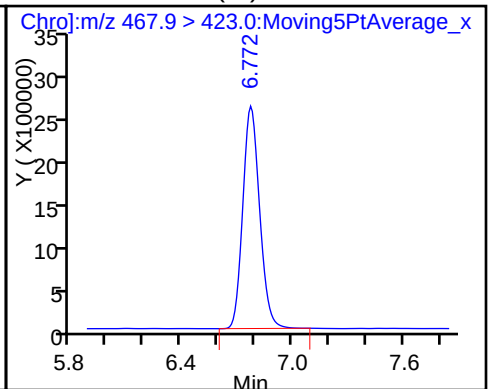
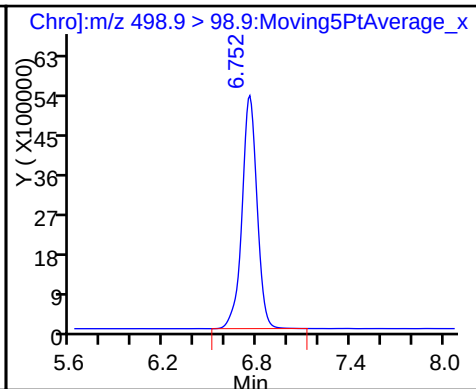
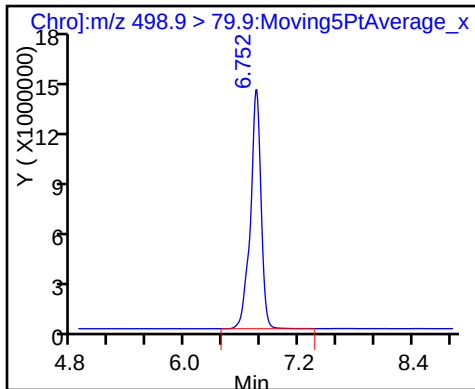
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

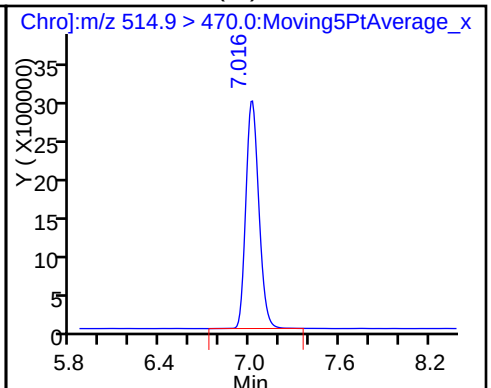
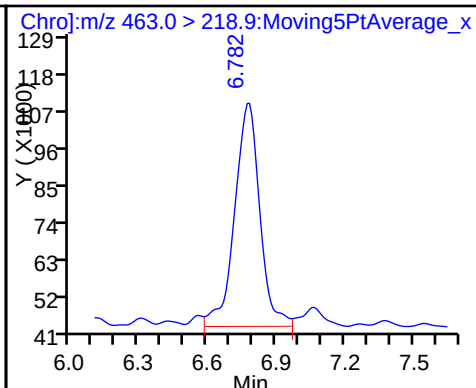
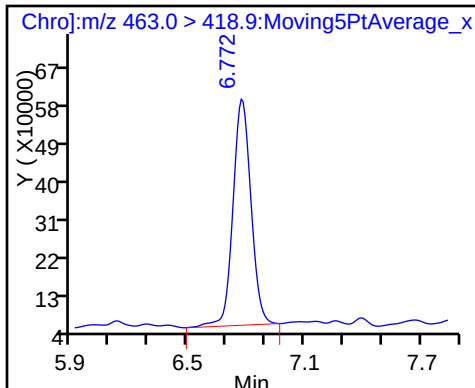
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

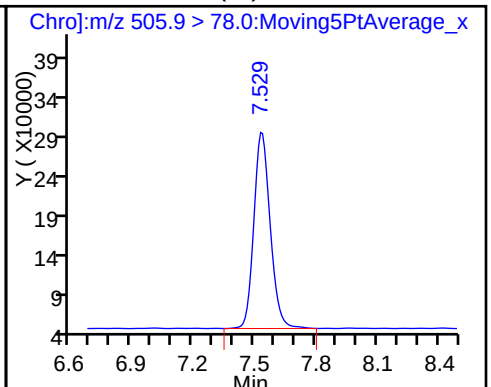
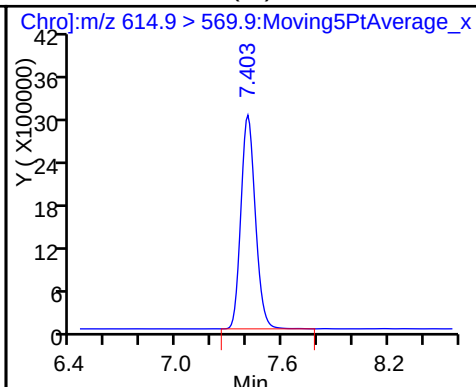
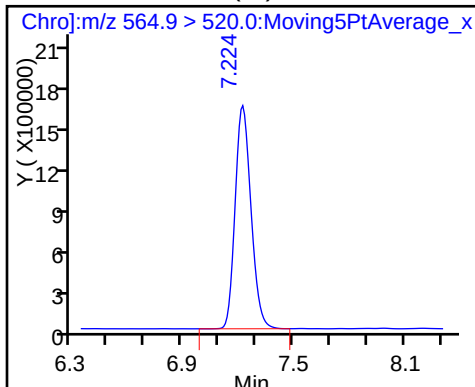
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Client Sample ID: TE#1 DL Lab Sample ID: 280-84914-5 DL
 Matrix: Water Lab File ID: PC516F20042.d
 Analysis Method: DV-LC-0012 Date Collected: 06/23/2016 12:25
 Extraction Method: 3535 Date Extracted: 06/29/2016 11:23
 Sample wt/vol: 263.3(mL) Date Analyzed: 06/30/2016 15:43
 Con. Extract Vol.: 5(mL) Dilution Factor: 2
 Injection Volume: 25(uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 332053 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	3.16	D	0.057	0.025

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102	D	60-155
STL01054	13C8 PFOS	108	D	45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20042.d
 Lims ID: 280-84914-B-5-A Lab Sample ID: 280-84914-5
 Client ID: TE#1
 Sample Type: Client
 Inject. Date: 30-Jun-2016 15:43:05 ALS Bottle#: 0 Worklist Smp#: 37
 Injection Vol: 25.0 ul Dil. Factor: 2.0000
 Sample Info: 280-84914-b-5-a, Sample
 Misc. Info.: 2X
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:40:08 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 16:36:35

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.029 4.067 -0.038 16050672 5.00

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.270 5.270 0.0 0.854 6960861 5.75

298.9 > 98.9 5.270 5.270 0.0 0.854 2251023 3.09(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.724 5.733 -0.009 9828666 5.00

8 Perfluoroheptanoic acid

363.0 > 318.9 6.169 6.159 0.010 0.948 20198433 7.38

363.0 > 168.9 6.159 6.159 0.0 0.946 5340513 3.78(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.168 6.168 0.0 1097419 4.73

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.168 6.168 0.0 1.000 19484453 21.8

398.9 > 98.9 6.168 6.168 0.0 1.000 6657646 2.93(1.30-2.41)

R
R

\$ 14 13C8 PFOA

421.0 > 375.9 6.508 6.508 0.0 1.000 13062265 5.12

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.508 6.508 0.0 15702547 5.00

16 Perfluorooctanoic acid

413.0 > 368.9 6.508 6.508 0.0 1.000 40273922 12.3

413.0 > 169.0 6.508 6.508 0.0 1.000 12279288 3.28(2.86-5.31)

\$ 18 13C8 PFOS

506.9 > 80.0 6.790 6.780 0.010 1.001 2036301 5.19

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.781 6.781 0.0 3060923 4.78

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.781 6.781 0.0 1.000 62115227 83.3

498.9 > 98.9 6.781 6.781 0.0 1.000 21111542 2.94(1.31-2.43)

R
R

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20042.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.801	0.0		9258459	5.00			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.000	2233401	1.04			
463.0 > 218.9	6.801	6.801	0.0	1.000	307021		7.27(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.035	0.010		8670763	5.00			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		4675613	5.00			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.431	7.431	0.0		8335772	5.00			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.576	7.576	0.0		746194	5.00			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20042.d

Injection Date: 30-Jun-2016 15:43:05

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-5-A

Lab Sample ID: 280-84914-5

Client ID: TE#1

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 37

Injection Vol: 25.0 ul

Dil. Factor: 2.0000

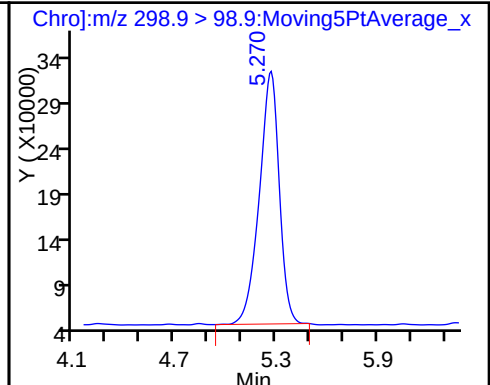
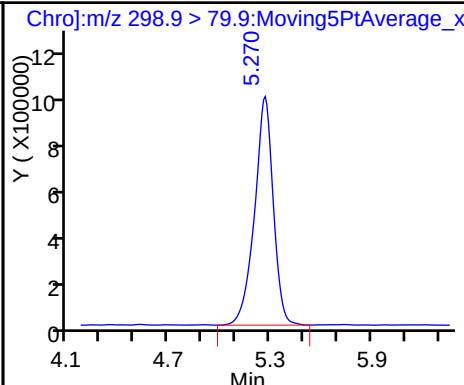
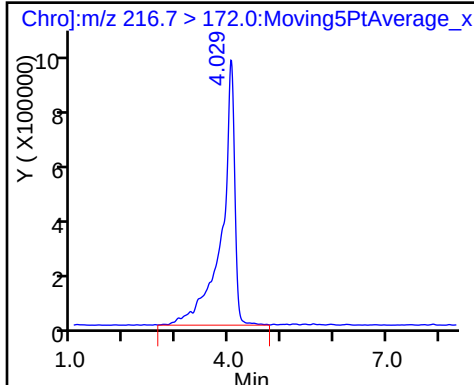
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

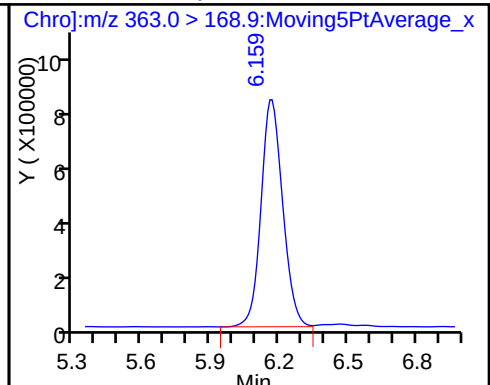
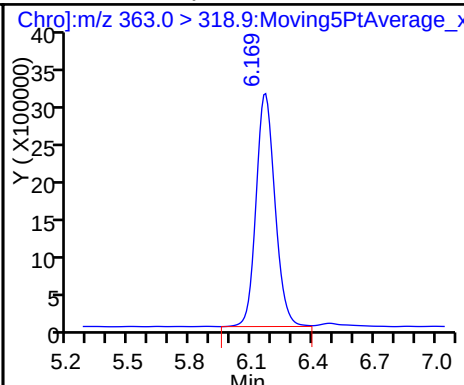
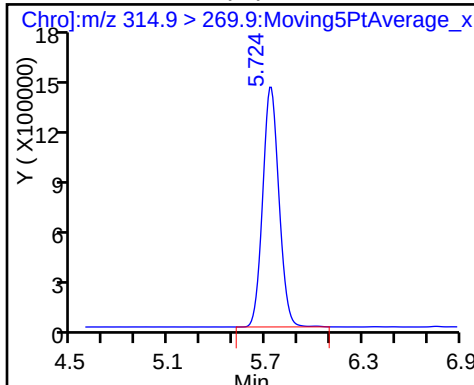
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

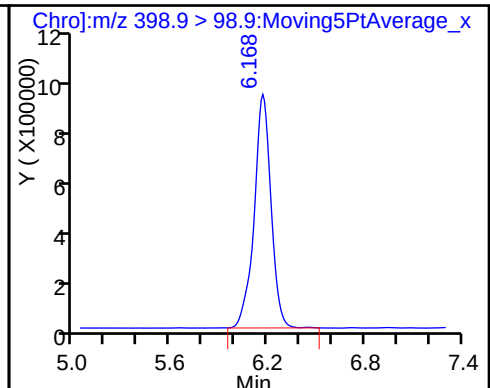
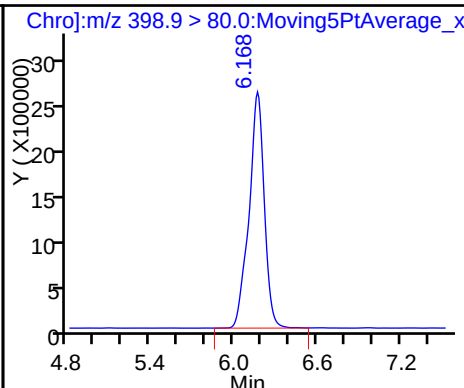
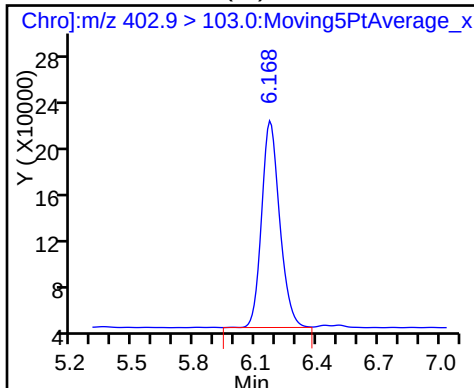
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

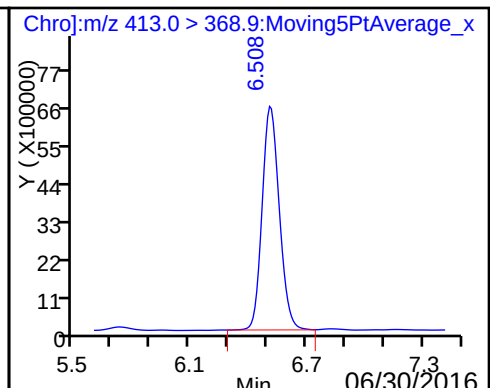
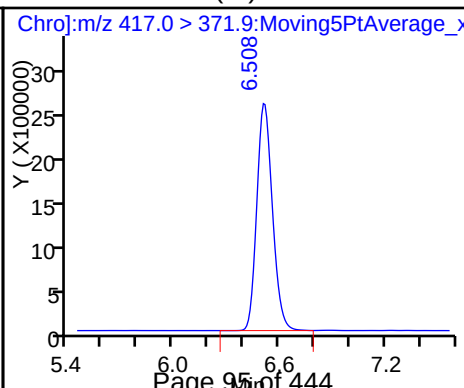
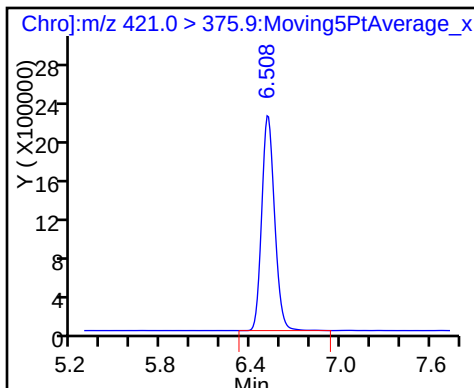
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

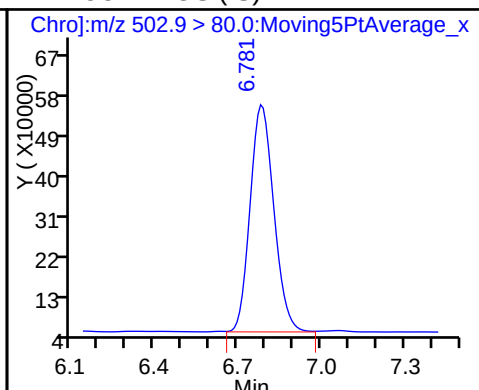
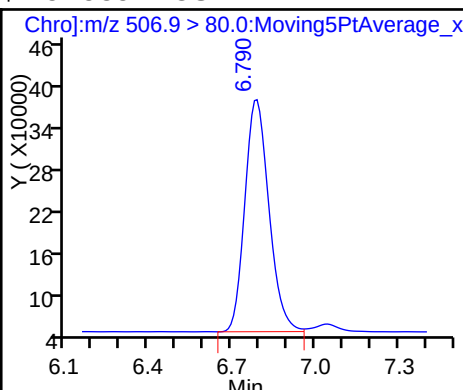
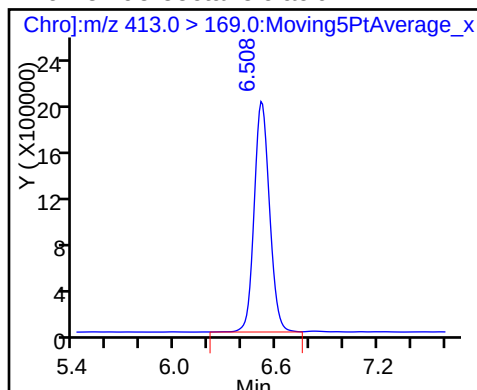
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

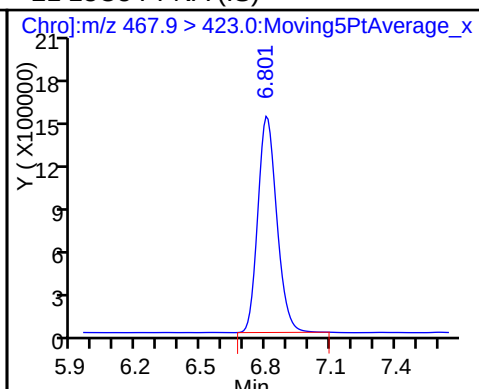
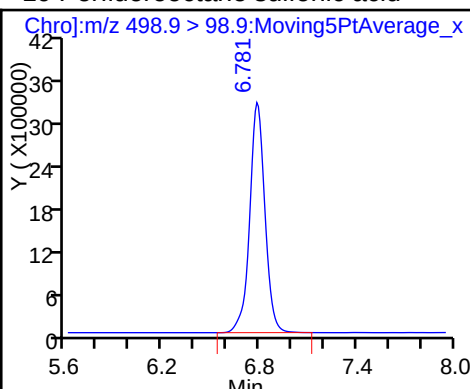
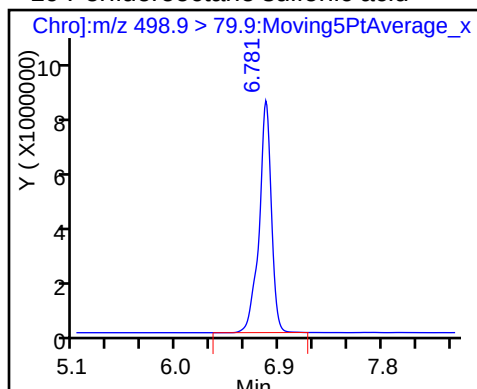
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

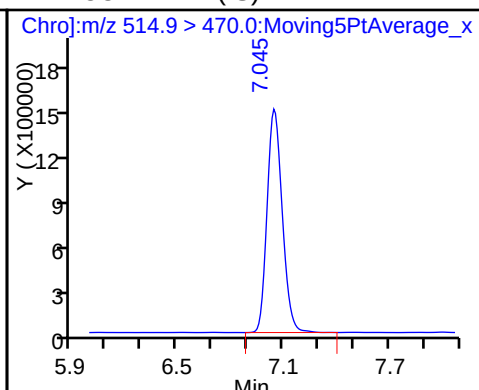
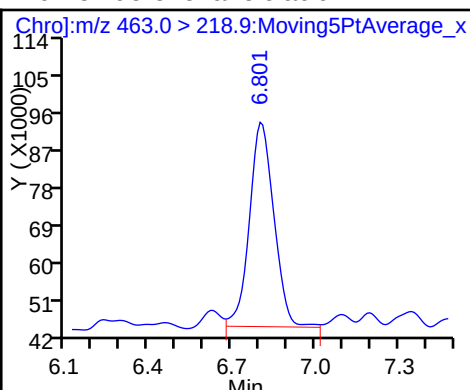
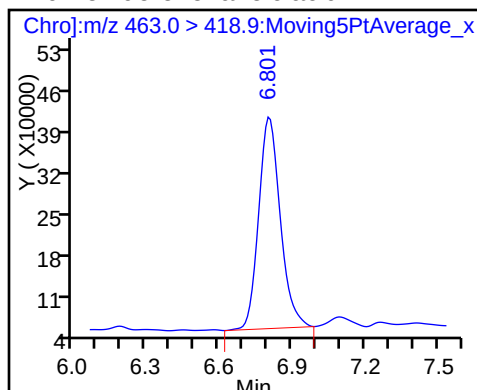
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

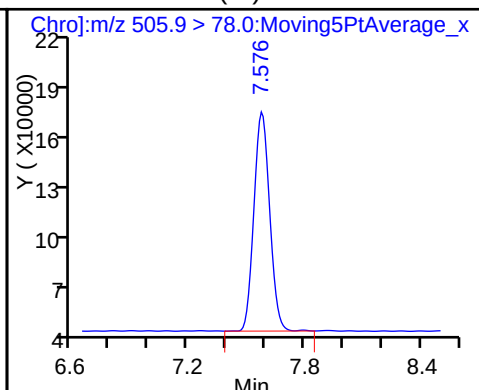
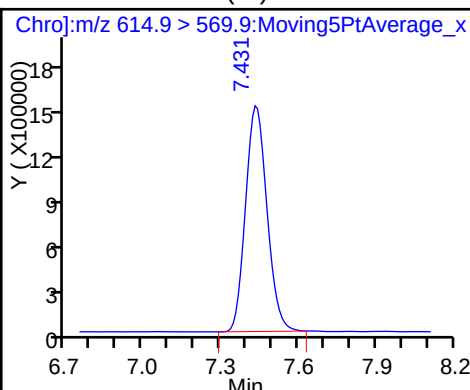
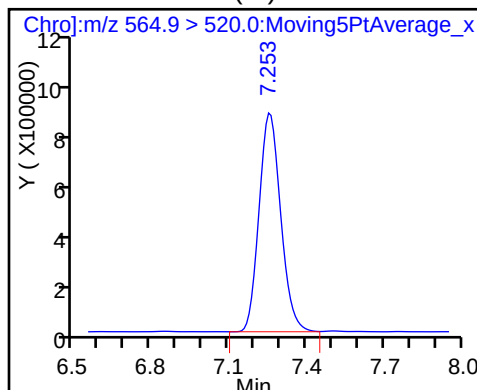
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#4</u>	Lab Sample ID: <u>280-84914-6</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20018.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 13:35</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>247.9(mL)</u>	Date Analyzed: <u>06/30/2016 10:47</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0083	U	0.020	0.0083
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.040	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107		60-155
STL01054	13C8 PFOS	98		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20018.d
 Lims ID: 280-84914-B-6-A Lab Sample ID: 280-84914-6
 Client ID: TE#4
 Sample Type: Client
 Inject. Date: 30-Jun-2016 10:47:52 ALS Bottle#: 0 Worklist Smp#: 13
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-6-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:15:27

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.973 4.153 -0.180 32899197 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.327 ND

298.9 > 98.9 5.327

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.686 5.800 -0.114 20879397 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.235 ND

363.0 > 168.9 6.235

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.130 6.234 -0.104 2656246 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.234 ND

398.9 > 98.9 6.234

\$ 14 13C8 PFOA

421.0 > 375.9 6.461 6.584 -0.123 0.999 27723996 10.7

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.470 6.584 -0.114 32072875 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.584 ND

413.0 > 169.0 6.584

\$ 18 13C8 PFOS

506.9 > 80.0 6.742 6.847 -0.105 1.000 5554851 9.41

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.743 6.847 -0.104 9228333 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.847 ND

498.9 > 98.9 6.847

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20018.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.763	6.867	-0.104		26864271	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.877				ND			
463.0 > 218.9		6.877							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.007	7.121	-0.114		26441490	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.215	7.328	-0.113		13475782	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.393	7.507	-0.114		22136412	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.586	-0.057		1119234	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20018.d

Injection Date: 30-Jun-2016 10:47:52

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-6-A

Lab Sample ID: 280-84914-6

Client ID: TE#4

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 13

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

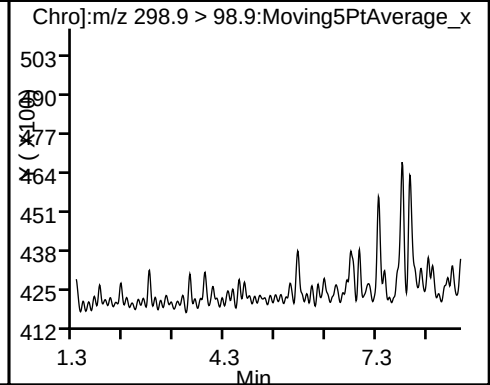
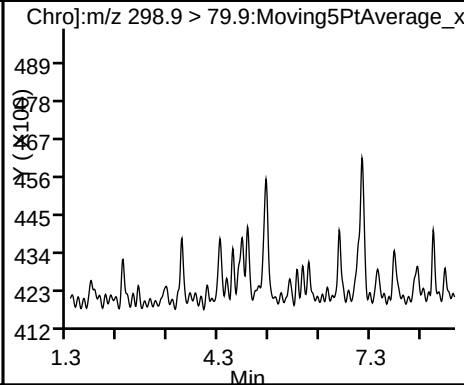
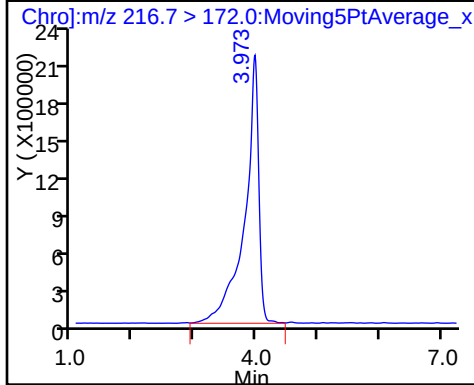
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

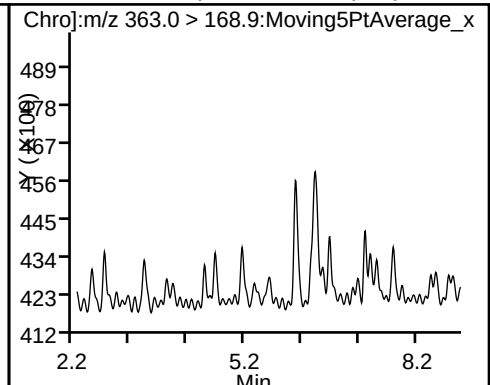
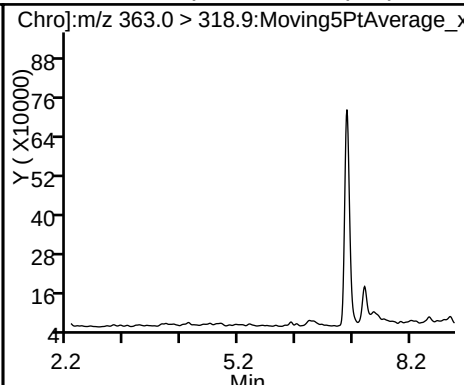
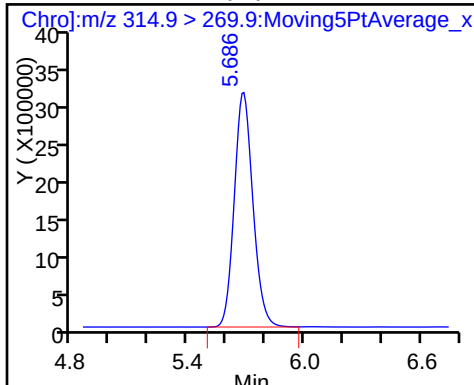
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (ND)

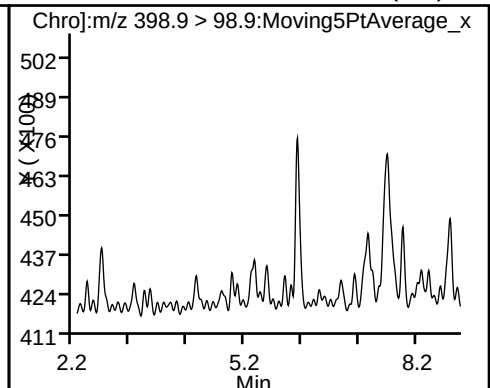
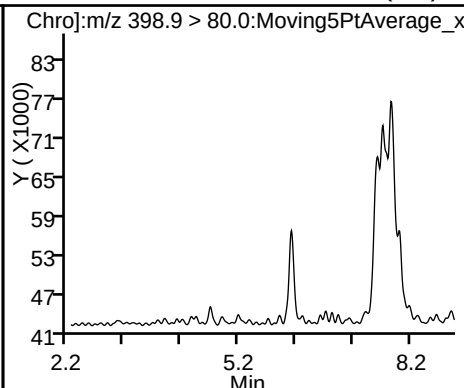
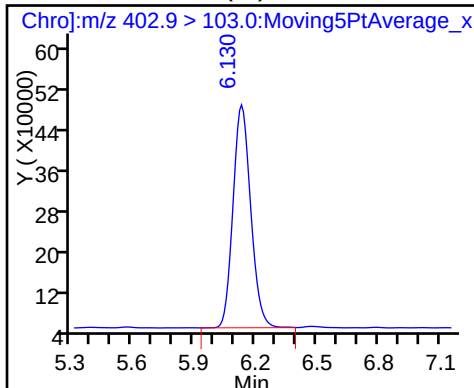
8 Perfluoroheptanoic acid (ND)



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate (ND)

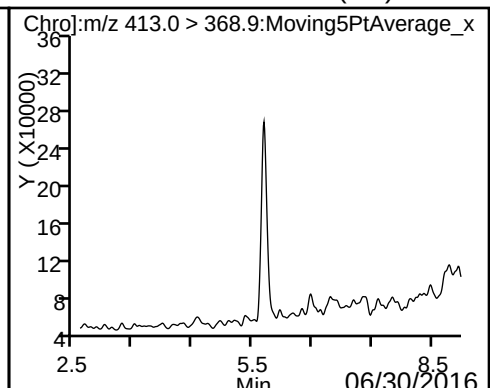
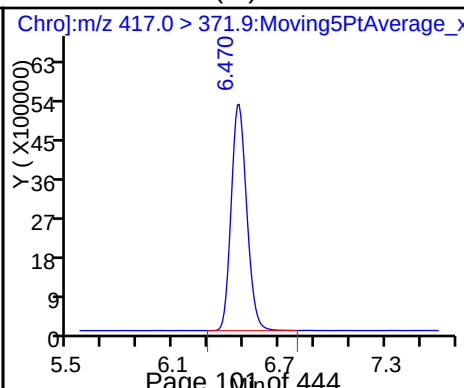
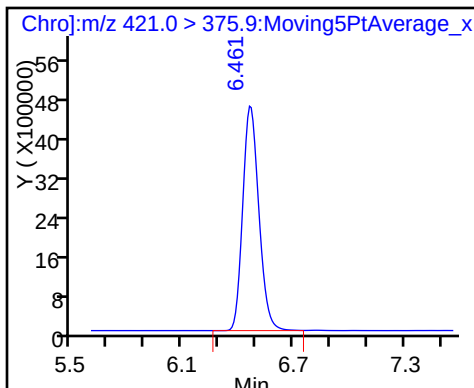
10 Perfluorohexane Sulfonate (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

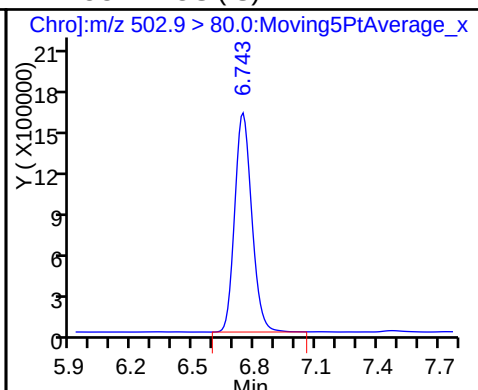
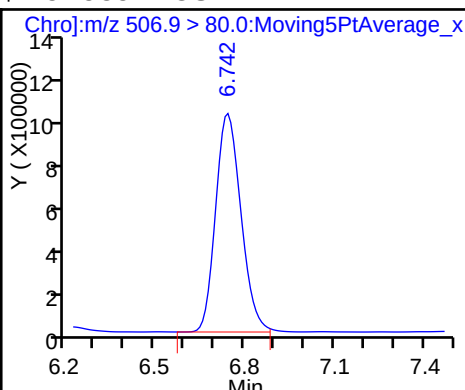
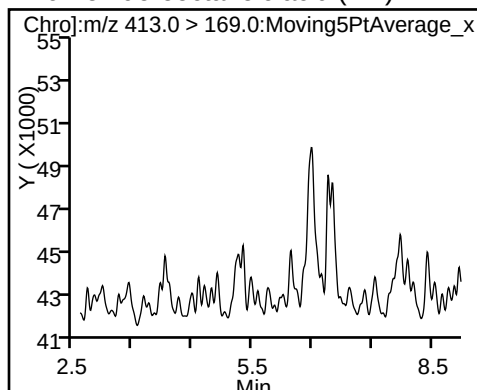
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

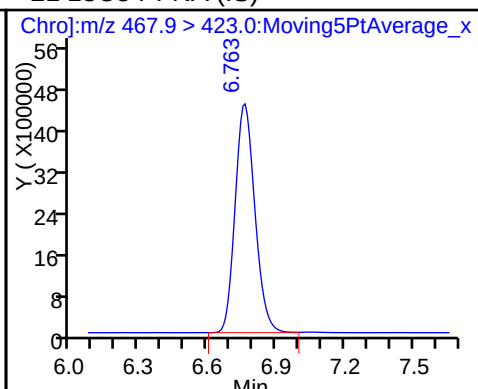
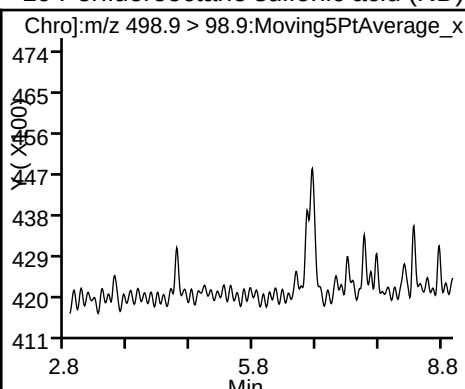
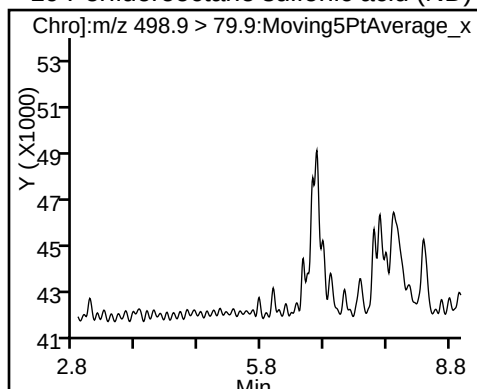
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

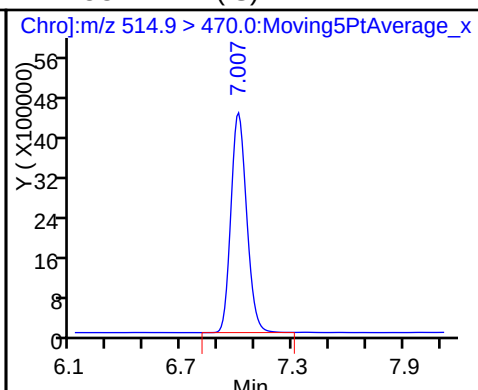
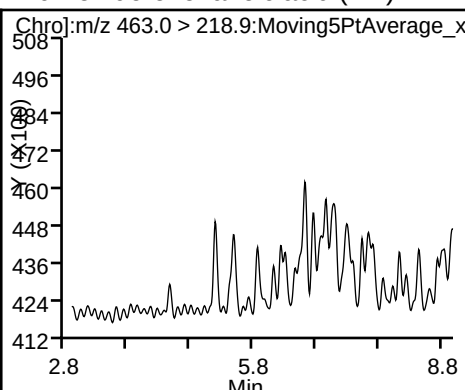
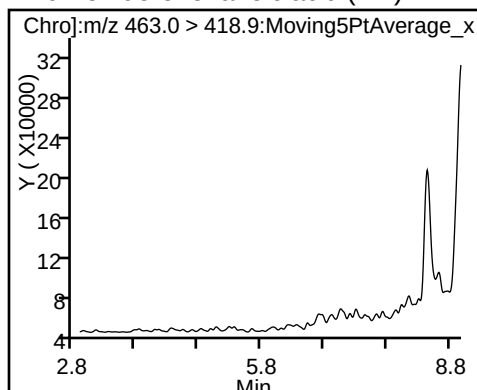
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

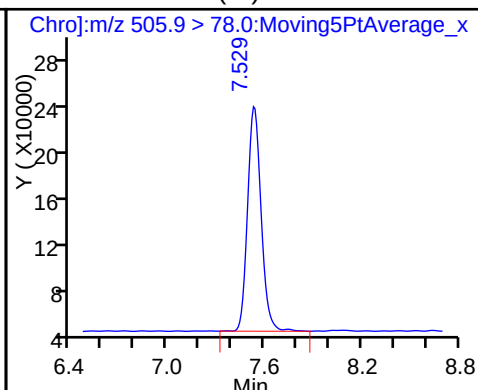
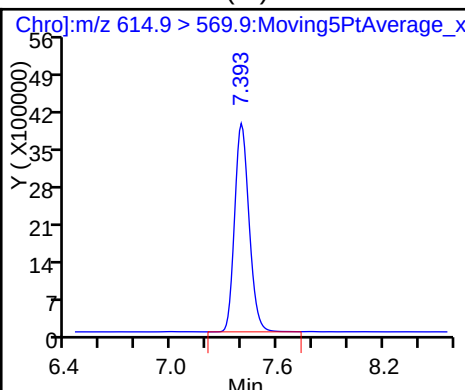
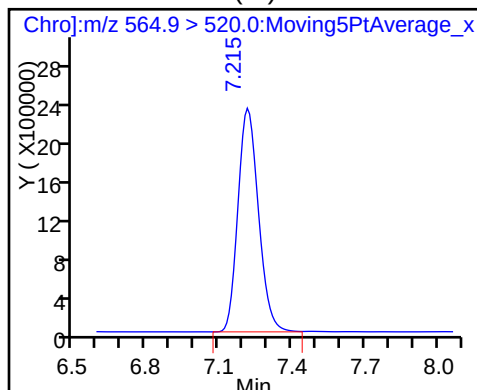
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE DUP</u>	Lab Sample ID: <u>280-84914-7</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20020.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 11:12</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>246(mL)</u>	Date Analyzed: <u>06/30/2016 11:12</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.030	0.0071
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.030	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.0099	U	0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20020.d
 Lims ID: 280-84914-B-7-A Lab Sample ID: 280-84914-7
 Client ID: TE DUP
 Sample Type: Client
 Inject. Date: 30-Jun-2016 11:12:29 ALS Bottle#: 0 Worklist Smp#: 15
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-7-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:06:59

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.992 4.020 -0.028 33829139 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.232 ND
 298.9 > 98.9 5.232

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.695 5.705 -0.010 21569106 10.0

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.139 6.158 -0.019 2648176 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND
 398.9 > 98.9 6.159

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND
 363.0 > 168.9 6.150

\$ 14 13C8 PFOA

421.0 > 375.9 6.480 6.498 -0.018 1.000 27709809 10.3

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.480 6.499 -0.019 33431549 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND
 413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.752 6.771 -0.019 1.000 5721293 9.52

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.752 6.771 -0.019 9394869 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND
 498.9 > 98.9 6.771

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.791	-0.019		26124552	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.035	-0.019		26648410	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.243	-0.009		15794028	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.422	-0.010		24457580	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.557	-0.019		1368591	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20020.d

Injection Date: 30-Jun-2016 11:12:29

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-7-A

Lab Sample ID: 280-84914-7

Client ID: TE DUP

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 15

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

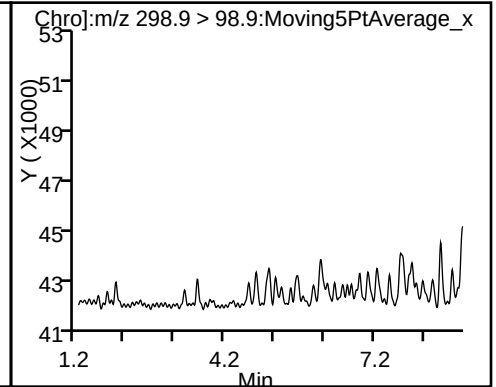
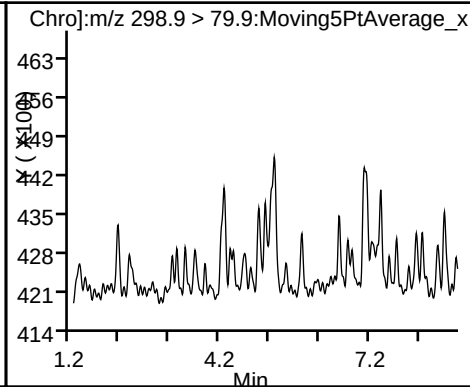
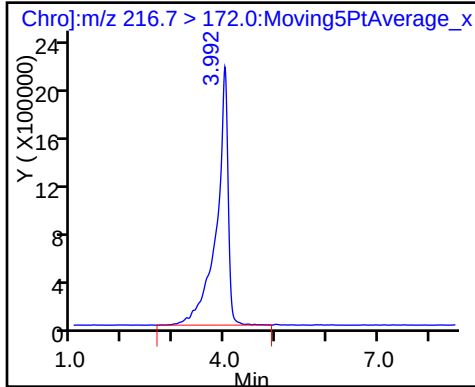
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

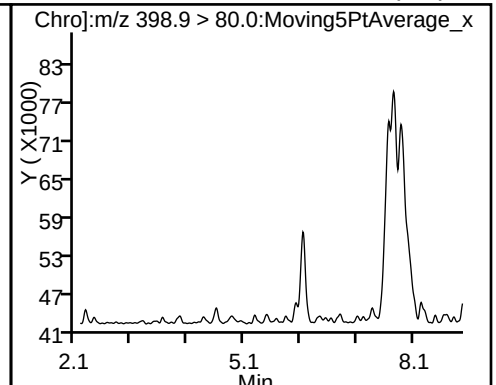
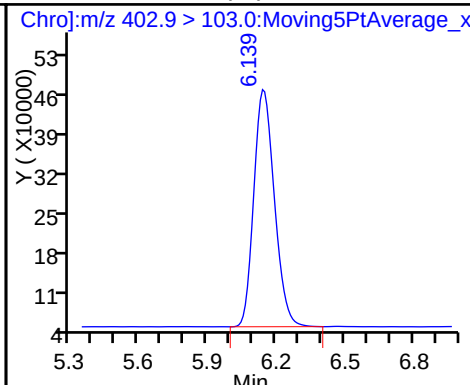
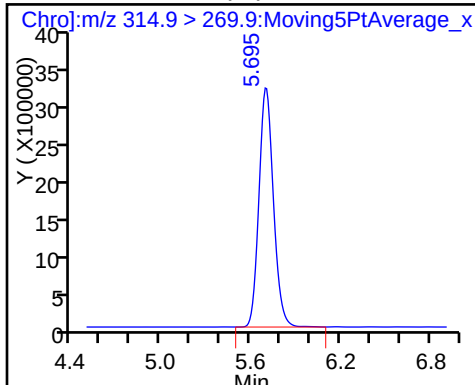
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

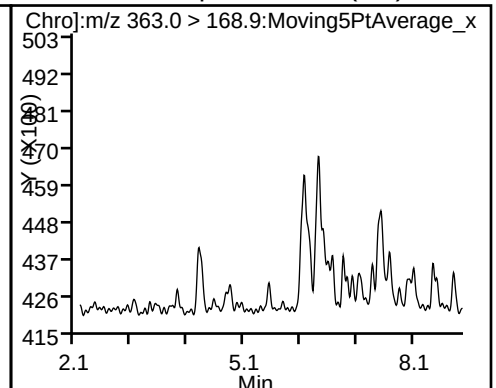
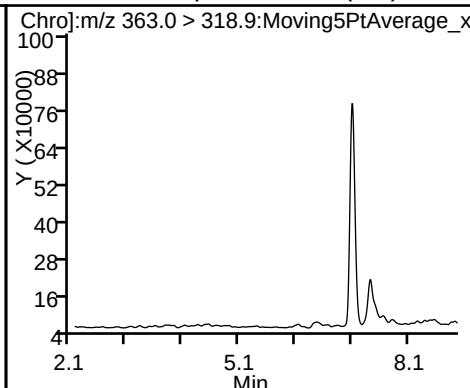
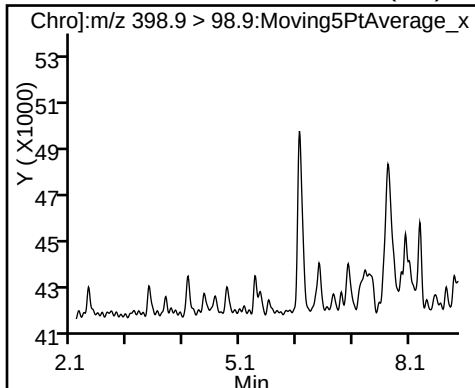
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

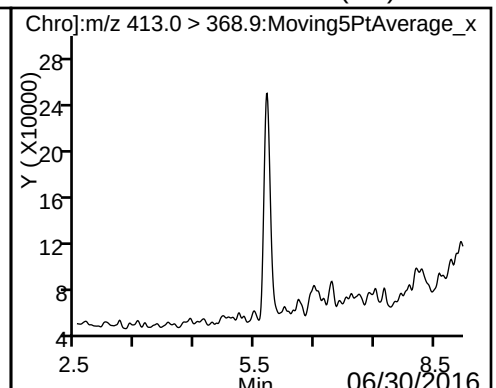
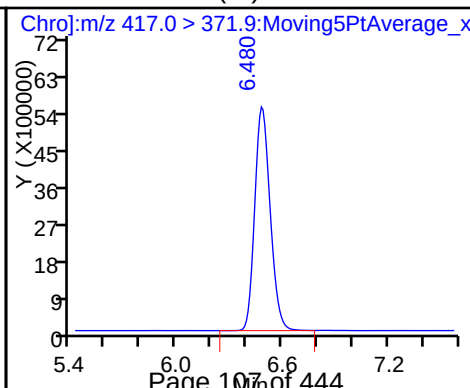
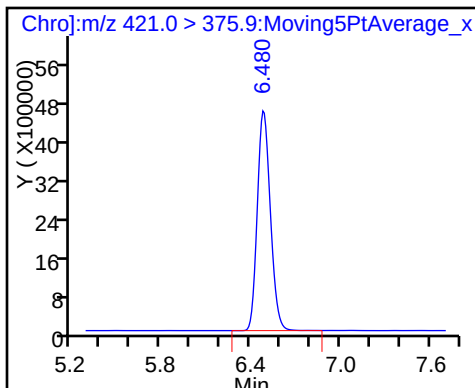
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

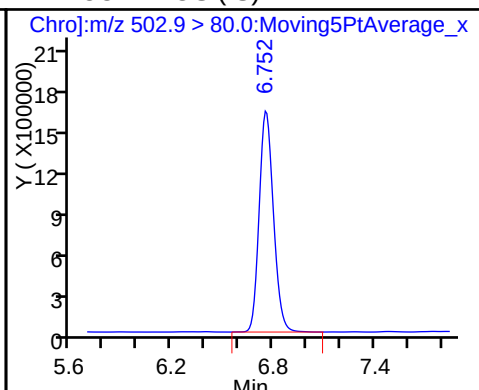
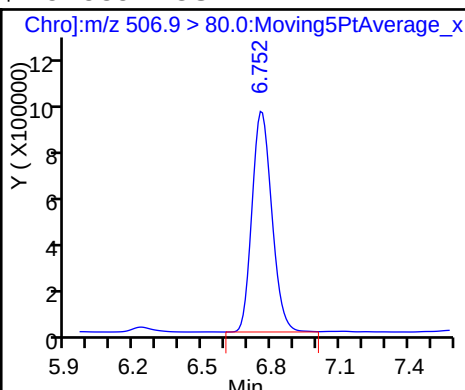
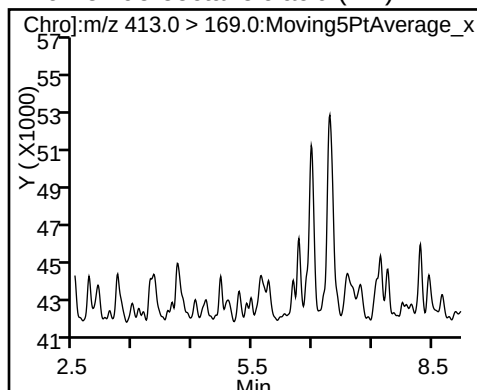
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

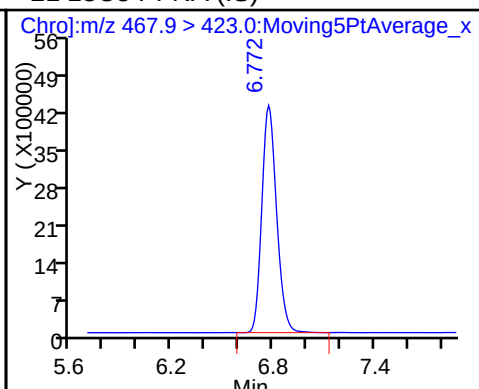
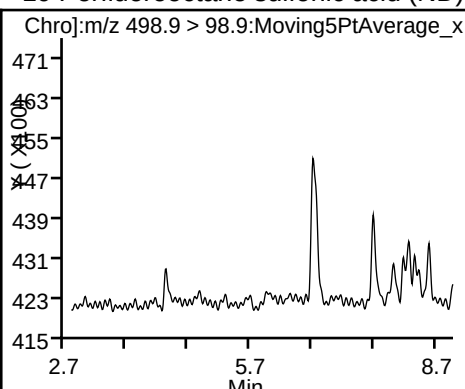
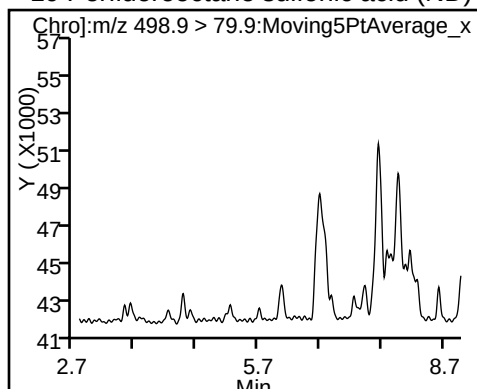
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

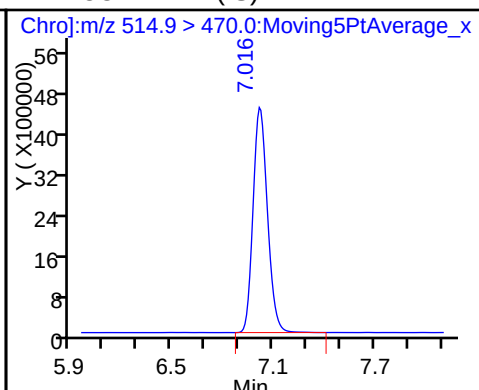
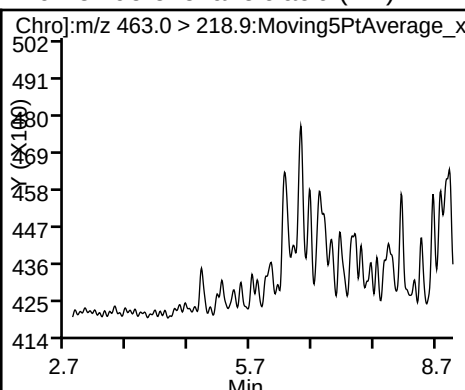
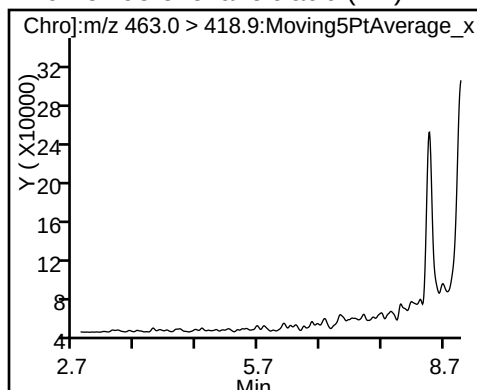
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

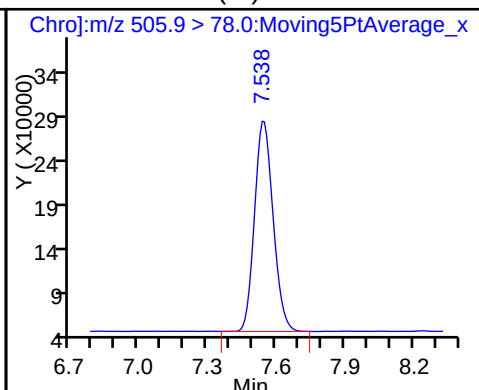
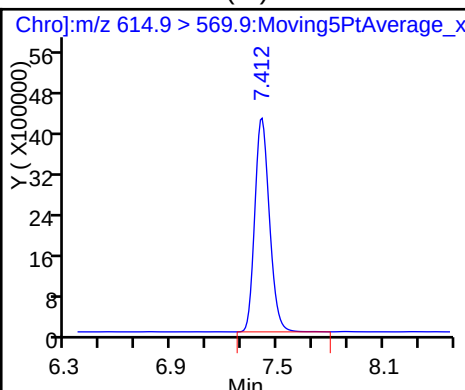
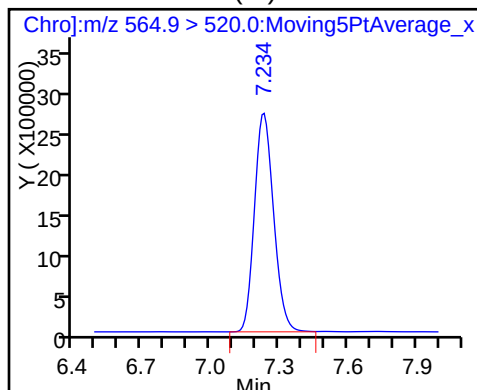
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#3</u>	Lab Sample ID: <u>280-84914-8</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20021.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 14:40</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>277(mL)</u>	Date Analyzed: <u>06/30/2016 11:24</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0074	U	0.018	0.0074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.027	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.012	U	0.027	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.0088	U	0.018	0.0088

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	105		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20021.d
 Lims ID: 280-84914-A-8-A Lab Sample ID: 280-84914-8
 Client ID: TE#3
 Sample Type: Client
 Inject. Date: 30-Jun-2016 11:24:47 ALS Bottle#: 0 Worklist Smp#: 16
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-8-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:07:19

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.992 4.020 -0.028 33016159 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.232 ND

298.9 > 98.9 5.232

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.705 5.705 0.0 21716889 10.0

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.149 6.158 -0.009 2605743 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND

398.9 > 98.9 6.159

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

\$ 14 13C8 PFOA

421.0 > 375.9 6.480 6.498 -0.018 1.000 27328016 10.5

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.480 6.499 -0.019 32310358 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND

413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.752 6.771 -0.019 1.000 5538497 10.0

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.752 6.771 -0.019 8655020 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND

498.9 > 98.9 6.771

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20021.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.791	-0.019		26318390	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.035	-0.019		24601044	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.243	-0.019		13160692	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.403	7.422	-0.019		21580819	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.557	-0.019		1209256	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20021.d

Injection Date: 30-Jun-2016 11:24:47

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-8-A

Lab Sample ID: 280-84914-8

Client ID: TE#3

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 16

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

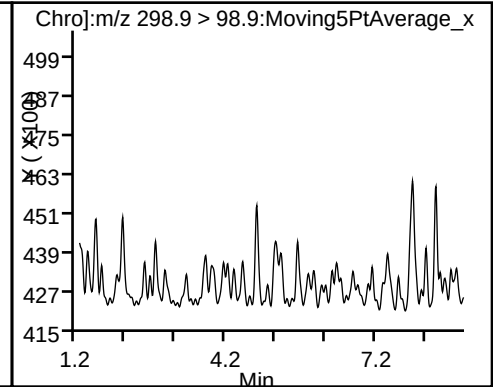
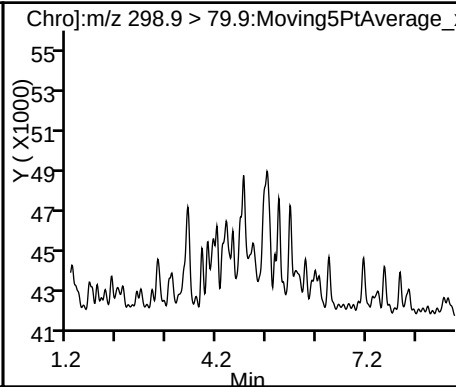
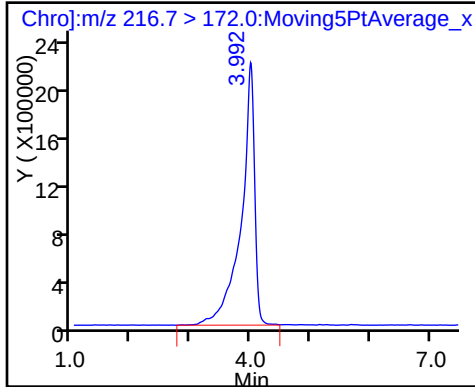
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

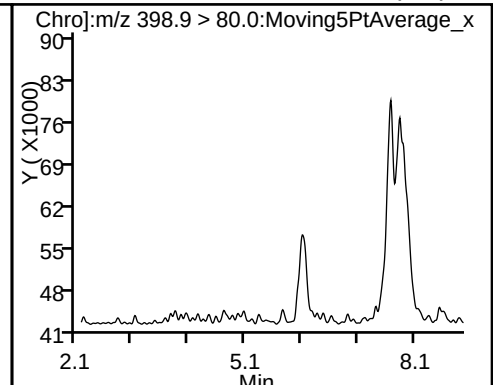
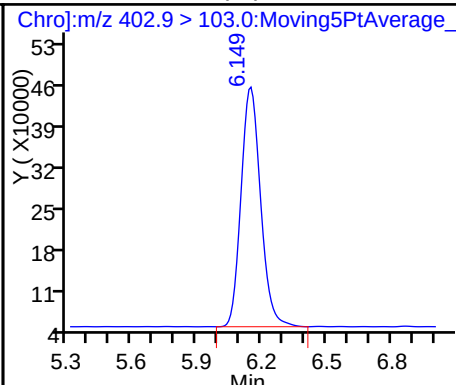
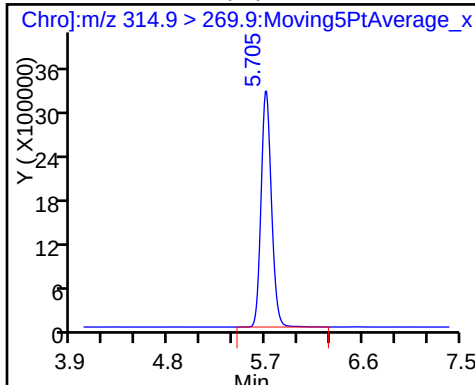
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

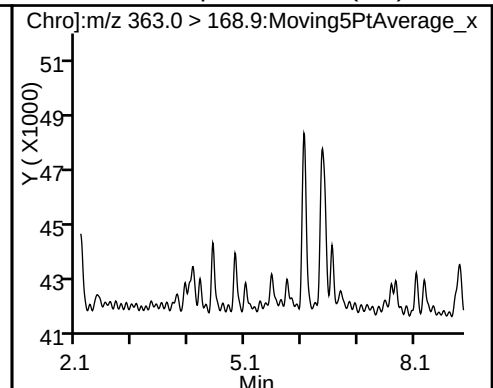
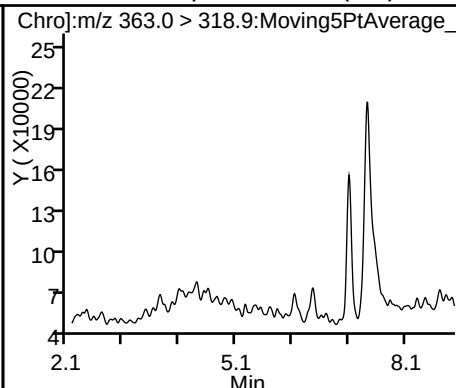
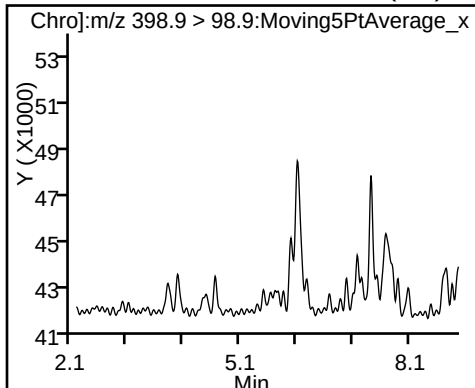
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

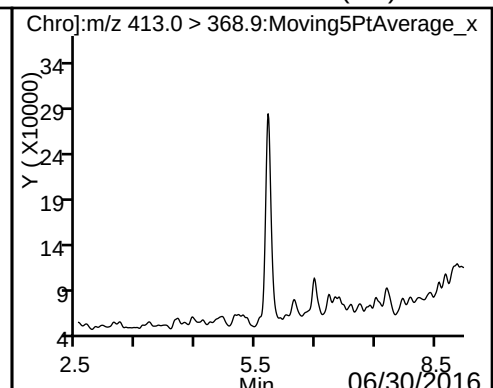
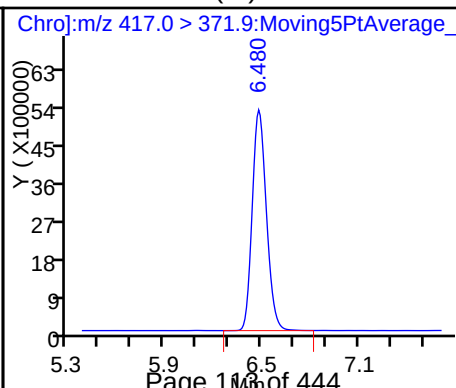
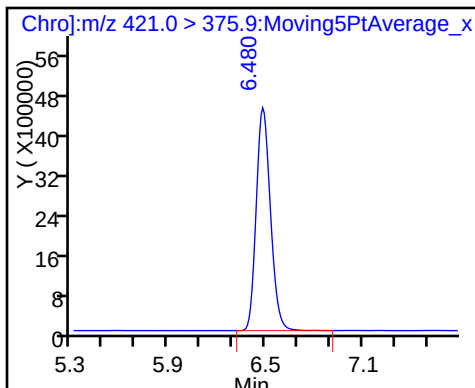
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

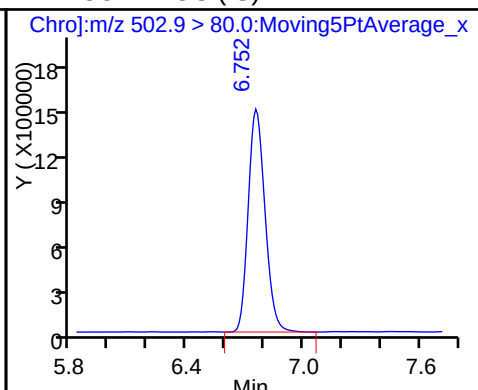
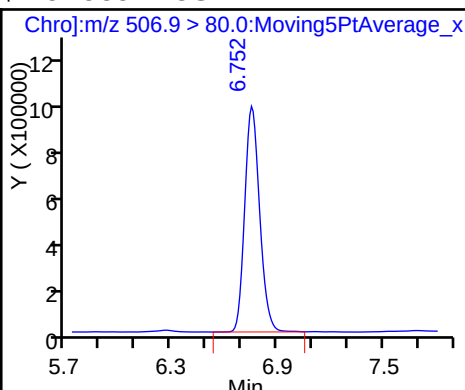
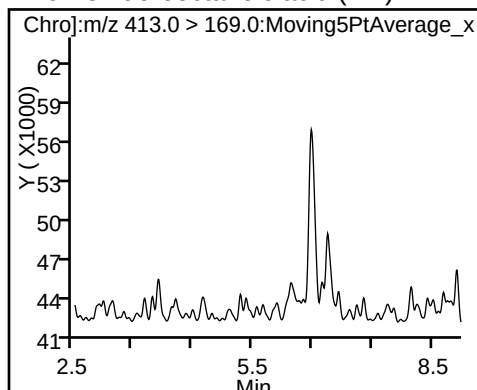
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

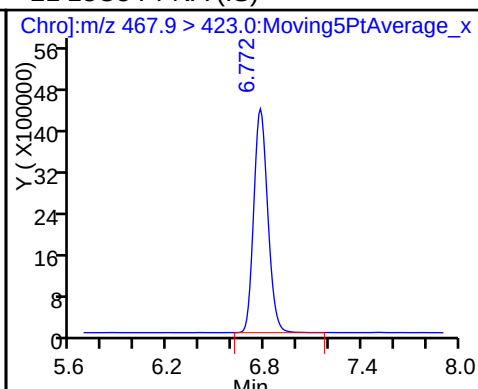
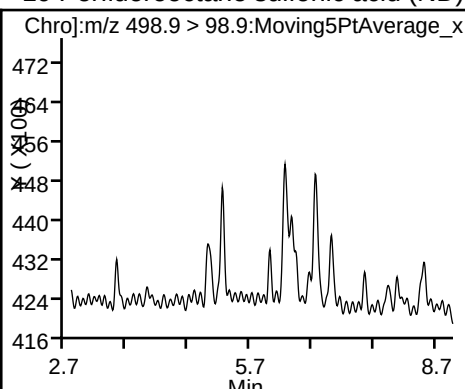
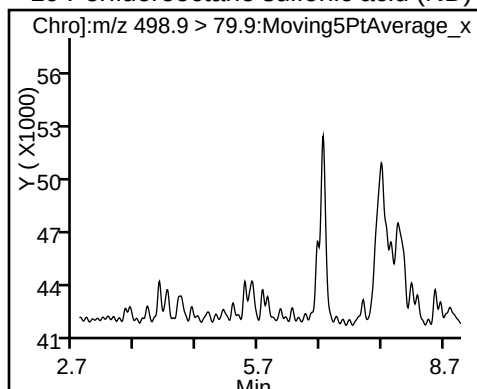
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

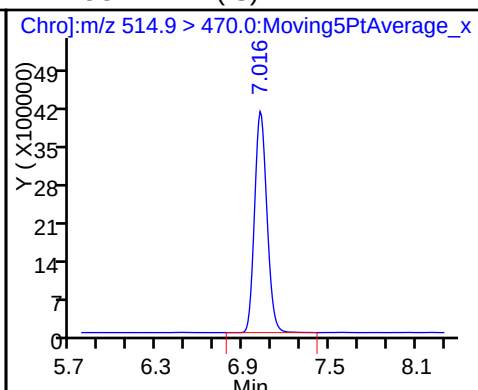
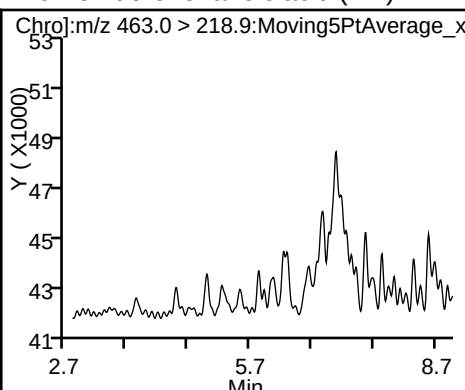
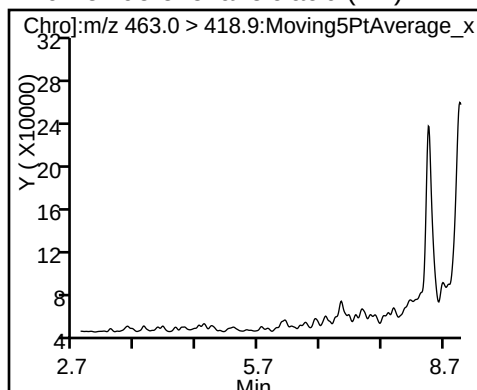
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

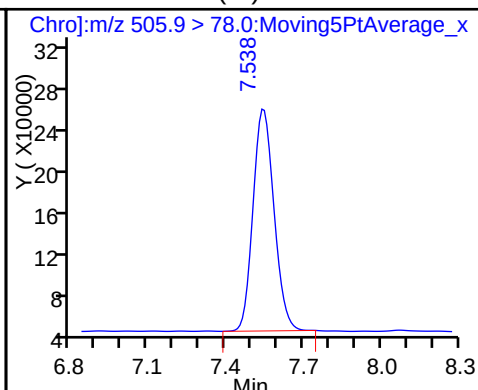
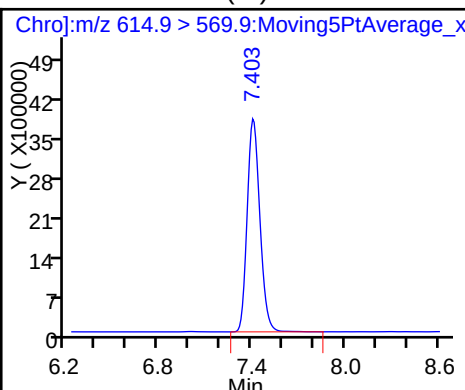
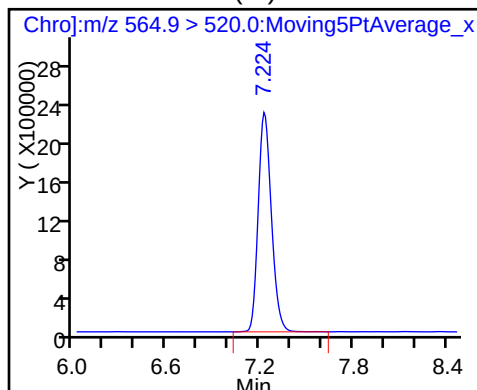
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>FB-2</u>	Lab Sample ID: <u>280-84914-9</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20022.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 15:05</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>259.5 (mL)</u>	Date Analyzed: <u>06/30/2016 11:37</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0079	U	0.019	0.0079
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0094	U	0.019	0.0094

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	98		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20022.d
 Lims ID: 280-84914-A-9-A Lab Sample ID: 280-84914-9
 Client ID: FB-2
 Sample Type: Client
 Inject. Date: 30-Jun-2016 11:37:05 ALS Bottle#: 0 Worklist Smp#: 17
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-9-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:07:32

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.992 4.020 -0.028 32652538 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.232 ND

298.9 > 98.9 5.232

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.705 5.705 0.0 21519896 10.0

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.139 6.158 -0.019 2524409 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND

398.9 > 98.9 6.159

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

\$ 14 13C8 PFOA

421.0 > 375.9 6.480 6.498 -0.018 0.999 27244974 10.3

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.489 6.499 -0.010 32647659 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND

413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.752 6.771 -0.019 1.000 5451214 9.40

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.752 6.771 -0.019 9067426 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND

498.9 > 98.9 6.771

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20022.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.791	-0.019		26585990	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.035	-0.019		28330527	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.243	-0.009		15577875	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.422	-0.010		19670065	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.557	0.0		338092	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20022.d

Injection Date: 30-Jun-2016 11:37:05

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-9-A

Lab Sample ID: 280-84914-9

Client ID: FB-2

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 17

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

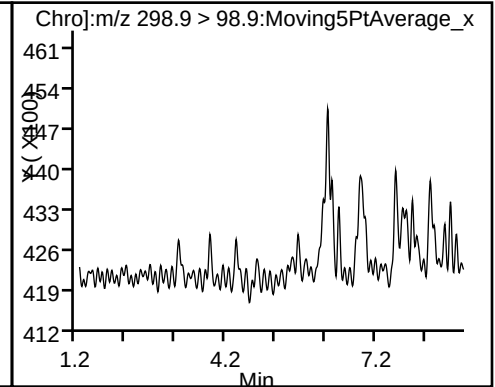
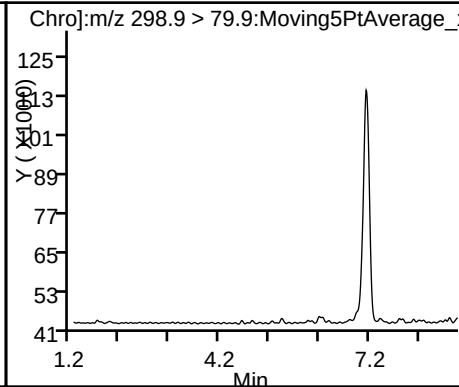
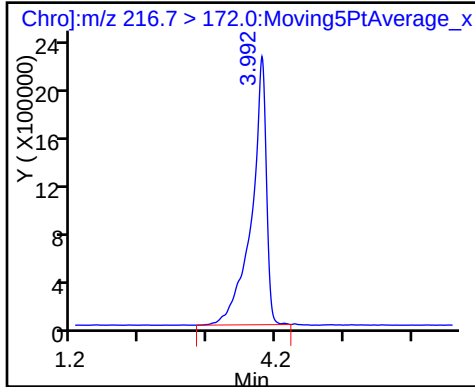
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

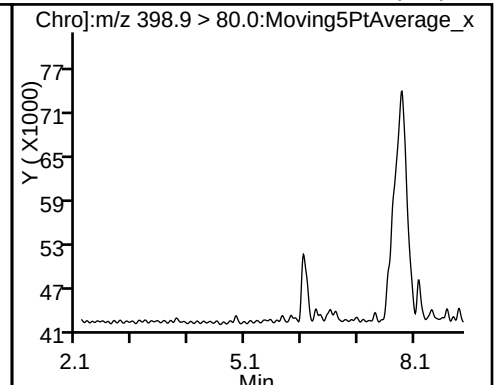
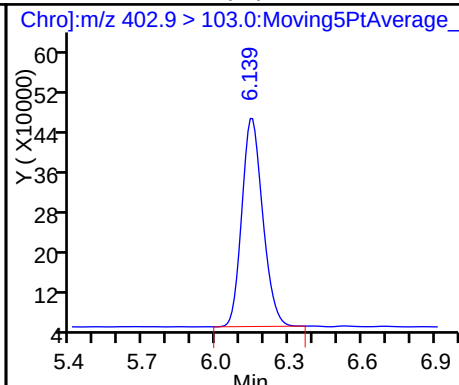
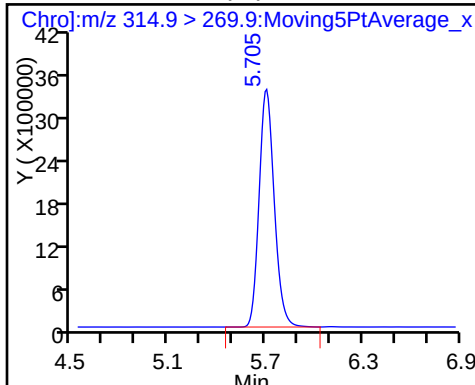
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

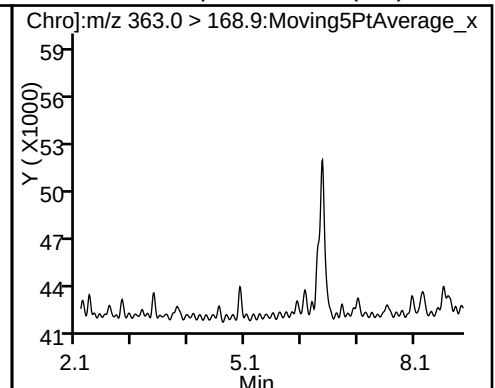
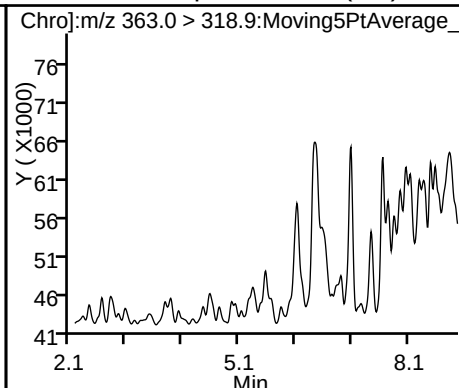
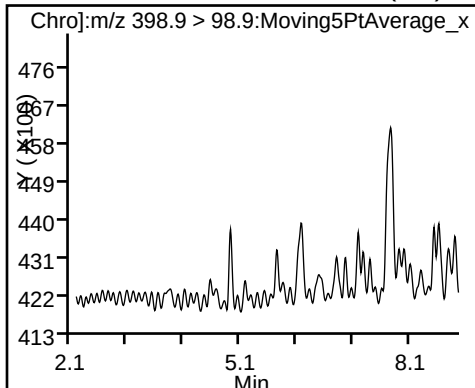
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

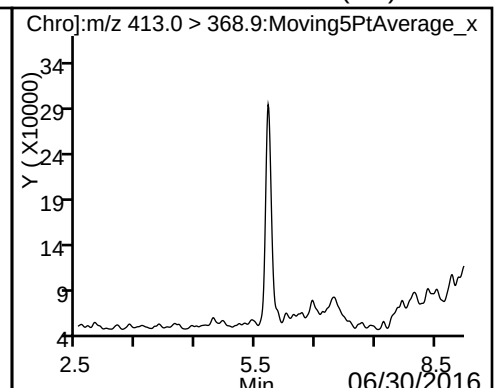
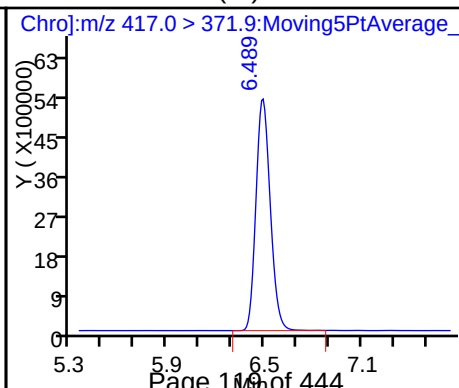
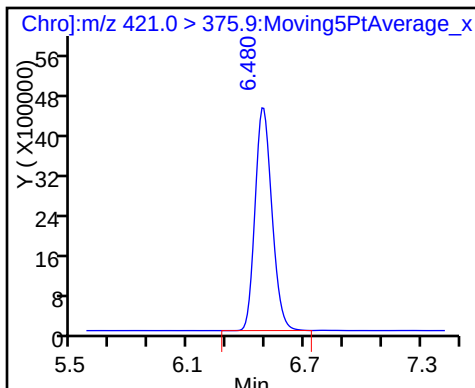
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

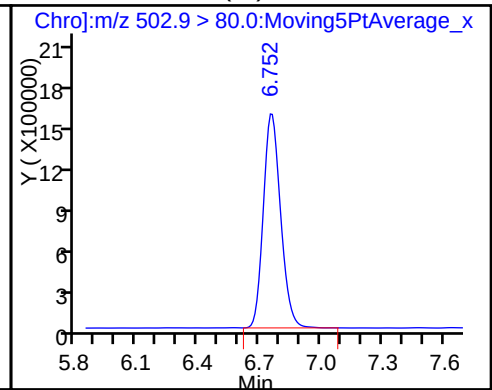
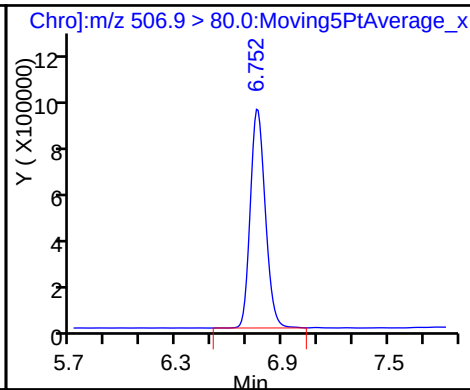
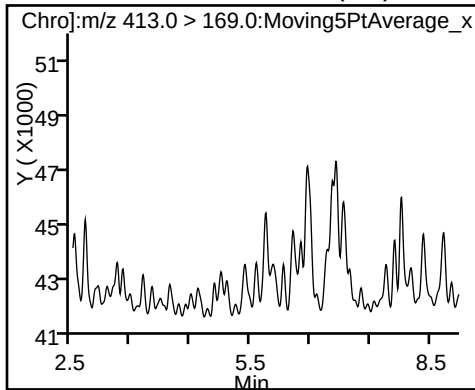
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

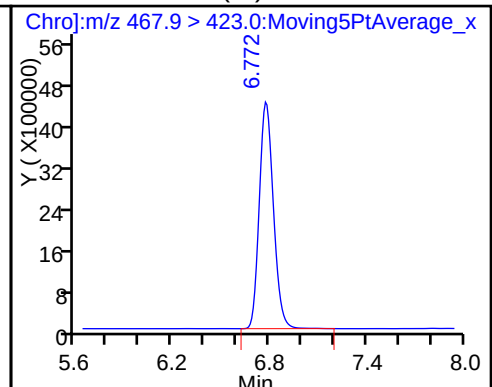
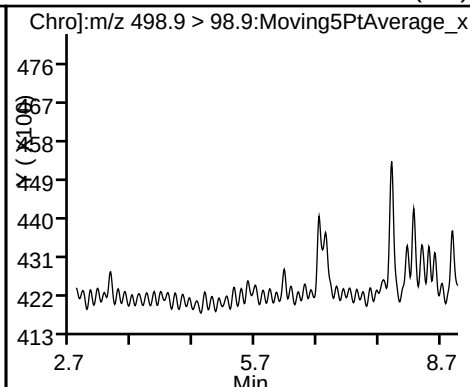
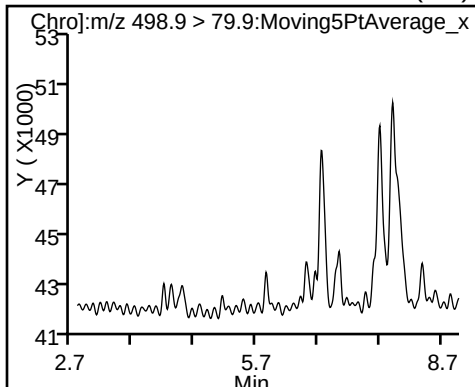
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

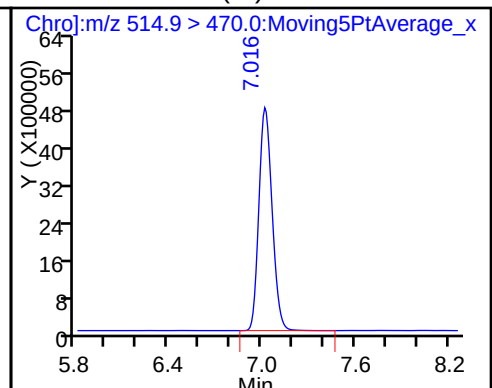
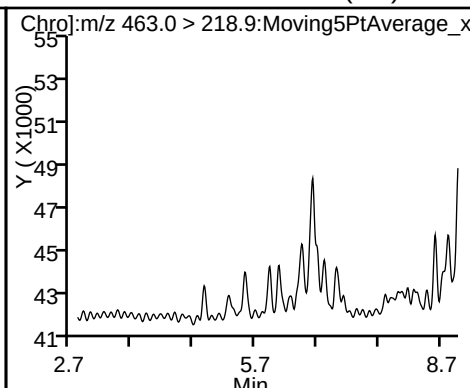
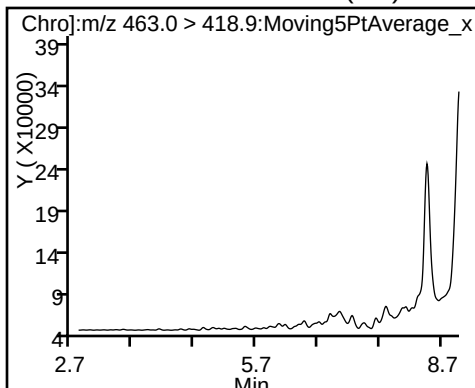
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

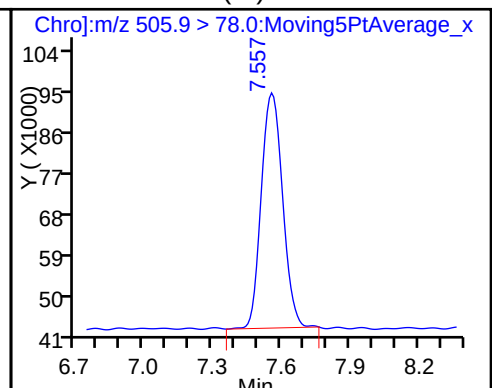
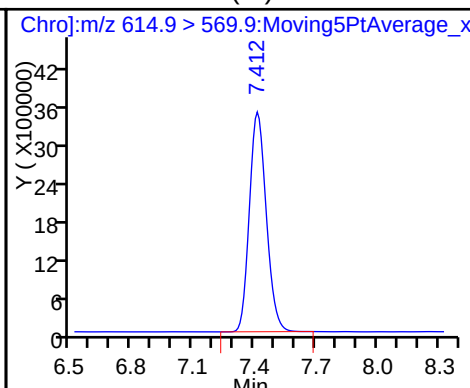
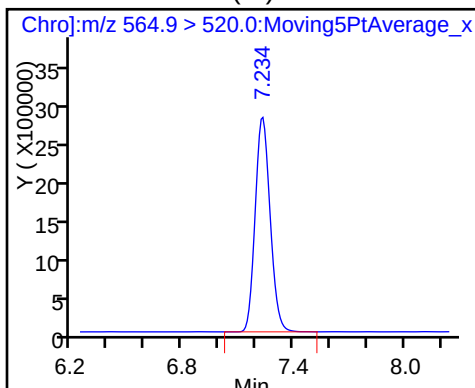
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>WB-2</u>	Lab Sample ID: <u>280-84914-10</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20023.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 15:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>258.1 (mL)</u>	Date Analyzed: <u>06/30/2016 11:49</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0068	U	0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0095	U	0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	106		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20023.d
 Lims ID: 280-84914-B-10-A Lab Sample ID: 280-84914-10
 Client ID: WB-2
 Sample Type: Client
 Inject. Date: 30-Jun-2016 11:49:23 ALS Bottle#: 0 Worklist Smp#: 18
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-10-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer Date: 30-Jun-2016 13:07:46

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.020	-0.019		32288044	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.695	5.705	-0.010		20402170	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.139	6.158	-0.019		2579825	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0		6.159				ND			
398.9 > 98.9		6.159							
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.150				ND			
363.0 > 168.9		6.150							
\$ 14 13C8 PFOA									
421.0 > 375.9	6.480	6.498	-0.018	1.000	26846152	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.480	6.499	-0.019		32282083	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.499				ND			
413.0 > 169.0		6.499							
\$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.771	-0.019	1.000	5745628	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.771	-0.019		8896444	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.771				ND			
498.9 > 98.9		6.771							

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20023.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.791	-0.019		25338953	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.035	-0.019		26774458	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.243	-0.019		15209398	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.403	7.422	-0.019		24273297	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.548	7.557	-0.009		706629	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20023.d

Injection Date: 30-Jun-2016 11:49:23

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-10-A

Lab Sample ID: 280-84914-10

Client ID: WB-2

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 18

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

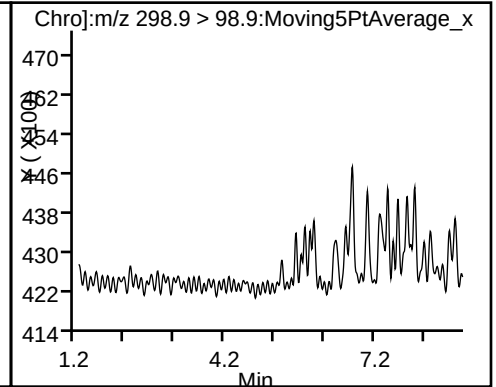
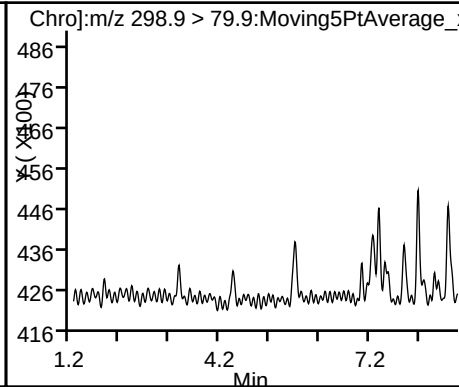
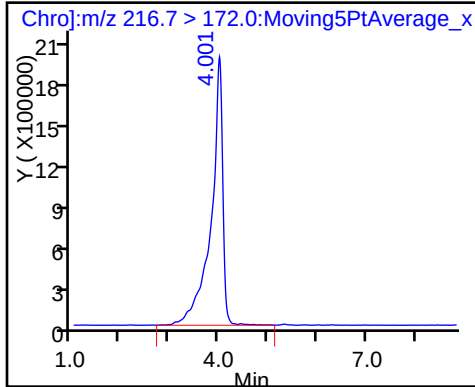
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

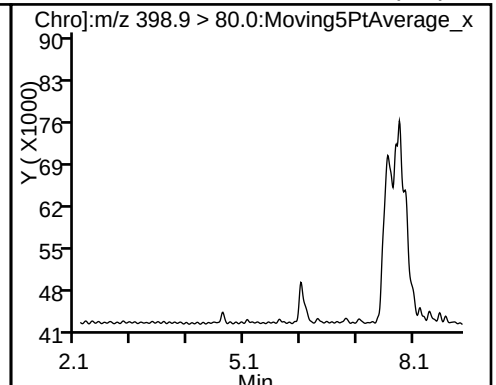
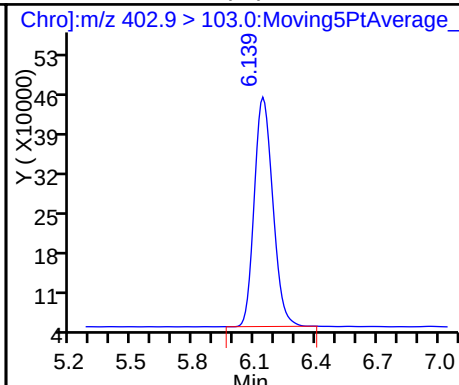
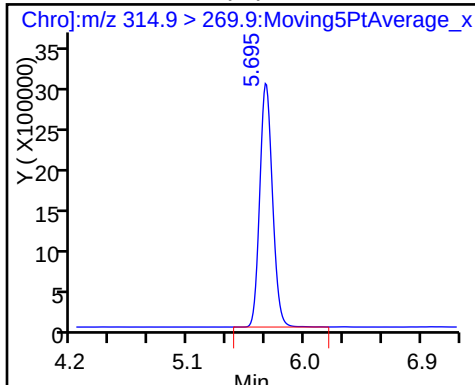
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

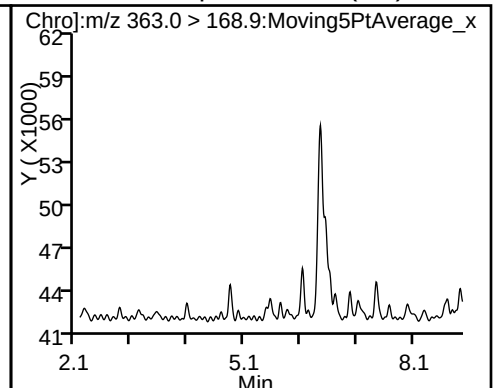
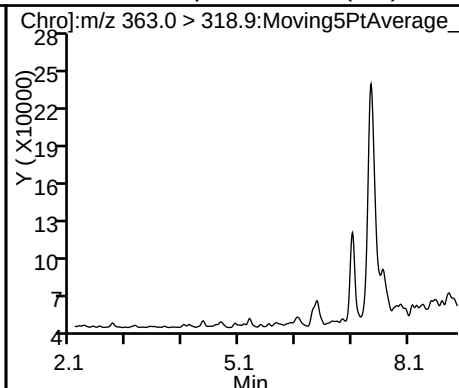
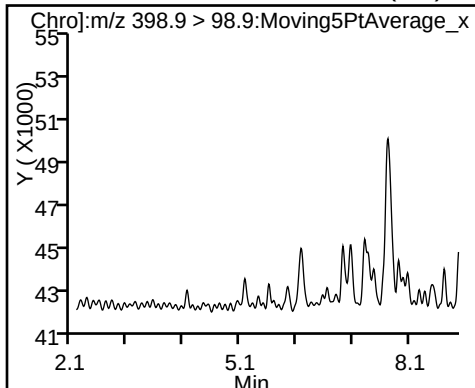
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

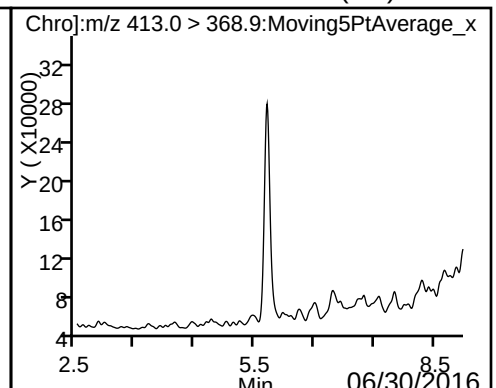
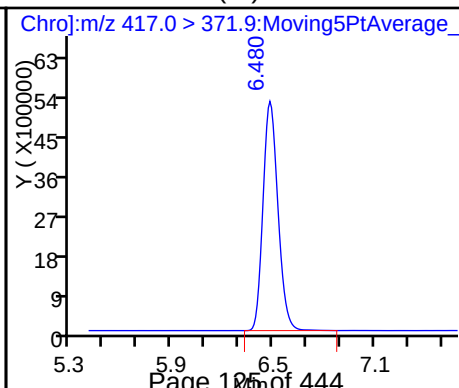
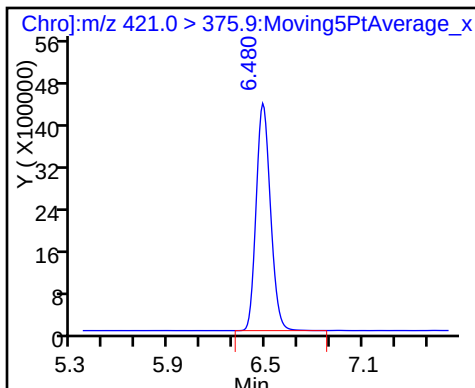
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

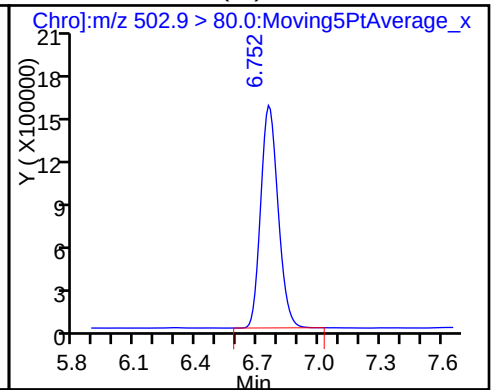
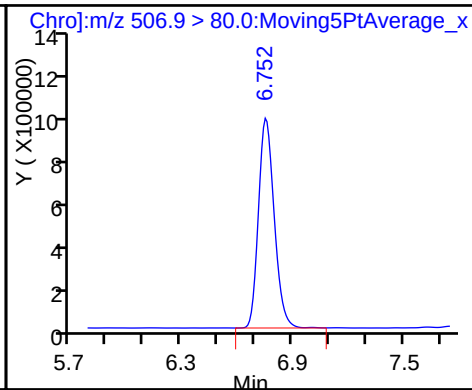
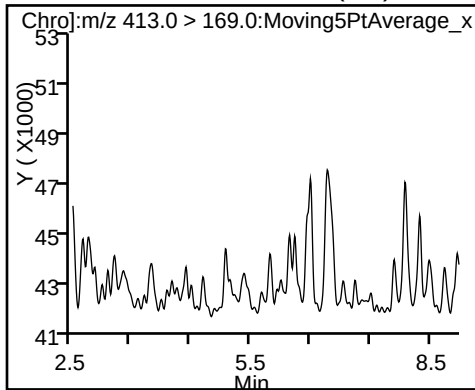
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

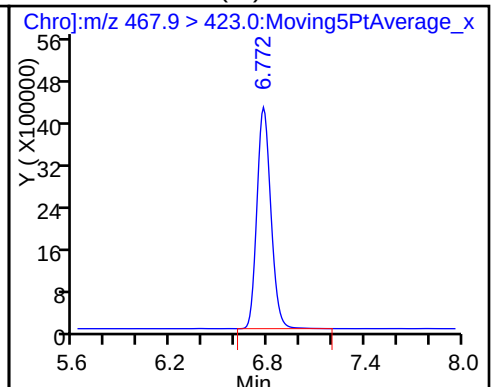
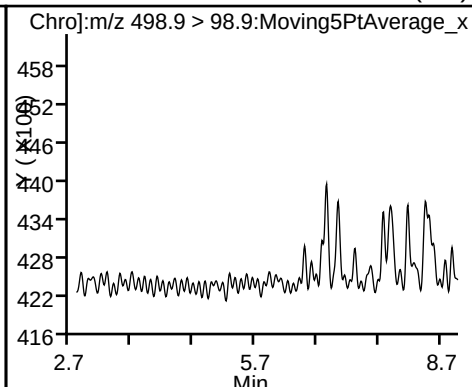
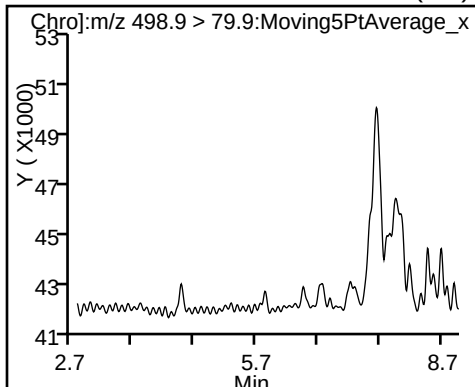
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

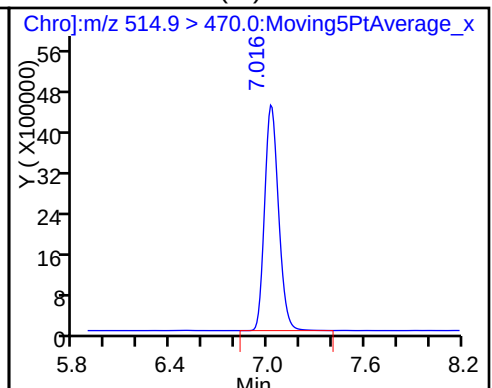
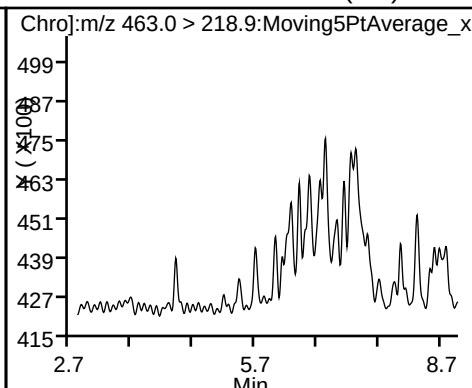
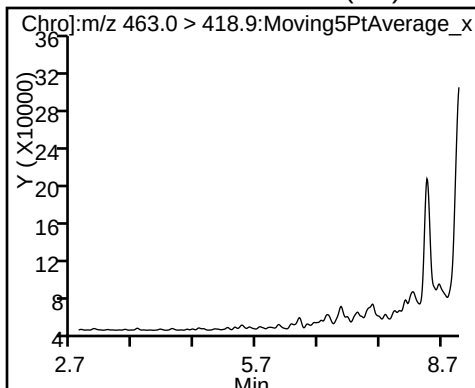
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

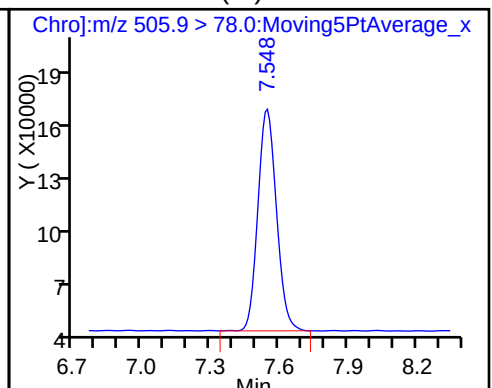
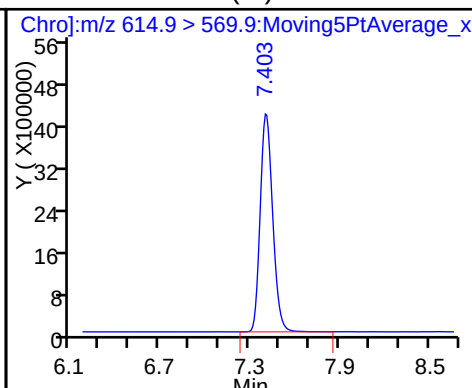
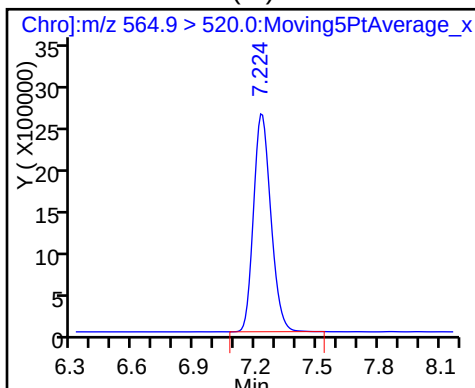
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>FB-1</u>	Lab Sample ID: <u>280-84914-11</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20026.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 10:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>265 (mL)</u>	Date Analyzed: <u>06/30/2016 12:26</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.012	U	0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0092	U	0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	98		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20026.d
 Lims ID: 280-84914-A-11-A Lab Sample ID: 280-84914-11
 Client ID: FB-1
 Sample Type: Client
 Inject. Date: 30-Jun-2016 12:26:18 ALS Bottle#: 0 Worklist Smp#: 21
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-11-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:08:58

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.029 4.020 0.009 31963665 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.232 ND

298.9 > 98.9 5.232

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.724 5.705 0.019 21778768 10.0

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.168 6.158 0.010 2555816 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND

398.9 > 98.9 6.159

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

\$ 14 13C8 PFOA

421.0 > 375.9 6.498 6.498 0.0 1.000 26789669 10.4

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.499 6.499 0.0 31852452 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND

413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.771 6.771 0.0 1.000 5551543 9.36

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.771 6.771 0.0 9277298 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND

498.9 > 98.9 6.771

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20026.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		25725942	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.035	0.0		27569605	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.243	0.0		16738019	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.422	7.422	0.0		29928983	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.557	0.0		875749	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20026.d

Injection Date: 30-Jun-2016 12:26:18

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-11-A

Lab Sample ID: 280-84914-11

Client ID: FB-1

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 21

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

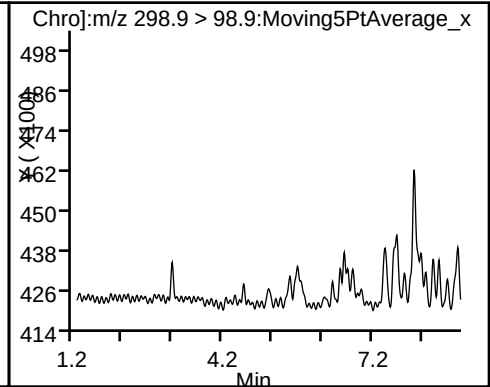
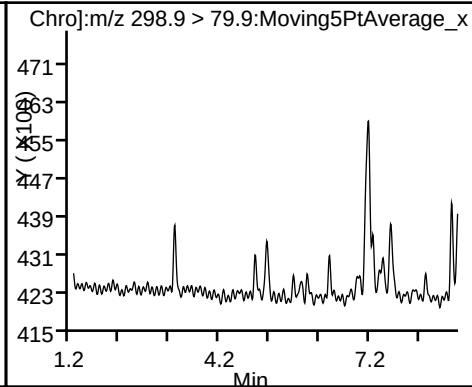
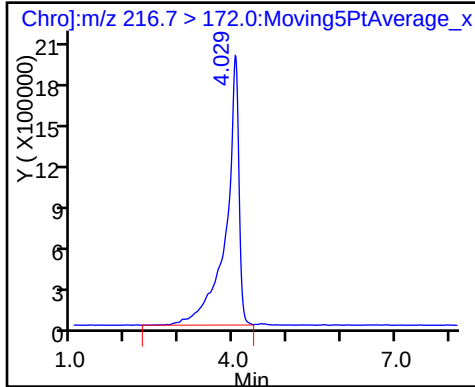
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

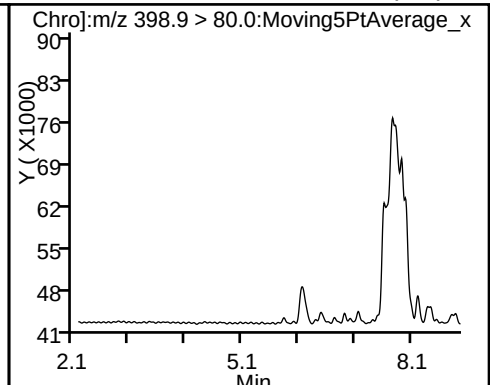
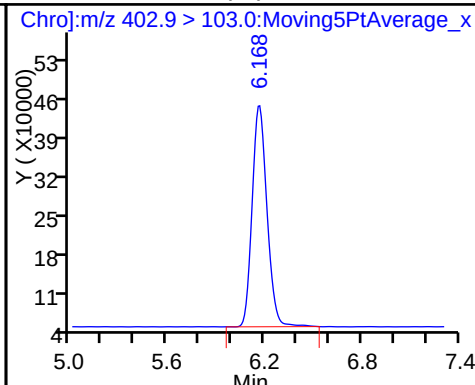
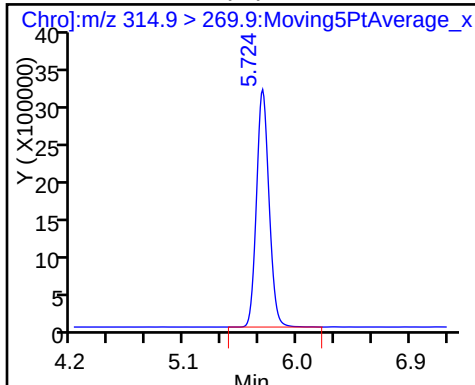
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

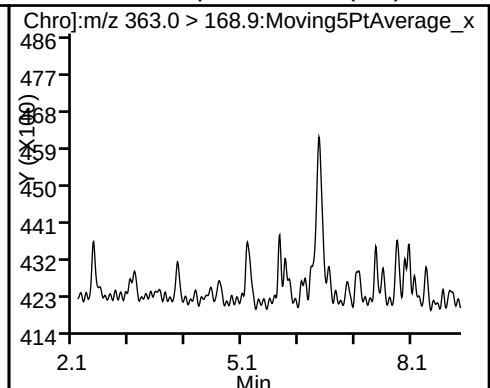
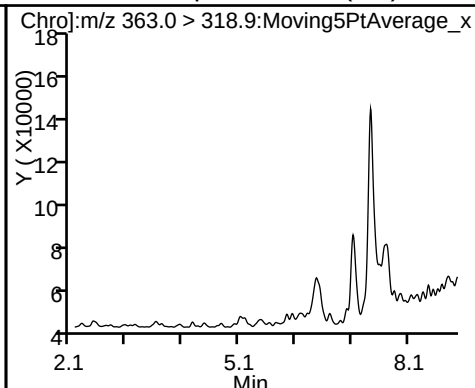
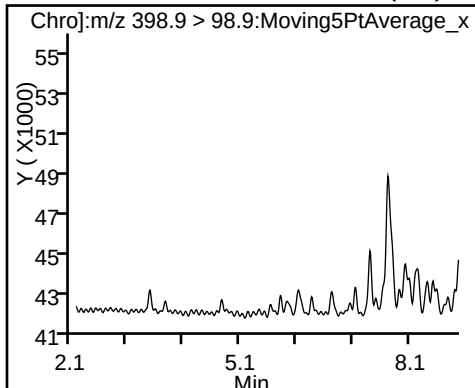
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

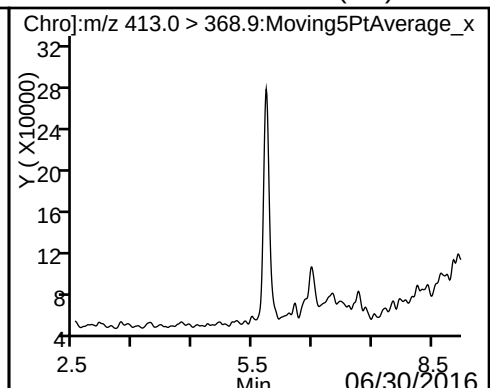
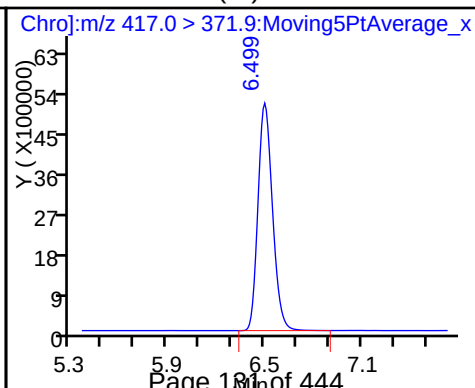
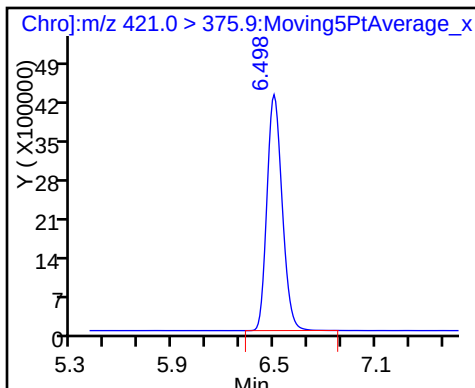
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

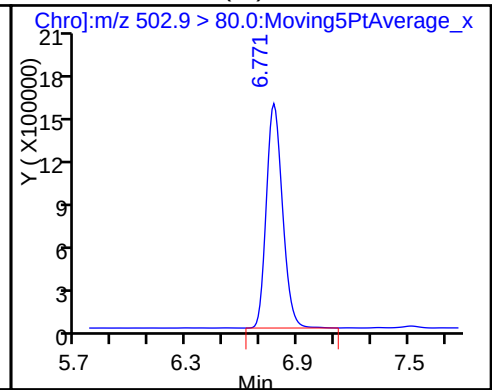
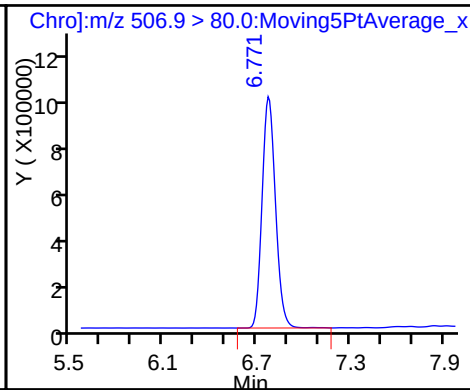
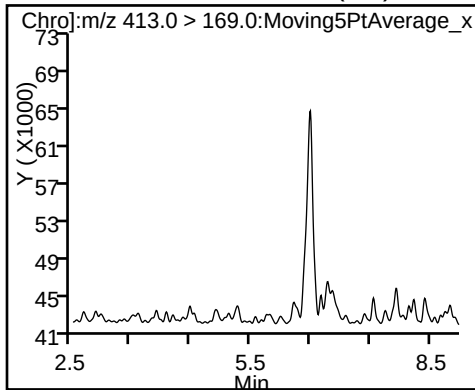
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

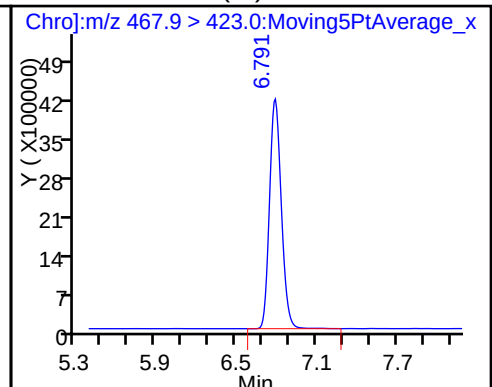
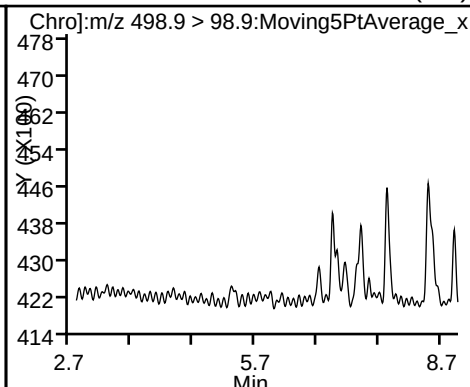
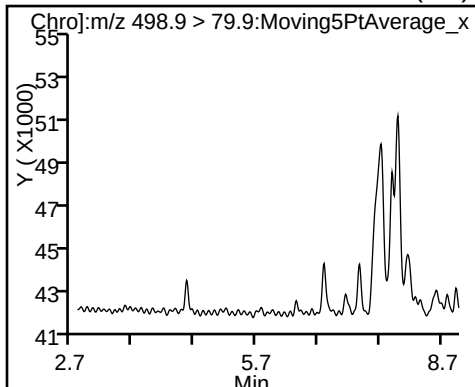
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

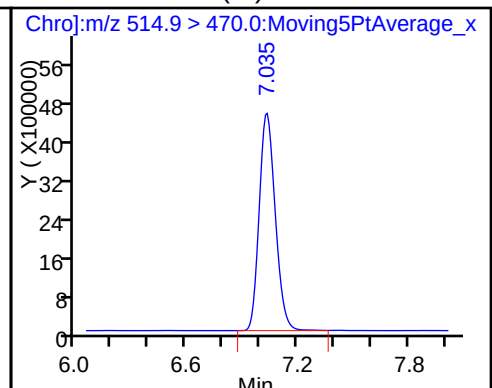
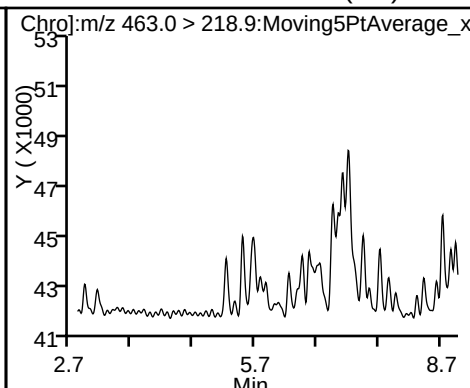
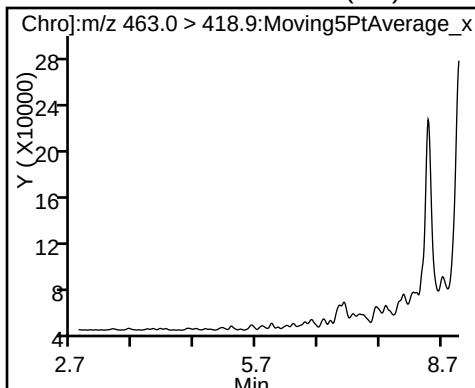
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

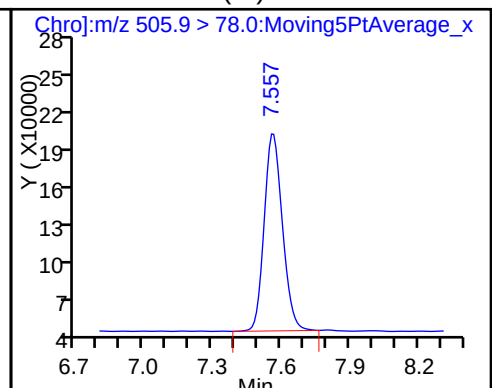
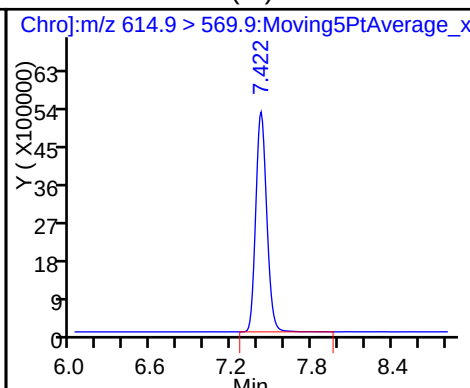
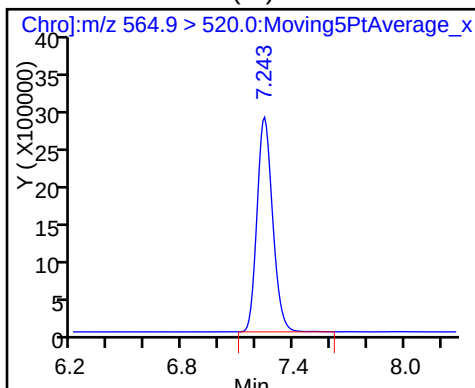
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>WB-1</u>	Lab Sample ID: <u>280-84914-12</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20027.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 11:10</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>264 (mL)</u>	Date Analyzed: <u>06/30/2016 12:38</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.028	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0066	U	0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0093	U	0.019	0.0093

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20027.d
 Lims ID: 280-84914-A-12-A Lab Sample ID: 280-84914-12
 Client ID: WB-1
 Sample Type: Client
 Inject. Date: 30-Jun-2016 12:38:35 ALS Bottle#: 0 Worklist Smp#: 22
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-12-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:09:12

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.010 4.020 -0.010 31474304 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.232 ND

298.9 > 98.9 5.232

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.714 5.705 0.009 20553626 10.0

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.158 6.158 0.0 2688235 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND

398.9 > 98.9 6.159

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

\$ 14 13C8 PFOA

421.0 > 375.9 6.489 6.498 -0.009 1.000 28037533 10.4

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.489 6.499 -0.010 33286749 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND

413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.771 6.771 0.0 1.000 5569975 9.53

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.771 6.771 0.0 9139288 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND

498.9 > 98.9 6.771

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20027.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.791	-0.009		24981882	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.035	-0.009		27410943	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.243	-0.009		16013847	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.422	-0.010		25559506	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.557	0.0		802133	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20027.d

Injection Date: 30-Jun-2016 12:38:35

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-12-A

Lab Sample ID: 280-84914-12

Client ID: WB-1

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 22

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

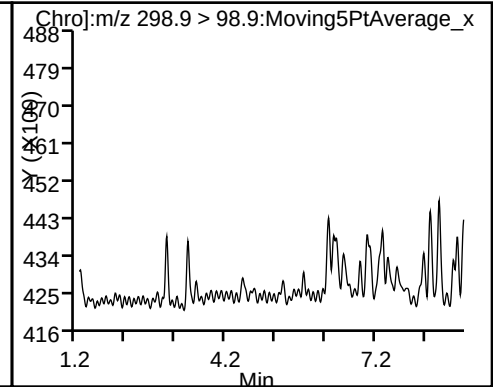
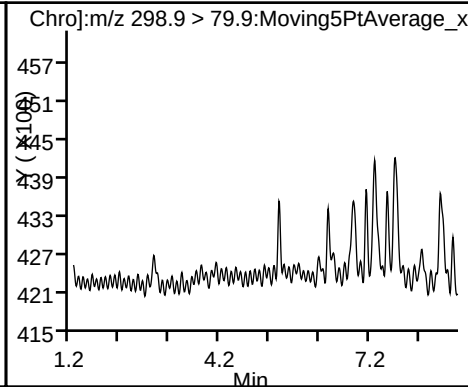
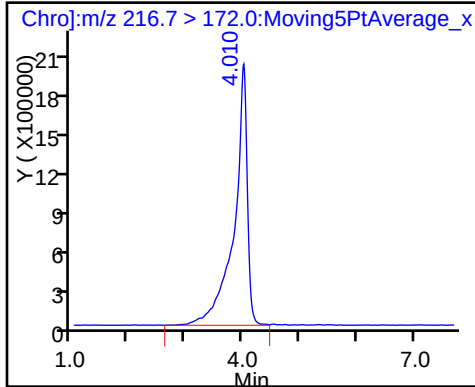
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

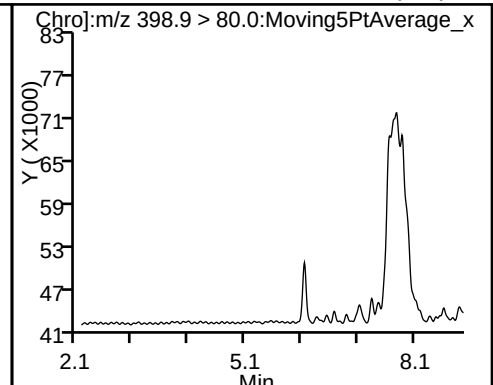
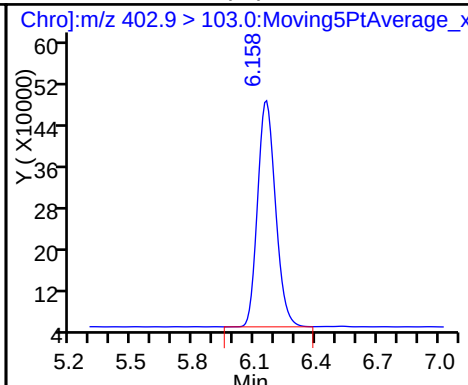
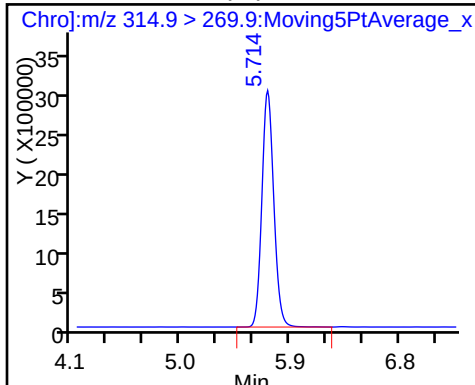
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

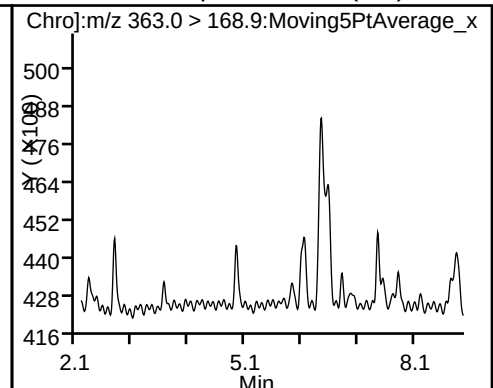
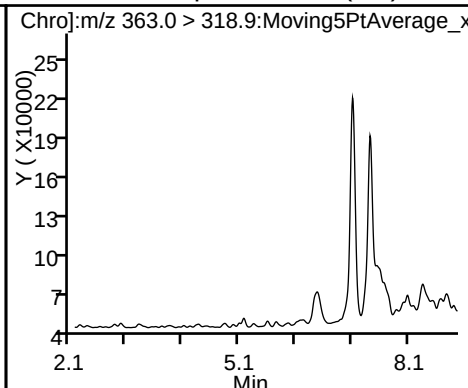
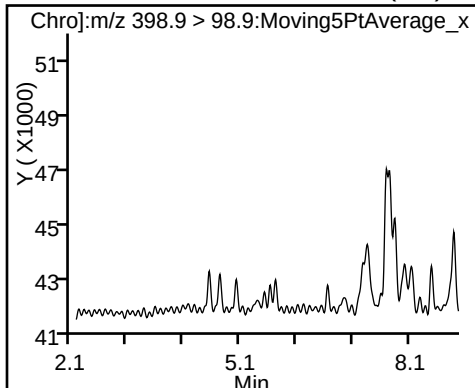
10 Perfluorohexane Sulfonate (ND)



10 Perfluorohexane Sulfonate (ND)

8 Perfluoroheptanoic acid (ND)

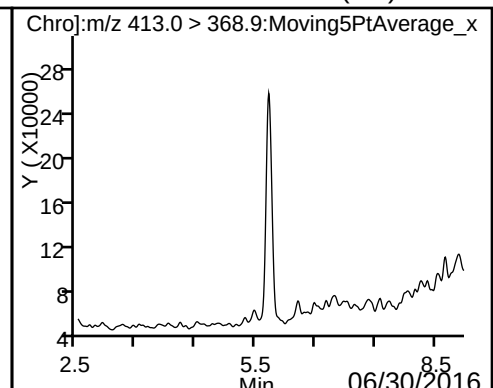
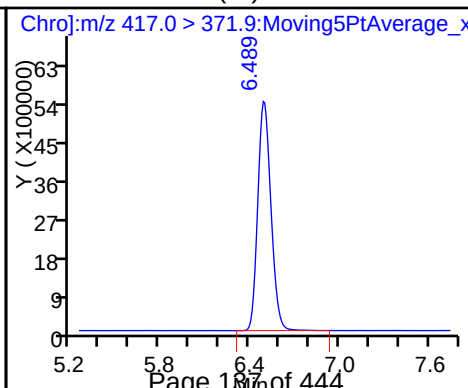
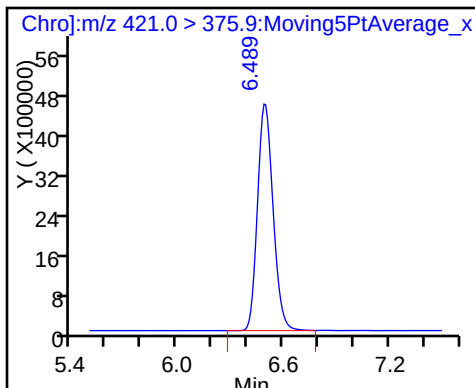
8 Perfluoroheptanoic acid (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

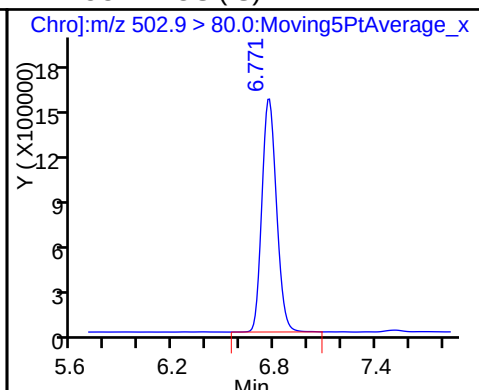
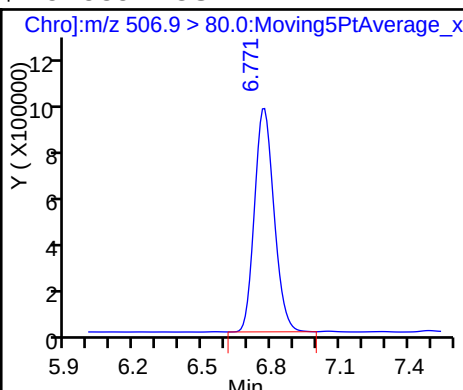
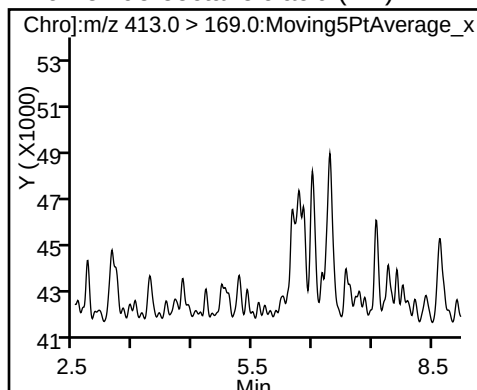
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

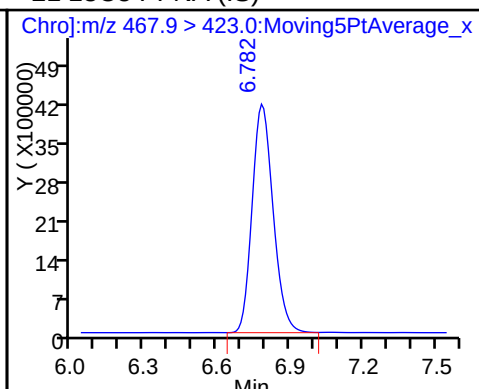
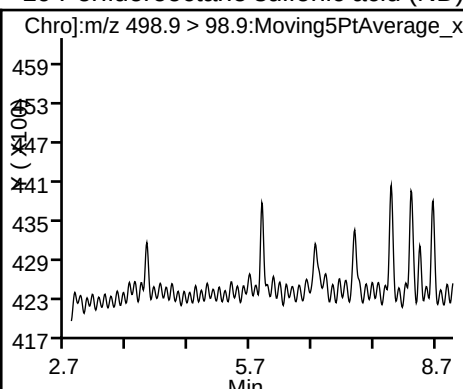
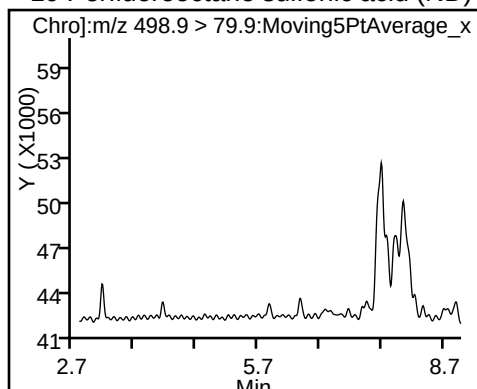
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

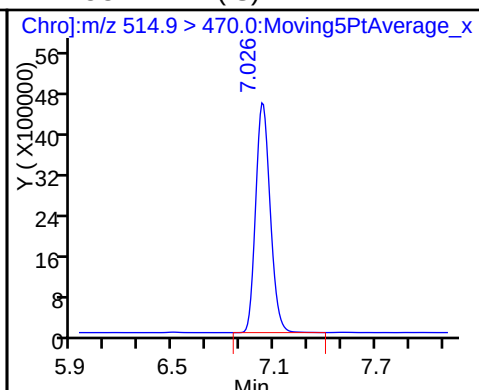
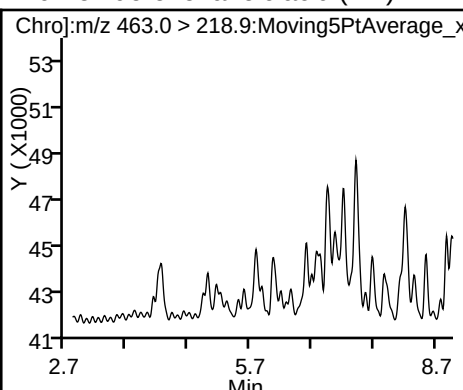
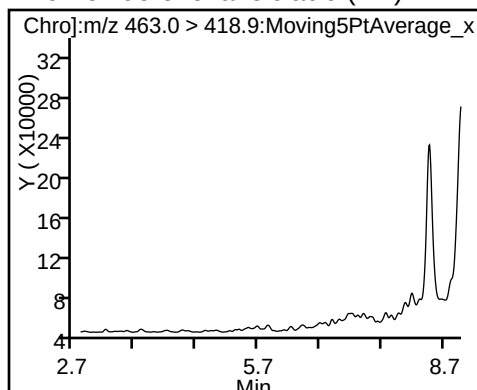
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

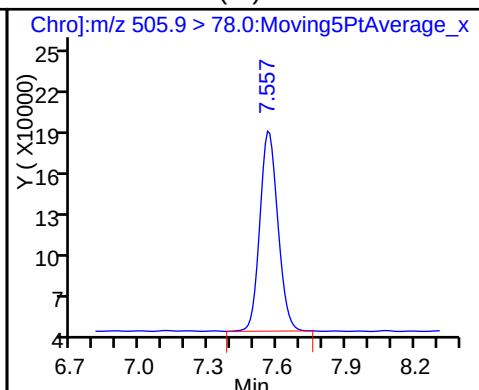
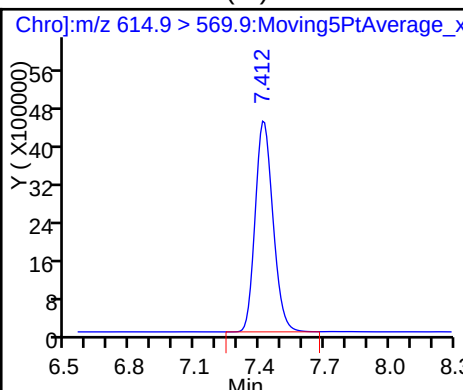
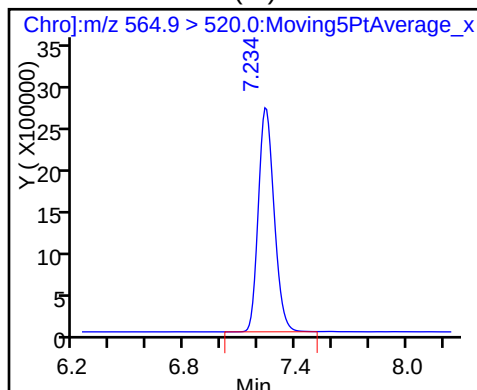
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CB-2</u>	Lab Sample ID: <u>280-84914-13</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20028.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 11:15</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>259.0 (mL)</u>	Date Analyzed: <u>06/30/2016 12:50</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.016	J	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0094	U	0.019	0.0094

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20028.d
 Lims ID: 280-84914-B-13-A Lab Sample ID: 280-84914-13
 Client ID: CB-2
 Sample Type: Client
 Inject. Date: 30-Jun-2016 12:50:53 ALS Bottle#: 0 Worklist Smp#: 23
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-13-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 14:35:23

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	4.020	-0.010		33152609	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9		5.232				ND			
298.9 > 98.9		5.232							
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.705	0.009		21631307	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.158	-0.009		2454915	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.159	6.159	0.0	1.002	292919	0.2084			R
398.9 > 98.9	6.159	6.159	0.0	1.002	102849		2.85(1.30-2.41)		R
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.150	-0.010	0.946	697723	0.2118			
363.0 > 168.9	6.150	6.150	0.0	0.948	167774		4.16(3.35-6.23)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.498	-0.009	1.000	27437226	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.499	-0.010		32813015	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.499	-0.010	1.000	727202	0.1425			R
413.0 > 169.0	6.489	6.499	-0.010	1.000	296553		2.45(2.86-5.31)		R
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.771	-0.010	1.000	5064401	9.54			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.771	-0.009		8297768	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.771	-0.009	1.000	905177	0.8244			R
498.9 > 98.9	6.771	6.771	0.0	1.001	332634		2.72(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.791	-0.009		25296334	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.035	-0.009		23449108	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.243	-0.009		12341227	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.422	-0.010		19888504	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.557	0.010		2100646	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20028.d

Injection Date: 30-Jun-2016 12:50:53

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-13-A

Lab Sample ID: 280-84914-13

Client ID: CB-2

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 23

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

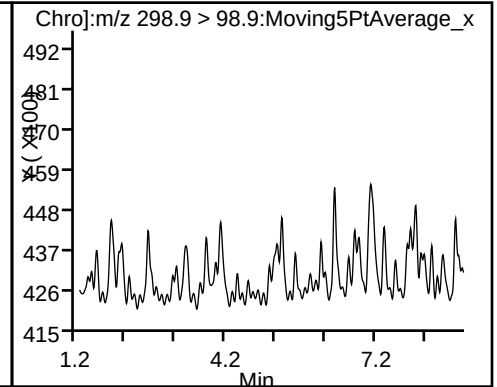
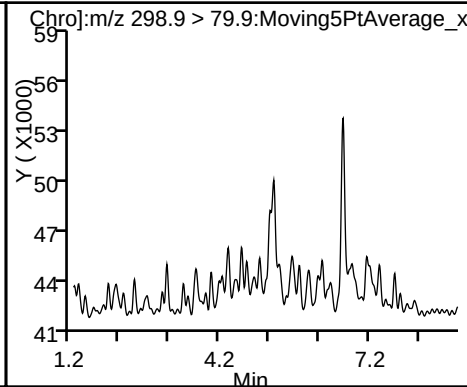
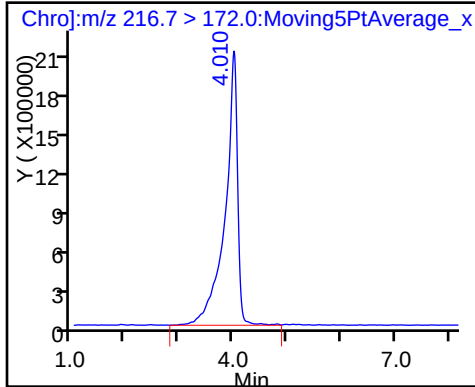
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

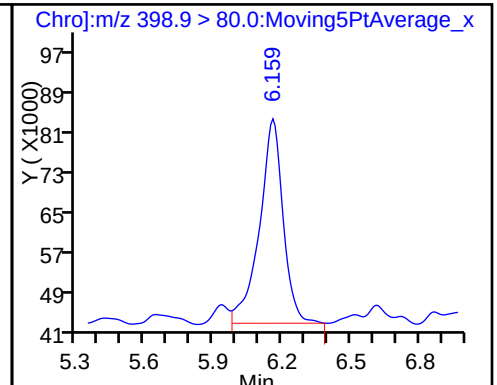
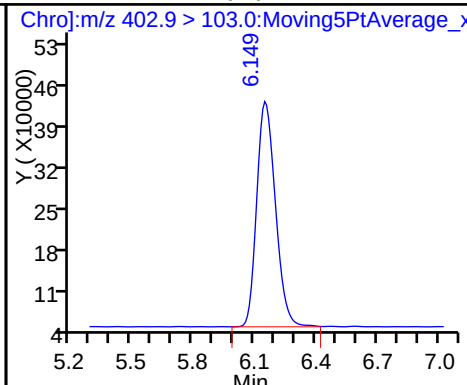
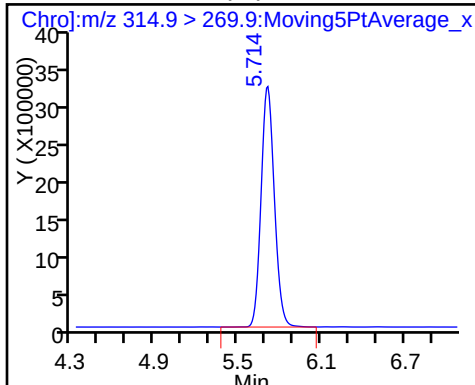
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

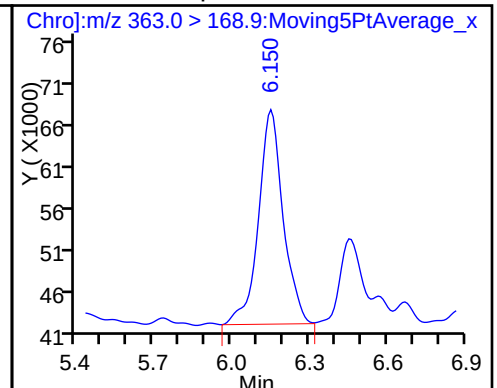
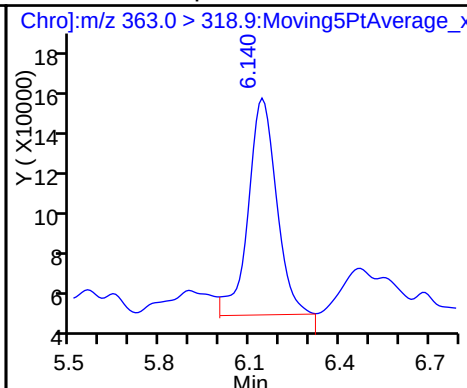
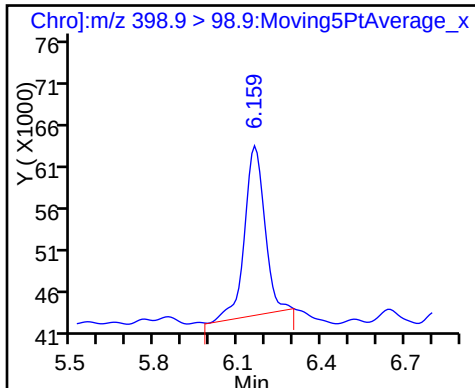
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate

8 Perfluoroheptanoic acid

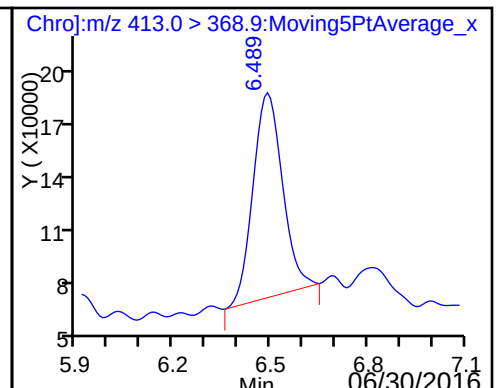
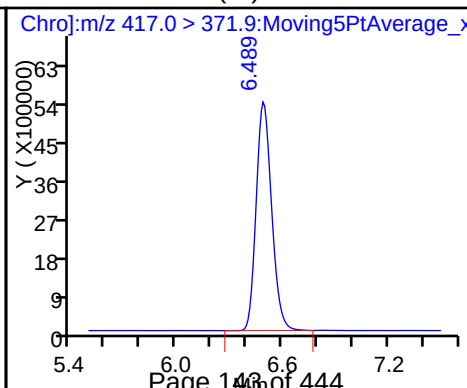
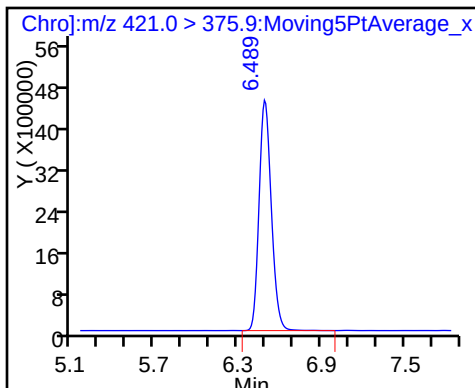
8 Perfluoroheptanoic acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

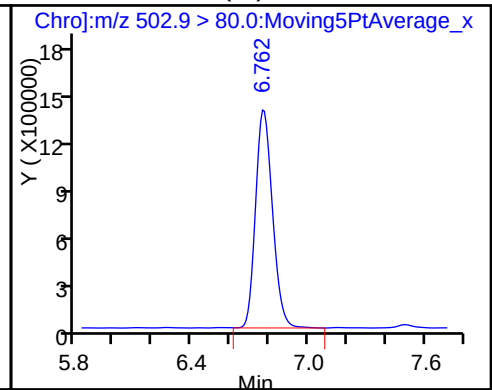
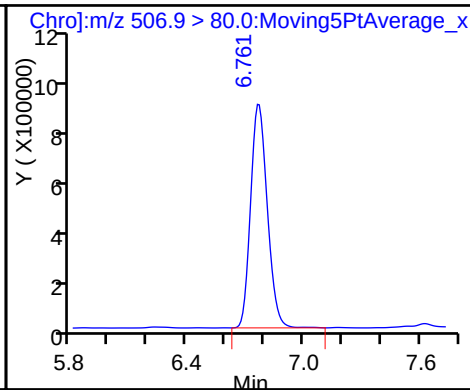
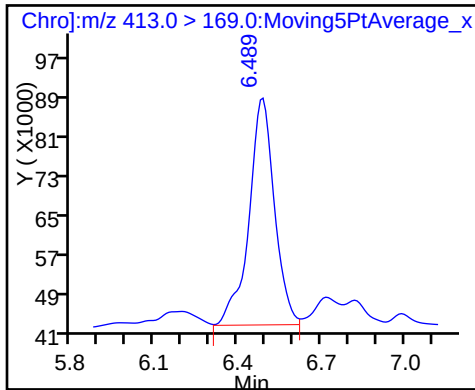
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

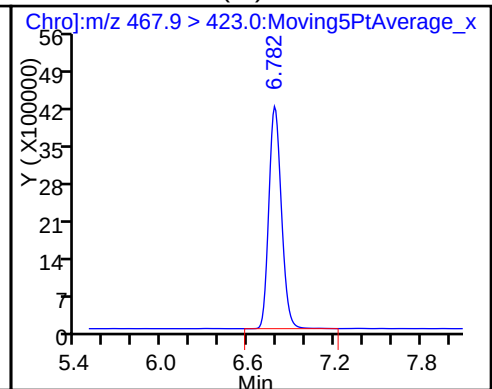
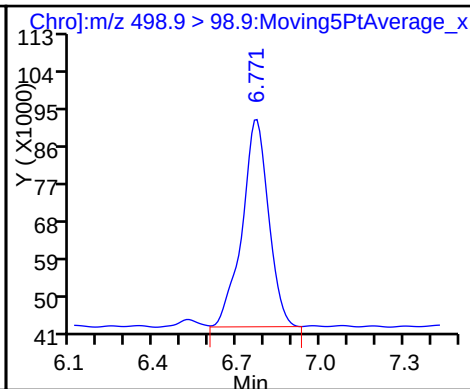
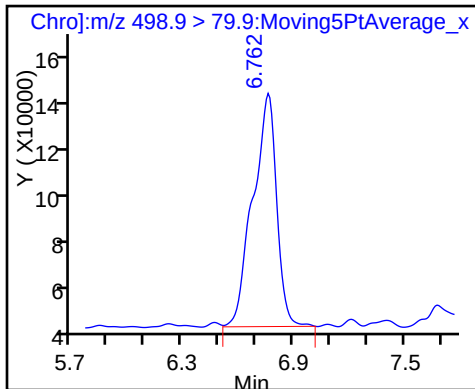
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

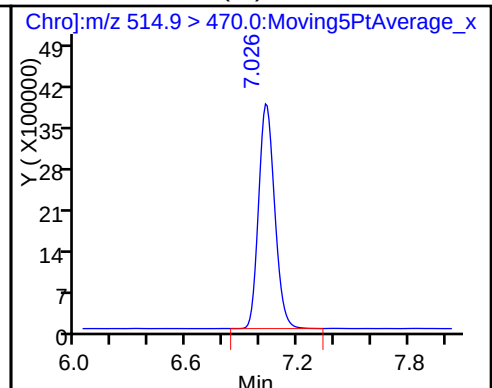
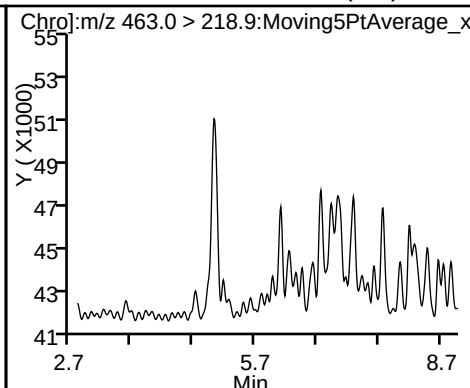
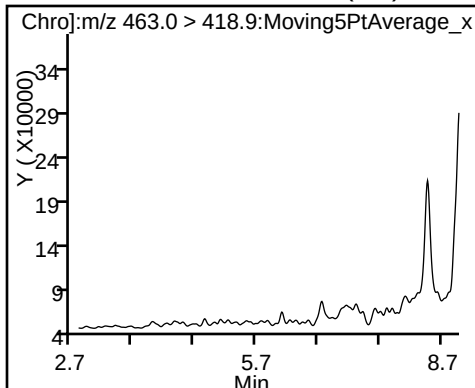
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

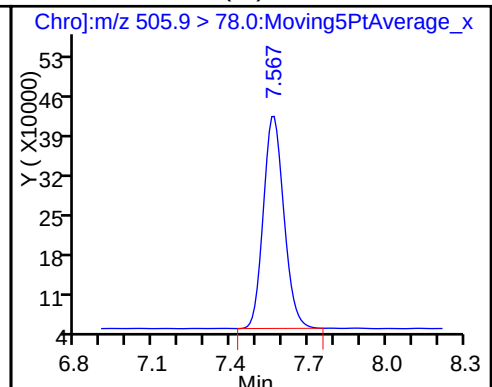
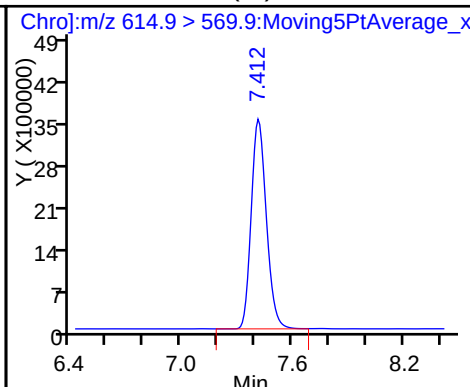
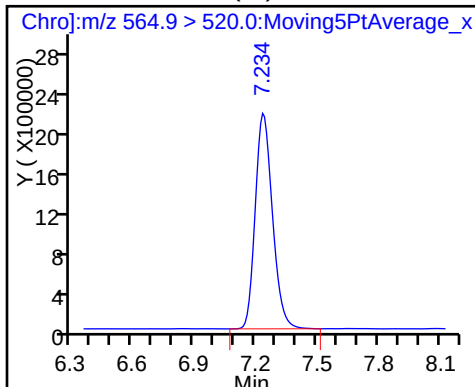
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CB-15</u>	Lab Sample ID: <u>280-84914-14</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20029.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 11:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>252.7(mL)</u>	Date Analyzed: <u>06/30/2016 13:03</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.017	J	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.036		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.11		0.030	0.0069
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.43		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.033		0.020	0.0097

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	99		60-155
STL01054	13C8 PFOS	92		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20029.d
 Lims ID: 280-84914-A-14-A Lab Sample ID: 280-84914-14
 Client ID: CB-15
 Sample Type: Client
 Inject. Date: 30-Jun-2016 13:03:11 ALS Bottle#: 0 Worklist Smp#: 24
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-14-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 14:35:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.020	0.047		23138826	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.232	0.009	0.852	1097491	0.8417			
298.9 > 98.9	5.251	5.232	0.019	0.854	338769		3.24(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.705	0.0		20009615	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.158	-0.009		2382114	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.159	-0.010	1.000	5346500	5.45			R
398.9 > 98.9	6.149	6.159	-0.010	1.000	1770468		3.02(1.30-2.41)		R
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.150	-0.010	0.946	5258997	1.83			
363.0 > 168.9	6.140	6.150	-0.010	0.946	1290843		4.07(3.35-6.23)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.498	-0.009	1.000	25920677	9.85			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.499	-0.010		32538987	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.499	-0.010	1.000	5867071	1.67			
413.0 > 169.0	6.489	6.499	-0.010	1.000	1952375		3.01(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.771	-0.010	1.000	4330443	8.78			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.771	-0.009		7706654	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.771	-0.009	1.000	20206700	21.5			R
498.9 > 98.9	6.762	6.771	-0.009	1.000	6118381		3.30(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.791	-0.009		23548293	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.791	-0.009	1.000	1468846	0.5148			
463.0 > 218.9	6.782	6.791	-0.009	1.000	237964		6.17(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.035	-0.009		21499402	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.243	-0.009		11961981	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.422	-0.010		21814686	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.557	0.0		1972477	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20029.d

Injection Date: 30-Jun-2016 13:03:11

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-14-A

Lab Sample ID: 280-84914-14

Client ID: CB-15

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 24

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

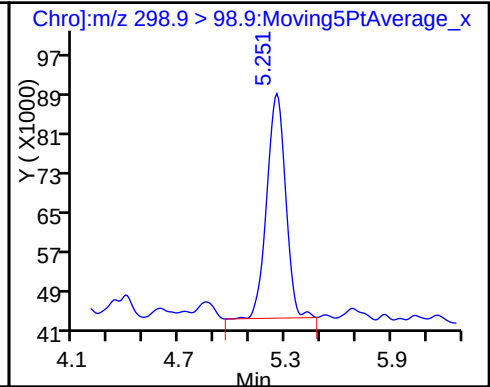
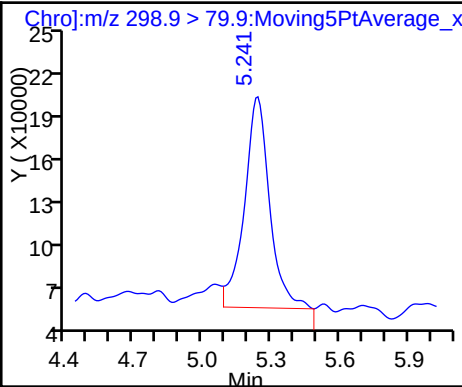
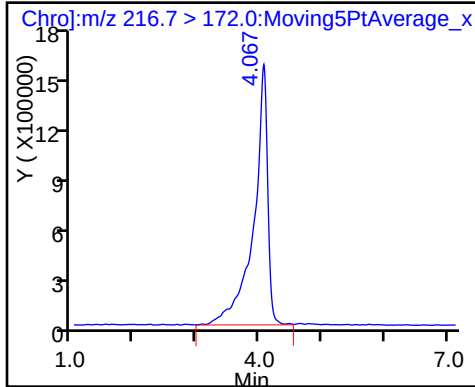
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

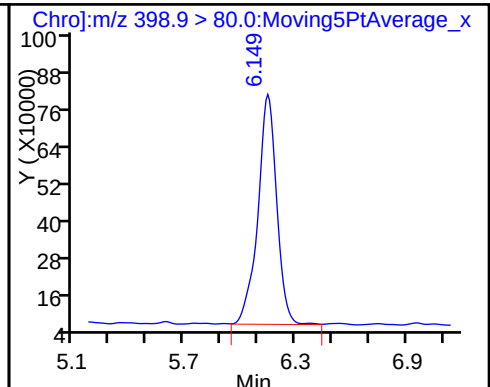
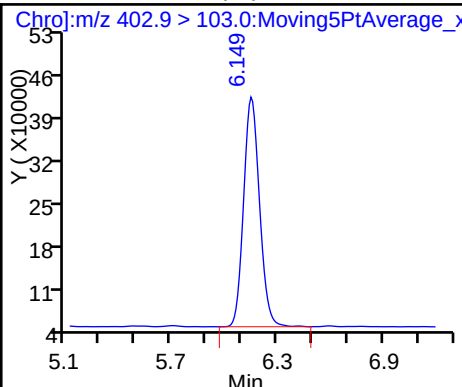
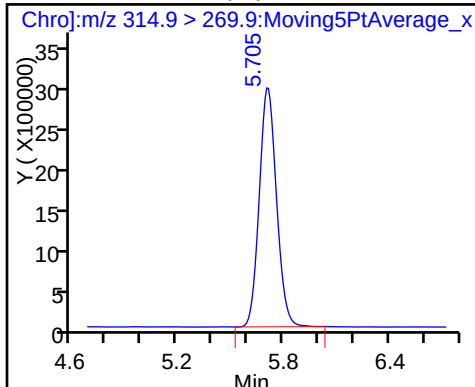
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

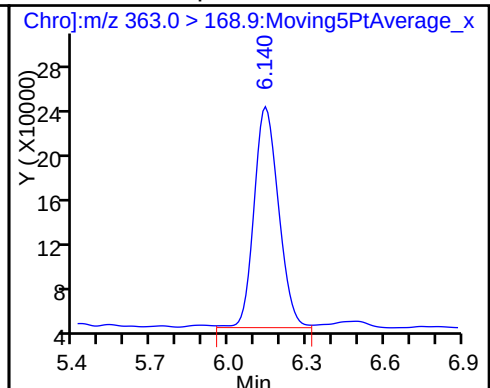
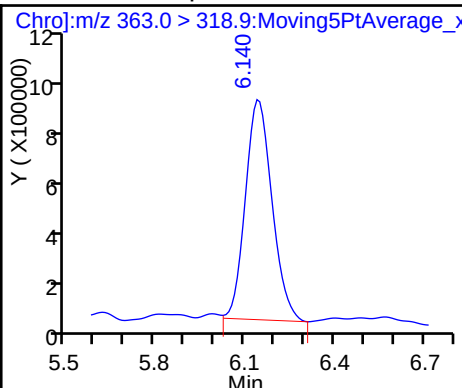
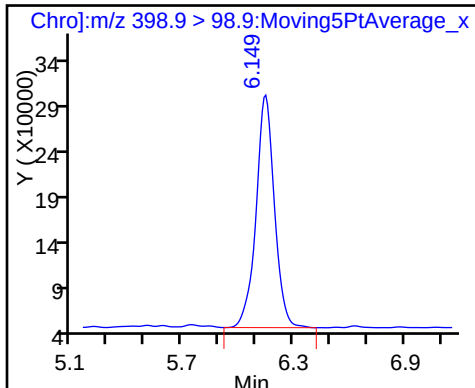
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate

8 Perfluoroheptanoic acid

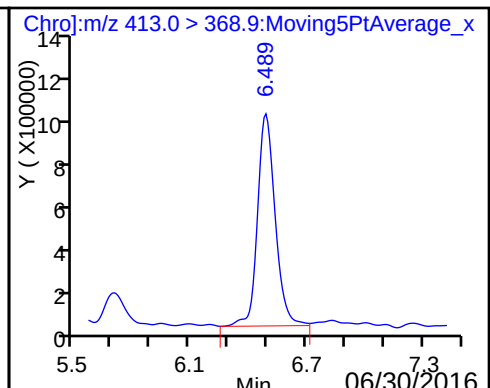
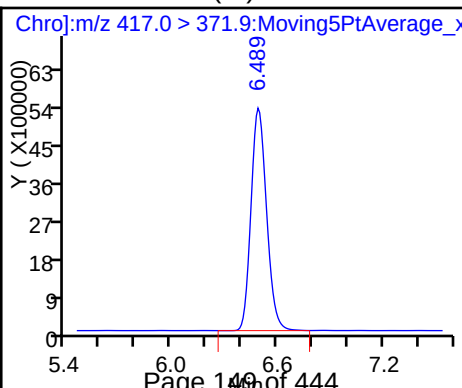
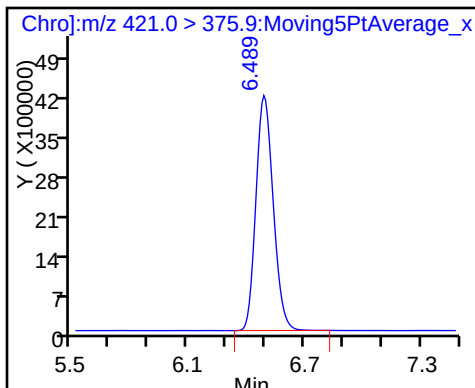
8 Perfluoroheptanoic acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

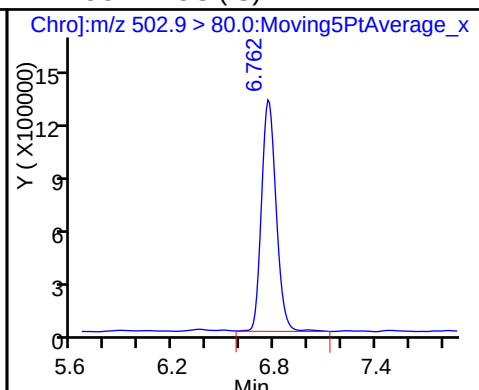
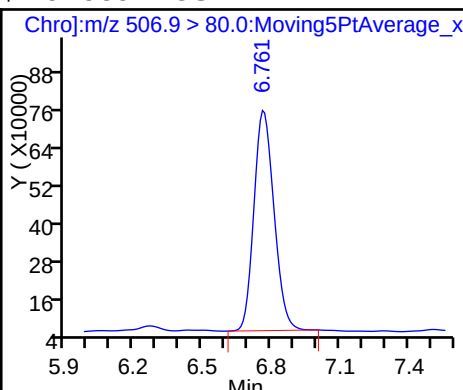
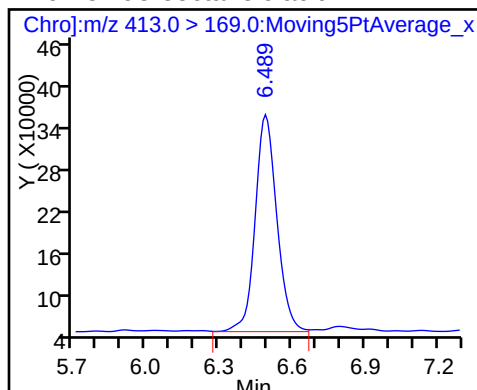
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

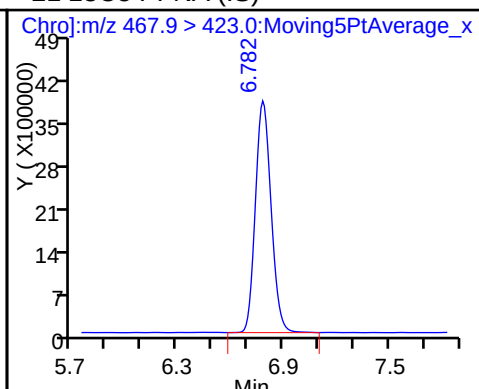
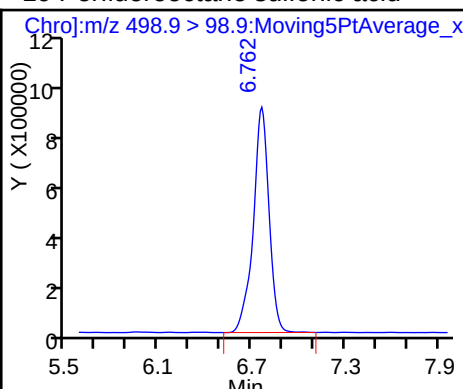
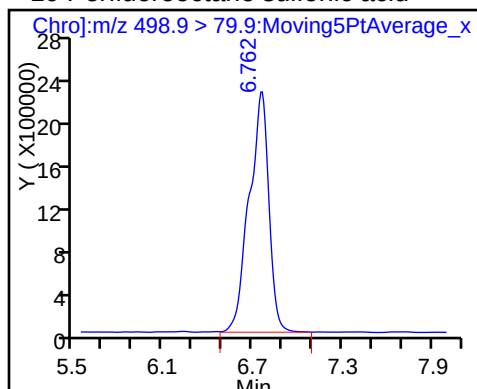
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

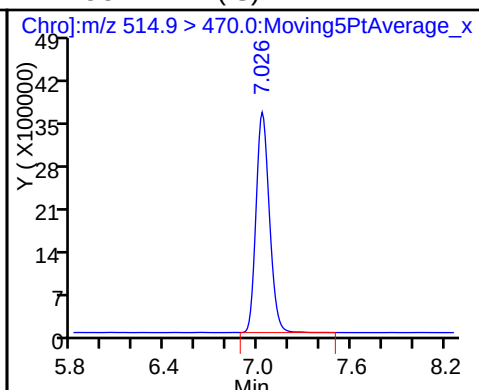
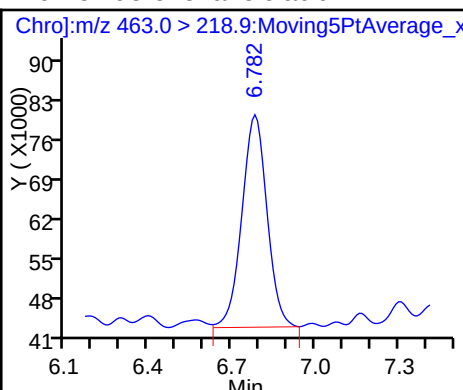
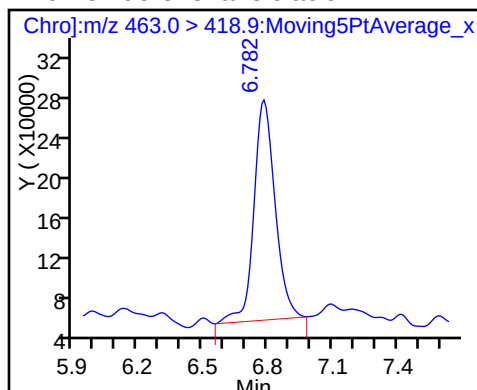
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

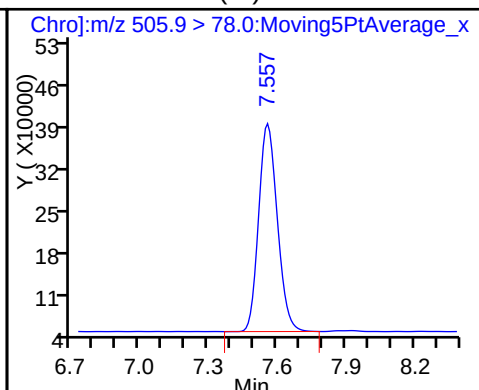
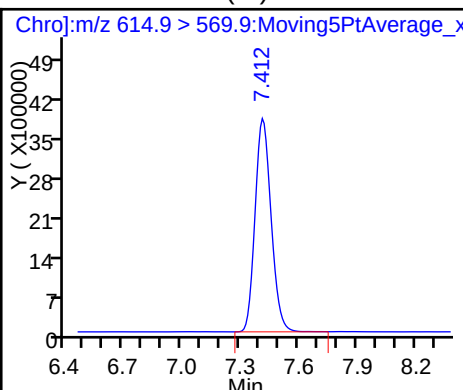
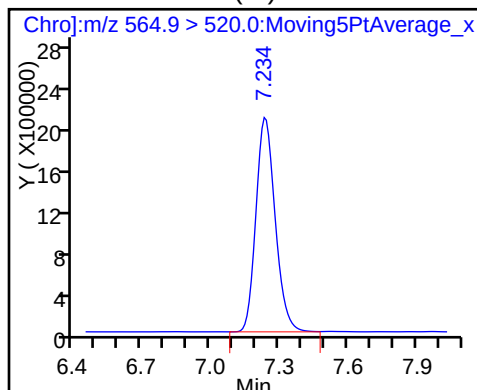
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-8</u>	Lab Sample ID: <u>280-84914-15</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20031.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>263.8 (mL)</u>	Date Analyzed: <u>06/30/2016 13:27</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.028	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.058		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.18	F1	0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.014	J	0.019	0.0093

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	107		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20031.d
 Lims ID: 280-84914-F-15-A Lab Sample ID: 280-84914-15
 Client ID: C-8
 Sample Type: Client
 Inject. Date: 30-Jun-2016 13:27:47 ALS Bottle#: 0 Worklist Smp#: 26
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-f-15-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 14:37:29

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	4.067	-0.057		15038305	10.0			
4 Perfluorobutane Sulfonate									RM
298.9 > 79.9	5.260	5.251	0.009	0.853	478781	0.3591			RM
298.9 > 98.9	5.260	5.251	0.009	0.853	113713		4.21(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.714	0.019		18620826	10.0			
8 Perfluoroheptanoic acid									M
363.0 > 318.9	6.159	6.150	0.009	0.946	1783743	0.6245			M
363.0 > 168.9	6.159	6.150	0.009	0.946	529376		3.37(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.158	0.010		2468272	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.168	6.159	0.009	1.000	3156529	3.07			R
398.9 > 98.9	6.168	6.159	0.009	1.000	886374		3.56(1.30-2.41)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.498	0.010	1.000	25827308	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.499	0.009		31272281	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	2595668	0.7308			
413.0 > 169.0	6.508	6.508	0.0	1.000	845493		3.07(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	5332629	10.2			M
									M
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		8172512	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.771	6.781	-0.010	0.999	9752712	9.74			R
498.9 > 98.9	6.781	6.781	0.0	1.000	2791007		3.49(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.801	-0.009		24933440	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.801	-0.010	1.000	738412	0.2215			
463.0 > 218.9	6.801	6.801	0.0	1.001	91336		8.08(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.045	-0.010		24636658	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		13430213	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.422	7.431	-0.009		24090130	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.576	-0.009		2388049	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20031.d

Injection Date: 30-Jun-2016 13:27:47

Instrument ID: LC_LCMS5

Lims ID: 280-84914-F-15-A

Lab Sample ID: 280-84914-15

Client ID: C-8

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 26

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

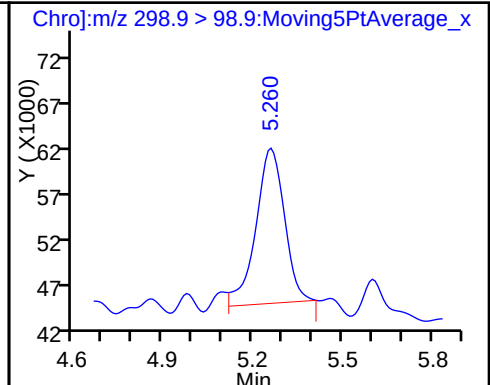
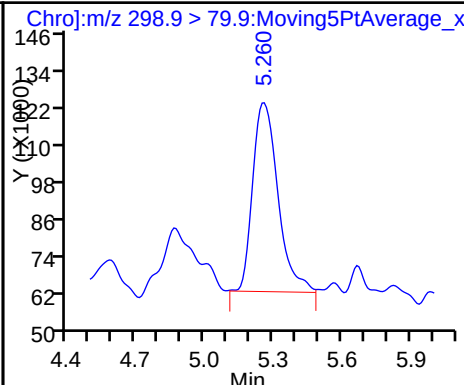
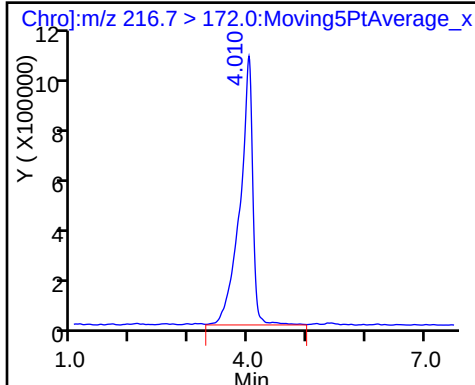
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (M)

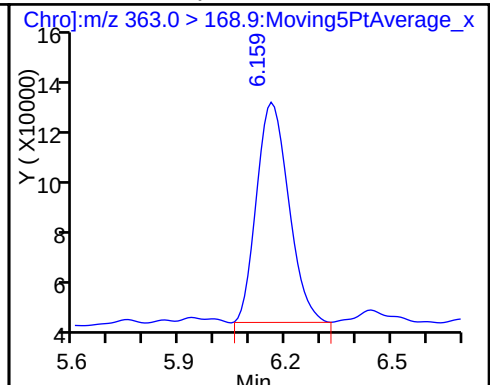
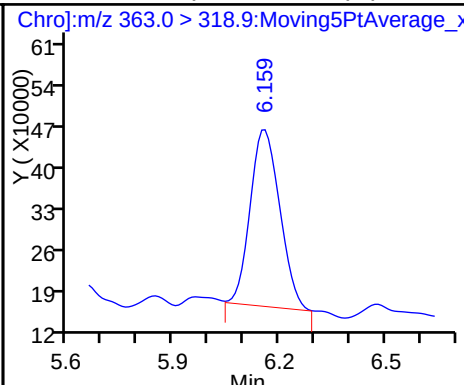
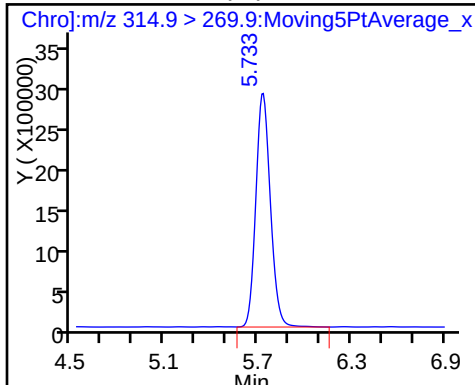
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (M)

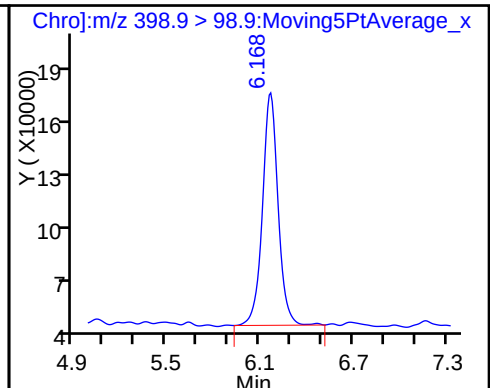
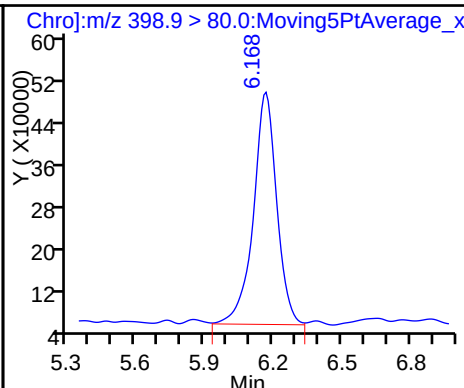
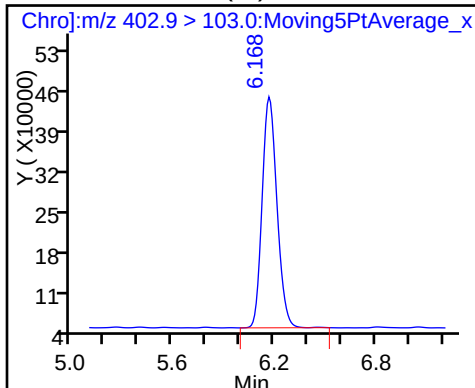
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

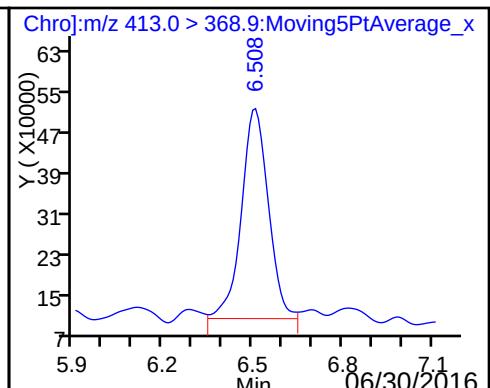
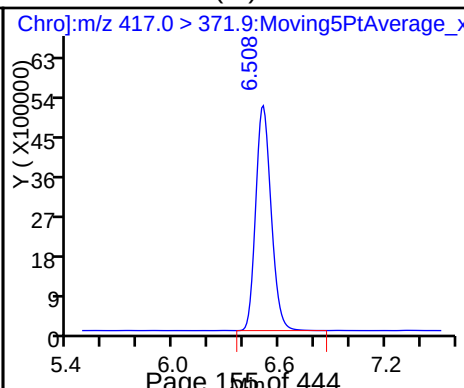
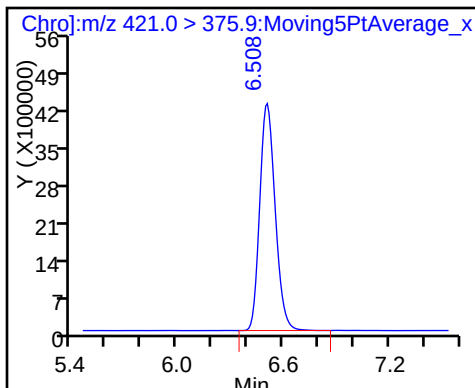
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

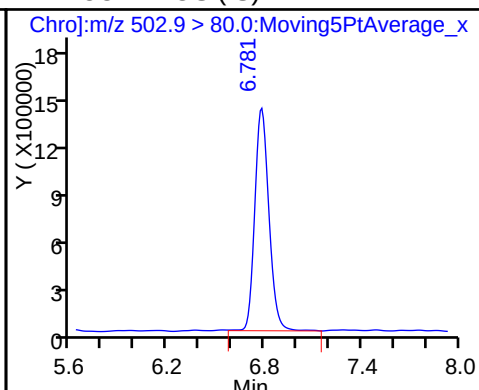
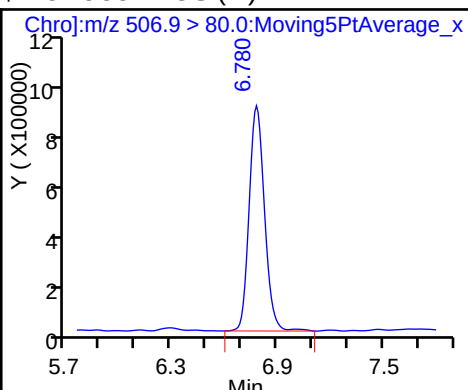
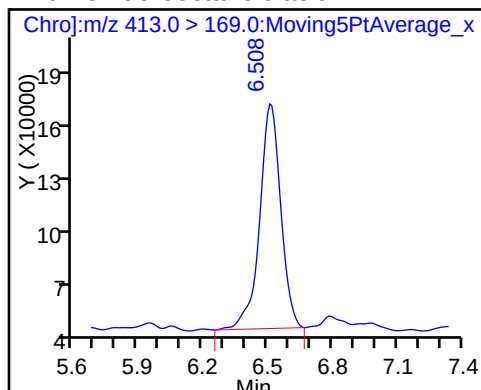
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS (M)

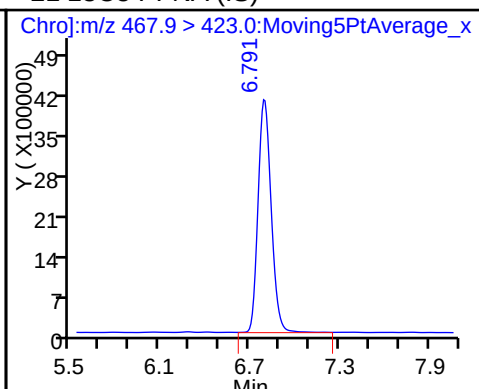
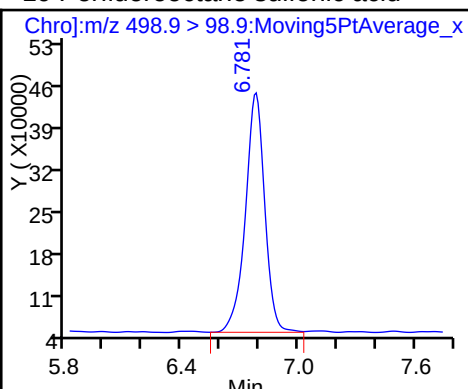
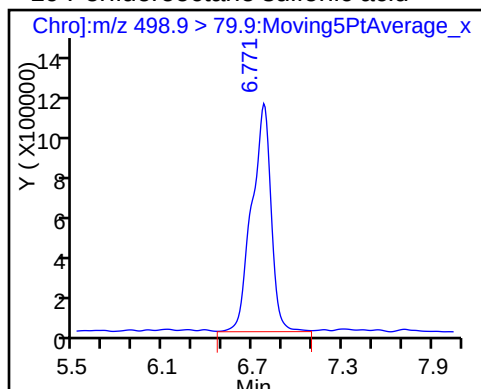
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

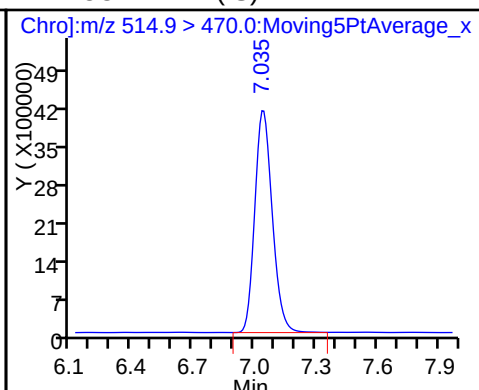
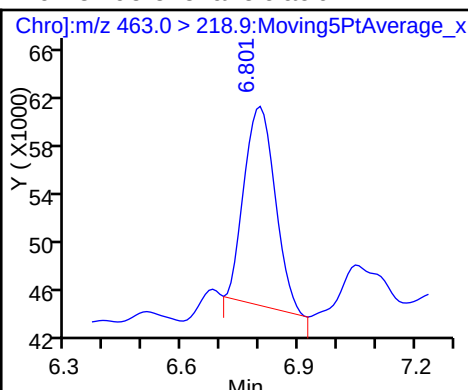
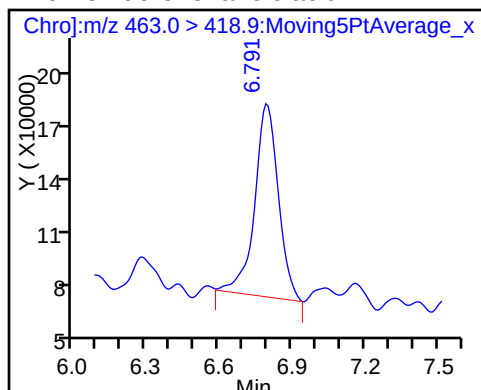
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

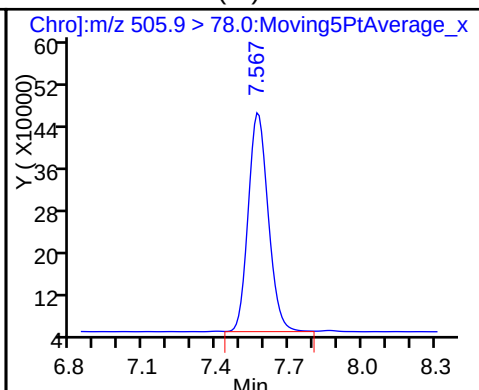
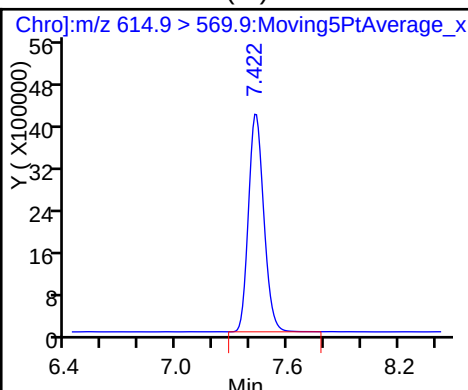
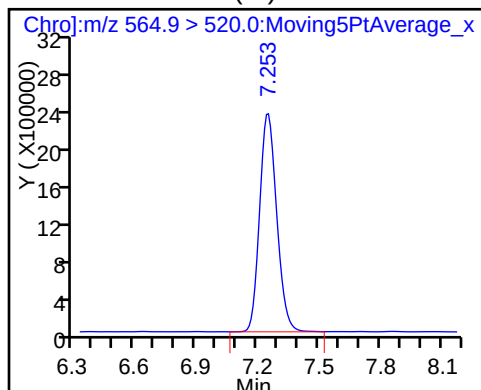
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



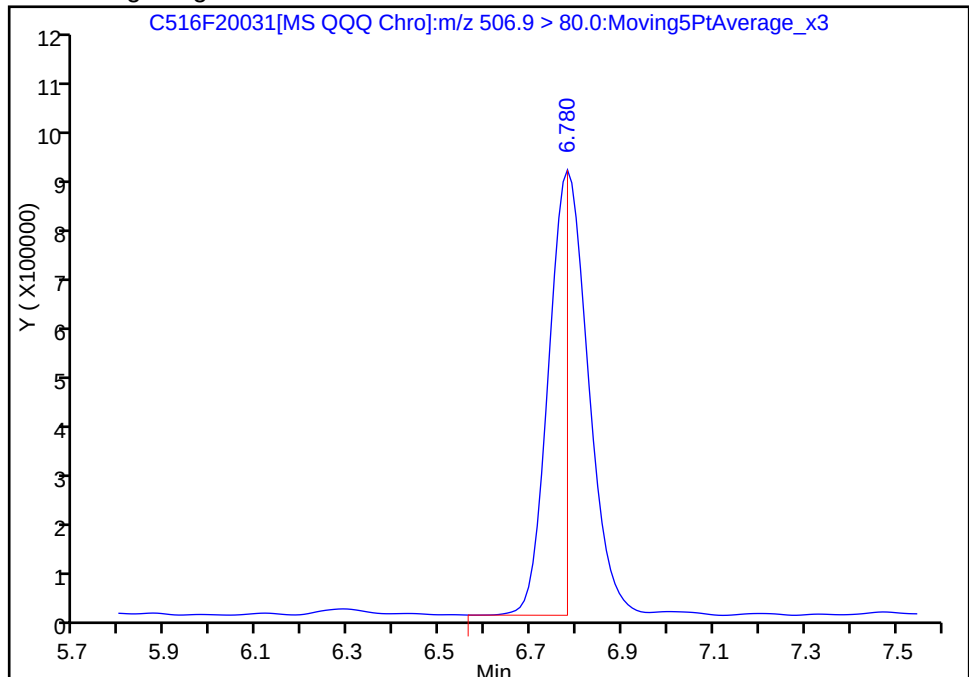
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20031.d				
Injection Date:	30-Jun-2016 13:27:47	Instrument ID:	LC_LCMS5		
Lims ID:	280-84914-F-15-A	Lab Sample ID:	280-84914-15		
Client ID:	C-8				
Operator ID:	ACM/HKF	ALS Bottle#:	0	Worklist Smp#:	26
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

\$ 18 13C8 PFOS, CAS: STL01054

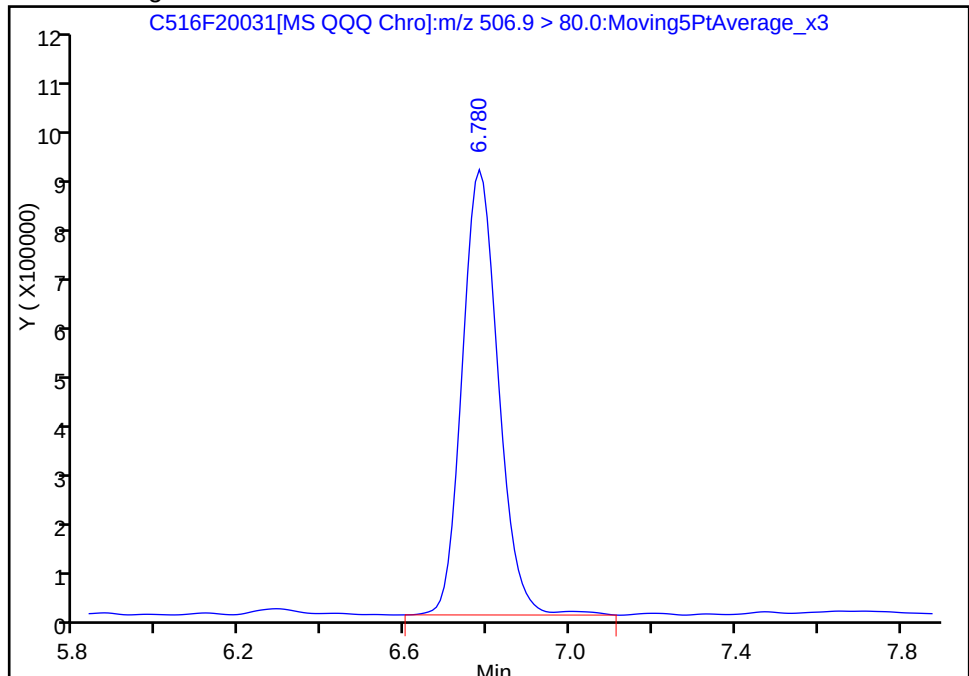
RT: 6.78
Area: 2474674
Amount: 4.718318
Amount Units: ug/L

Processing Integration Results



RT: 6.78
Area: 5332629
Amount: 10.205145
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 14:37:29
Audit Action: Manually Integrated
Audit Reason: Baseline

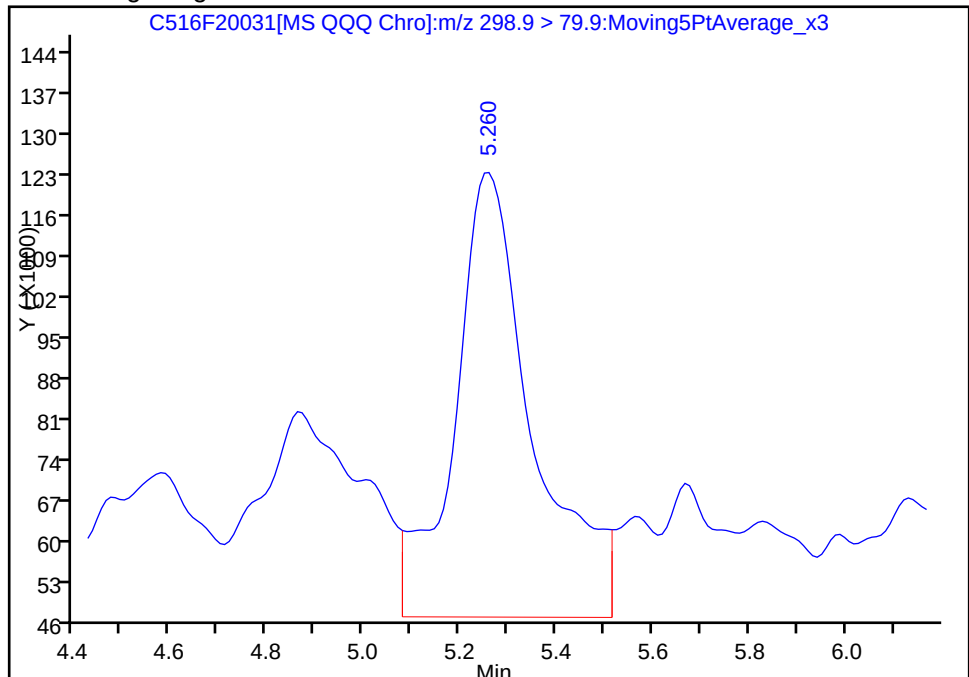
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20031.d		
Injection Date:	30-Jun-2016 13:27:47	Instrument ID:	LC_LCMS5
Lims ID:	280-84914-F-15-A	Lab Sample ID:	280-84914-15
Client ID:	C-8		
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector:	MS QQQ
		Worklist Smp#:	26

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

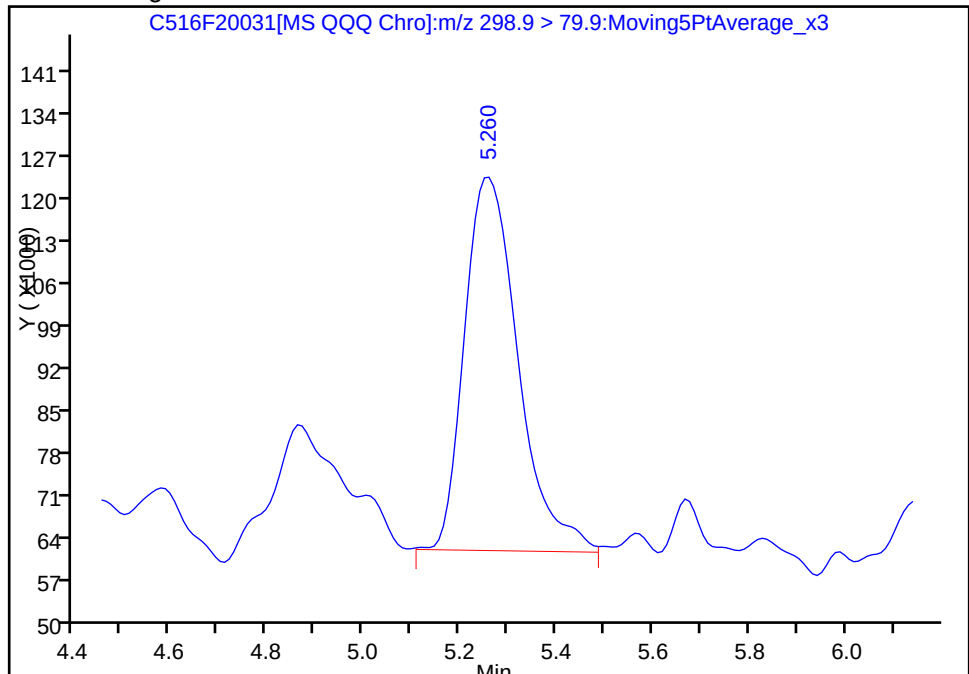
RT: 5.26
Area: 855186
Amount: 0.634986
Amount Units: ug/L

Processing Integration Results



RT: 5.26
Area: 478781
Amount: 0.359089
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 14:37:29
Audit Action: Manually Integrated
Audit Reason: Baseline

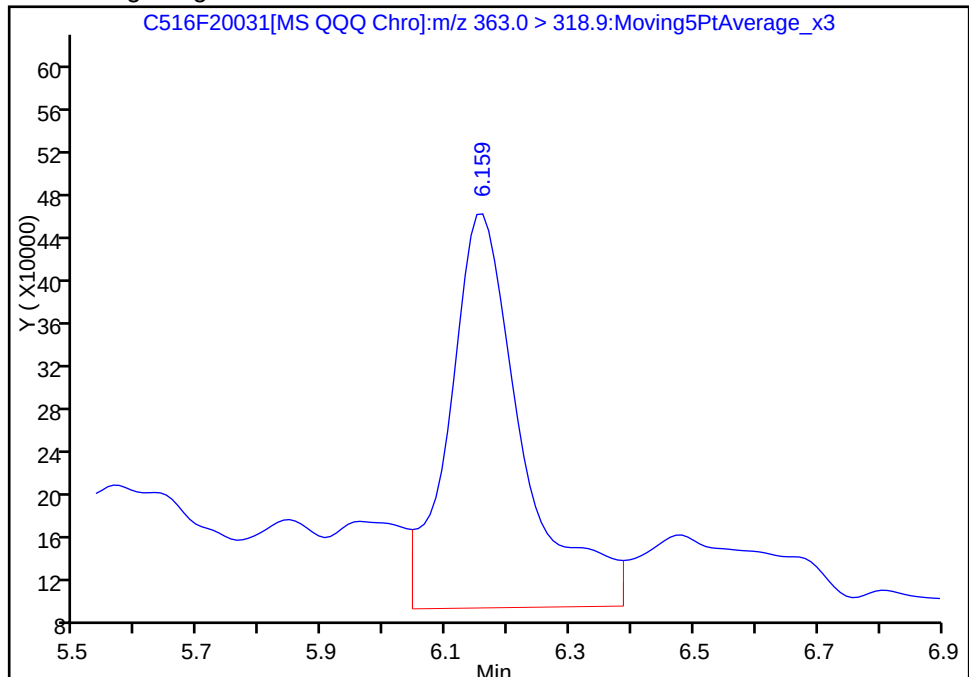
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20031.d				
Injection Date:	30-Jun-2016 13:27:47	Instrument ID:	LC_LCMS5		
Lims ID:	280-84914-F-15-A	Lab Sample ID:	280-84914-15		
Client ID:	C-8				
Operator ID:	ACM/HKF	ALS Bottle#:	0	Worklist Smp#:	26
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector:	MS QQQ		

8 Perfluoroheptanoic acid, CAS: 375-85-9

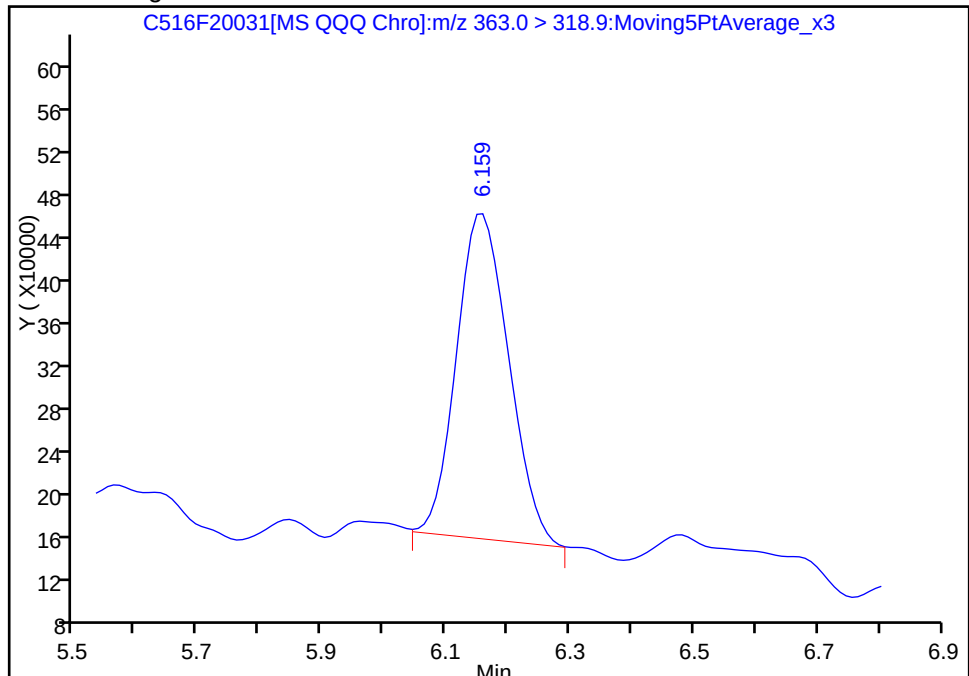
RT: 6.16
Area: 3012797
Amount: 1.077765
Amount Units: ug/L

Processing Integration Results



RT: 6.16
Area: 1783743
Amount: 0.624457
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 14:37:29
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-4</u>	Lab Sample ID: <u>280-84914-16</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20034.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 12:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>277.9(mL)</u>	Date Analyzed: <u>06/30/2016 14:04</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.66		0.018	0.0074
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.80		0.027	0.012
375-95-1	Perfluorononanoic acid (PFNA)	0.065		0.036	0.016
335-67-1	Perfluorooctanoic acid (PFOA)	0.91		0.018	0.0088

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	98		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20034.d
 Lims ID: 280-84914-B-16-A Lab Sample ID: 280-84914-16
 Client ID: C-4
 Sample Type: Client
 Inject. Date: 30-Jun-2016 14:04:41 ALS Bottle#: 0 Worklist Smp#: 29
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-16-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyera Date: 30-Jun-2016 14:39:03

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.010	4.067	-0.057		32004126	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.251	5.251	0.0	0.854	37254251	36.7			
298.9 > 98.9	5.251	5.251	0.0	0.854	11437621		3.26(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.714	0.0		15530384	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.150	-0.010	0.946	84256546	44.7			
363.0 > 168.9	6.140	6.150	-0.010	0.946	21944945		3.84(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.158	-0.009		1835978	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.159	-0.010	1.000	113121866	151.9			RE
398.9 > 98.9	6.149	6.159	-0.010	1.000	37250853		3.04(1.30-2.41)		RE
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.498	-0.009	1.000	18105110	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.499	-0.010		21741850	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.508	-0.019	1.000	113454789	50.4			
413.0 > 169.0	6.489	6.508	-0.019	1.000	34502865		3.29(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.780	-0.019	1.000	2857584	9.35			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.781	-0.019		4777971	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.752	6.781	-0.029	0.999	217778289	374.6			E
498.9 > 98.9	6.762	6.781	-0.019	1.000	100522086		2.17(1.31-2.43)		E

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.801	-0.009		12260936	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.801	-0.010	1.000	5008491	3.61			
463.0 > 218.9	6.791	6.801	-0.010	1.000	772728		6.48(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.045	-0.019		21729922	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.253	-0.018		12549584	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.431	-0.019		20421509	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.557	7.576	-0.019		2159707	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

E - Exceeded Maximum Amount

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20034.d

Injection Date: 30-Jun-2016 14:04:41

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-16-A

Lab Sample ID: 280-84914-16

Client ID: C-4

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 29

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

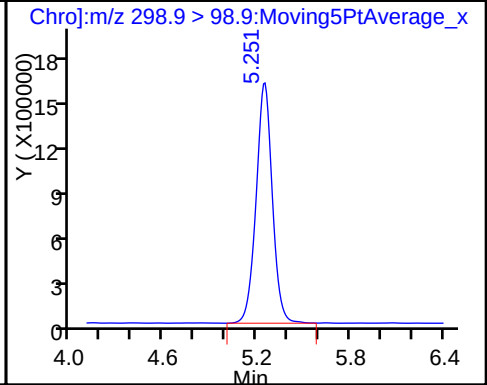
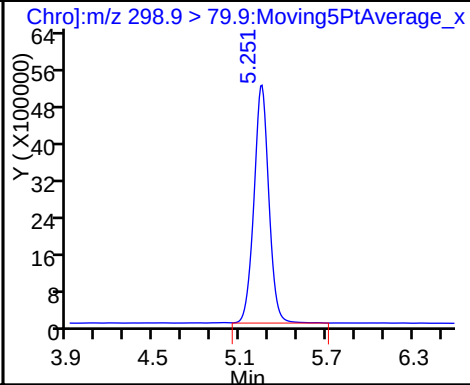
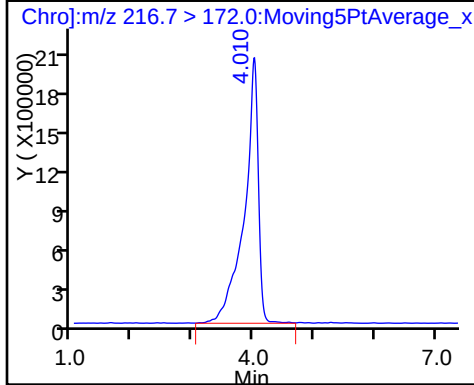
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

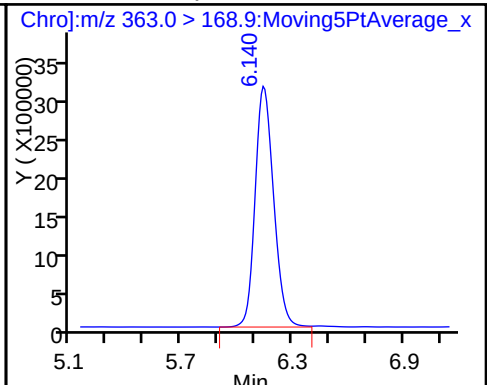
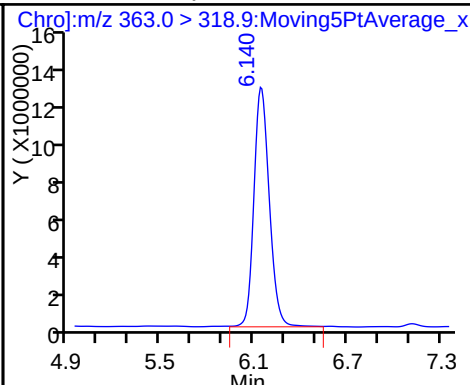
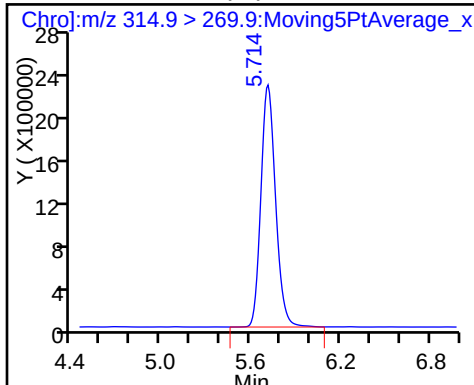
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

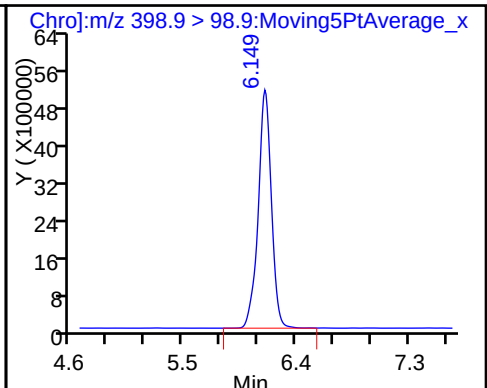
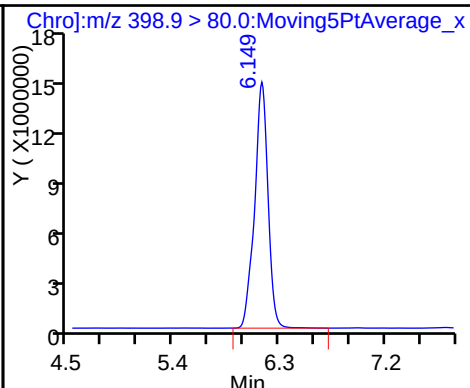
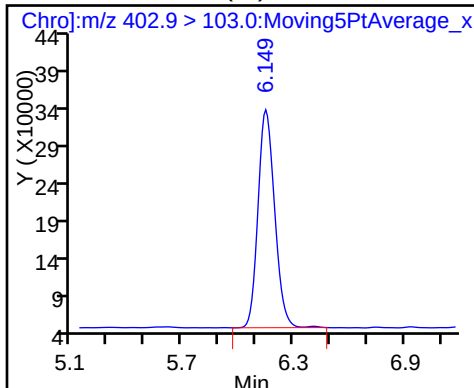
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

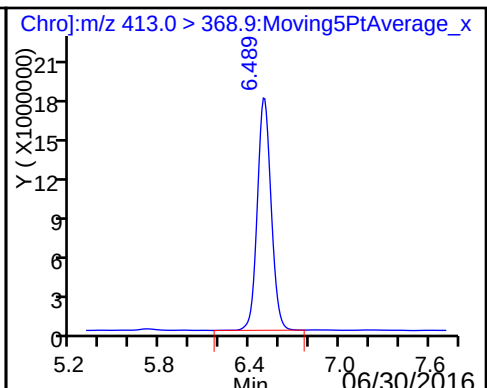
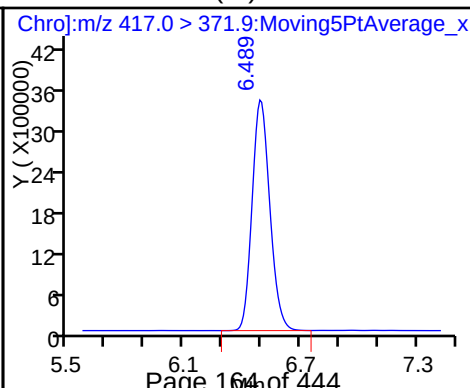
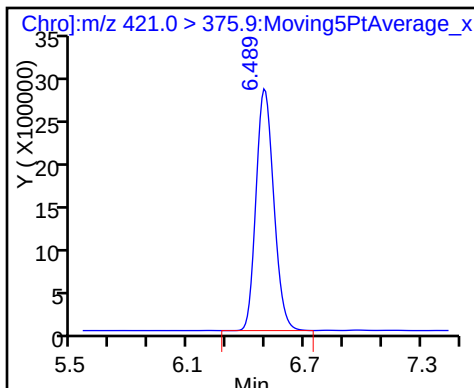
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

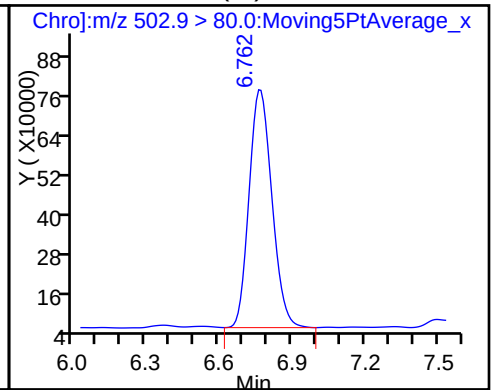
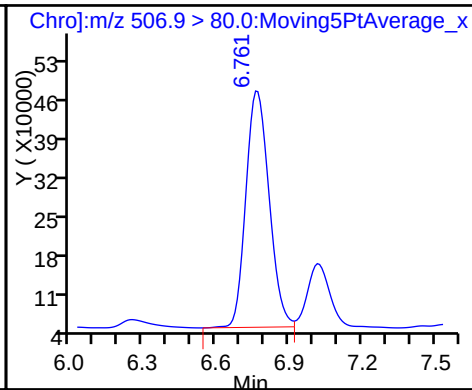
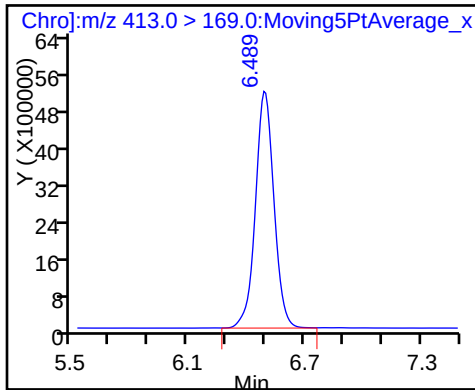
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

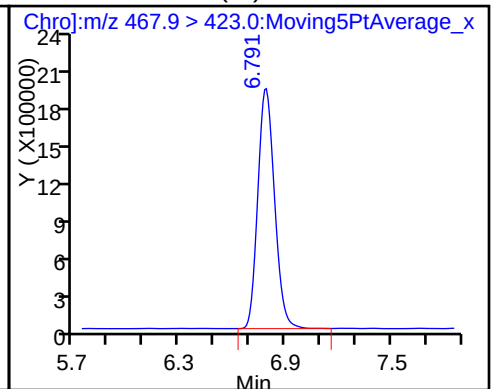
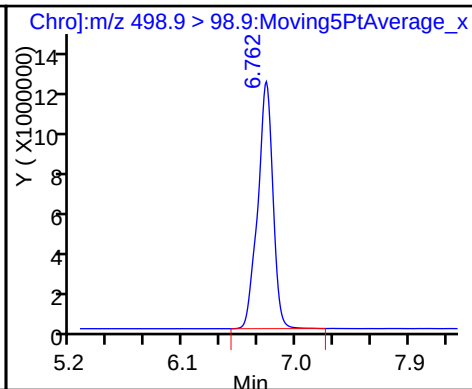
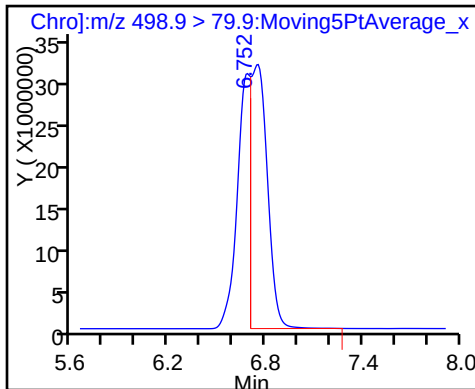
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

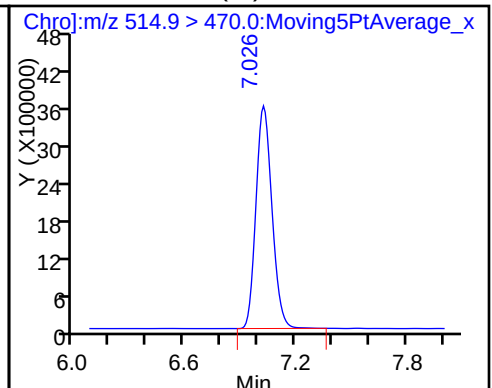
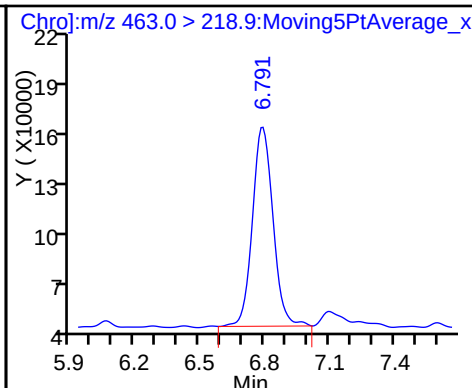
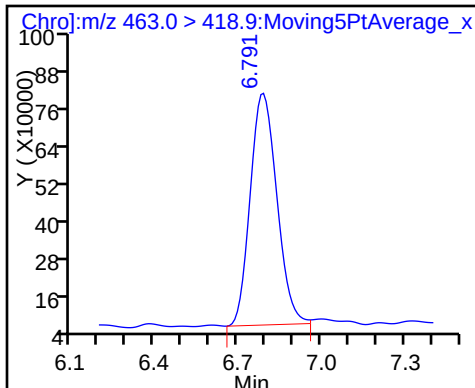
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

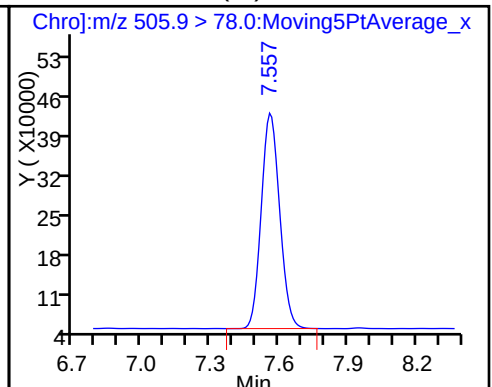
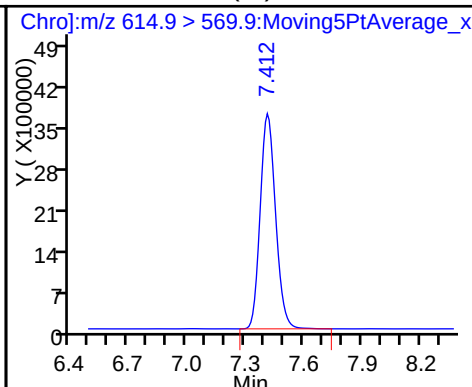
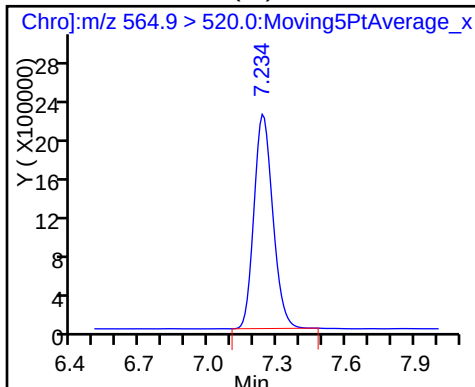
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-4 DL</u>	Lab Sample ID: <u>280-84914-16 DL</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20043.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 12:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>277.9(mL)</u>	Date Analyzed: <u>06/30/2016 15:55</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>5</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	2.64	D	0.13	0.031
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	6.99	D	0.13	0.060

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102	D	60-155
STL01054	13C8 PFOS	113	D	45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20043.d
 Lims ID: 280-84914-B-16-A Lab Sample ID: 280-84914-16
 Client ID: C-4
 Sample Type: Client
 Inject. Date: 30-Jun-2016 15:55:23 ALS Bottle#: 0 Worklist Smp#: 38
 Injection Vol: 25.0 ul Dil. Factor: 5.0000
 Sample Info: 280-84914-b-16-a, Sample
 Misc. Info.: 5X
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 17:19:51 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ

Process Host: XAWRK033

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.086	4.153	-0.067		5808101	2.00			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.289	5.327	-0.038	0.855	7363709	5.93			
298.9 > 98.9	5.289	5.327	-0.038	0.855	2275807		3.24(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.752	5.800	-0.048		3870061	2.00			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.234	-0.047		450037	1.89			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.187	6.234	-0.047	1.000	26850943	29.3			R
398.9 > 98.9	6.196	6.234	-0.038	1.002	8817439		3.05(1.30-2.41)		R
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.187	6.235	-0.048	0.947	22826424	8.57			
363.0 > 168.9	6.187	6.235	-0.048	0.947	5863076		3.89(3.35-6.23)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.584	-0.048	1.000	5152323	2.04			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.584	-0.047		6118685	2.00			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.537	6.584	-0.047	1.000	29612464	9.29			
413.0 > 169.0	6.537	6.584	-0.047	1.000	9261280		3.20(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.847	-0.038	1.000	1012924	2.16			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.809	6.847	-0.038		1451980	1.91			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.800	6.809	-0.047	0.999	68728077	77.7			R
498.9 > 98.9	6.800	6.809	-0.047	0.999	26203286		2.62(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.867	-0.038		3710172	2.00			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.829	6.877	-0.047	1.000	1463963	0.6629			R
463.0 > 218.9	6.829	6.877	-0.047	1.000	299432		4.89(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.064	7.121	-0.057		4306163	2.00			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.328	-0.057		2311180	2.00			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.450	7.507	-0.057		3809949	2.00			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.586	7.586	0.0		521991	2.00			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20043.d

Injection Date: 30-Jun-2016 15:55:23

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-16-A

Lab Sample ID: 280-84914-16

Client ID: C-4

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 38

Injection Vol: 25.0 ul

Dil. Factor: 5.0000

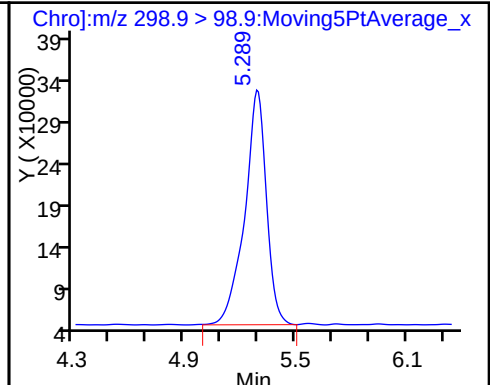
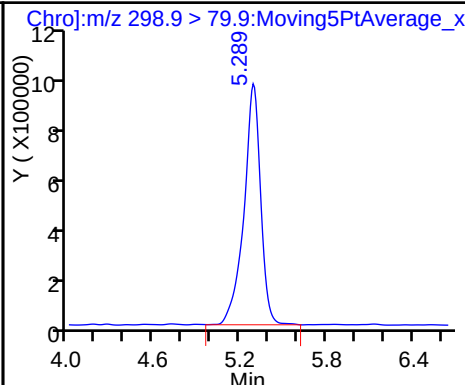
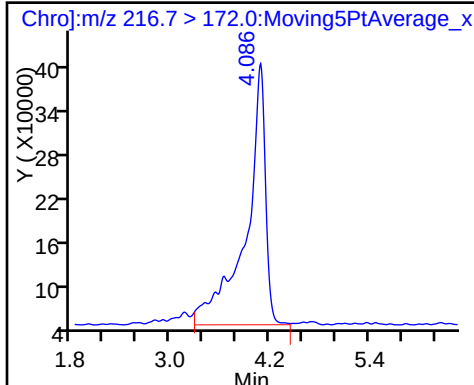
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

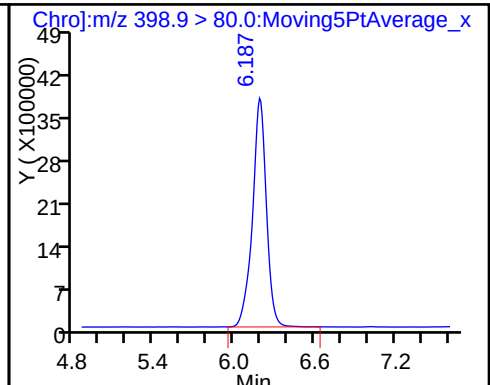
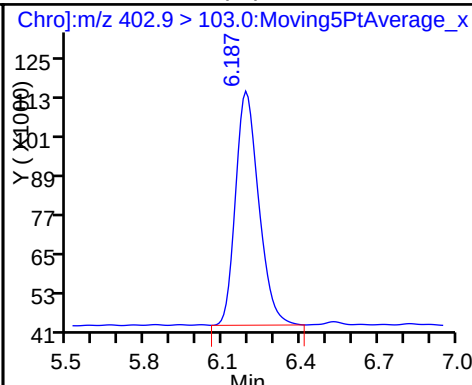
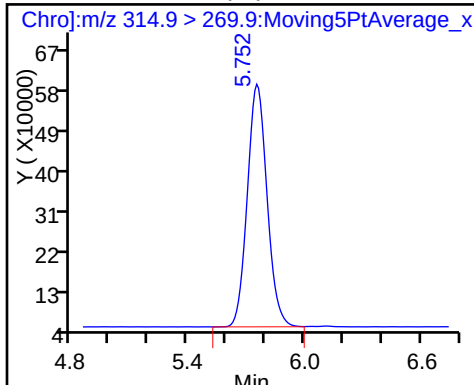
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

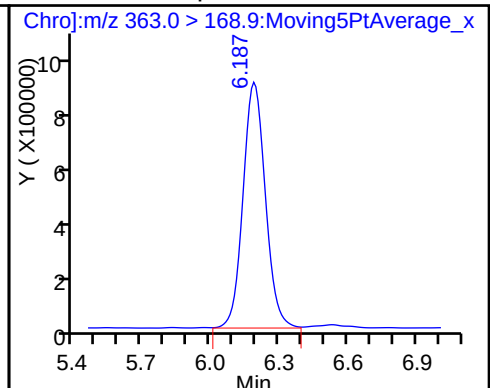
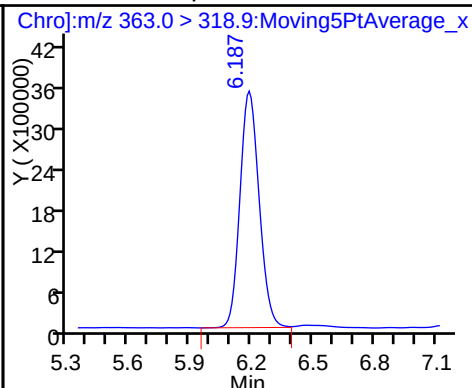
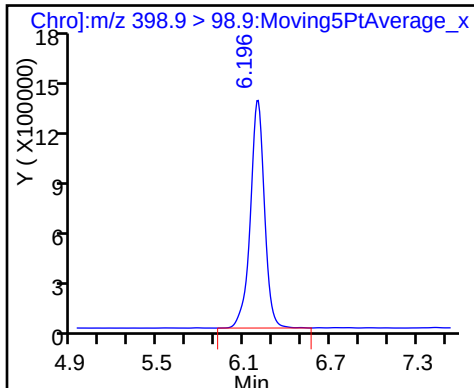
10 Perfluorohexane Sulfonate



10 Perfluorohexane Sulfonate

8 Perfluoroheptanoic acid

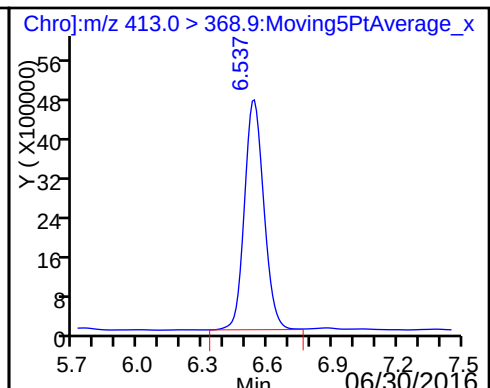
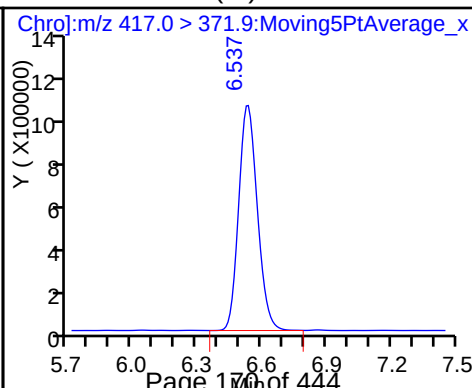
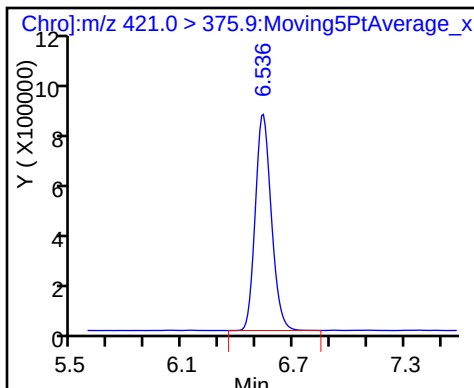
8 Perfluoroheptanoic acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

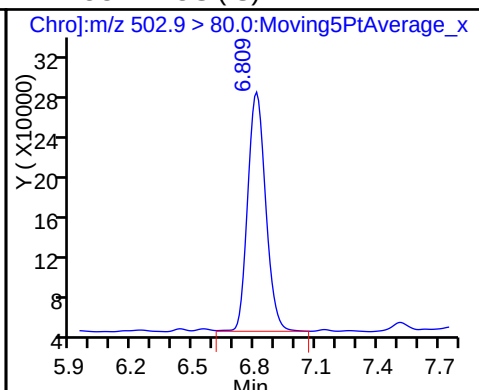
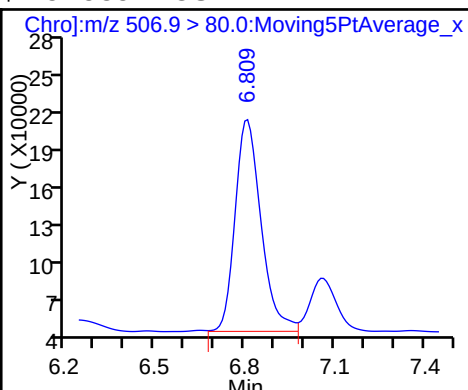
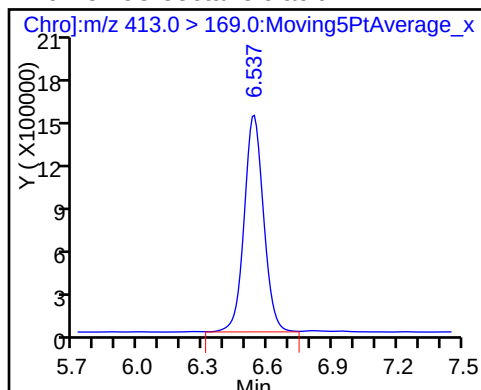
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

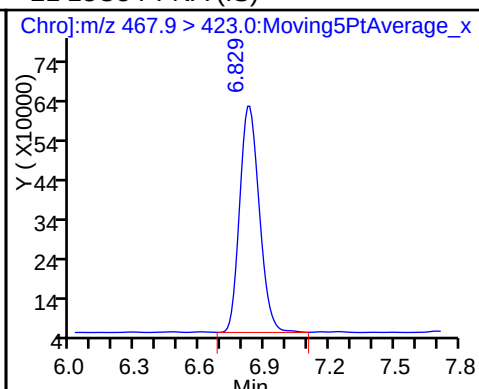
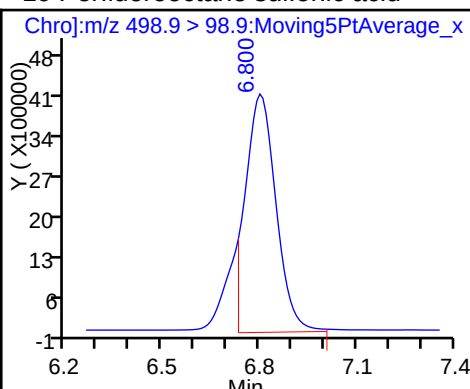
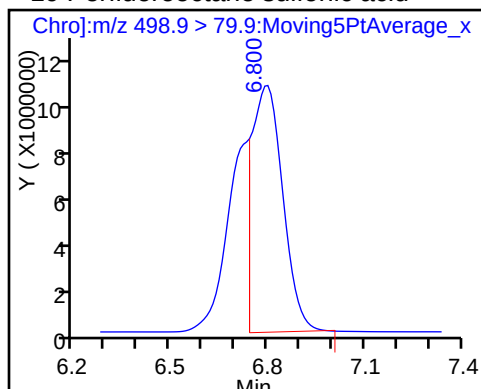
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

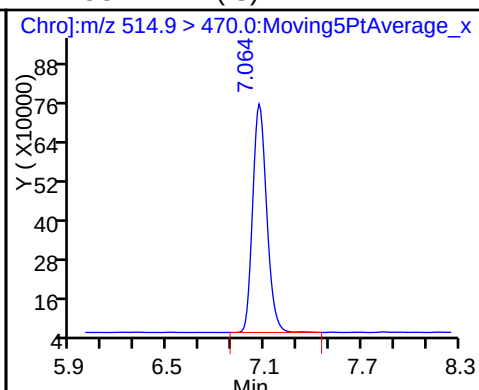
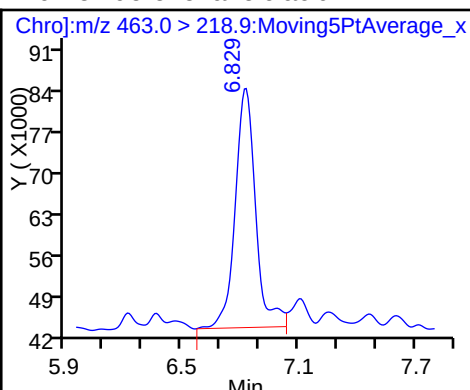
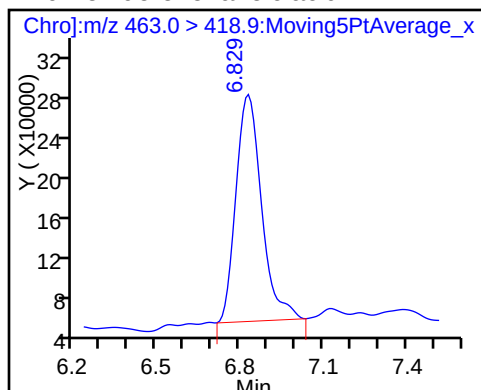
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

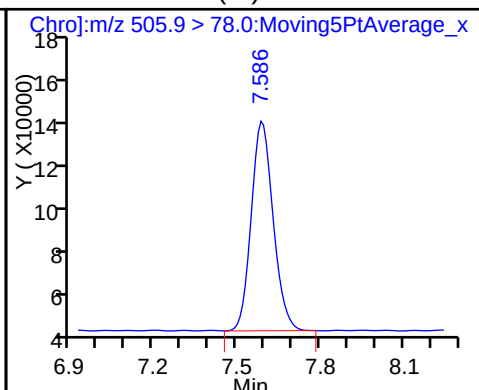
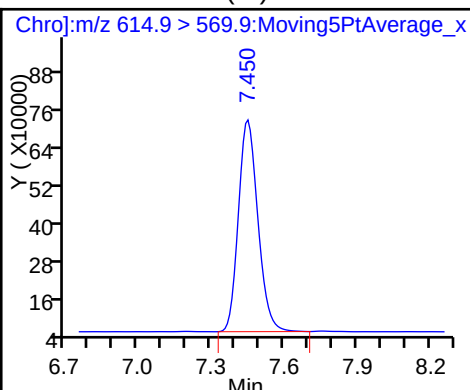
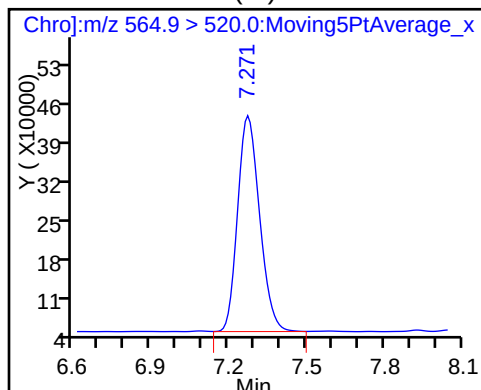
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CB-1A</u>	Lab Sample ID: <u>280-84914-17</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20035.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 13:15</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>259.5 (mL)</u>	Date Analyzed: <u>06/30/2016 14:17</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.045		0.019	0.0079
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.093		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.27		0.029	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.73		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.11		0.019	0.0094

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20035.d
 Lims ID: 280-84914-B-17-A Lab Sample ID: 280-84914-17
 Client ID: CB-1A
 Sample Type: Client
 Inject. Date: 30-Jun-2016 14:17:00 ALS Bottle#: 0 Worklist Smp#: 30
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-17-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 15:28:36

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.067	-0.047		33486840	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.251	5.251	0.0	0.851	3451172	2.35			
298.9 > 98.9	5.260	5.251	0.009	0.853	1057647		3.26(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.714	0.010		21379433	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.150	0.009	0.946	14341643	4.81			
363.0 > 168.9	6.159	6.150	0.009	0.946	3751758		3.82(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.168	6.158	0.010		2663254	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.168	6.159	0.009	1.000	15415298	14.2			R
398.9 > 98.9	6.168	6.159	0.009	1.000	5463545		2.82(1.30-2.41)		R
\$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.498	0.010	1.000	28037252	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.499	0.009		34128451	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	20166021	5.64			
413.0 > 169.0	6.508	6.508	0.0	1.000	6017710		3.35(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	5297447	9.54			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		8682197	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.781	-0.010	0.999	40271477	38.1			R
498.9 > 98.9	6.781	6.781	0.0	1.000	10883031		3.70(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.801	0.0		27019338	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.801	6.801	0.0	1.000	2260552	0.7054			R
463.0 > 218.9	6.801	6.801	0.0	1.000	410098		5.51(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.045	0.0		28229899	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		16141756	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.422	7.431	-0.009		29827657	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.576	-0.009		901909	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20035.d

Injection Date: 30-Jun-2016 14:17:00

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-17-A

Lab Sample ID: 280-84914-17

Client ID: CB-1A

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 30

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

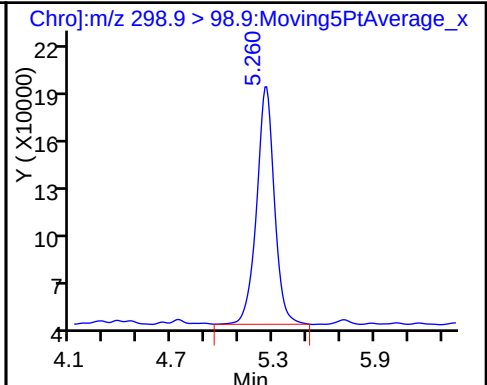
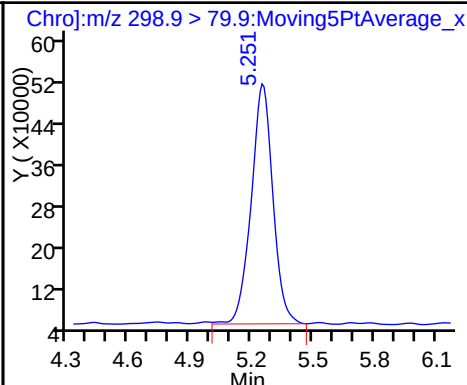
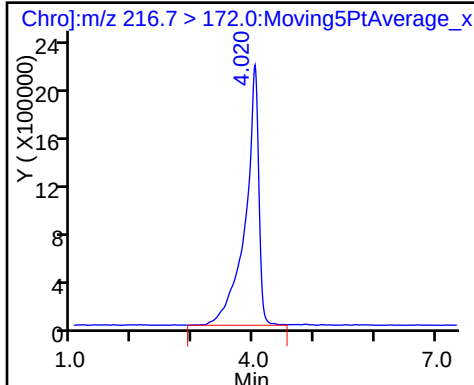
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

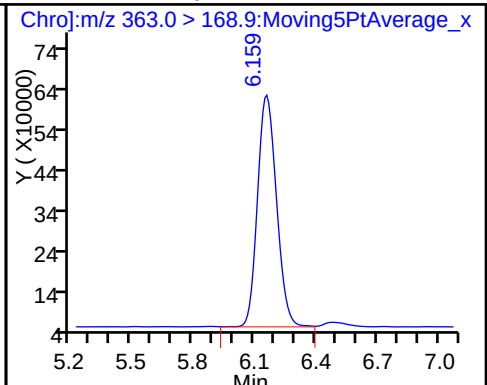
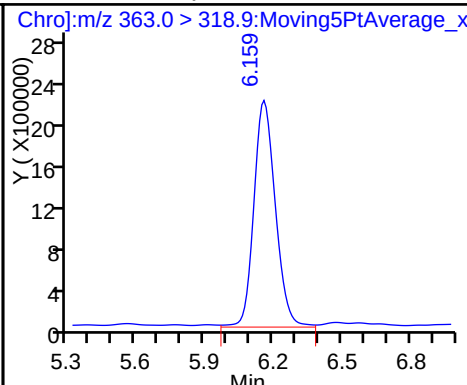
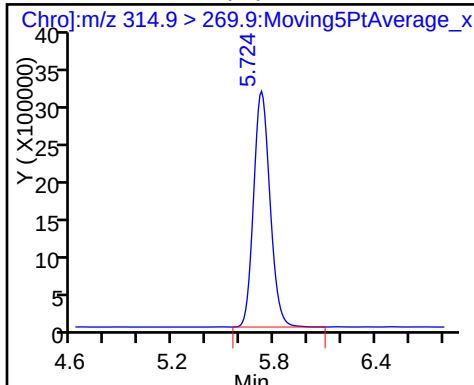
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

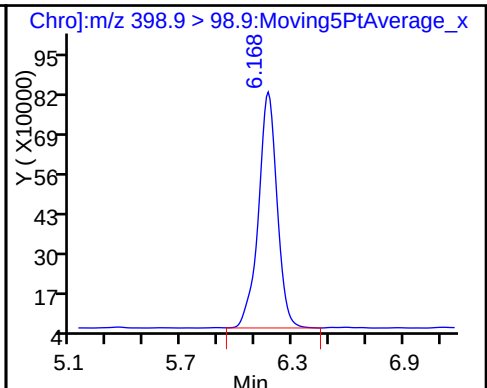
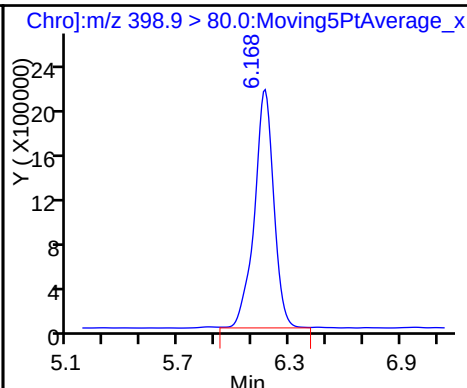
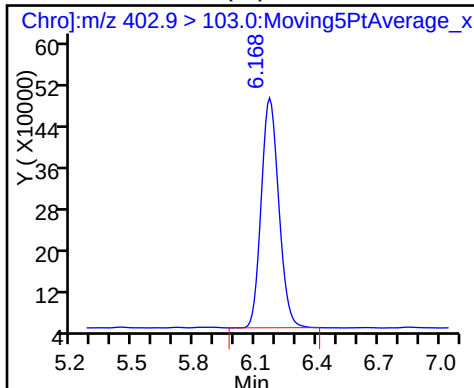
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

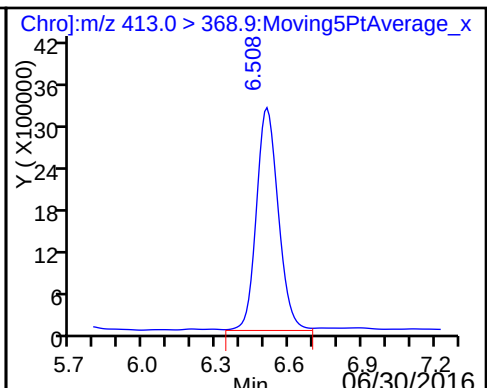
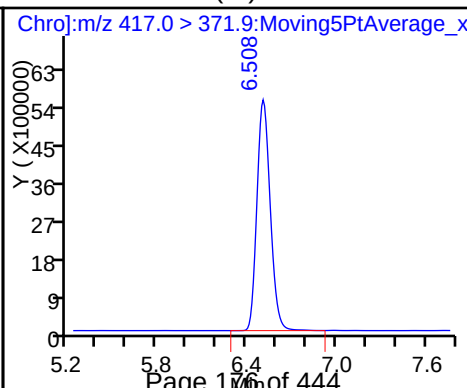
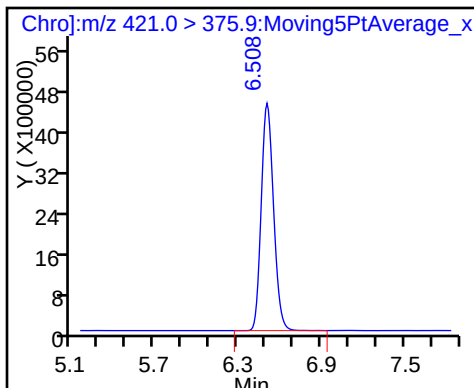
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

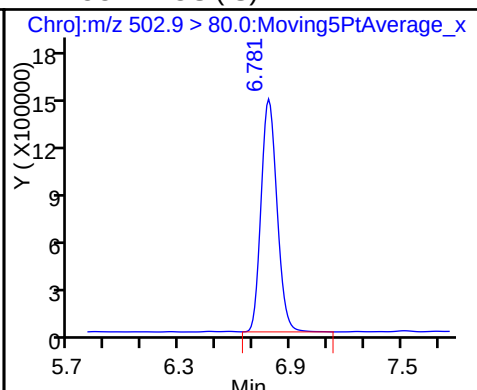
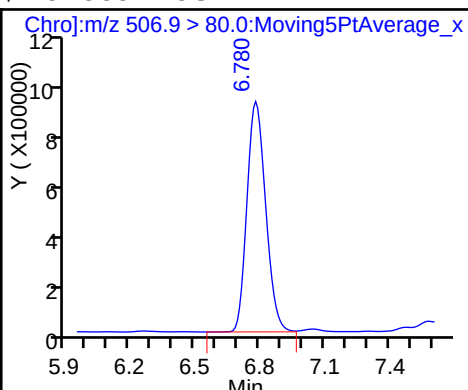
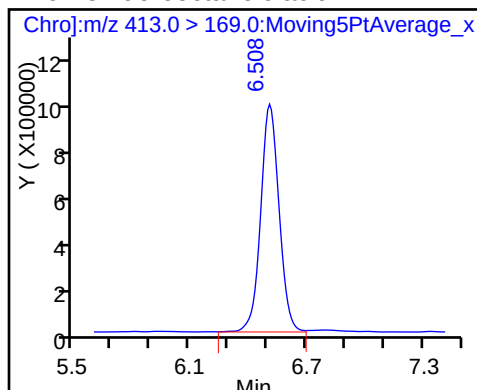
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

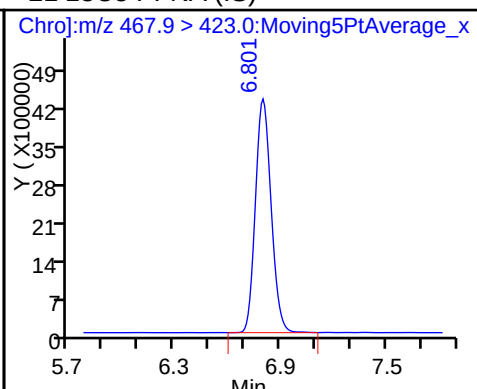
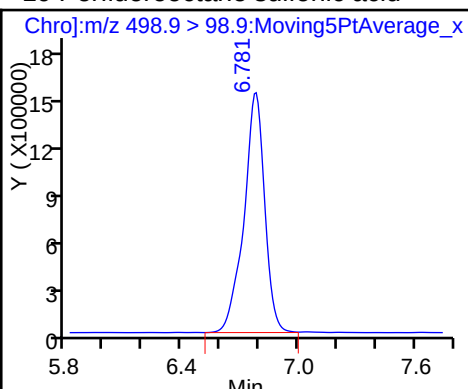
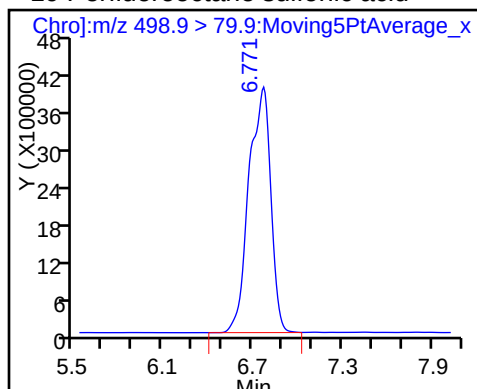
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

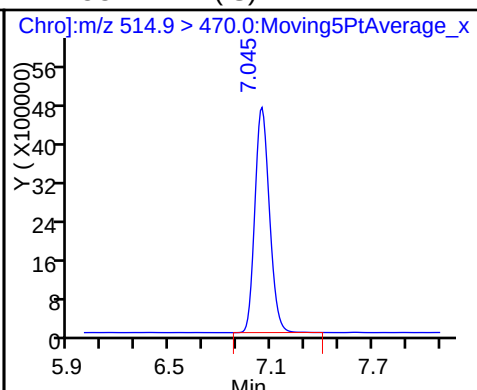
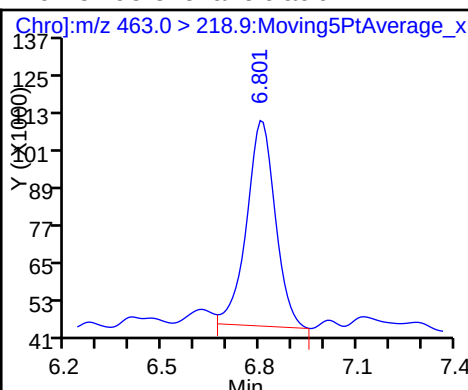
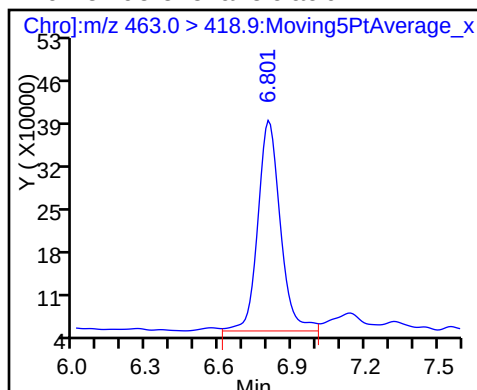
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

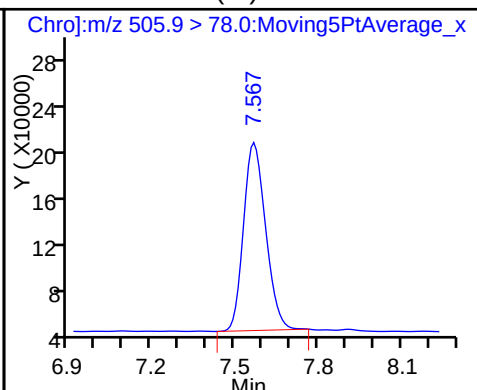
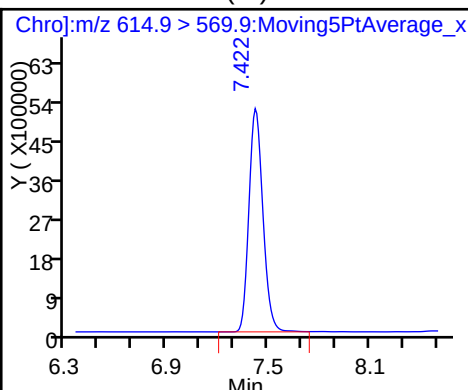
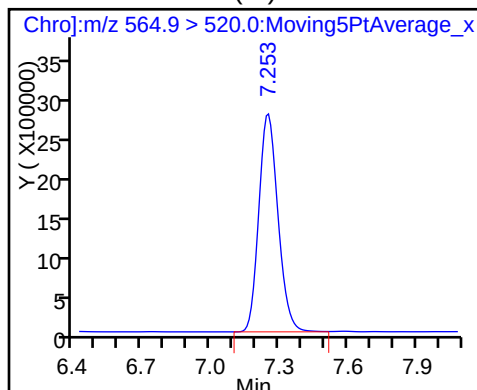
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CB#5</u>	Lab Sample ID: <u>280-84914-18</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20036.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 13:45</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>264.9(mL)</u>	Date Analyzed: <u>06/30/2016 14:29</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0078	U	0.019	0.0078
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.080		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.033		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.016	U	0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.12		0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.015	J	0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	105		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d
 Lims ID: 280-84914-B-18-A Lab Sample ID: 280-84914-18
 Client ID: CB#5
 Sample Type: Client
 Inject. Date: 30-Jun-2016 14:29:17 ALS Bottle#: 0 Worklist Smp#: 31
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-18-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 17:17:28 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK033

First Level Reviewer: meyera

Date: 30-Jun-2016 15:29:27

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.982	4.153	-0.171		14977677	10.0			
4 Perfluorobutane Sulfonate									RM
298.9 > 79.9	5.298	5.327	-0.029	0.858	156017	0.1490			RM
298.9 > 98.9	5.270	5.327	-0.057	0.853	177523		0.88(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.733	5.800	-0.067		13037195	10.0			
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.234	-0.057		2004427	9.46			
10 Perfluorohexane Sulfonate									RM
398.9 > 80.0	6.168	6.234	-0.066	0.999	1482252	1.74			RM
398.9 > 98.9	6.178	6.234	-0.056	1.000	603187		2.46(1.30-2.41)		
8 Perfluoroheptanoic acid									RM
363.0 > 318.9	6.074	6.235	-0.161	0.933	8979000	4.23			RM
363.0 > 168.9	5.979	6.235	-0.256	0.919	26758		335.56(3.35-6.23)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.584	-0.067	1.001	20328730	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.584	-0.076		24314564	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.584	-0.076	1.000	2227998	0.8142			
413.0 > 169.0	6.518	6.584	-0.066	1.001	762125		2.92(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.847	-0.067	1.000	4883535	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.847	-0.066		7581689	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.781	6.847	-0.066	1.000	6166696	6.61			R
498.9 > 98.9	6.781	6.847	-0.066	1.000	1782744		3.46(1.31-2.43)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.867	-0.067		20009894	10.0			
20 Perfluorononanoic acid									M
463.0 > 418.9	6.801	6.877	-0.075	1.000	478032	0.1702			M
463.0 > 218.9	6.810	6.877	-0.066	1.001	79142		6.04(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.121	-0.076		19886063	10.0			
* 26 13C2 PFA (IS)									M
564.9 > 520.0	7.253	7.328	-0.076		12146298	10.0			M
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.507	-0.076		22711980	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.576	7.586	-0.010		1101733	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d

Injection Date: 30-Jun-2016 14:29:17

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-18-A

Lab Sample ID: 280-84914-18

Client ID: CB#5

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 31

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

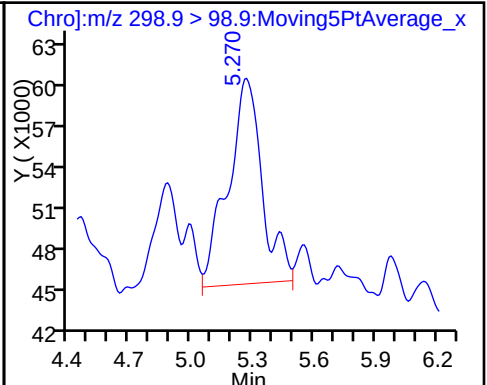
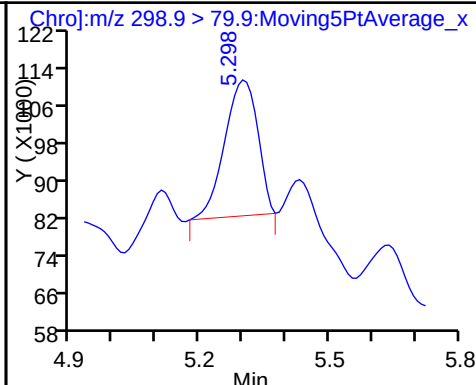
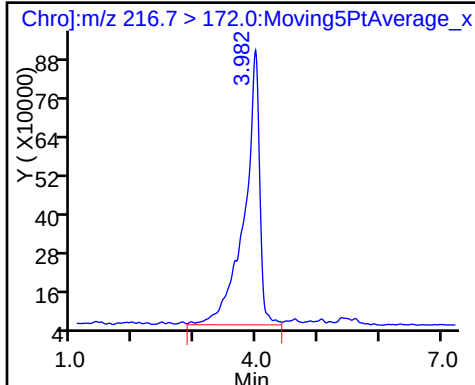
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (M)

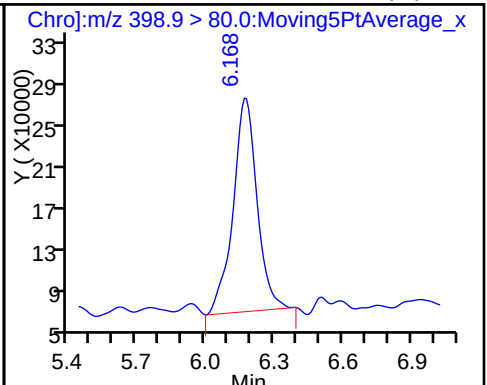
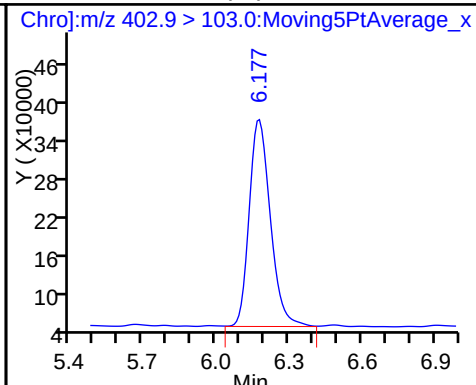
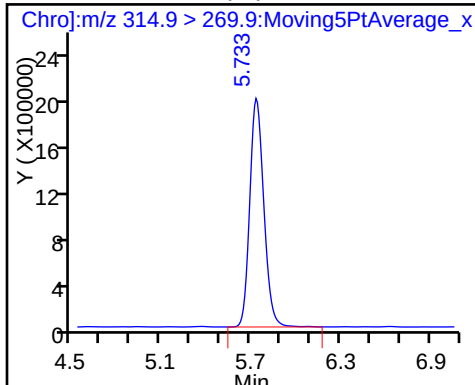
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

* 9 18O2 PFHxS (IS)

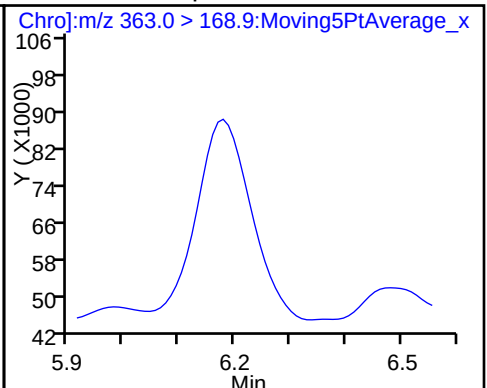
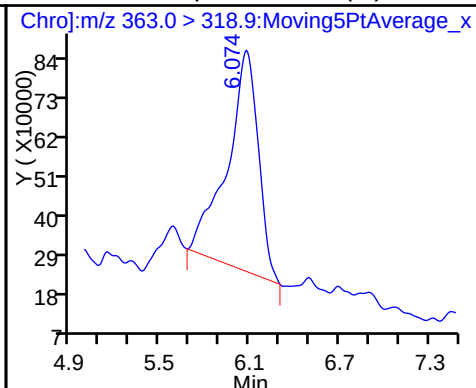
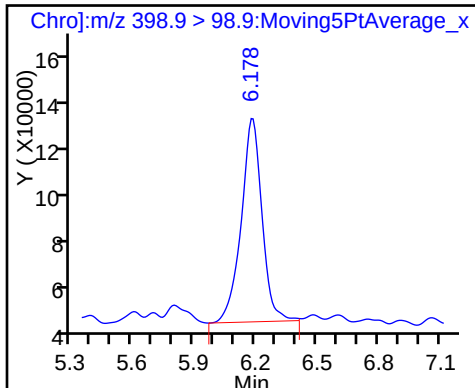
10 Perfluorohexane Sulfonate (M)



10 Perfluorohexane Sulfonate

8 Perfluoroheptanoic acid (M)

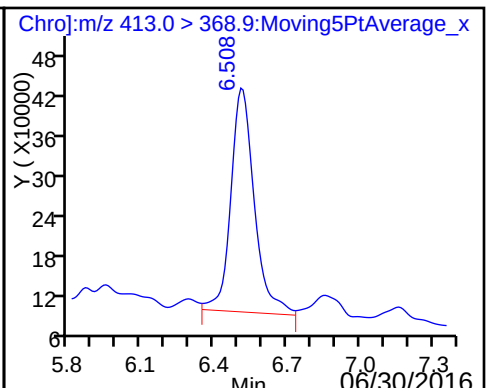
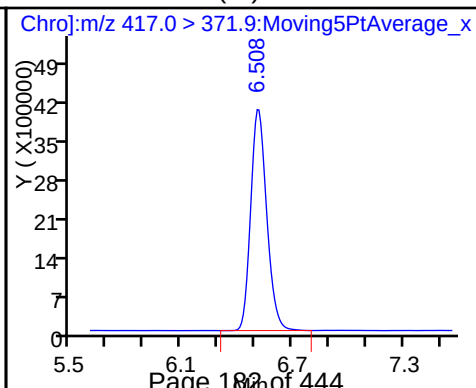
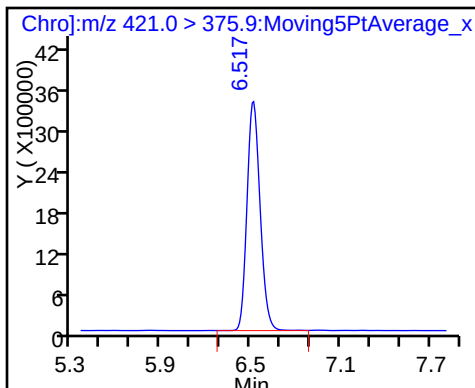
8 Perfluoroheptanoic acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

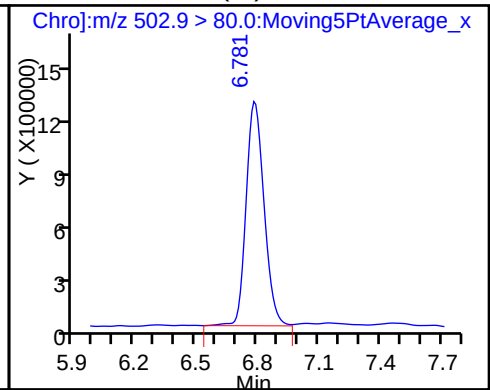
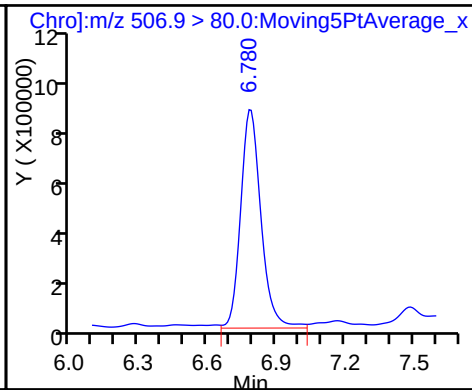
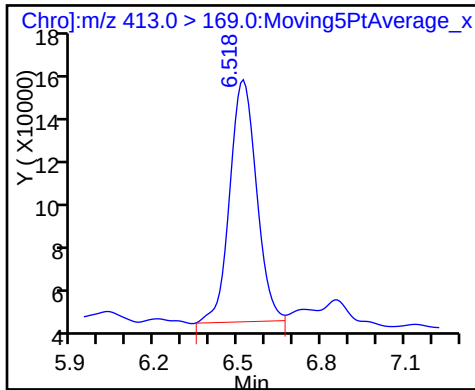
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

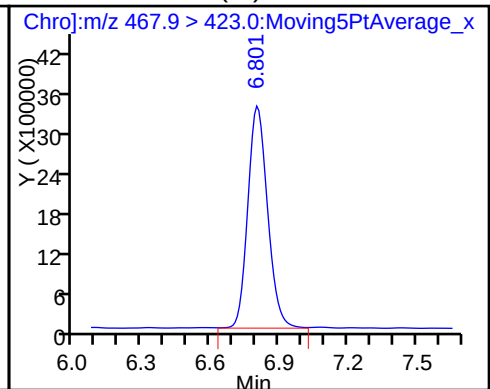
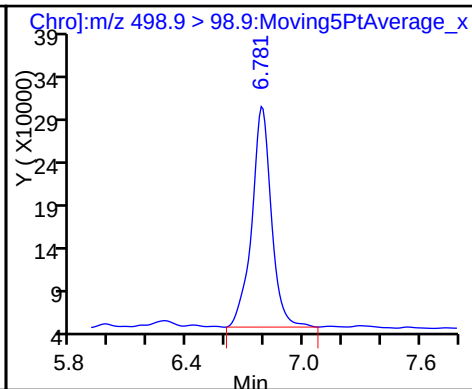
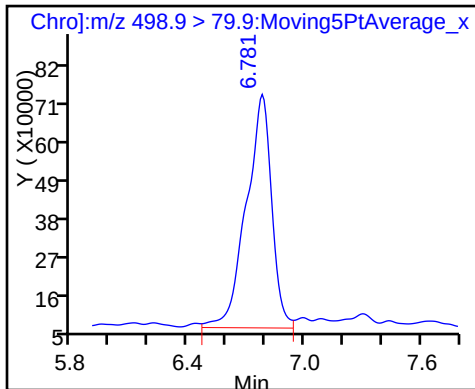
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

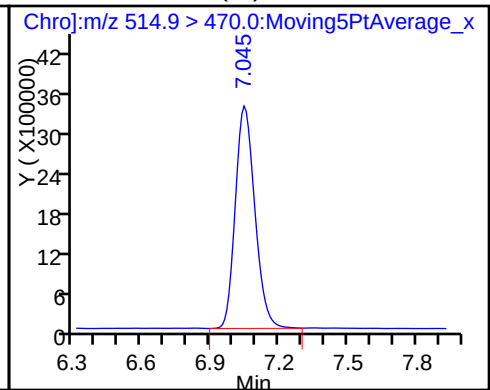
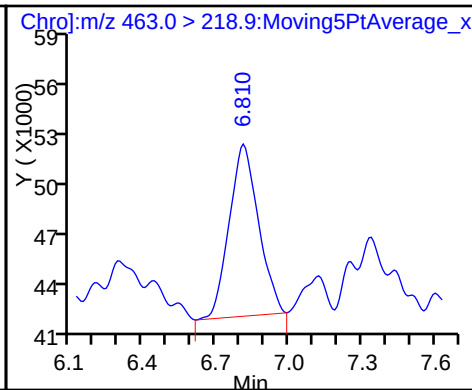
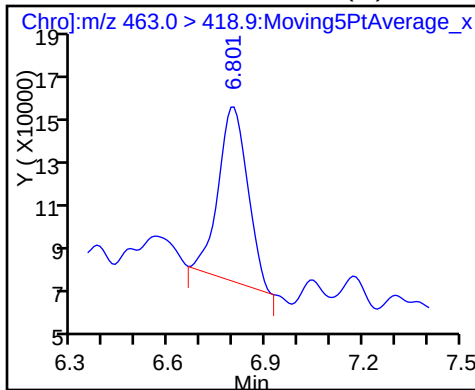
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (M)

20 Perfluorononanoic acid

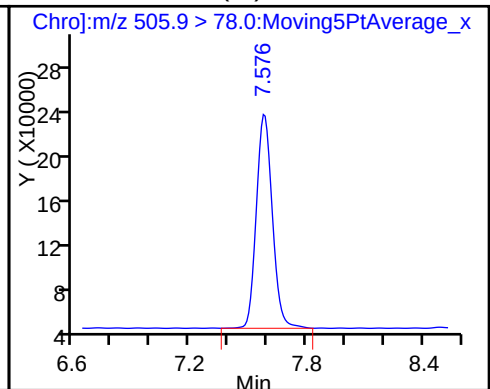
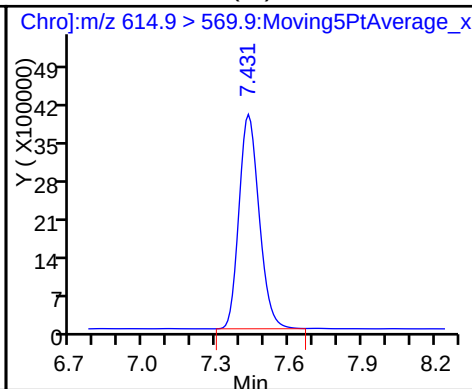
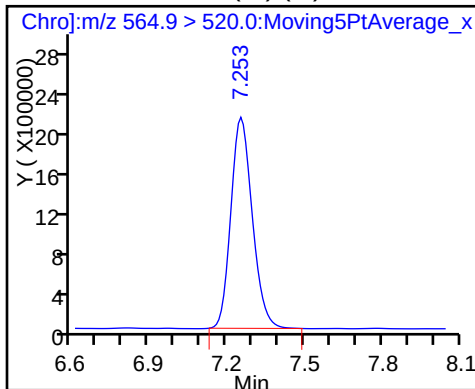
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS) (M)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



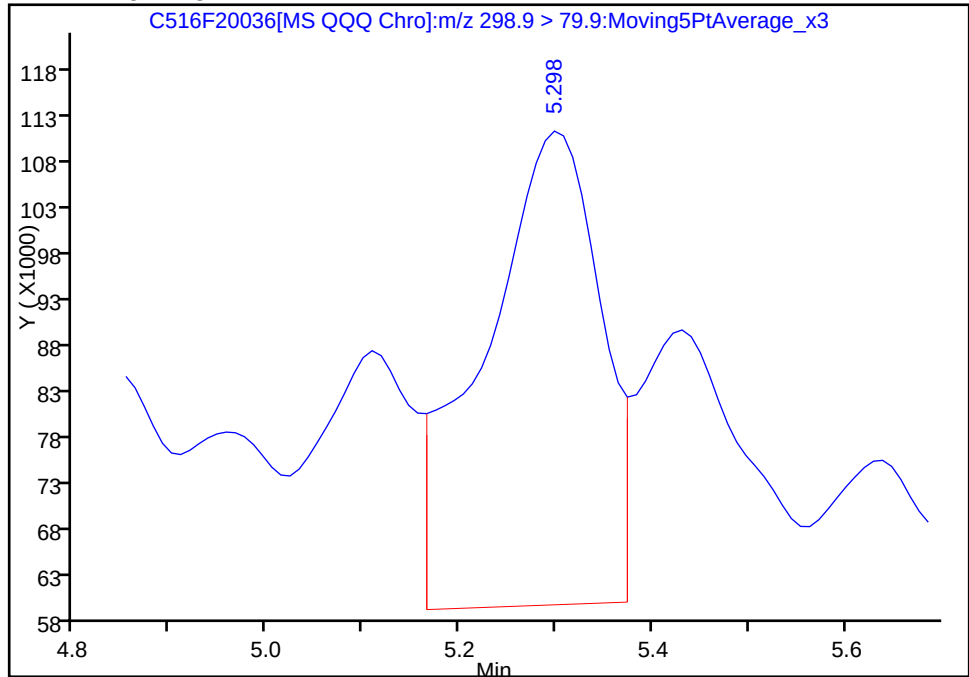
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d				
Injection Date:	30-Jun-2016 14:29:17	Instrument ID:	LC_LCMS5		
Lims ID:	280-84914-B-18-A	Lab Sample ID:	280-84914-18		
Client ID:	CB#5				
Operator ID:	ACM/HKF	ALS Bottle#:	0	Worklist Smp#:	31
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

4 Perfluorobutane Sulfonate, CAS: 29420-43-3

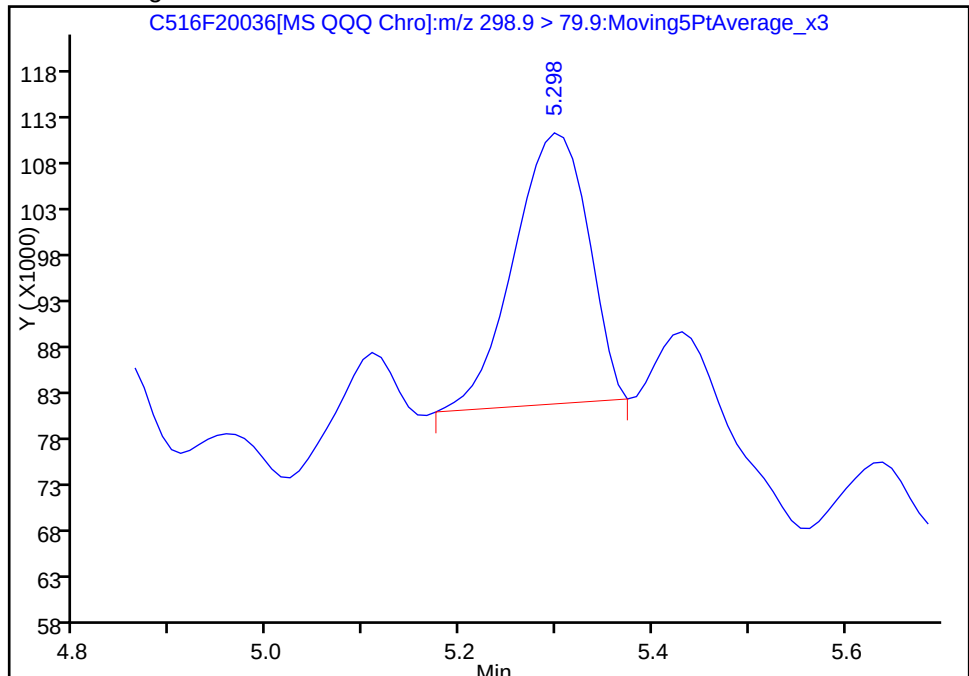
RT: 5.30
Area: 427568
Amount: 0.394075
Amount Units: ug/L

Processing Integration Results



RT: 5.30
Area: 156017
Amount: 0.148974
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 15:29:27
Audit Action: Manually Integrated
Audit Reason: Baseline

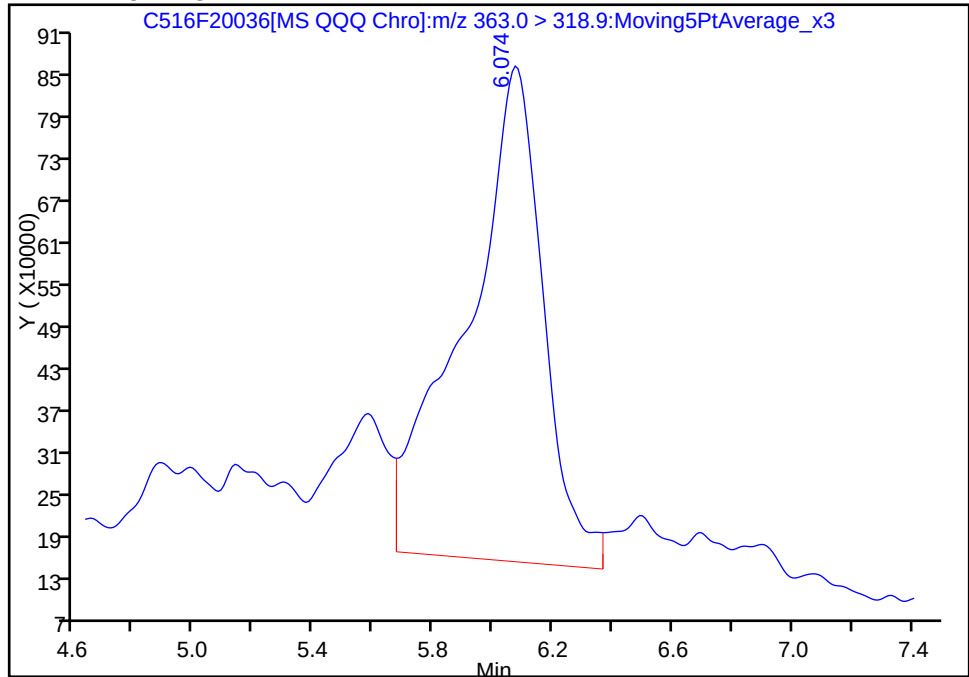
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d		
Injection Date:	30-Jun-2016 14:29:17	Instrument ID:	LC_LCMS5
Lims ID:	280-84914-B-18-A	Lab Sample ID:	280-84914-18
Client ID:	CB#5		
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector:	MS QQQ
		Worklist Smp#:	31

8 Perfluoroheptanoic acid, CAS: 375-85-9

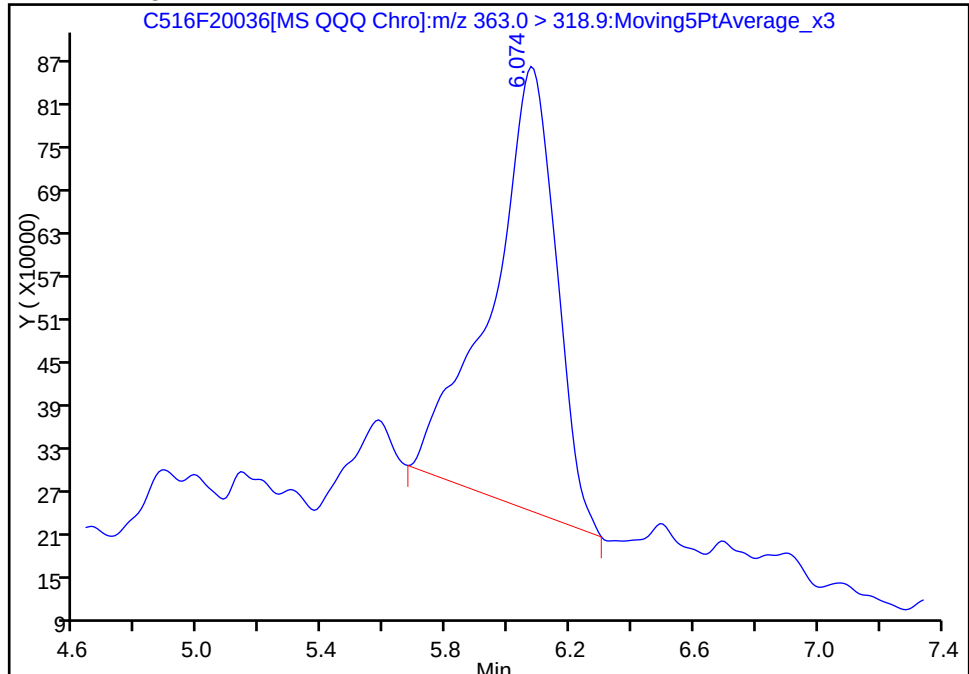
RT: 6.07
Area: 12694697
Amount: 5.988521
Amount Units: ug/L

Processing Integration Results



RT: 6.07
Area: 8979000
Amount: 4.225914
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 15:29:27
Audit Action: Manually Integrated
Audit Reason: Baseline

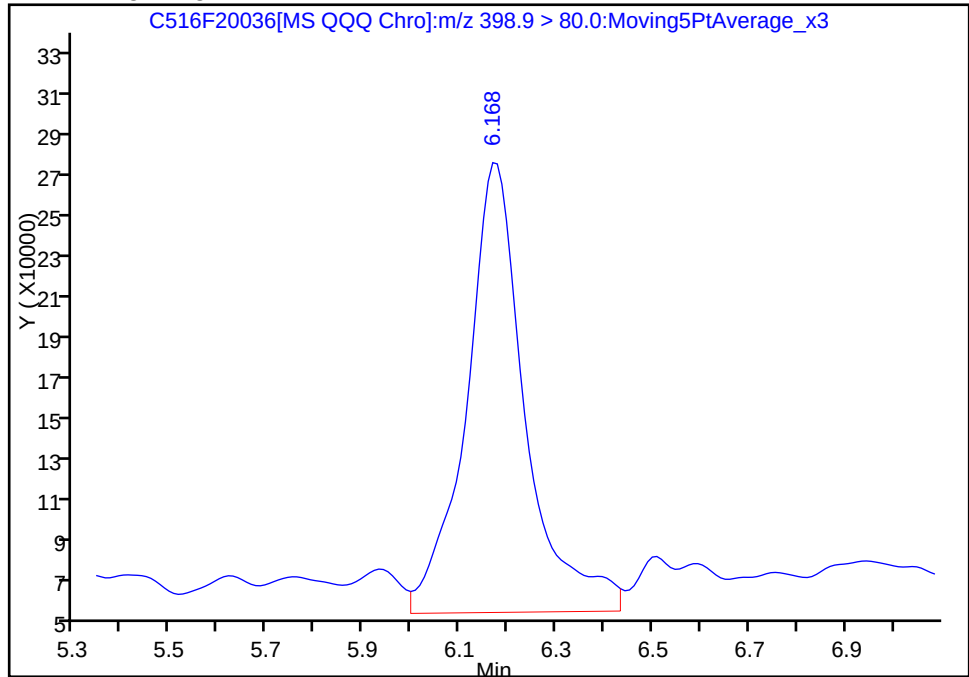
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d				
Injection Date:	30-Jun-2016 14:29:17	Instrument ID:	LC_LCMS5		
Lims ID:	280-84914-B-18-A	Lab Sample ID:	280-84914-18		
Client ID:	CB#5				
Operator ID:	ACM/HKF	ALS Bottle#:	0	Worklist Smp#:	31
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

10 Perfluorohexane Sulfonate, CAS: 108427-53-8

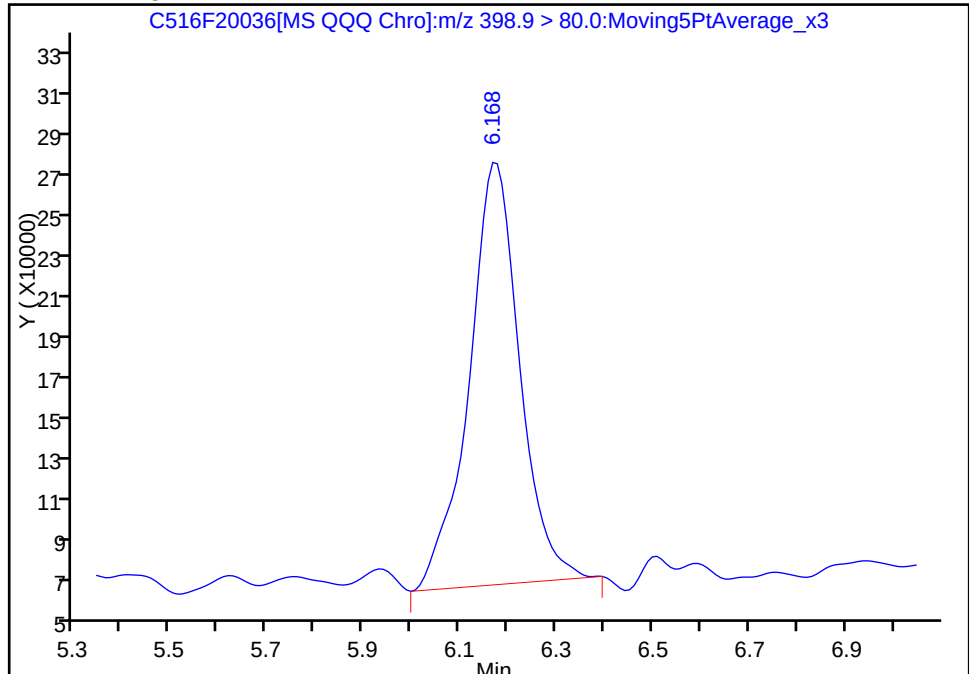
RT: 6.17
Area: 1837925
Amount: 2.175457
Amount Units: ug/L

Processing Integration Results



RT: 6.17
Area: 1482252
Amount: 1.737843
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 15:29:27
Audit Action: Manually Integrated
Audit Reason: Baseline

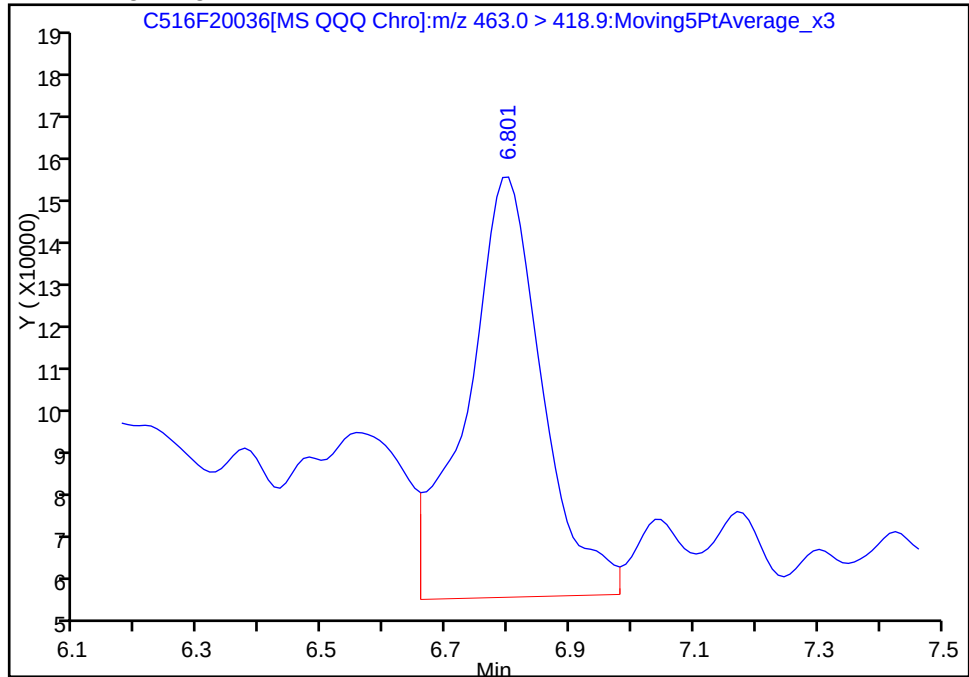
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d		
Injection Date:	30-Jun-2016 14:29:17	Instrument ID:	LC_LCMS5
Lims ID:	280-84914-B-18-A	Lab Sample ID:	280-84914-18
Client ID:	CB#5		
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector:	MS QQQ
		Worklist Smp#:	31

20 Perfluorononanoic acid, CAS: 375-95-1

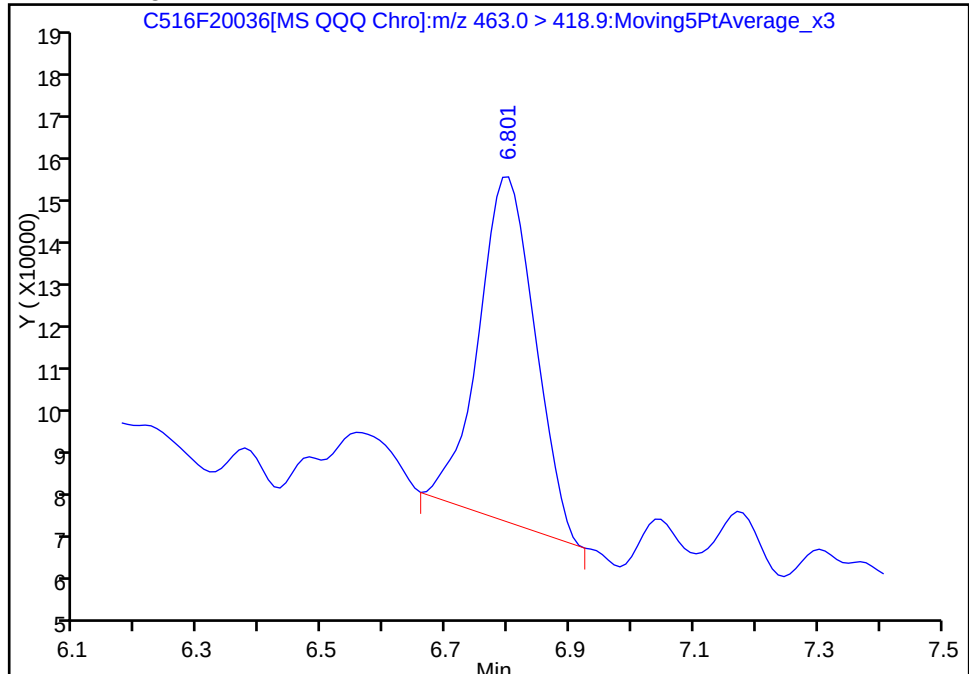
RT: 6.80
Area: 774177
Amount: 0.302719
Amount Units: ug/L

Processing Integration Results



RT: 6.80
Area: 478032
Amount: 0.170200
Amount Units: ug/L

Manual Integration Results



Reviewer: meyera, 30-Jun-2016 15:29:27
Audit Action: Manually Integrated
Audit Reason: Baseline

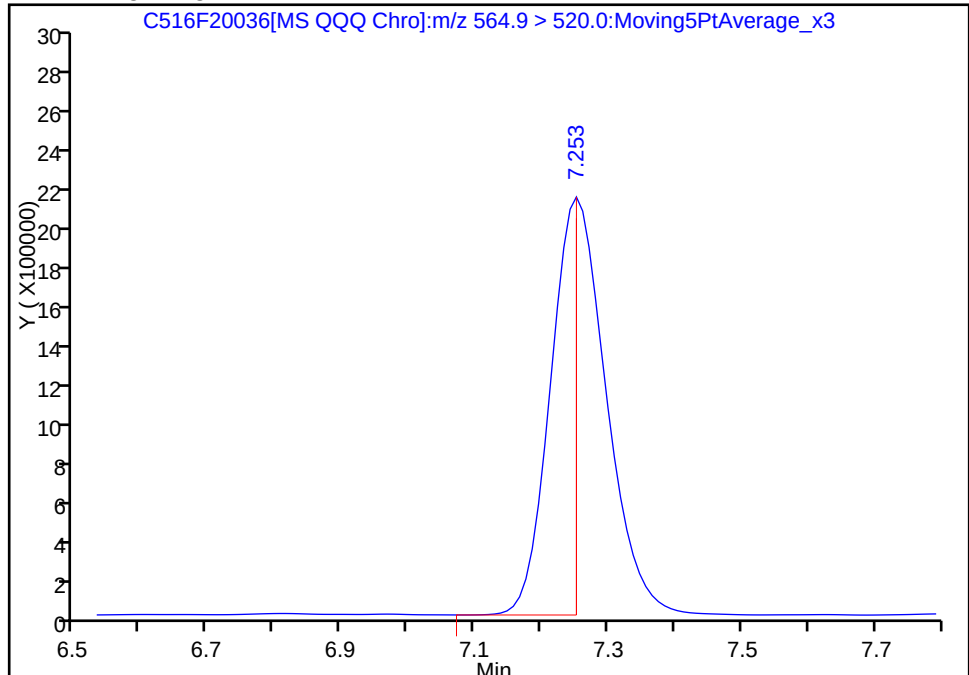
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20036.d				
Injection Date:	30-Jun-2016 14:29:17	Instrument ID:	LC_LCMS5		
Lims ID:	280-84914-B-18-A	Lab Sample ID:	280-84914-18		
Client ID:	CB#5				
Operator ID:	ACM/HKF	ALS Bottle#:	0	Worklist Smp#:	31
Injection Vol:	25.0 ul	Dil. Factor:	1.0000		
Method:	8321_PFC	Limit Group:	LC - PFC		
Column:		Detector	MS QQQ		

* 26 13C2 PFUnA (IS), CAS: STL01008

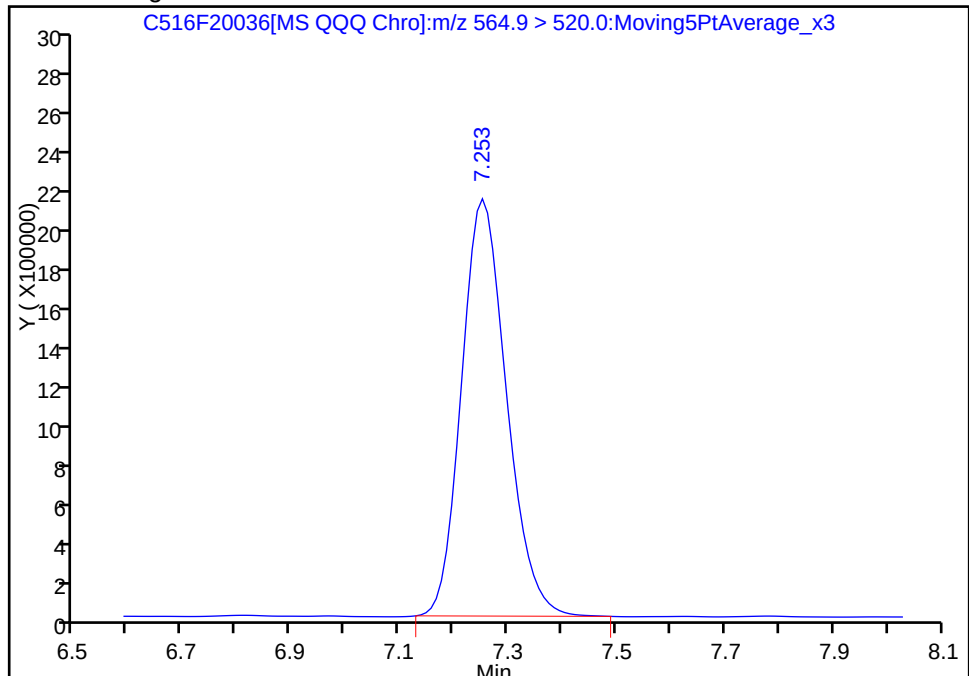
Processing Integration Results

RT: 7.25
Area: 5574082
Amount: 10.000000
Amount Units: ug/L



RT: 7.25
Area: 12146298
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: tinkhams, 30-Jun-2016 17:17:28
Audit Action: Manually Integrated
Audit Reason: Split Peak

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>CB#2</u>	Lab Sample ID: <u>280-84914-19</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20037.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 14:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>257.4 (mL)</u>	Date Analyzed: <u>06/30/2016 14:41</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.33		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.046		0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.10		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.15		0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	104		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20037.d
 Lims ID: 280-84914-B-19-A Lab Sample ID: 280-84914-19
 Client ID: CB#2
 Sample Type: Client
 Inject. Date: 30-Jun-2016 14:41:35 ALS Bottle#: 0 Worklist Smp#: 32
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-b-19-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer Date: 30-Jun-2016 15:29:50

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.067	-0.066		33978981	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.251	5.251	0.0	0.850	268515	0.2092			
298.9 > 98.9	5.251	5.251	0.0	0.850	98732		2.72(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.714	0.010		20286614	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.150	0.019	0.946	47332906	17.2			
363.0 > 168.9	6.169	6.150	0.019	0.946	11992614		3.95(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.158	0.019		2416705	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.168	6.159	0.009	0.999	2406216	2.37			R
398.9 > 98.9	6.168	6.159	0.009	0.999	671278		3.58(1.30-2.41)		R
\$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.498	0.019	1.000	26058629	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.499	0.019		31690611	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.508	0.010	1.000	25543626	7.72			
413.0 > 169.0	6.518	6.508	0.010	1.000	7849564		3.25(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.780	0.010	1.000	5358167	9.98			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.781	0.009		8396216	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.781	6.781	0.0	0.999	5437116	5.25			R
498.9 > 98.9	6.790	6.781	0.009	1.000	1824763		2.98(1.31-2.43)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.801	0.010		26440760	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.801	0.009	1.000	2303151	0.7362			
463.0 > 218.9	6.810	6.801	0.009	1.000	389640		5.91(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.045	0.009		25996481	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.253	0.010		14116311	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.441	7.431	0.010		25605591	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.586	7.576	0.010		1108104	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20037.d

Injection Date: 30-Jun-2016 14:41:35

Instrument ID: LC_LCMS5

Lims ID: 280-84914-B-19-A

Lab Sample ID: 280-84914-19

Client ID: CB#2

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 32

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

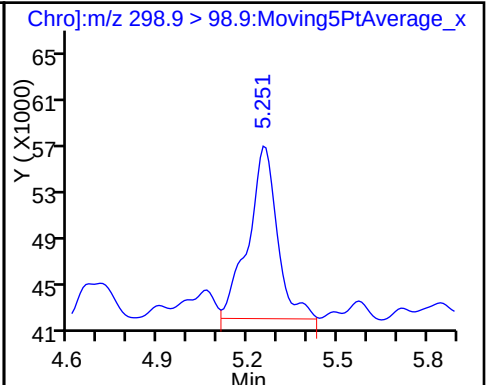
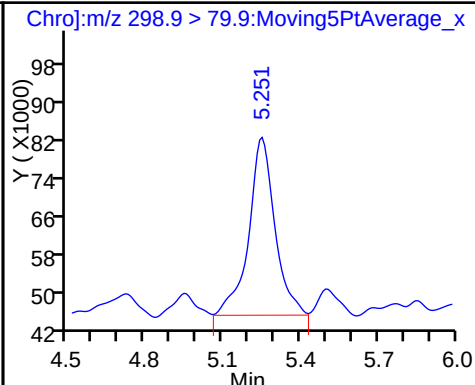
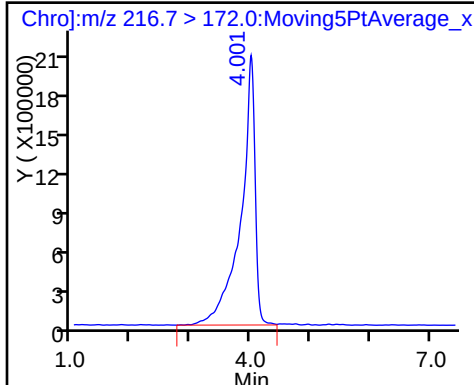
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

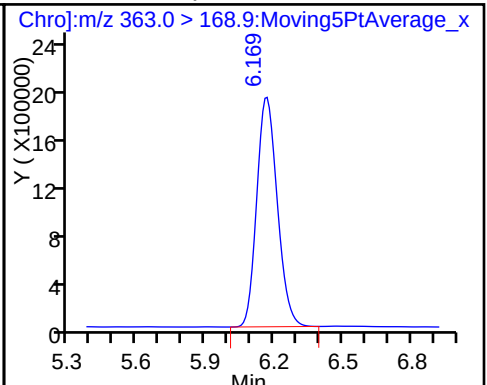
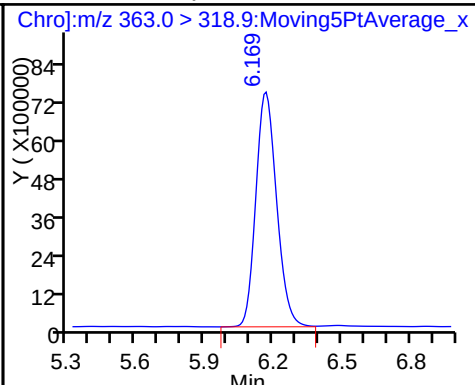
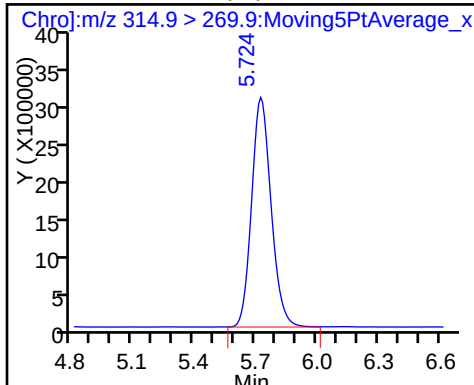
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

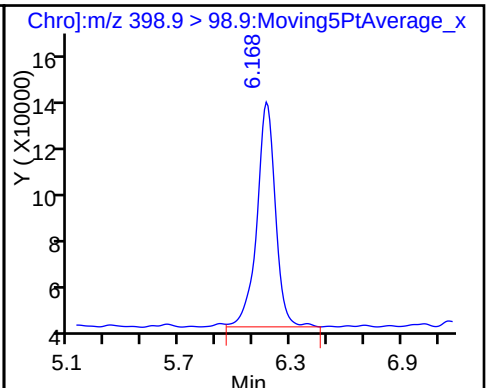
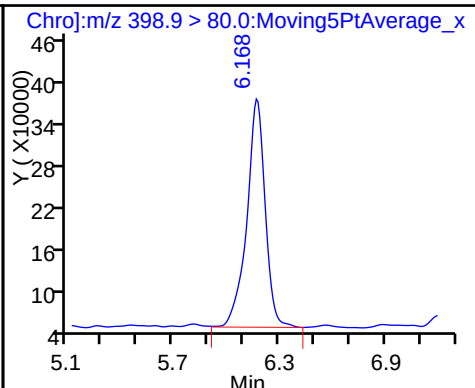
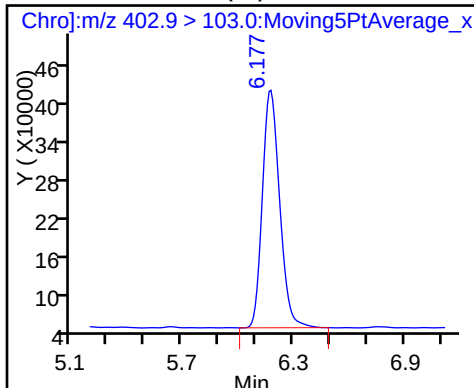
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

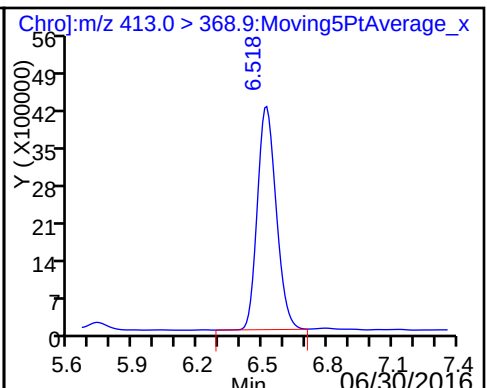
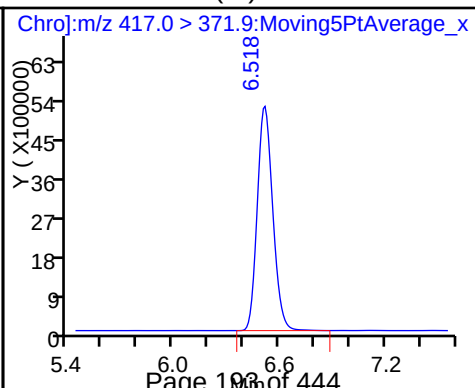
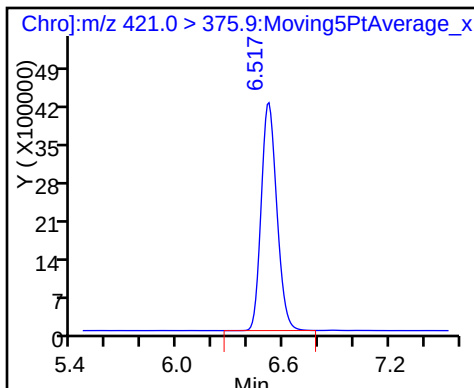
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

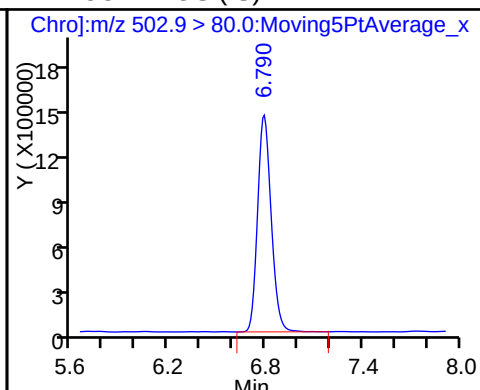
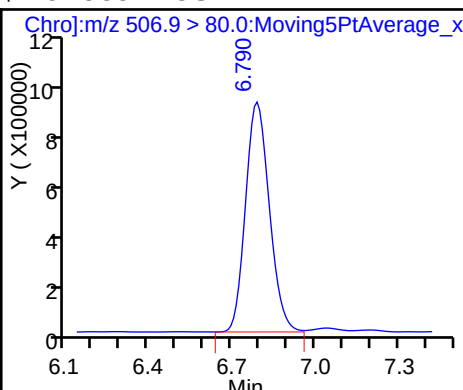
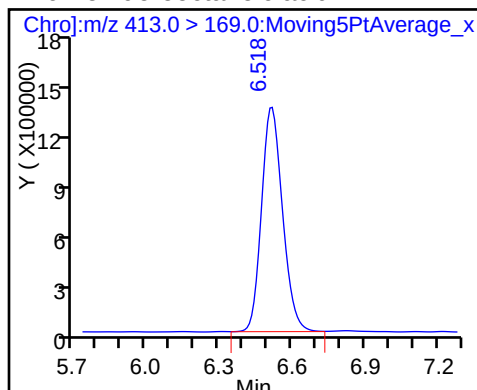
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

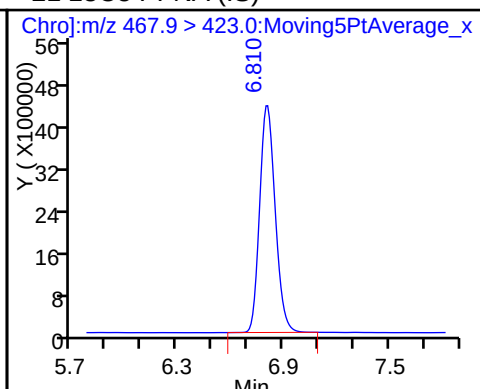
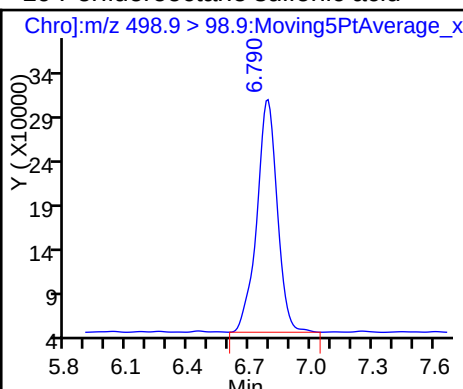
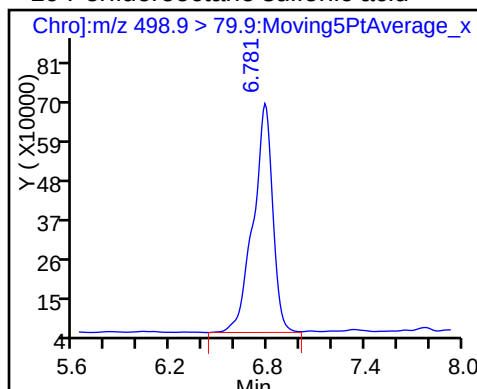
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

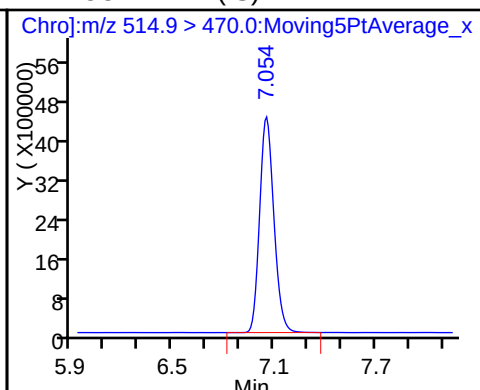
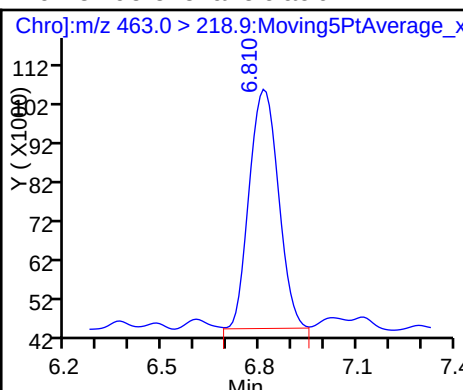
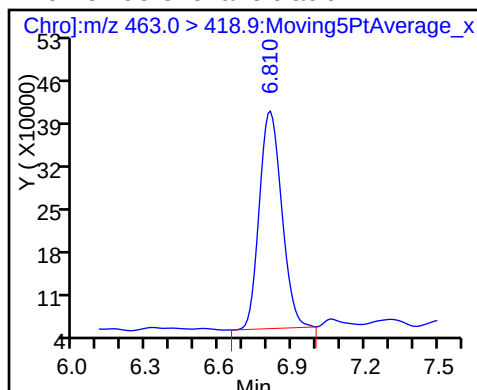
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

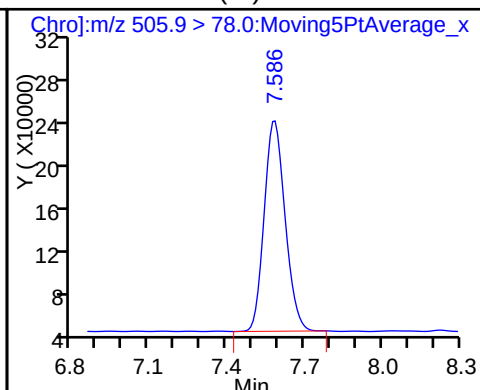
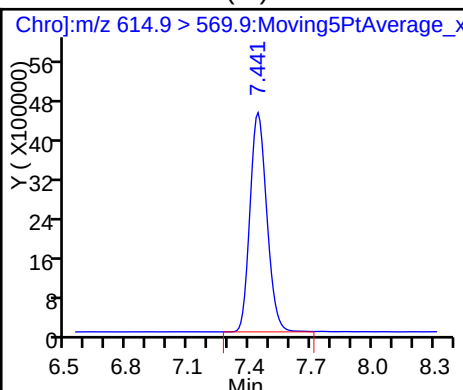
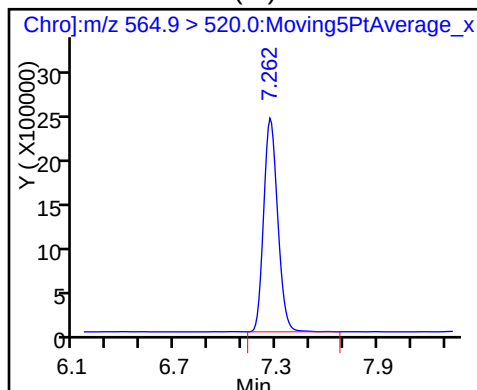
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>#4</u>	Lab Sample ID: <u>280-84914-20</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20038.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 14:50</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>258.2 (mL)</u>	Date Analyzed: <u>06/30/2016 14:53</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0067	U	0.029	0.0067
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0095	U	0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	97		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20038.d
 Lims ID: 280-84914-A-20-A Lab Sample ID: 280-84914-20
 Client ID: #4
 Sample Type: Client
 Inject. Date: 30-Jun-2016 14:53:53 ALS Bottle#: 0 Worklist Smp#: 33
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-20-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 15:30:05

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.039 4.067 -0.028 29307132 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.251 ND

298.9 > 98.9 5.251

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.733 5.714 0.019 22603326 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.177 6.158 0.019 2621081 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.159 ND

398.9 > 98.9 6.159

\$ 14 13C8 PFOA

421.0 > 375.9 6.517 6.498 0.019 1.000 28135694 9.71

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.518 6.499 0.019 35844234 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.508 ND

413.0 > 169.0 6.508

\$ 18 13C8 PFOS

506.9 > 80.0 6.790 6.780 0.010 1.000 5289510 9.59

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.790 6.781 0.009 8621876 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.781 ND

498.9 > 98.9 6.781

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.801	0.010		28493566	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.801				ND			
463.0 > 218.9		6.801							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.045	0.009		26371695	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.253	0.010		15064715	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.441	7.431	0.010		26165071	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.586	7.576	0.010		943012	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20038.d

Injection Date: 30-Jun-2016 14:53:53

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-20-A

Lab Sample ID: 280-84914-20

Client ID: #4

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 33

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

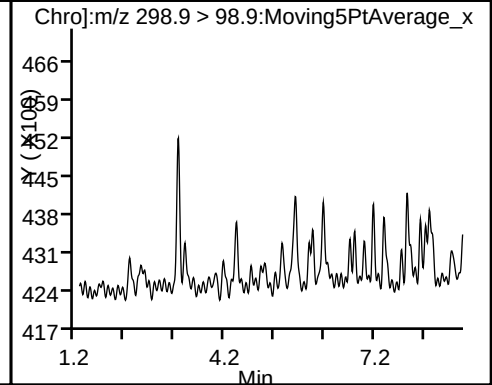
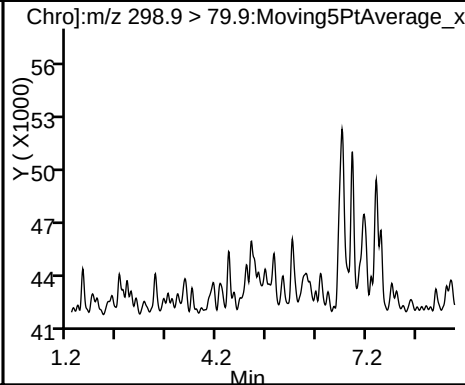
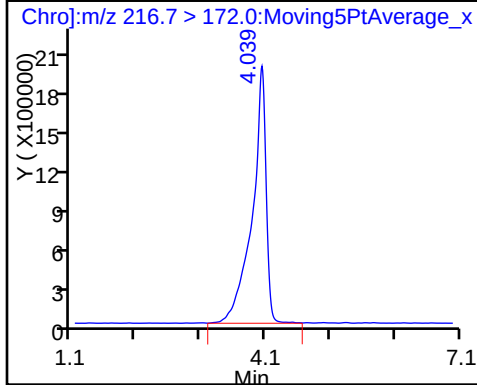
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

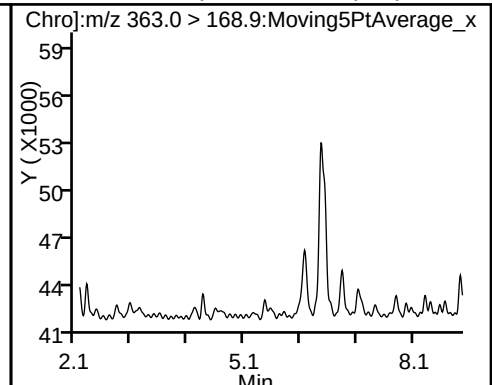
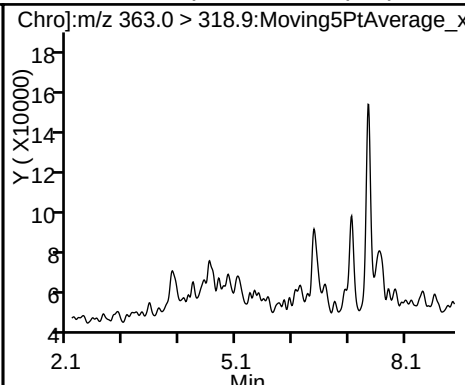
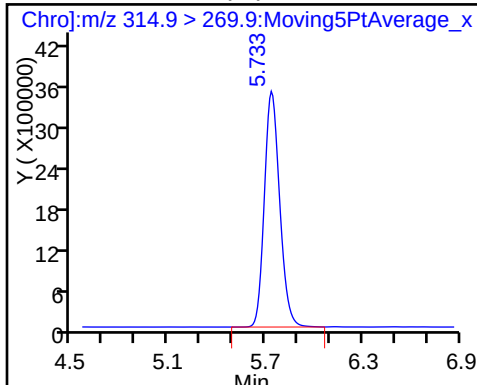
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (ND)

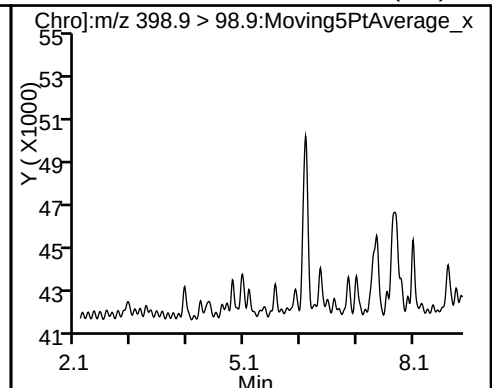
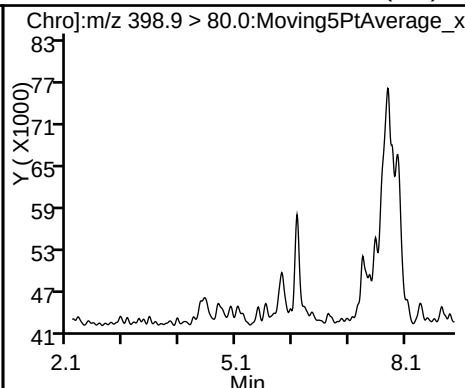
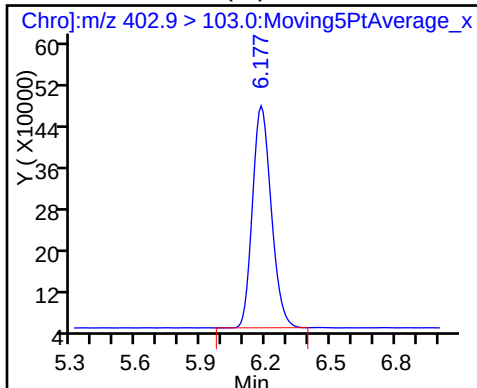
8 Perfluoroheptanoic acid (ND)



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate (ND)

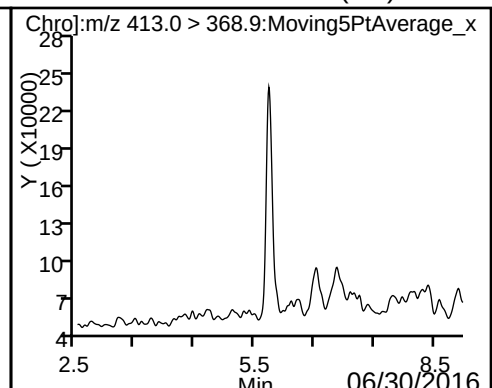
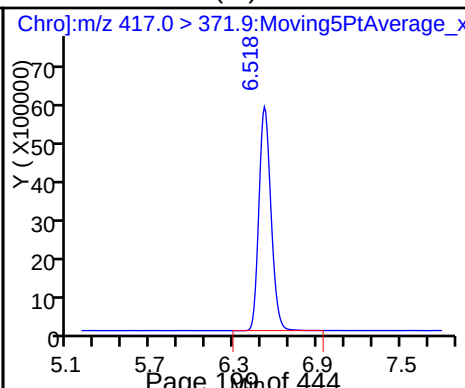
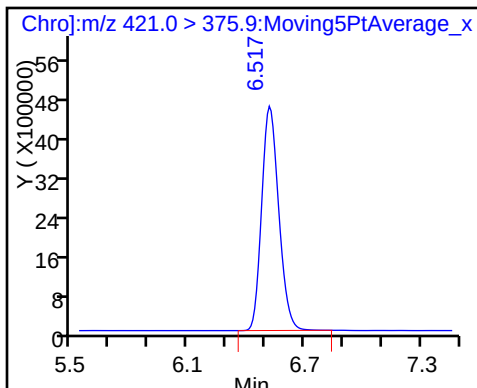
10 Perfluorohexane Sulfonate (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

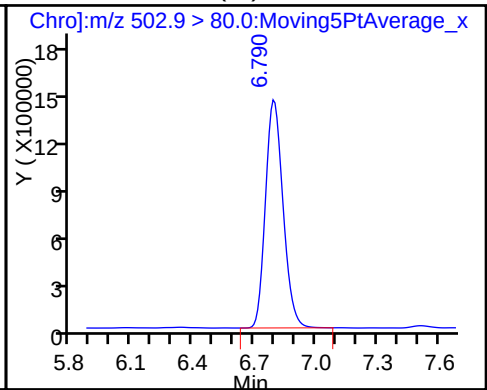
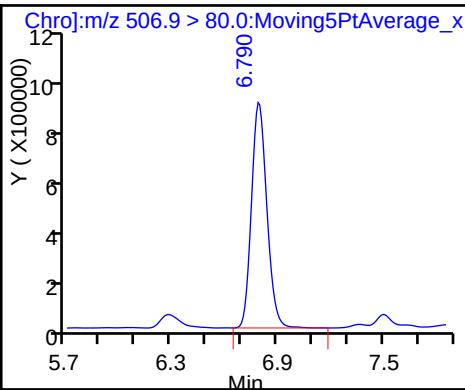
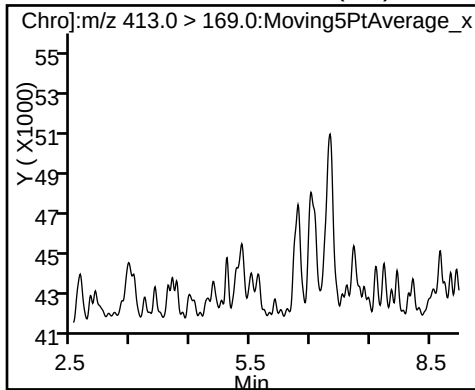
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

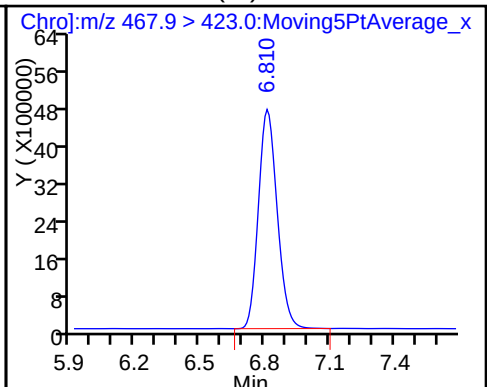
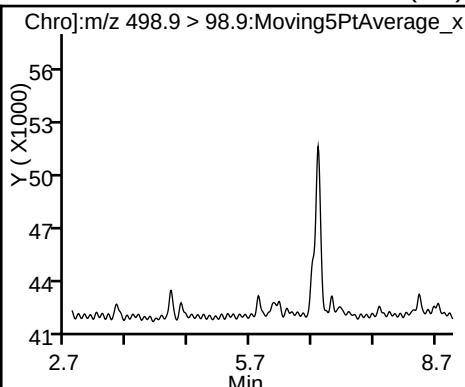
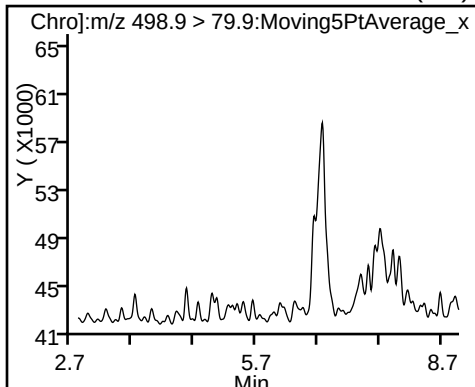
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

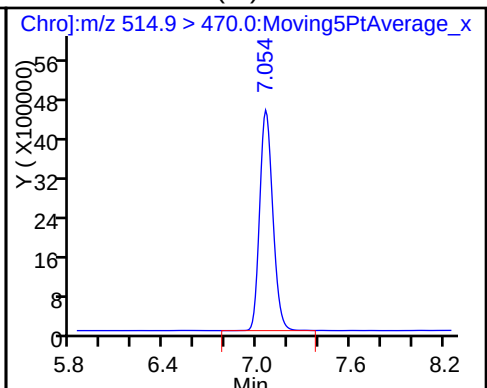
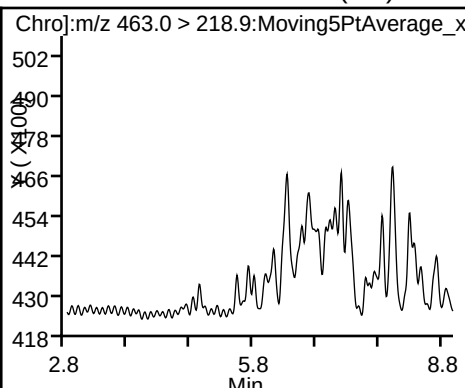
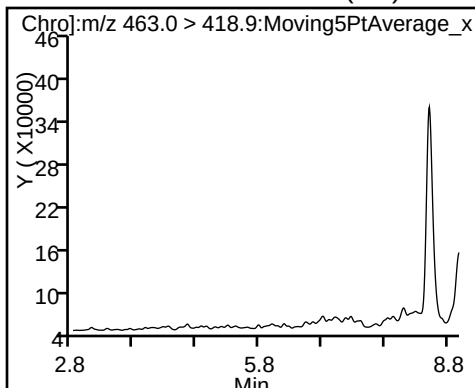
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

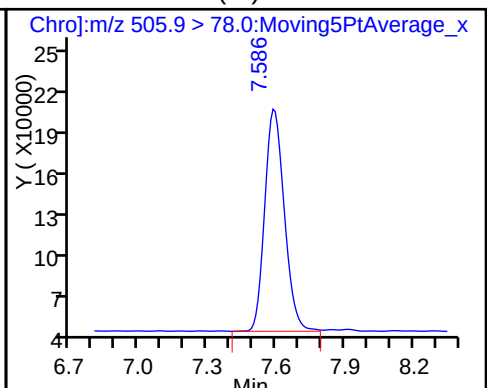
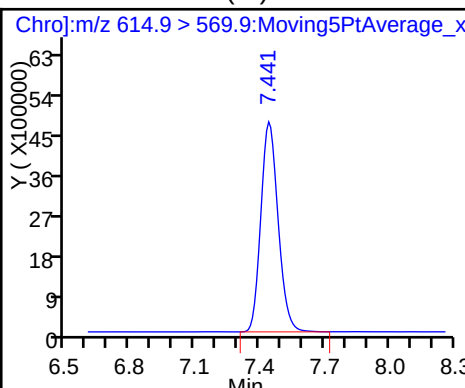
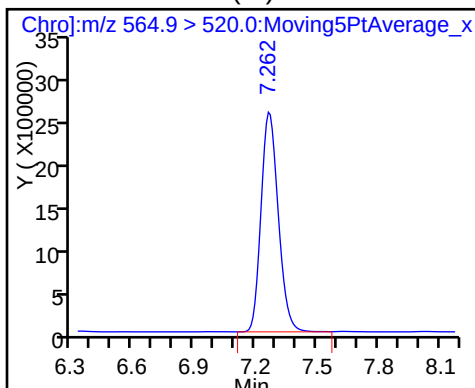
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-48</u>	Lab Sample ID: <u>280-84914-21</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20039.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 15:08</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>256.9(mL)</u>	Date Analyzed: <u>06/30/2016 15:06</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0080	U	0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.084		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0094	J	0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.049		0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	100		60-155
STL01054	13C8 PFOS	97		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20039.d
 Lims ID: 280-84914-A-21-A Lab Sample ID: 280-84914-21
 Client ID: C-48
 Sample Type: Client
 Inject. Date: 30-Jun-2016 15:06:10 ALS Bottle#: 0 Worklist Smp#: 34
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-a-21-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 15:30:24

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.982	4.067	-0.085		32031882	10.0			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.251	-0.010	0.851	204561	0.1525			R
298.9 > 98.9	5.260	5.251	0.009	0.854	115431		1.77(1.80-3.35)		R
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.714	0.0		21655953	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.150	0.0	0.946	12691718	4.32			
363.0 > 168.9	6.159	6.150	0.009	0.948	3246787		3.91(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		2564432	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.159	6.159	0.0	1.000	593066	0.4845			R
398.9 > 98.9	6.149	6.159	-0.010	0.998	204916		2.89(1.30-2.41)		R
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.498	0.0	1.000	27301991	10.0			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.499	0.0		33652006	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.508	-0.009	1.000	9058476	2.53			
413.0 > 169.0	6.499	6.508	-0.009	1.000	2459140		3.68(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.780	-0.009	1.000	5281515	9.27			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.781	-0.010		8904585	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.781	-0.019	0.999	487274	0.3775			
498.9 > 98.9	6.771	6.781	-0.010	1.000	269264		1.81(1.31-2.43)		

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20039.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.801	-0.009		26290033	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.801	-0.010	1.000	803577	0.2300			
463.0 > 218.9	6.782	6.801	-0.019	0.999	84277		9.53(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.045	-0.010		26485079	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.253	-0.009		15692664	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.431	-0.019		29613588	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.567	7.576	-0.009		1251593	10.0			

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20039.d

Injection Date: 30-Jun-2016 15:06:10

Instrument ID: LC_LCMS5

Lims ID: 280-84914-A-21-A

Lab Sample ID: 280-84914-21

Client ID: C-48

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 34

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

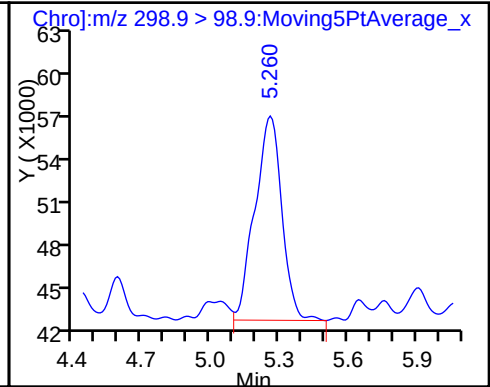
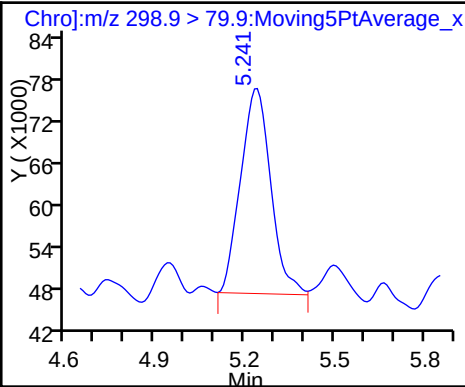
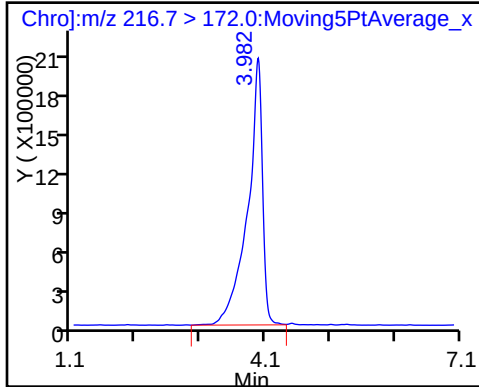
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

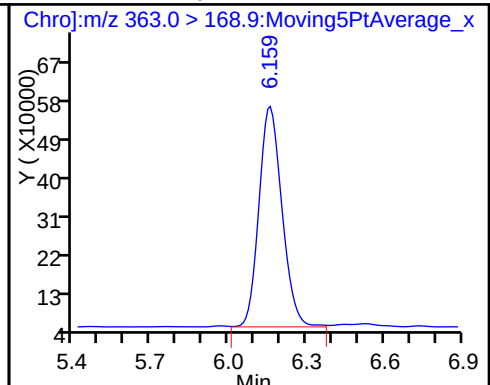
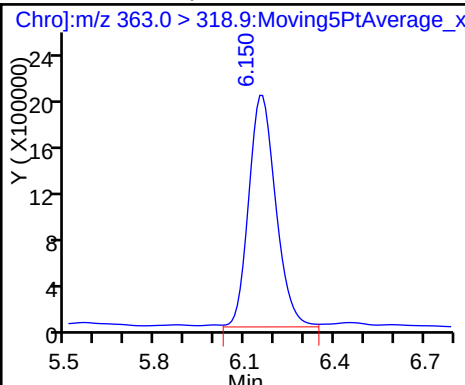
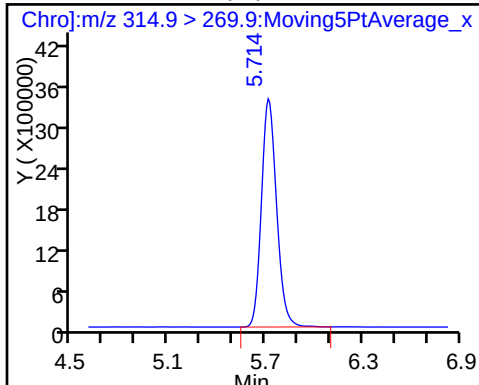
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

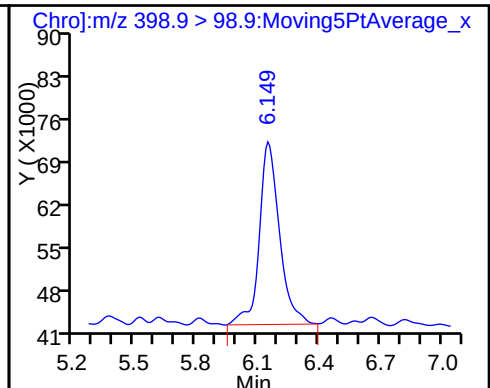
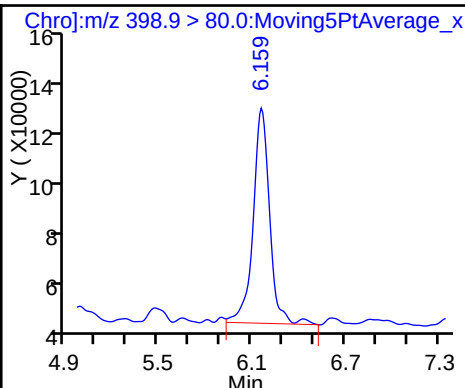
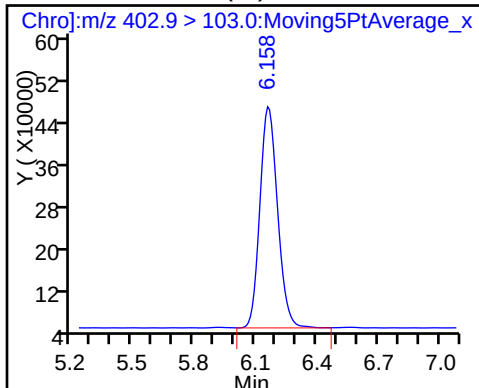
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

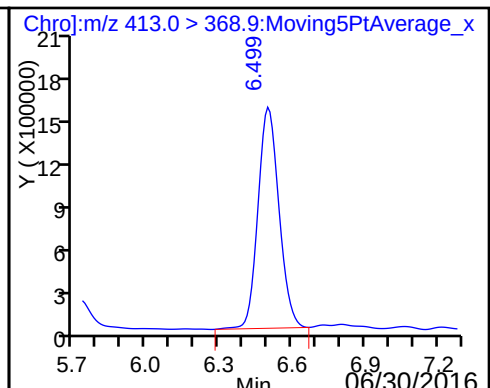
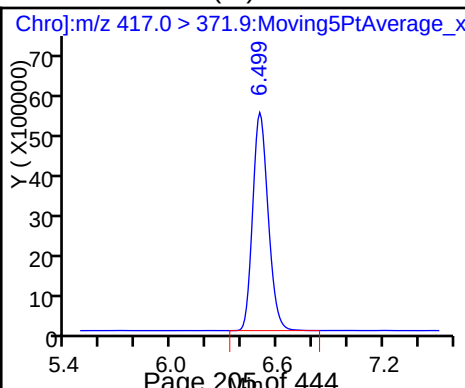
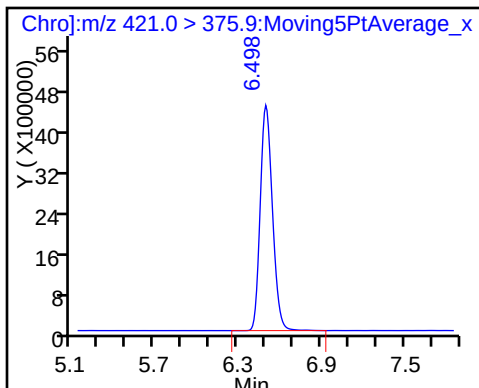
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

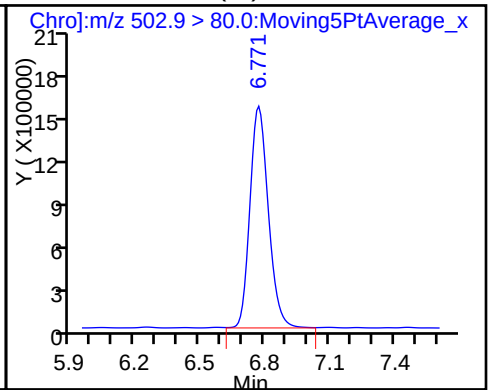
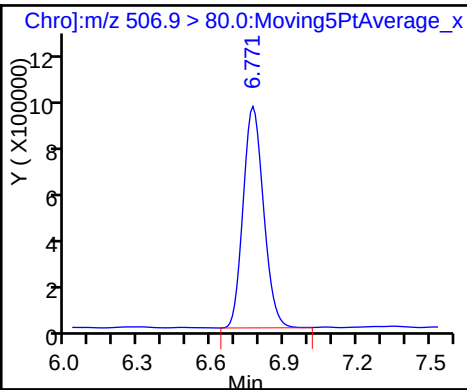
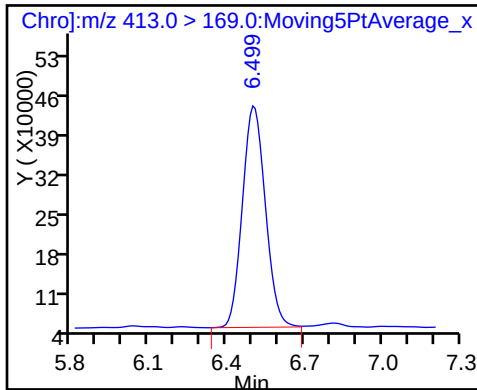
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

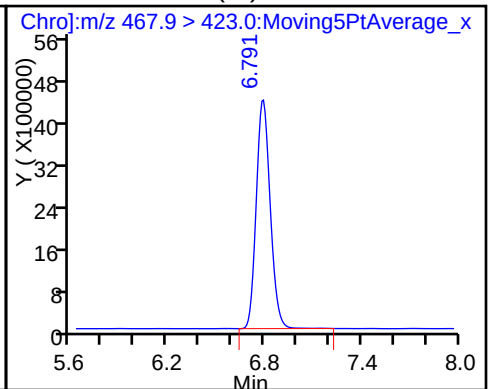
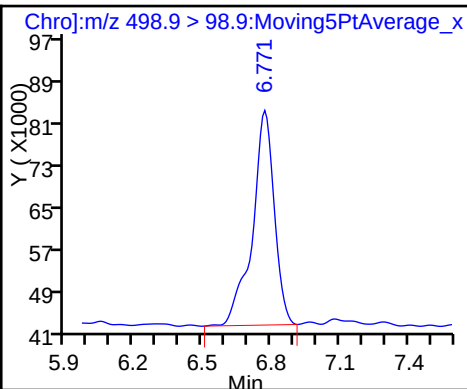
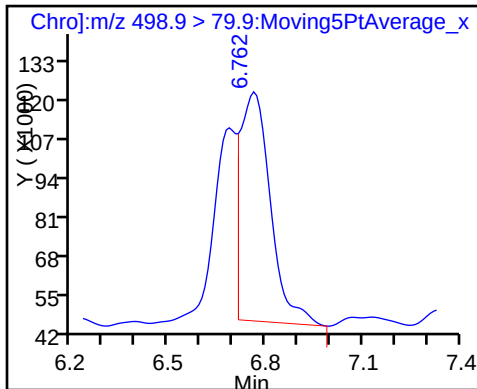
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

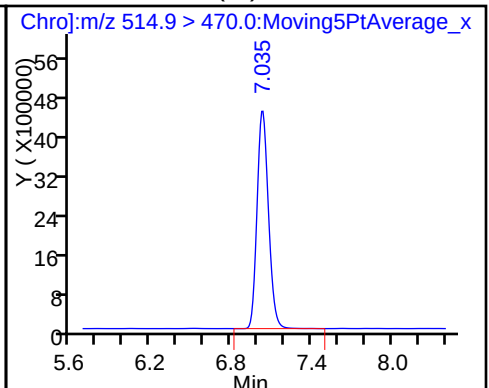
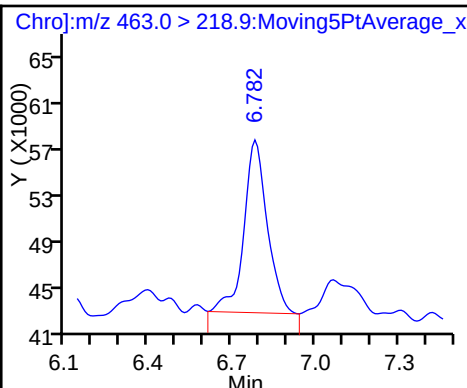
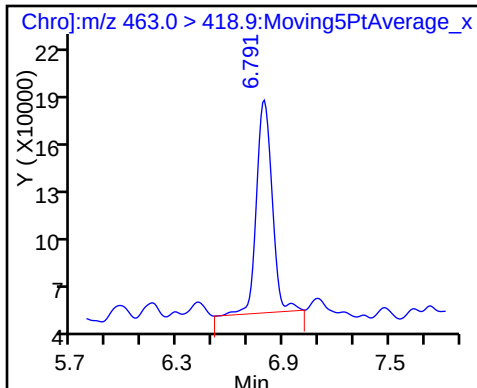
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

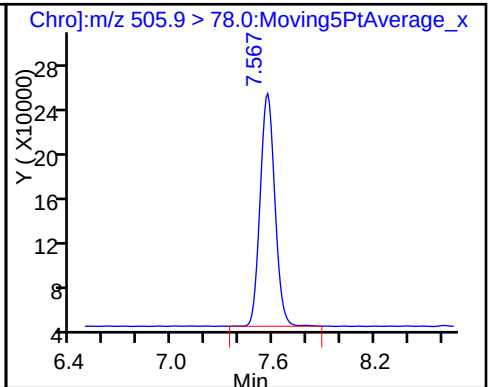
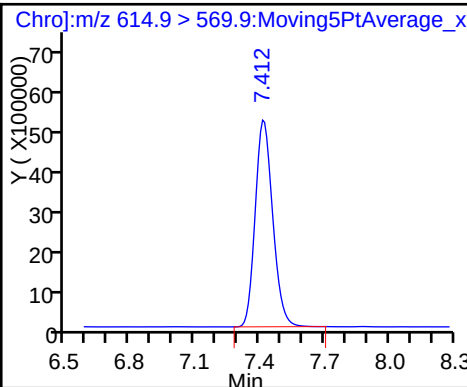
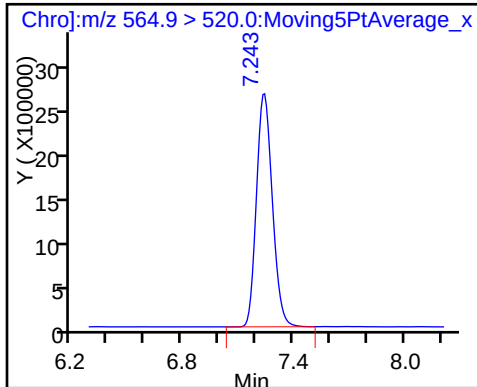
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-84914-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-328740/3	PC516F06008.d
Level 2	STD0005 280-328740/4	PC516F06009.d
Level 3	STD0010 280-328740/5	PC516F06010.d
Level 4	STD0020 280-328740/6	PC516F06011.d
Level 5	STD0050 280-328740/7	PC516F06012.d
Level 6	STD0100 280-328740/8	PC516F06013.d
Level 7	STD0200 280-328740/9	PC516F06014.d
Level 8	STD0500 280-328740/10	PC516F06015.d
Level 9	STD1250 280-328740/11	PC516F06016.d

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 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	1.0935 1.0731	0.9682 1.1168	1.1011 1.0889	1.0163 1.1259	1.0411	Lin2	-0.004	1.0730							0.9970		0.9800
Perfluoropentanoic acid (PFPA)	1.3959 1.2078	1.0565 1.2222	1.2095 1.2100	1.1322 1.1856	1.2067	Lin2	0.0300	1.1734							0.9950		0.9800
Perfluorobutane Sulfonate (PFBS)	5.1403 4.7868	4.9725 5.2449	5.0208 5.5169	4.6740 5.9824	5.2935	Lin2	-0.043	5.2289							0.9930		0.9800
Perfluorobutanesulfonic acid	5.1403 4.7868	4.9725 5.2449	5.0208 5.5169	4.6740 5.9824	5.2935	Lin2	-0.043	5.2289							0.9930		0.9800
Perfluorohexanoic acid (PFHxA)	1.0267 0.9482	1.0181 0.9452	0.9750 0.9241	1.0158 0.9118	0.9109	Lin2	0.0206	0.9436							0.9990		0.9800
Perfluoroheptanoic acid (PFHpA)	1.0268 0.9363	0.9027 0.9087	0.8648 0.8487	0.8655 0.8270	0.8797	Lin2	0.0290	0.8670							0.9980		0.9800
Perfluorohexane Sulfonate (PFHxS)	5.5961 3.6390	4.4606 4.0123	4.1902 3.7210	4.0834 3.8307	4.0848	Lin2	0.3295	3.8358							0.9990		0.9800
Perfluorohexanesulfonic acid	5.5961 3.6390	4.4606 4.0123	4.1902 3.7210	4.0834 3.8307	4.0848	Lin2	0.3295	3.8358							0.9990		0.9800
Perfluoroheptane Sulfonate	1.0469 1.2337	1.4301 1.1966	1.2370 1.2023	1.1876 1.0563	1.2143	Lin2	-0.012	1.2131							0.9900		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	1.0469 1.2337	1.4301 1.1966	1.2370 1.2023	1.1876 1.0563	1.2143	Lin2	-0.012	1.2131							0.9900		0.9800
Perfluorooctanoic acid (PFOA)	1.3260 1.0892	1.3937 1.0793	1.0859 0.9740	1.0522 0.9049	1.0619	Lin2	0.0742	1.0342							0.9890		0.9800
Perfluorooctanesulfonic acid (PFOS)	1.5676 1.2584	1.3596 1.1582	1.3732 1.1122	1.1887 0.9589	1.2720	Lin2	0.0841	1.1630							0.9910		0.9800
Perfluorononanoic acid (PFNA)	1.3972 1.1280	1.1487 1.1212	1.0990 1.1350	1.1535 1.1303	1.1718	Lin2	0.0488	1.1168							0.9980		0.9800

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

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-84914-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Perfluorodecanoic acid (PFDA)	1.1899 1.0233	1.0247 0.9665	1.0818 1.0033	1.0008 0.9920	1.0636	Lin2	0.0350	1.0039							0.9990		0.9800
Perfluorodecane sulfonate (PFDS)	1.4838 1.2796	1.3630 1.2639	1.2150 1.2964	1.2209 1.1582	1.2487	Lin2	0.0481	1.2319							0.9980		0.9800
Perfluorodecane Sulfonic acid	1.4838 1.2796	1.3630 1.2639	1.2150 1.2964	1.2209 1.1582	1.2487	Lin2	0.0481	1.2319							0.9980		0.9800
Perfluoroundecanoic acid (PFUnA)	1.7146 1.4647	1.7101 1.3676	1.5648 1.3430	1.3951 1.3939	1.4002	Lin2	0.0750	1.4098							0.9960		0.9800
Perfluorododecanoic acid (PFDoA)	1.3017 1.0587	1.1956 1.0311	1.0672 0.9868	1.0267 1.0217	1.0324	Lin2	0.0595	1.0215							0.9990		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.1447 1.0951	1.0906 1.0524	1.0905 1.0899	1.0591 1.1084	1.1227	Lin2	0.0103	1.0846							0.9990		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.2872 0.9589	1.0900 0.9686	0.9993 0.8414	0.9813 0.8847	0.9590	Lin2	0.0751	0.9227							0.9980		0.9800
Perfluorotetradecanoic acid (PFTeA)	0.6533 0.5880	0.5308 0.6377	0.5451 0.6135	0.5482 0.6668	0.5681	Lin2	0.0042	0.5905							0.9910		0.9800
13C8 PFOA	0.9499 0.8392	0.9381 0.7496	0.9704 0.7015	0.8844 0.6647	0.8995	Lin2	0.0401	0.8046							0.9840		0.9800
13C8 PFOS	0.6559 0.6428	0.7415 0.5602	0.6905 0.5481	0.6966 0.4724	0.6607	Lin2	0.0199	0.6093							0.9800		0.9800

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

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-84914-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-328740/3	PC516F06008.d
Level 2	STD0005 280-328740/4	PC516F06009.d
Level 3	STD0010 280-328740/5	PC516F06010.d
Level 4	STD0020 280-328740/6	PC516F06011.d
Level 5	STD0050 280-328740/7	PC516F06012.d
Level 6	STD0100 280-328740/8	PC516F06013.d
Level 7	STD0200 280-328740/9	PC516F06014.d
Level 8	STD0500 280-328740/10	PC516F06015.d
Level 9	STD1250 280-328740/11	PC516F06016.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin2	595154 30314584	1295896 64808389	3038727 157344591	5302668 394160471	15646483	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	684905 26550357	1319121 52945593	2769987 120508960	5174660 255912628	14121680	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	250069 10998014	623522 21952626	1117801 52661159	2150148 113831493	5710734	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid	HXS	Lin2	250069 10998014	623522 21952626	1117801 52661159	2150148 113831493	5710734	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	503746 20841959	1271251 40945931	2232965 92031312	4642778 196806552	10659437	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	696517 27517800	1648753 50554239	2810806 102889489	5744336 201805611	14292973	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	290699 8927761	597251 17932033	996121 37926174	2005825 77830813	4705477	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	290699 8927761	597251 17932033	996121 37926174	2005825 77830813	4705477	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptane Sulfonate	PFOS	Lin2	193401 10232509	677069 20264466	1051810 43315154	2150073 81786282	5403580	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	193401 10232509	677069 20264466	1051810 43315154	2150073 81786282	5403580	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	899444 32009782	2545486 60046068	3529270 118077119	6983614 220819164	17252348	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	290513 10470143	645716 19674973	1171224 40197453	2158847 74481235	5678428	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	740676 25021117	1587923 43845776	2681286 90947910	5817495 168854641	14058059	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	647522 25238466	1445379 48421431	2800062 109010928	5187930 219177035	13455719	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-84914-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	277874 10758635	654135 21695661	1047130 47343835	2240490 90907790	5632521	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	277874 10758635	654135 21695661	1047130 47343835	2240490 90907790	5632521	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	588700 21285381	1566038 39180966	2540060 77899378	4772902 154032440	11414147	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	915560 33735988	2159339 63246783	3492545 142077526	6822134 293807930	17657166	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	590186 26107207	1495146 51602388	2697496 117575149	5393596 250150013	13895071	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	905331 30556604	1968702 59415459	3270152 121132497	6520781 254423900	16402113	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	459487 18737310	958729 39118116	1783816 88331768	3642443 191754560	9715521	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin2	644366 24662701	1713329 41702455	3153884 85046612	5869974 162199054	14613722	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	121681 5353658	352518 9525828	589580 19830288	1266475 36728856	2952684	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:

Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d
 Lims ID: STD0002
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 06-Jun-2016 14:49:59 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0002, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:00:17

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.446	4.020	0.426		27213757	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.982	4.020	-0.038	0.896	595154	0.2072			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.355	5.100	0.255	0.910	684905	0.2124			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.450	5.222	0.228	0.865	250069	0.1822			
298.9 > 98.9	5.459	5.222	0.237	0.866	81289		3.08(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.450	5.222	0.228	0.865	250069	0.1822			
298.9 > 98.9	5.459	5.222	0.237	0.866	81289		3.08(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.885	5.695	0.190		24532160	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.894	5.686	0.208	1.002	503746	0.1957			
313.0 > 118.6	5.923	5.686	0.237	1.006	10193		49.42(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.292	6.121	0.171	0.949	696517	0.2034			
363.0 > 168.9	6.292	6.121	0.171	0.949	191107		3.64(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.130	0.170		2600098	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.301	6.130	0.171	1.000	290699	0.1898			R
398.9 > 98.9	6.291	6.130	0.161	0.999	100556		2.89(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.301	6.130	0.171	1.000	290699	0.1898			
398.9 > 98.9	6.291	6.130	0.161	0.999	100556		2.89(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.621	6.460	0.161	0.959	193401	0.1743			
449.0 > 98.9	6.621	6.460	0.161	0.959	76248		2.54(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.621	6.460	0.161	0.959	193401	0.1743			
449.0 > 98.9	6.621	6.460	0.161	0.959	76248		2.54(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.470	0.161	1.000	644366	0.1863			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.470	0.161		33916758	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.471	0.161	1.000	899444	0.1846			
413.0 > 169.0	6.632	6.471	0.161	1.000	303395		2.96(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.894	6.742	0.152	0.999	121681	0.1731			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.743	0.161		9276020	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.904	6.743	0.161	1.000	290513	0.1852			R
498.9 > 98.9	6.885	6.743	0.142	0.997	81976		3.54(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.753	0.161		26504778	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.924	6.753	0.171	1.001	740676	0.2065			
463.0 > 218.9	6.905	6.753	0.152	0.999	111132		6.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.159	6.998	0.161	1.000	647522	0.2022			R
513.0 > 219.0	7.159	6.998	0.161	1.000	83452		7.76(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.007	0.151		27209809	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.347	7.186	0.161	1.064	277874	0.1934			
598.9 > 99.0	7.356	7.186	0.170	1.066	72213		3.85(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.347	7.186	0.161	1.064	277874	0.1934			R
598.9 > 99.0	7.356	7.186	0.170	1.066	72213		3.85(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.215	0.151		17167663	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.366	7.215	0.151	1.000	588700	0.1901			
563.0 > 268.9	7.366	7.215	0.151	1.000	96854		6.08(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.545	7.393	0.152		35167056	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.545	7.394	0.151	1.000	915560	0.1966			
613.0 > 168.9	7.545	7.394	0.151	1.000	122464		7.48(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.696	7.545	0.151	1.020	905331	0.1977			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.529	0.113		25779733	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.530	0.113	1.000	590186	0.2016			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.829	7.677	0.152	1.038	459487	0.2142			
712.9 > 169.0	7.829	7.677	0.152	1.038	71115		6.46(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC_CAL_stock_00033

Amount Added: 10.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d

Injection Date: 06-Jun-2016 14:49:59

Instrument ID: LC_LCMS5

Lims ID: STD0002

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

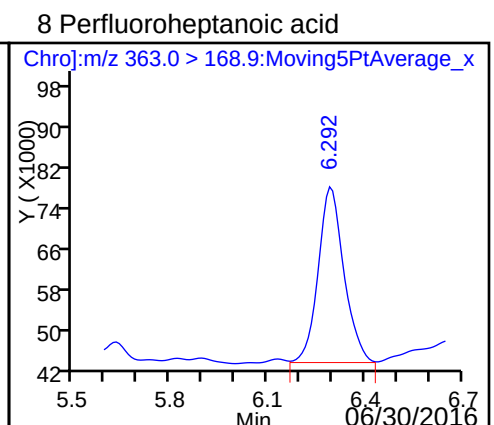
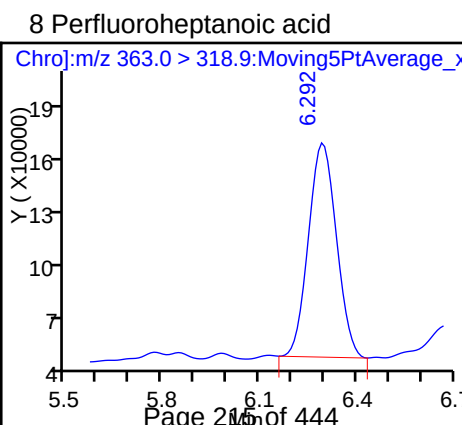
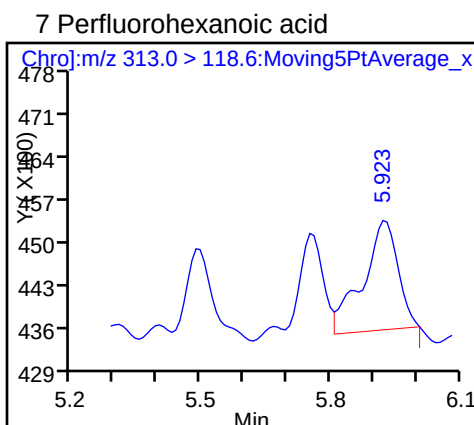
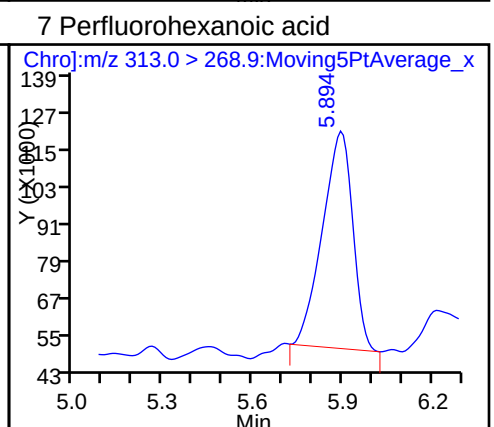
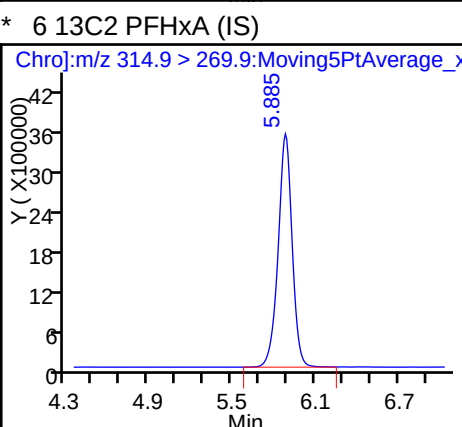
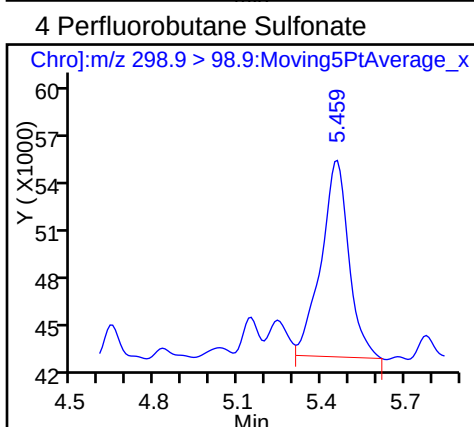
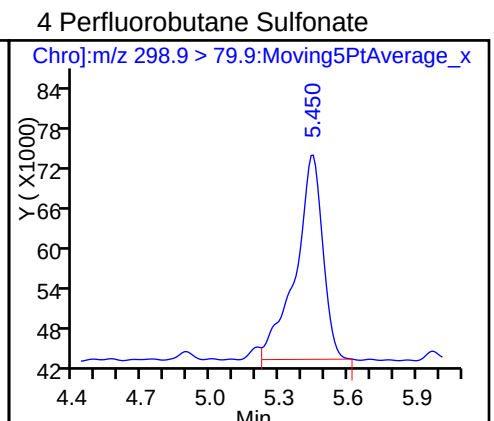
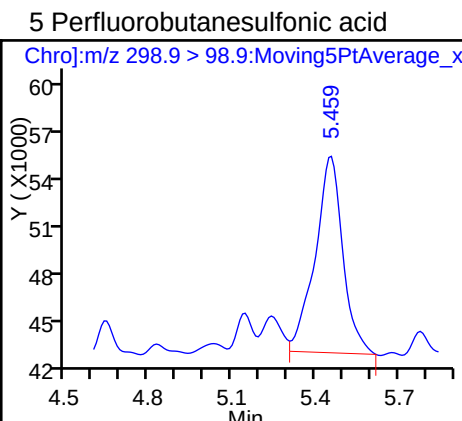
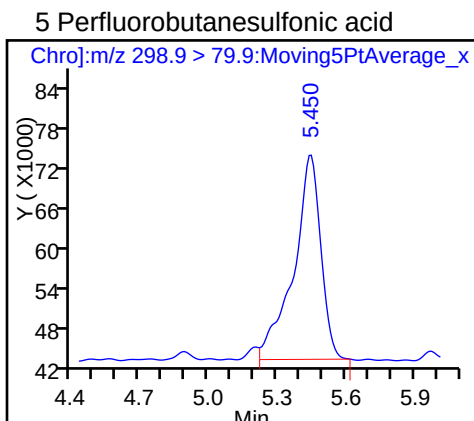
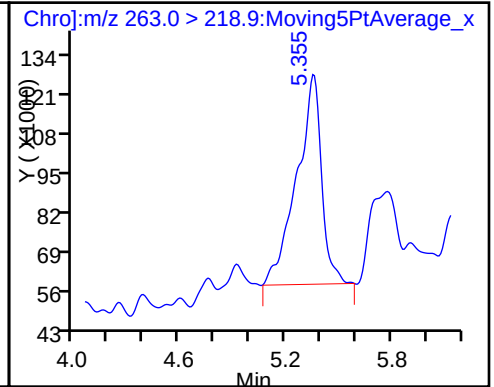
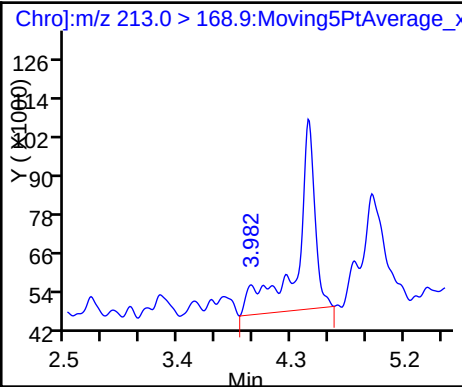
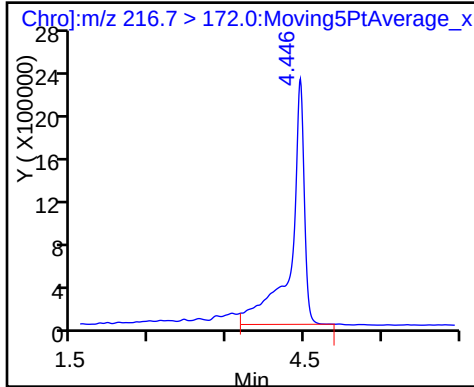
Method: 8321_PFC

Limit Group: LC - PFC

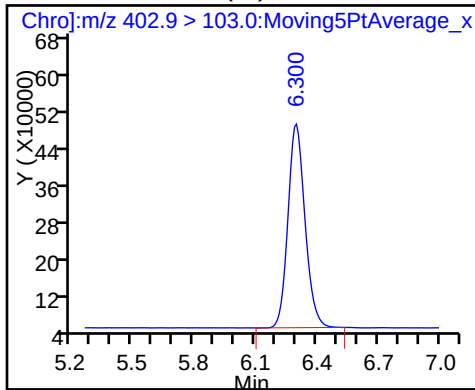
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

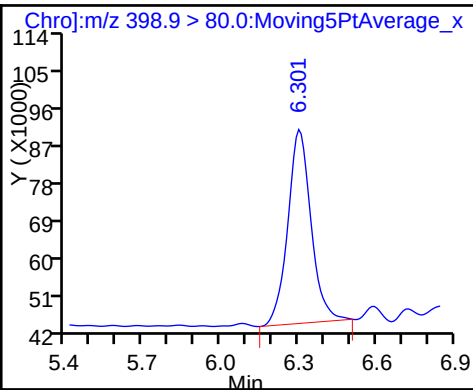
3 Perfluoropentanoic acid



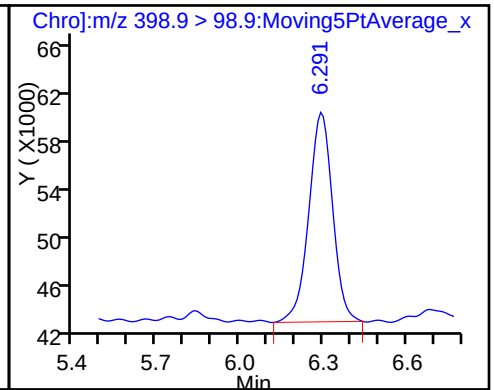
* 9 18O2 PFHxS (IS)



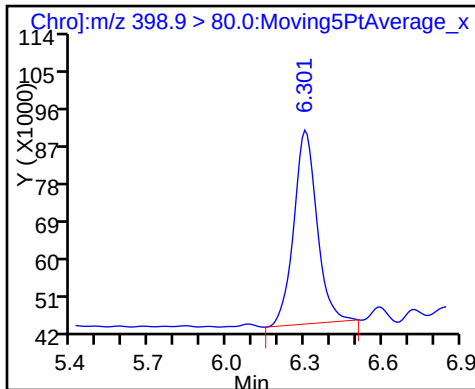
10 Perfluorohexane Sulfonate



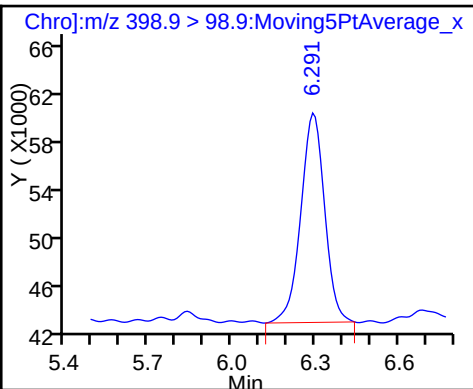
10 Perfluorohexane Sulfonate



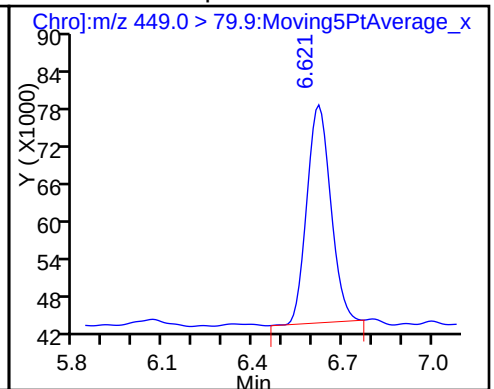
11 Perfluorohexanesulfonic acid



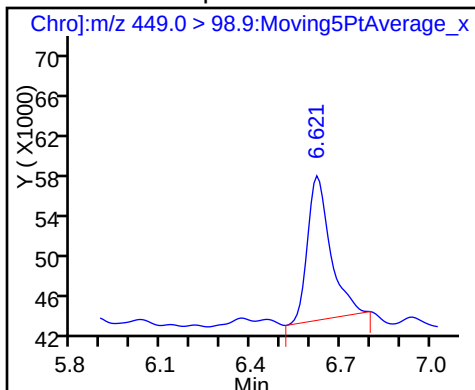
11 Perfluorohexanesulfonic acid



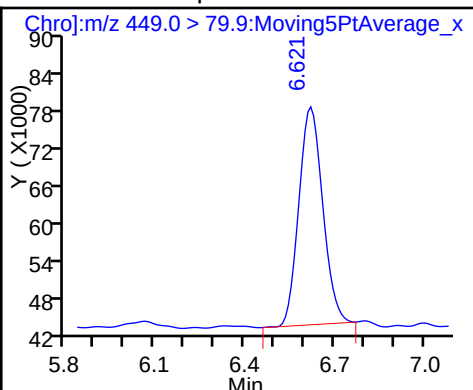
12 Perfluoroheptanesulfonic Acid



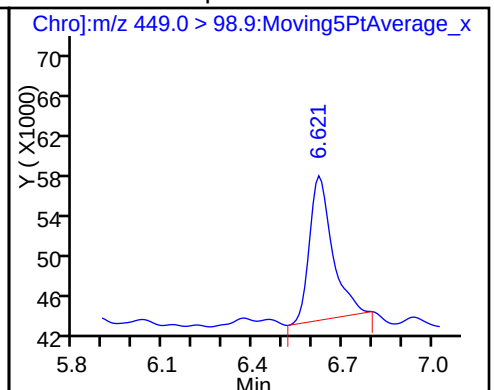
12 Perfluoroheptanesulfonic Acid



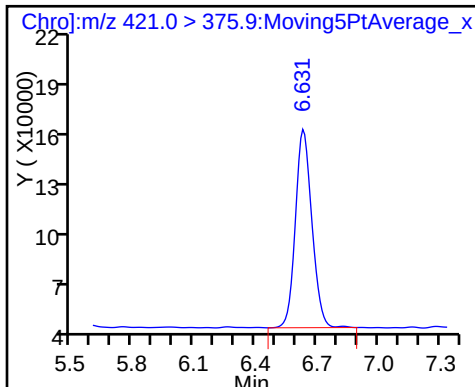
13 Perfluoroheptane Sulfonate



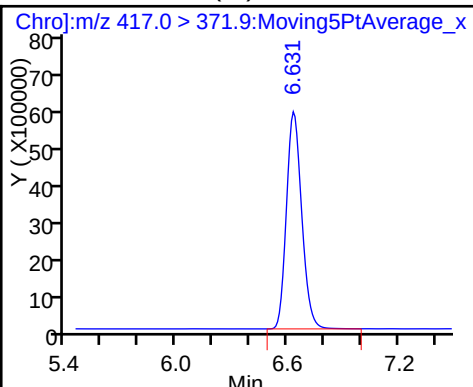
13 Perfluoroheptane Sulfonate



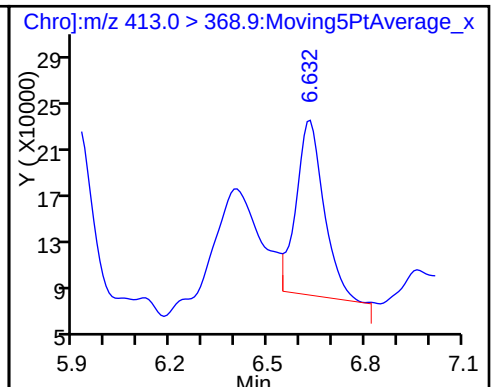
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



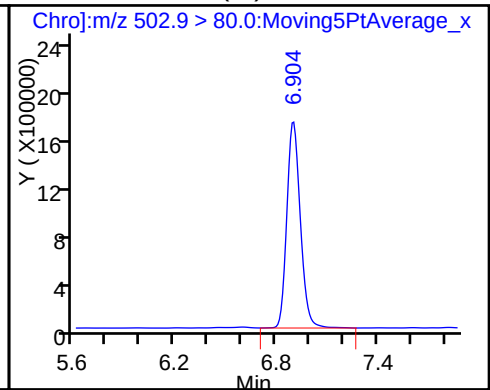
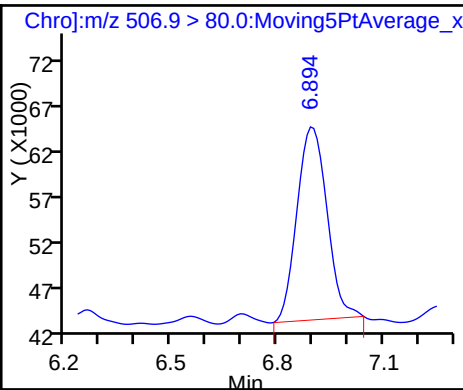
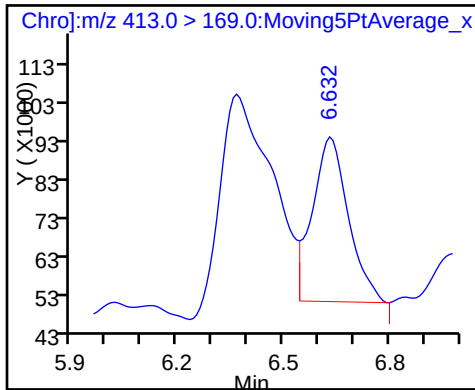
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

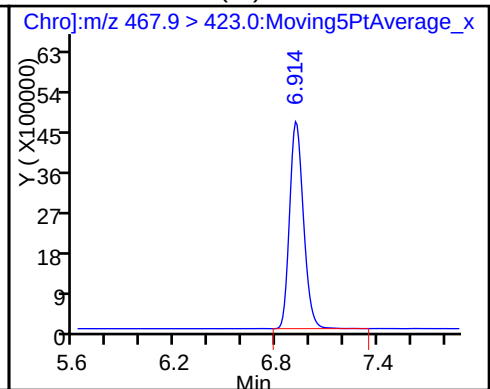
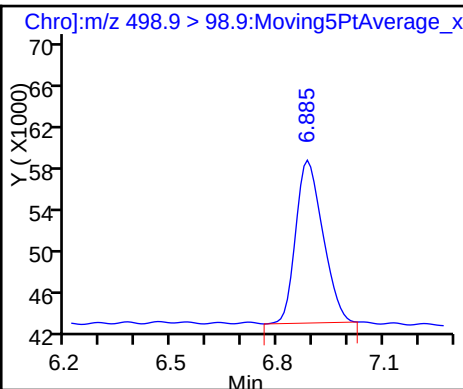
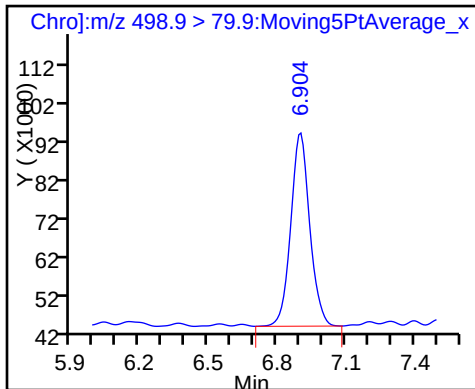
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

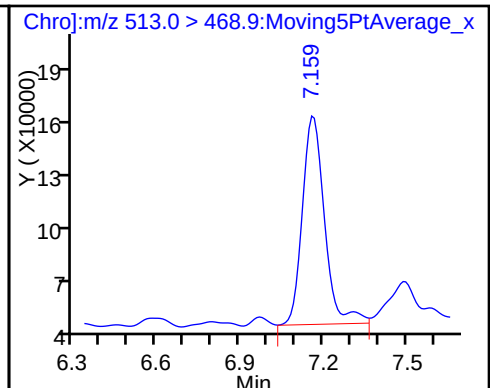
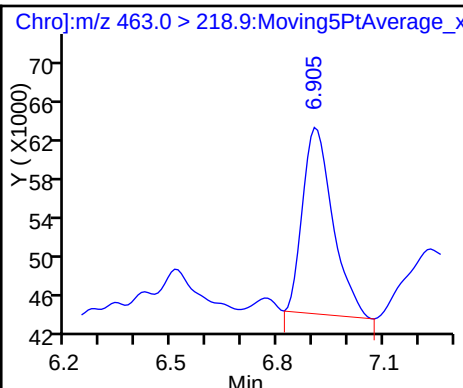
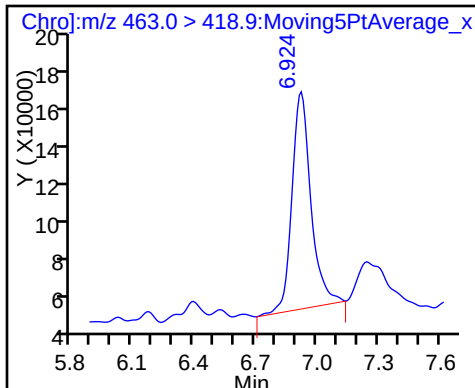
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

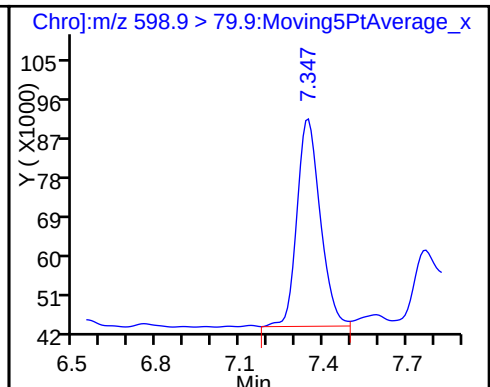
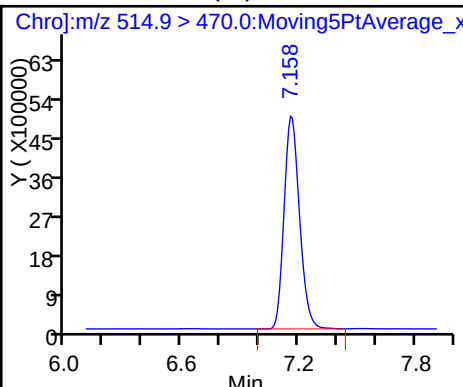
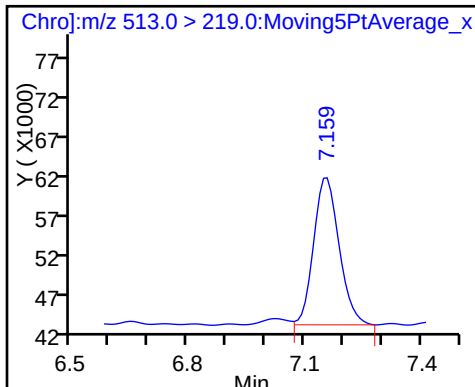
23 Perfluorodecanoic acid



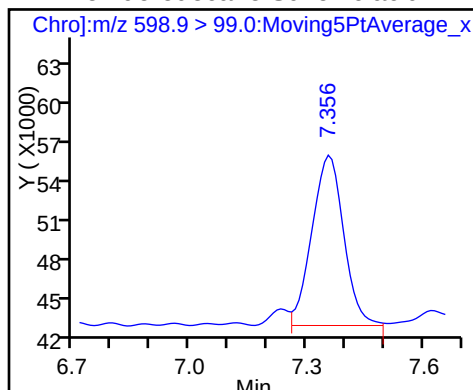
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

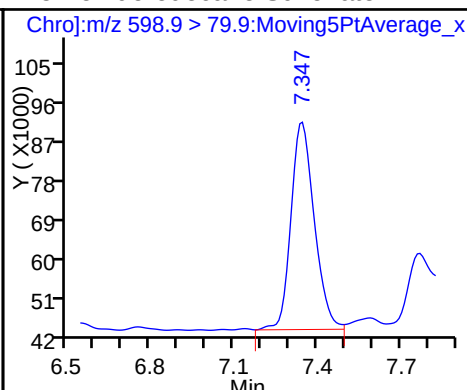
24 Perfluorodecane Sulfonic acid



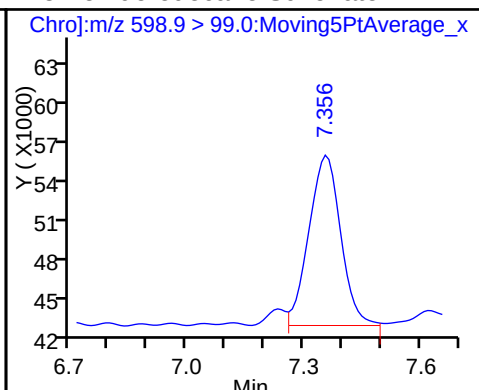
24 Perfluorodecane Sulfonic acid



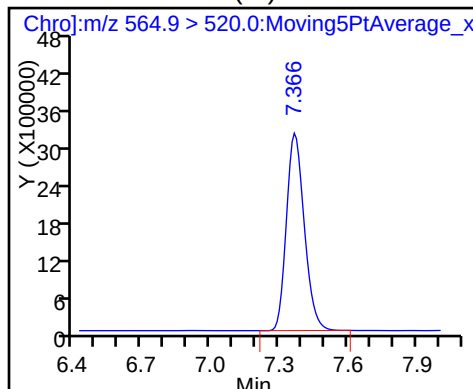
25 Perfluorodecane Sulfonate



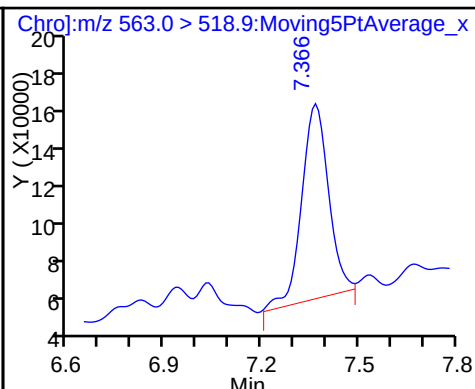
25 Perfluorodecane Sulfonate



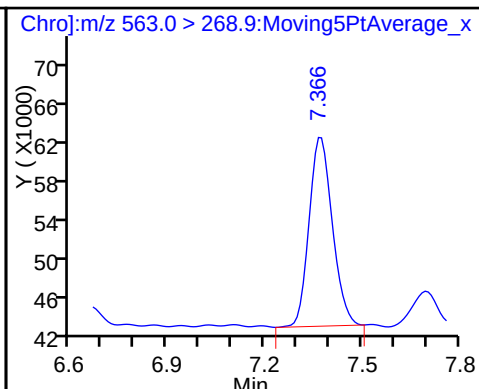
* 26 13C2 PFUnA (IS)



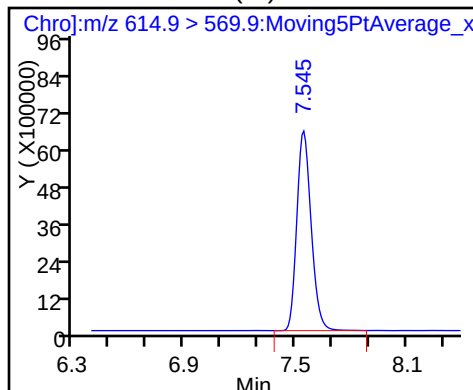
27 Perfluoroundecanoic acid



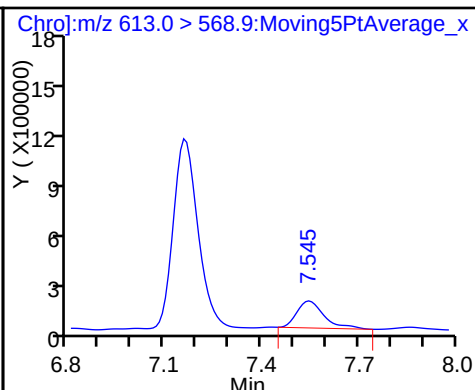
27 Perfluoroundecanoic acid



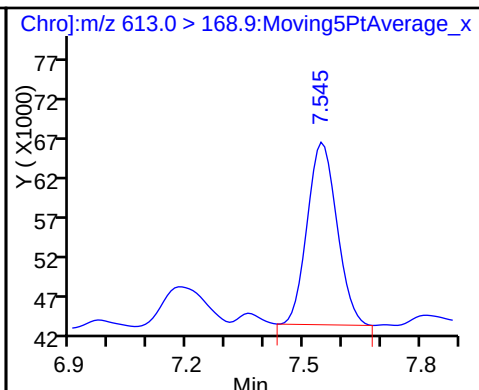
* 28 13C2 PFDaA (IS)



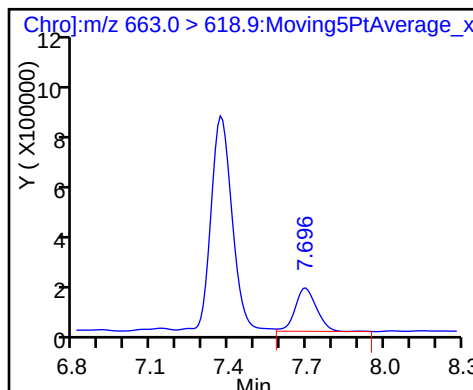
29 Perfluorododecanoic acid



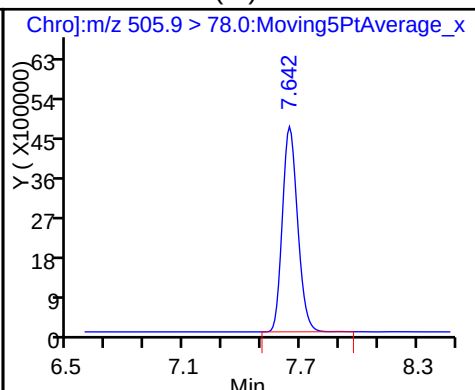
29 Perfluorododecanoic acid



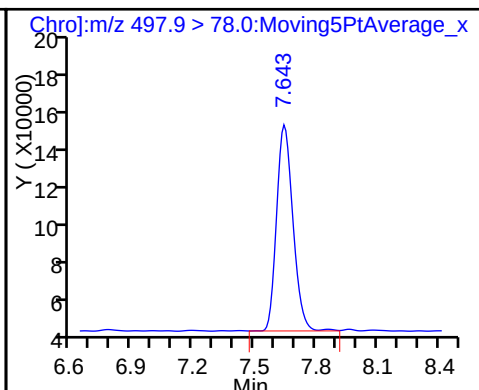
30 Perfluorotridecanoic acid



* 31 13C8 FOSA (IS)



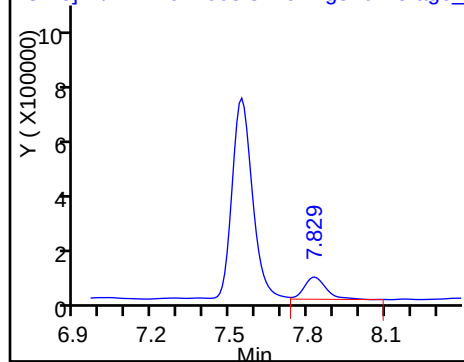
32 Perfluorooctane Sulfonamide



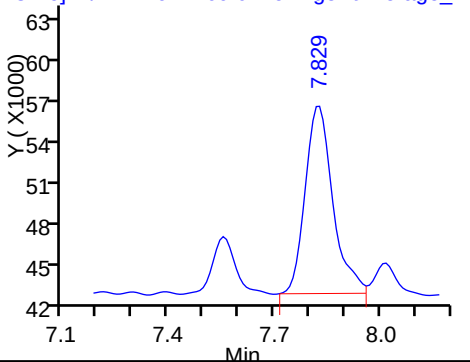
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d
 Lims ID: STD0005
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 06-Jun-2016 15:02:17 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0005, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:40 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:59:51

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.172	4.020	0.152		26769557	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.172	4.020	0.152	1.000	1295896	0.4546			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.242	5.100	0.142	0.899	1319121	0.4247			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.355	5.222	0.133	0.855	623522	0.4290			
298.9 > 98.9	5.364	5.222	0.142	0.857	199278		3.13(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.355	5.222	0.133	0.855	623522	0.4290			
298.9 > 98.9	5.364	5.222	0.142	0.857	199278		3.13(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.828	5.686	0.142	1.000	1271251	0.5176			
313.0 > 118.6	5.819	5.686	0.133	0.998	31432		40.44(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.695	0.133		24971837	10.0			
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.254	6.121	0.133	0.947	1648753	0.4872			R
363.0 > 168.9	6.263	6.121	0.142	0.949	498178		3.31(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.130	0.133		2680752	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.130	0.133	1.000	597251	0.4636			R
398.9 > 98.9	6.272	6.130	0.142	1.002	202471		2.95(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.130	0.133	1.000	597251	0.4636			
398.9 > 98.9	6.272	6.130	0.142	1.002	202471		2.95(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.460	0.133	0.959	677069	0.5711			
449.0 > 98.9	6.593	6.460	0.133	0.959	152739		4.43(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.460	0.133	0.959	677069	0.5711			
449.0 > 98.9	6.593	6.460	0.133	0.959	152739		4.43(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.603	6.470	0.133	1.000	1713329	0.5331			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.603	6.470	0.133		36529272	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.603	6.471	0.132	1.000	2545486	0.6020			
413.0 > 169.0	6.613	6.471	0.142	1.001	723773		3.52(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.875	6.742	0.133	1.000	352518	0.5490			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.875	6.743	0.132		9508598	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.876	6.743	0.133	1.000	645716	0.4859			R
498.9 > 98.9	6.876	6.743	0.133	1.000	212089		3.04(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.753	0.142		27647688	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.895	6.753	0.142	1.000	1587923	0.4706			
463.0 > 218.9	6.895	6.753	0.142	1.000	280755		5.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.140	6.998	0.142	1.000	1445379	0.4755			R
513.0 > 219.0	7.130	6.998	0.132	0.999	198159		7.29(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.140	7.007	0.133		28209499	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.318	7.186	0.132	1.064	654135	0.4948			
598.9 > 99.0	7.318	7.186	0.132	1.064	165840		3.94(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.318	7.186	0.132	1.064	654135	0.4948			R
598.9 > 99.0	7.318	7.186	0.132	1.064	165840		3.94(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.215	0.123		18315536	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.215	0.123	1.000	1566038	0.5533			R
563.0 > 268.9	7.347	7.215	0.132	1.001	163382		9.59(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.393	0.124		36122892	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.394	0.123	1.000	2159339	0.5269			
613.0 > 168.9	7.517	7.394	0.123	1.000	311344		6.94(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.529	0.085		27418934	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.530	0.085	1.000	1495146	0.4932			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.668	7.545	0.123	1.020	1968702	0.5093			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.677	0.123	1.038	958729	0.4424			
712.9 > 169.0	7.800	7.677	0.123	1.038	162064		5.92(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 25.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d

Injection Date: 06-Jun-2016 15:02:17

Instrument ID: LC_LCMS5

Lims ID: STD0005

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

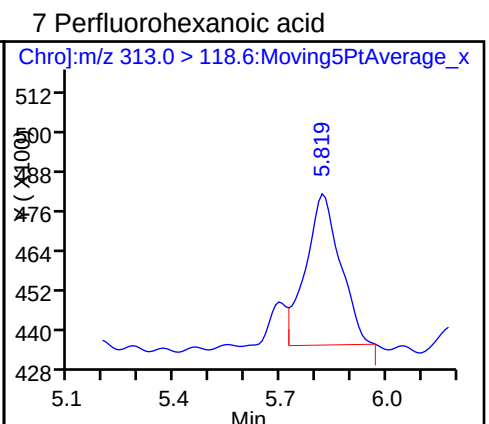
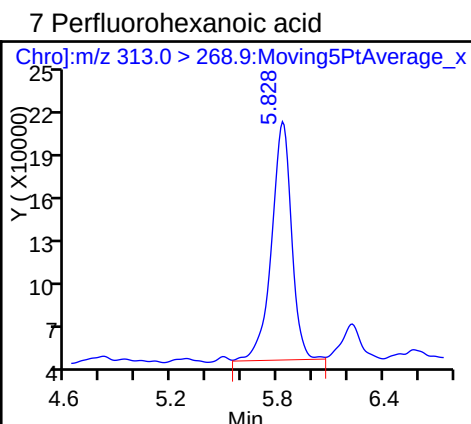
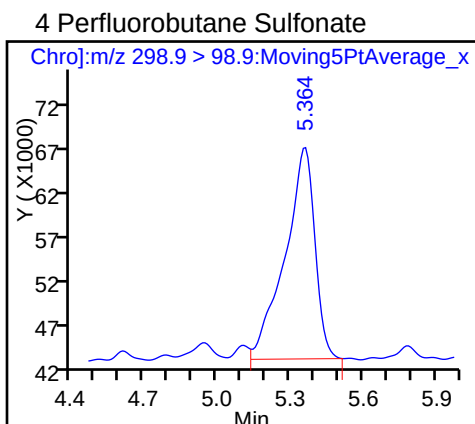
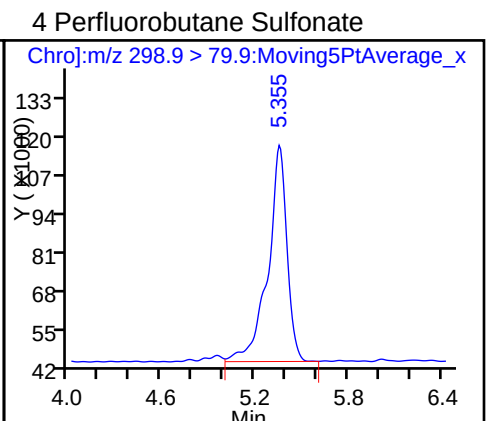
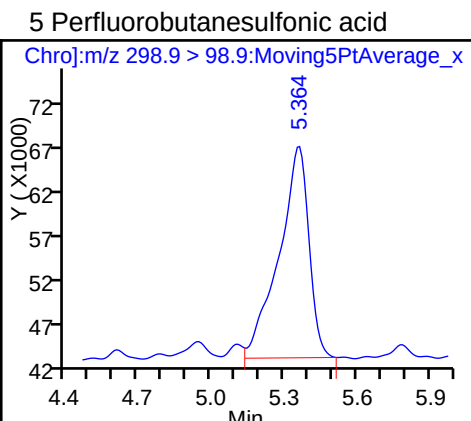
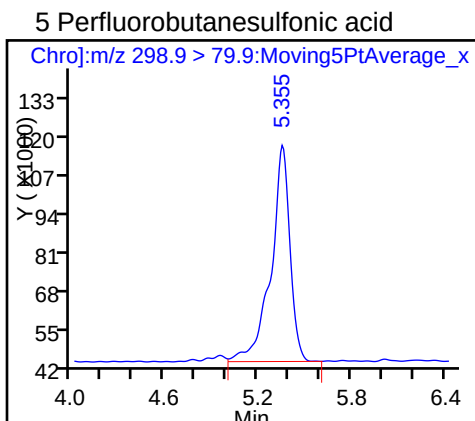
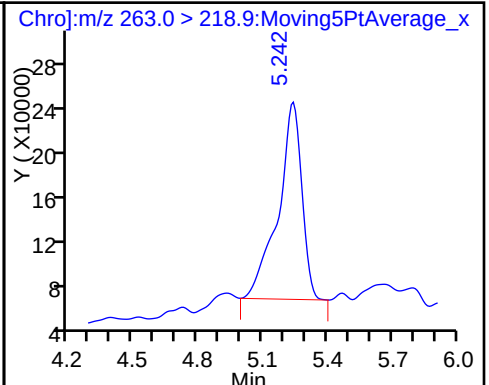
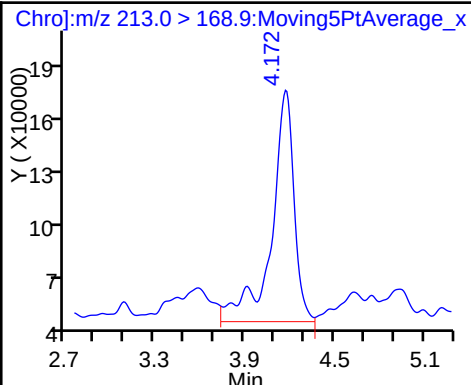
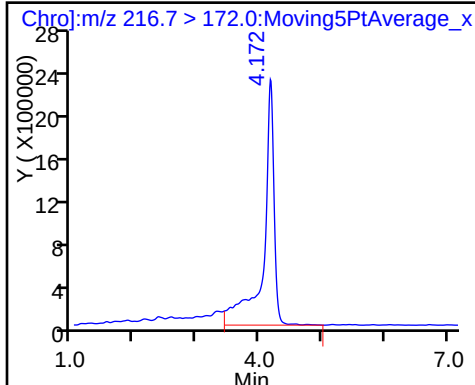
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

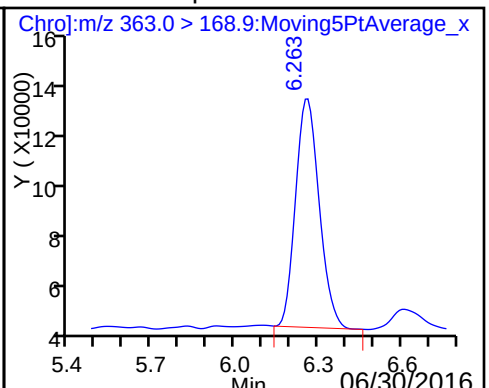
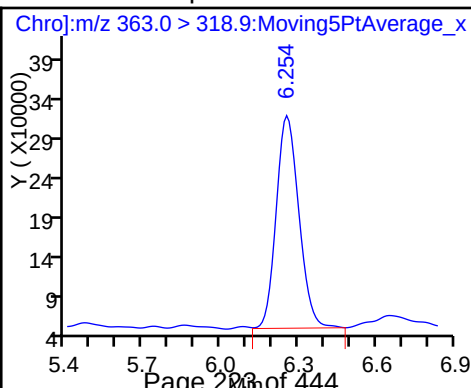
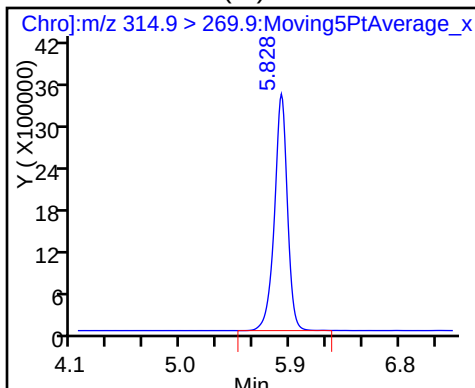
3 Perfluoropentanoic acid



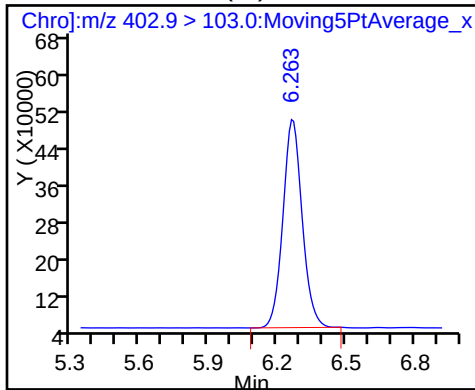
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

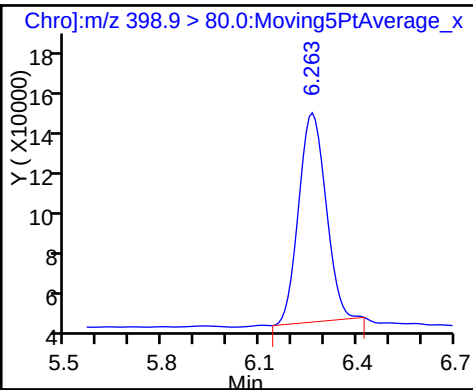
8 Perfluoroheptanoic acid



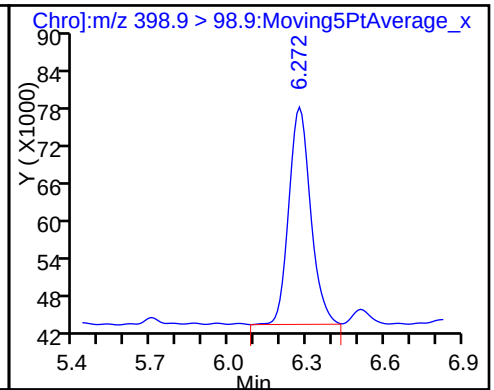
* 9 18O2 PFHxS (IS)



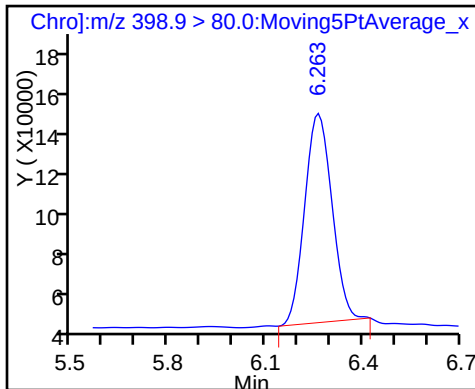
10 Perfluorohexane Sulfonate



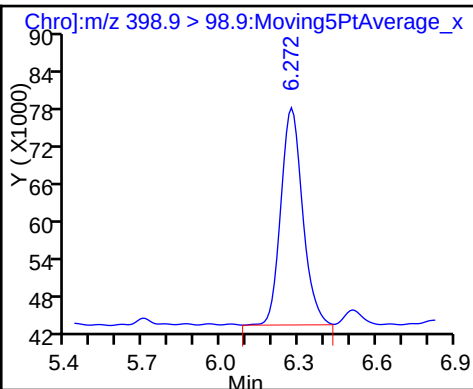
10 Perfluorohexane Sulfonate



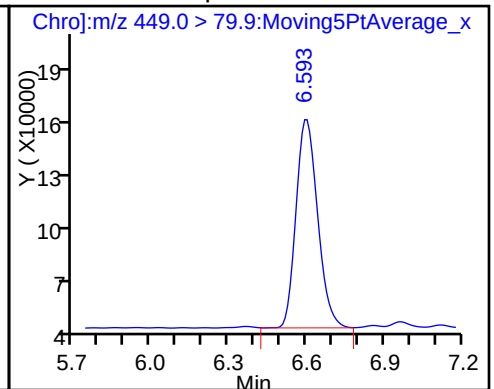
11 Perfluorohexanesulfonic acid



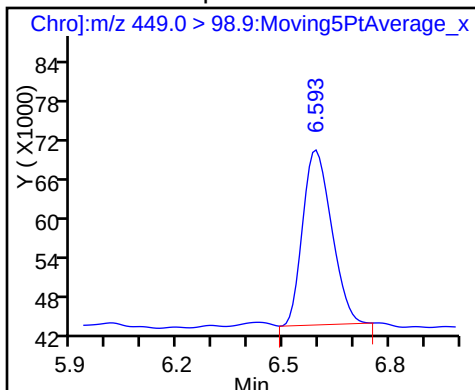
11 Perfluorohexanesulfonic acid



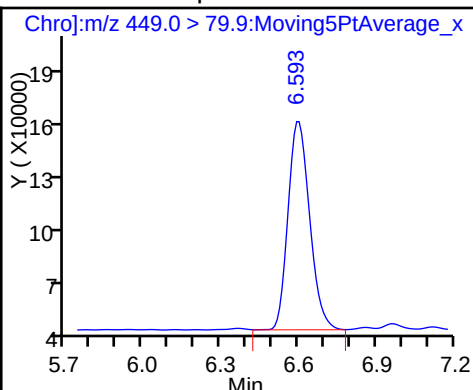
12 Perfluoroheptanesulfonic Acid



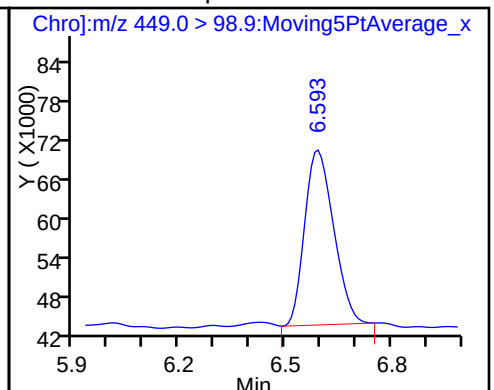
12 Perfluoroheptanesulfonic Acid



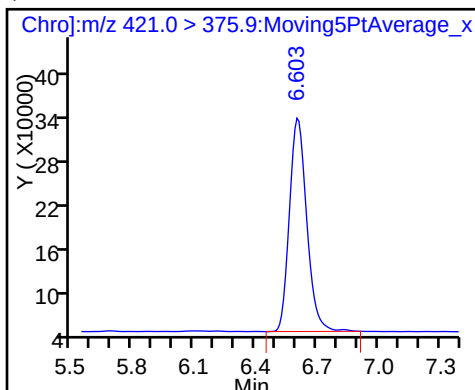
13 Perfluoroheptane Sulfonate



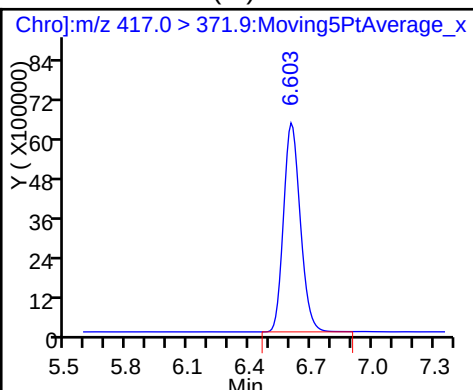
13 Perfluoroheptane Sulfonate



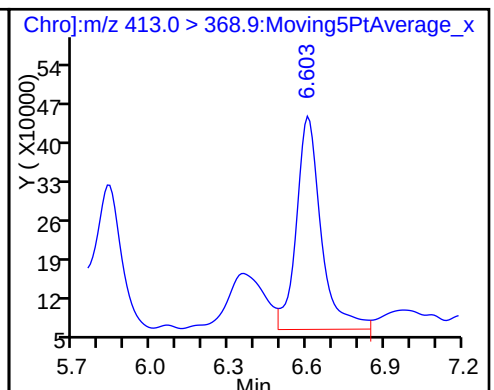
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



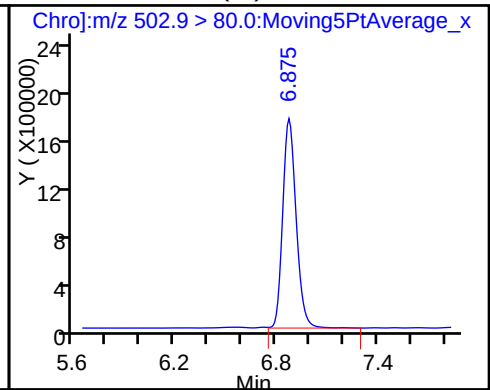
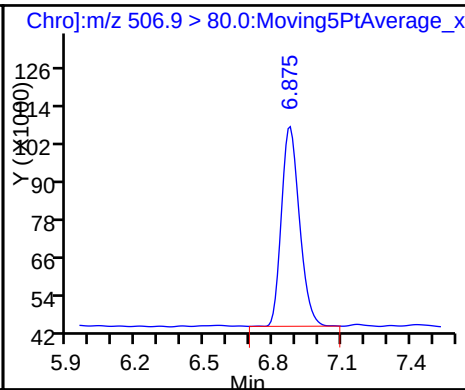
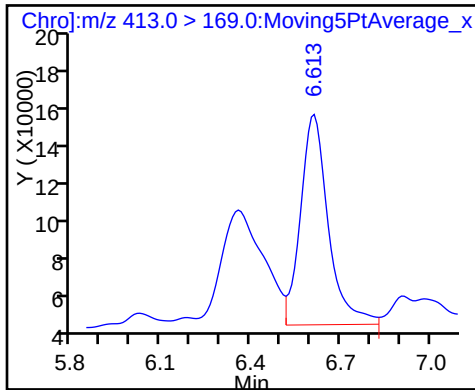
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

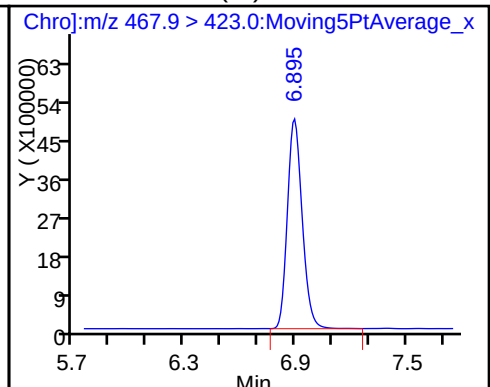
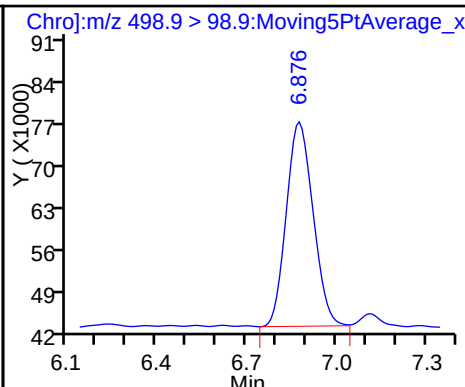
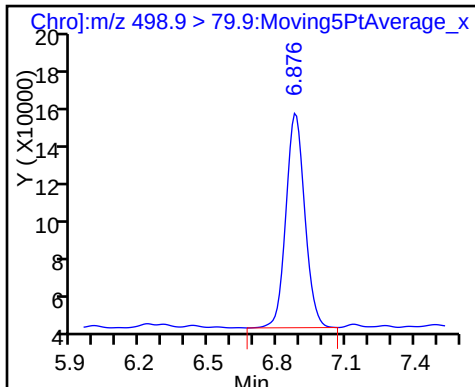
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

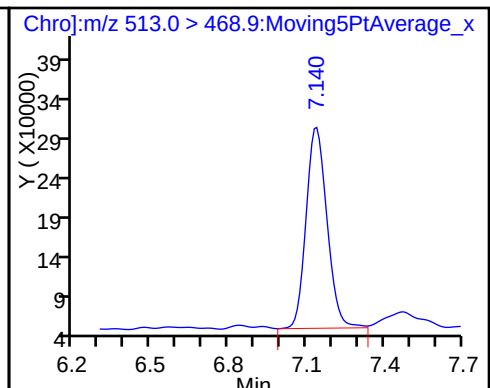
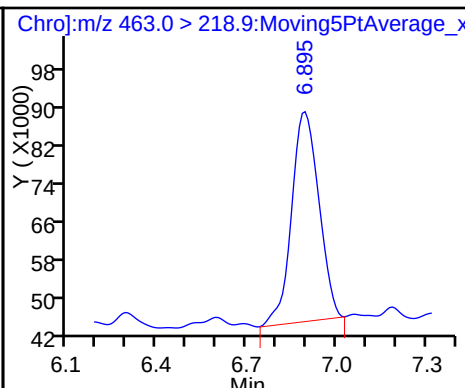
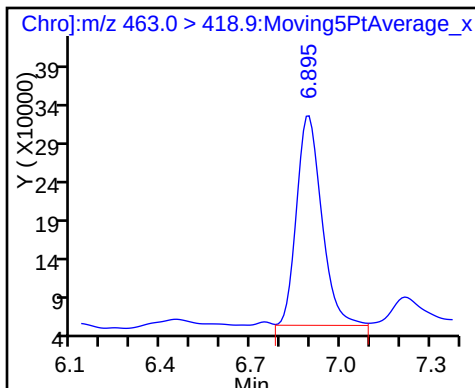
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

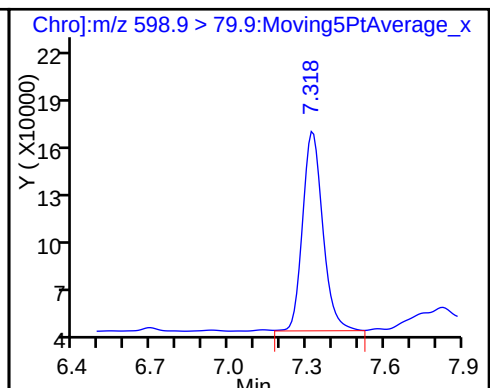
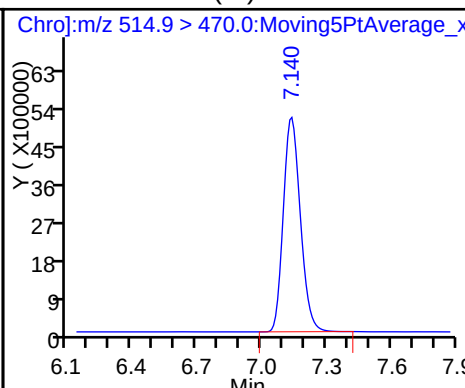
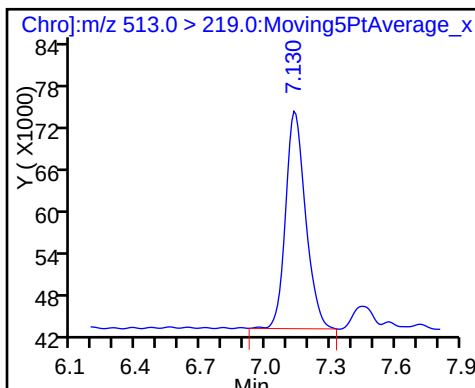
23 Perfluorodecanoic acid



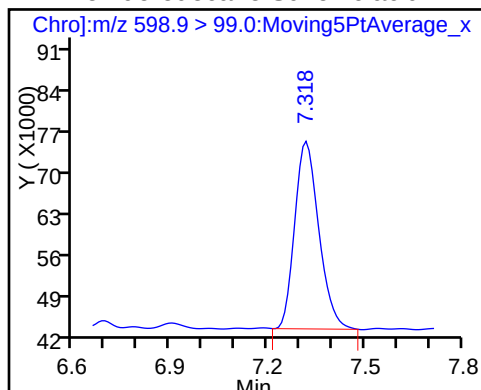
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

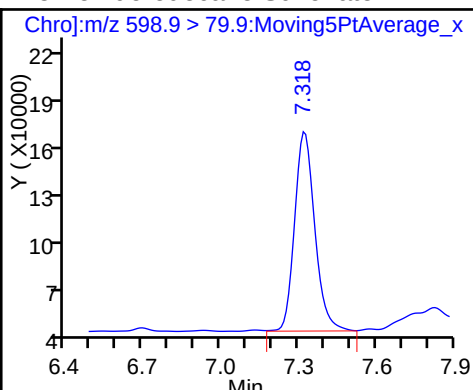
24 Perfluorodecane Sulfonic acid



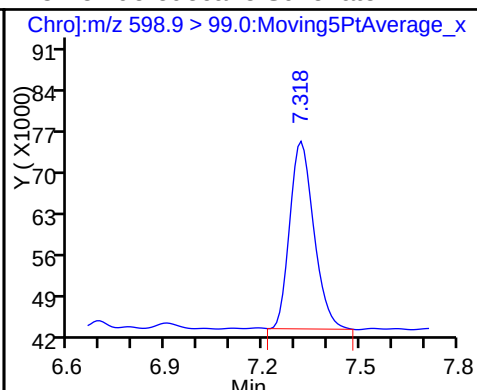
24 Perfluorodecane Sulfonic acid



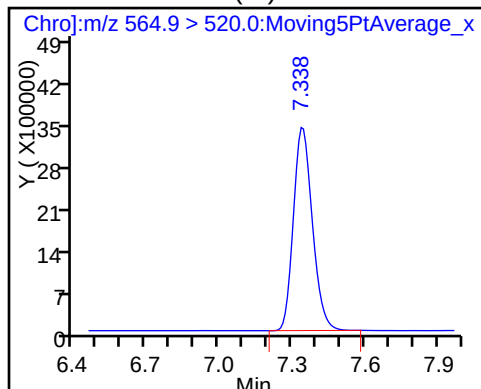
25 Perfluorodecane Sulfonate



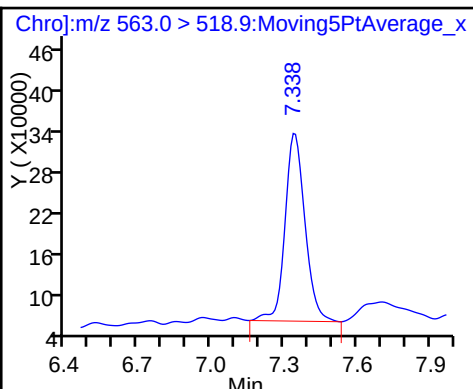
25 Perfluorodecane Sulfonate



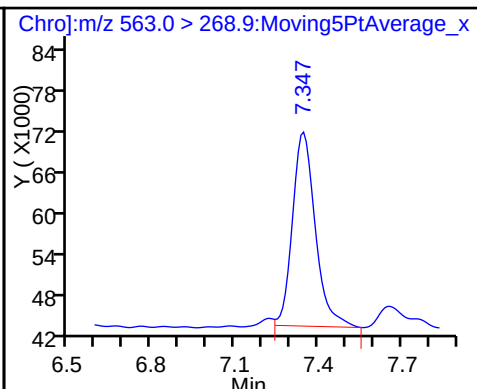
* 26 13C2 PFUnA (IS)



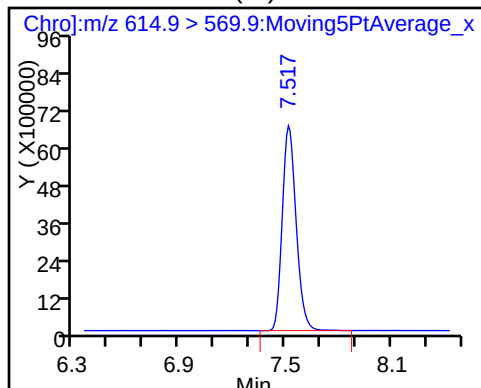
27 Perfluoroundecanoic acid



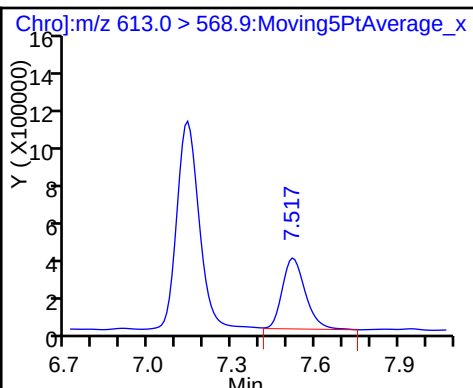
27 Perfluoroundecanoic acid



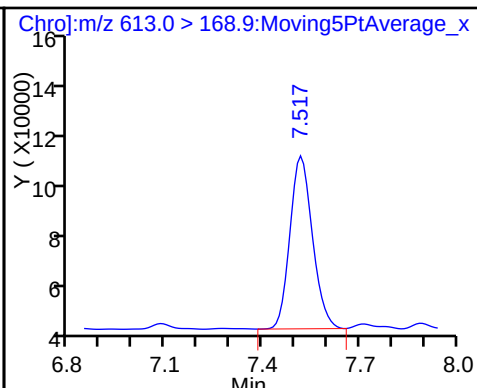
* 28 13C2 PFDaA (IS)



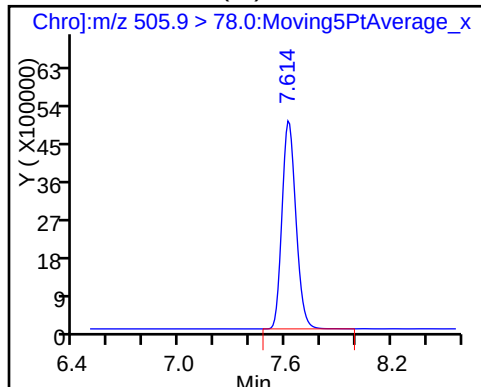
29 Perfluorododecanoic acid



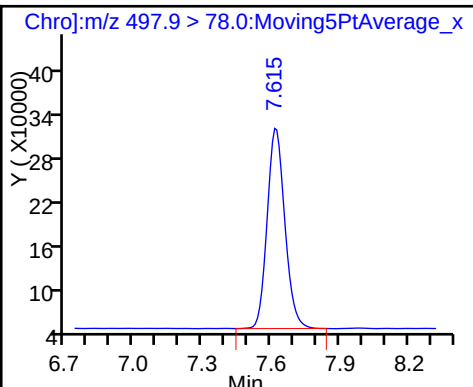
29 Perfluorododecanoic acid



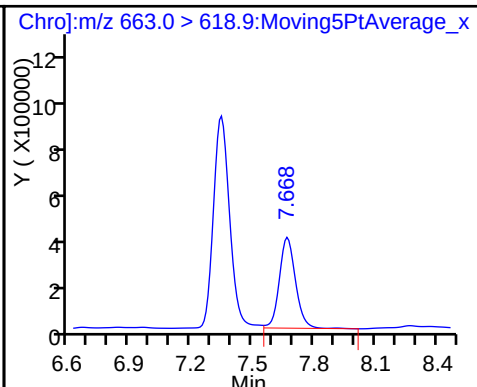
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

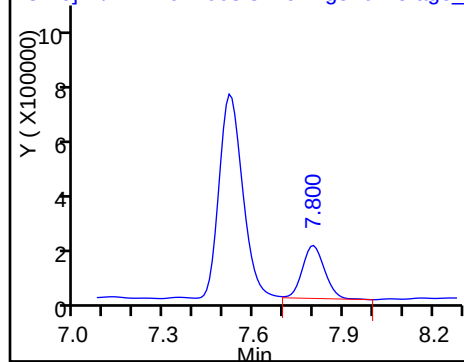


30 Perfluorotridecanoic acid



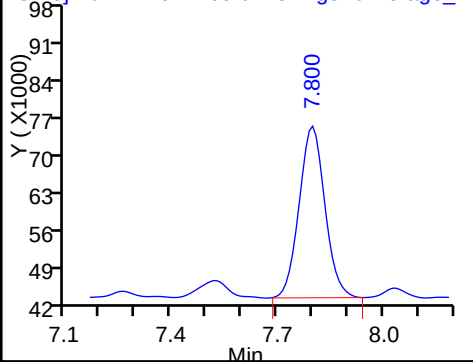
33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d

Injection Date: 06-Jun-2016 15:02:17

Instrument ID: LC_LCMS5

Lims ID: STD0005

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

Method: 8321_PFC

Limit Group: LC - PFC

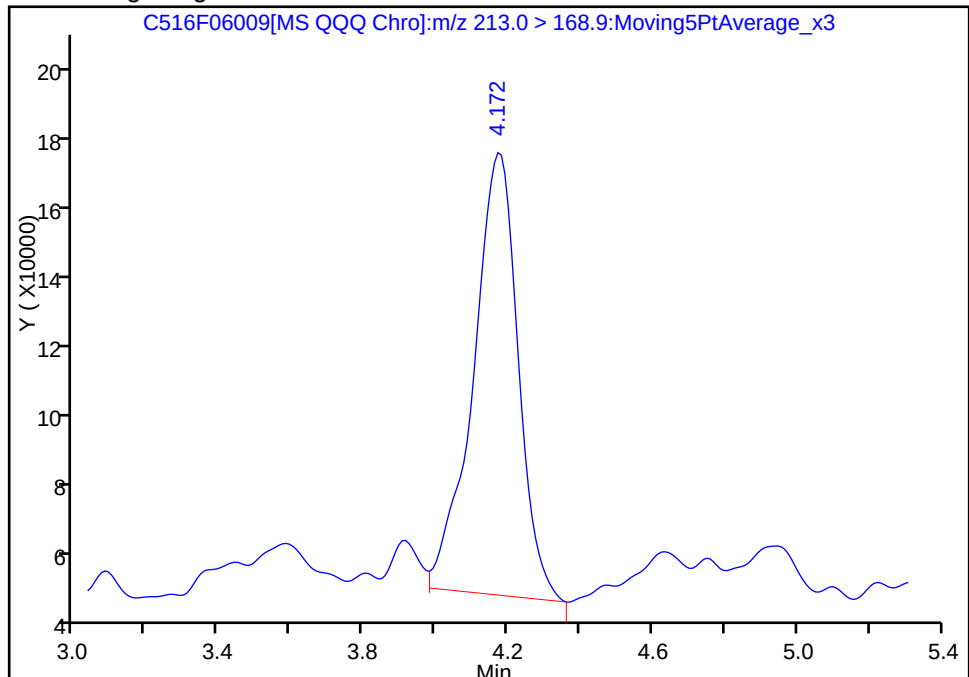
Column:

Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

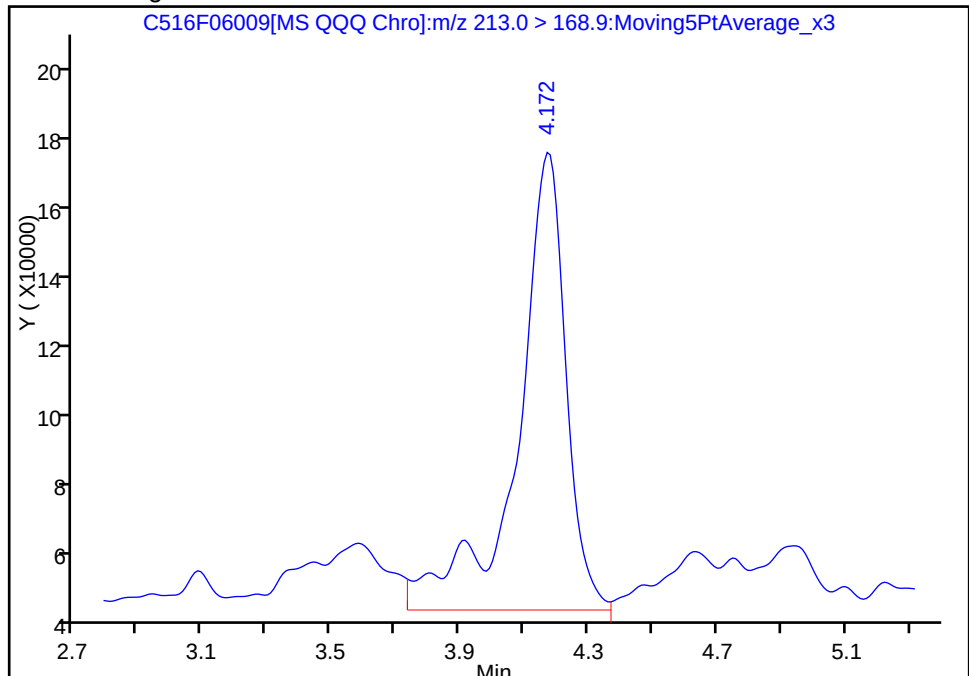
RT: 4.17
Area: 1029041
Amount: 0.374913
Amount Units: ug/L

Processing Integration Results



RT: 4.17
Area: 1295896
Amount: 0.454566
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:51

Audit Action: Manually Integrated

Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
 Lims ID: STD0010
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 06-Jun-2016 15:14:36 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0010, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:47 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:59:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.020	0.142		27598245	10.0			M
2 Perfluorobutyric acid									M
213.0 > 168.9	4.162	4.020	0.142	1.000	3038727	1.03			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.242	5.100	0.142	0.901	2769987	1.01			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.364	5.222	0.142	0.857	1117801	0.8579			
298.9 > 98.9	5.355	5.222	0.133	0.855	317629		3.52(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.364	5.222	0.142	0.857	1117801	0.8579			R
298.9 > 98.9	5.355	5.222	0.133	0.855	317629		3.52(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.819	5.686	0.133	1.000	2232965	1.01			
313.0 > 118.6	5.847	5.686	0.161	1.005	55910		39.94(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.818	5.695	0.123		22902773	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.121	0.133	0.948	2810806	0.9641			
363.0 > 168.9	6.254	6.121	0.133	0.948	746729		3.76(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.130	0.133		2379792	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.130	0.133	1.000	996121	0.9464			R
398.9 > 98.9	6.263	6.130	0.133	1.000	385155		2.59(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.130	0.133	1.000	996121	0.9464			
398.9 > 98.9	6.263	6.130	0.133	1.000	385155		2.59(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.460	0.133	0.960	1051810	0.9808			
449.0 > 98.9	6.593	6.460	0.133	0.960	322325		3.26(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.460	0.133	0.960	1051810	0.9808			
449.0 > 98.9	6.593	6.460	0.133	0.960	322325		3.26(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.470	0.123	1.000	3153884	1.16			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.470	0.123		32501126	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.471	0.123	1.000	3529270	0.9782			
413.0 > 169.0	6.594	6.471	0.123	1.000	1161058		3.04(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.742	0.123	1.000	589580	1.05			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.743	0.123		8538322	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.743	0.123	1.000	1171224	1.06			R
498.9 > 98.9	6.866	6.743	0.123	1.000	385147		3.04(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.753	0.133		24397078	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.753	0.133	1.000	2681286	0.9404			
463.0 > 218.9	6.886	6.753	0.133	1.000	402542		6.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	6.998	0.132	1.000	2800062	1.04			
513.0 > 219.0	7.121	6.998	0.123	0.999	245568		11.40(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.007	0.123		25884523	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.186	0.123	1.065	1047130	0.9127			
598.9 > 99.0	7.309	7.186	0.123	1.065	256407		4.08(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.186	0.123	1.065	1047130	0.9127			R
598.9 > 99.0	7.309	7.186	0.123	1.065	256407		4.08(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.215	0.123		16232780	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.215	0.123	1.000	2540060	1.06			R
563.0 > 268.9	7.329	7.215	0.113	0.999	344361		7.38(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.393	0.114		32725502	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.394	0.113	1.000	3492545	0.9865			
613.0 > 168.9	7.507	7.394	0.113	1.000	493117		7.08(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.529	0.085		24736240	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.530	0.085	1.000	2697496	1.00			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.545	0.113	1.020	3270152	1.00			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.677	0.114	1.038	1783816	0.9160			
712.9 > 169.0	7.791	7.677	0.114	1.038	269547		6.62(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 50.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d

Injection Date: 06-Jun-2016 15:14:36

Instrument ID: LC_LCMS5

Lims ID: STD0010

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

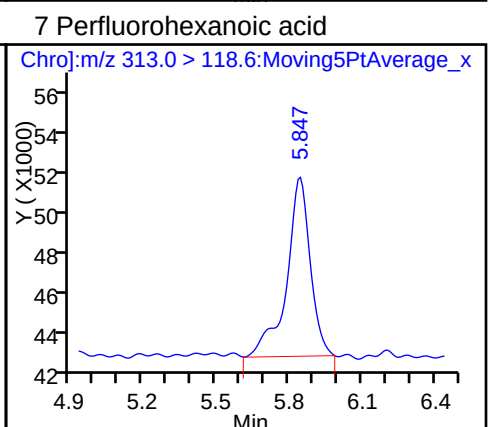
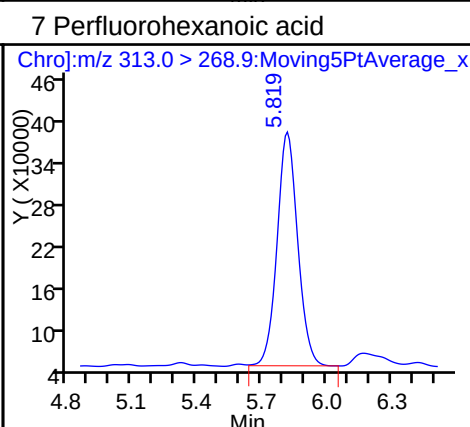
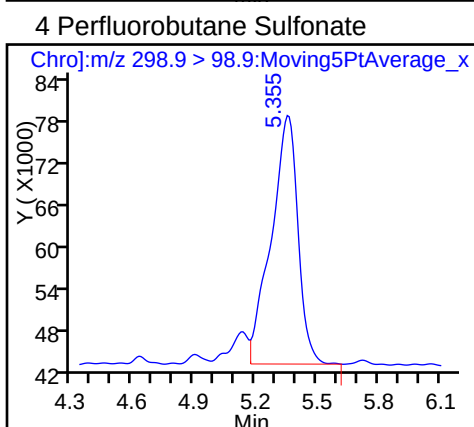
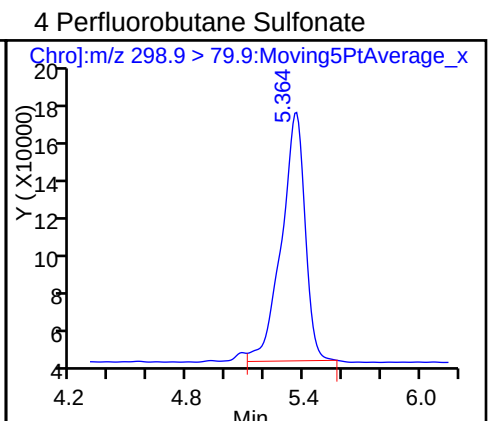
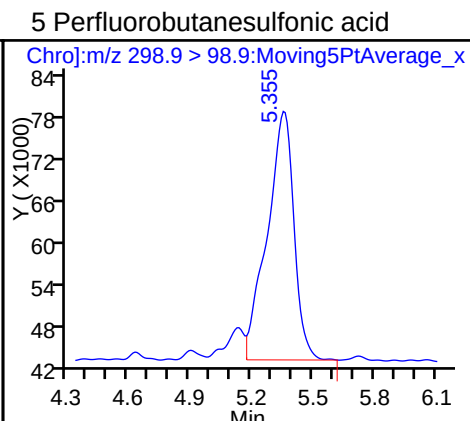
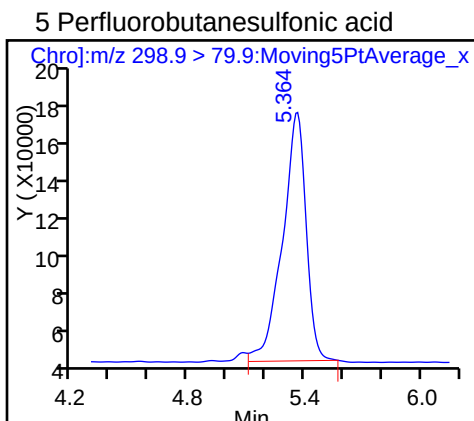
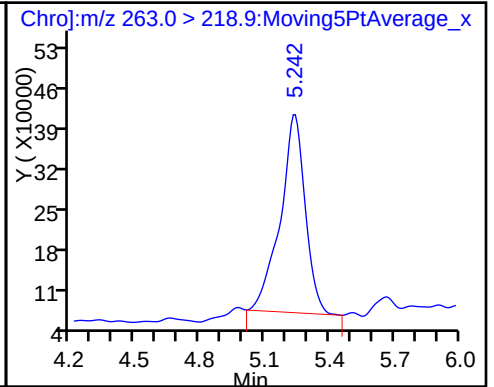
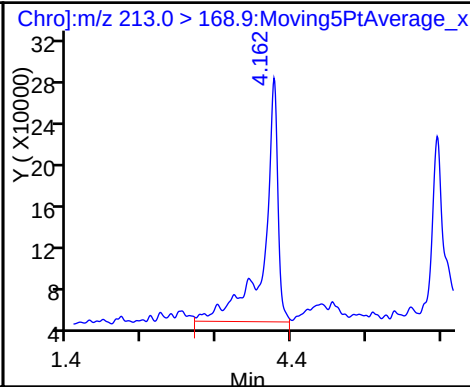
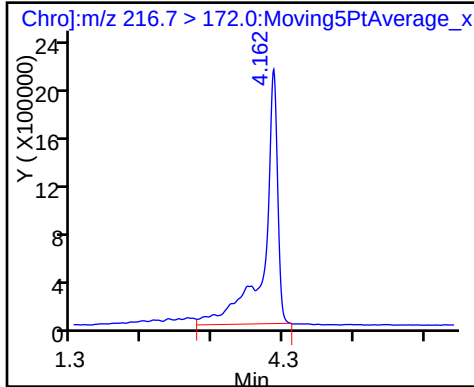
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid (M)

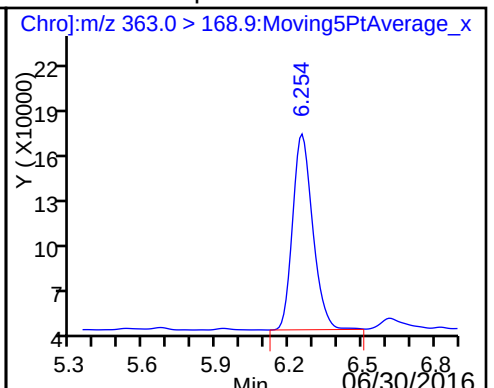
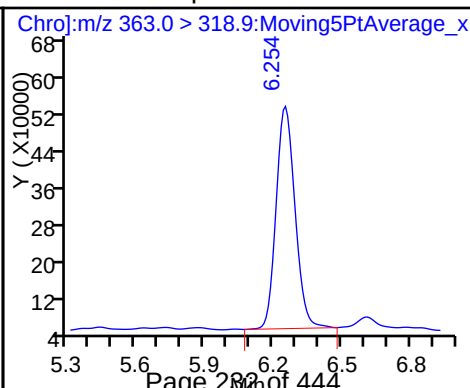
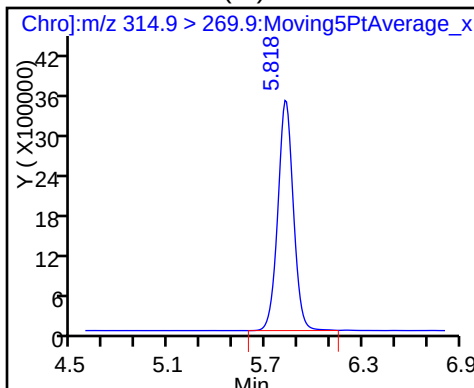
3 Perfluoropentanoic acid



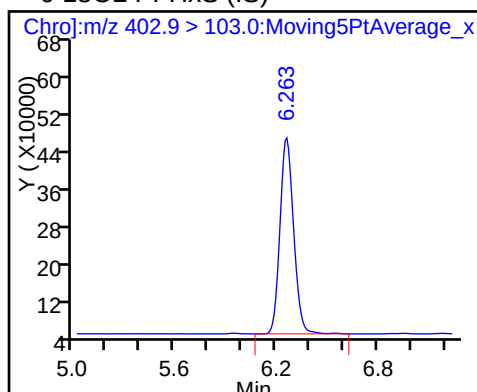
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

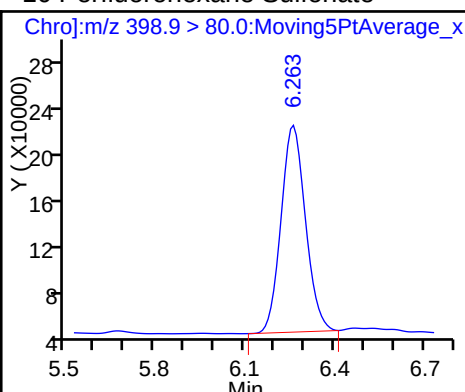
8 Perfluoroheptanoic acid



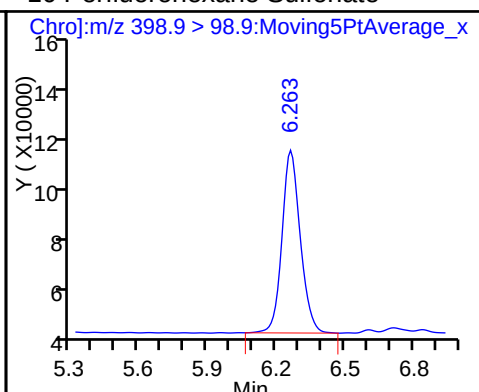
* 9 18O2 PFHxS (IS)



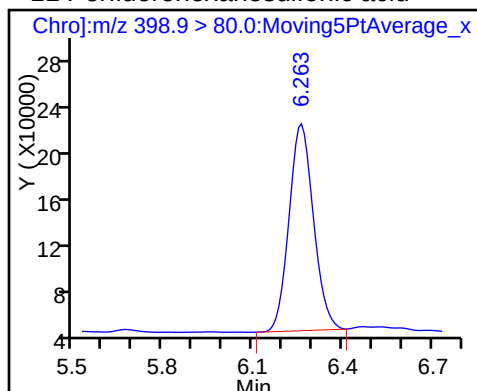
10 Perfluorohexane Sulfonate



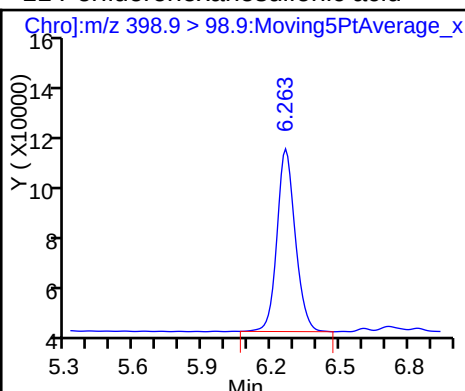
10 Perfluorohexane Sulfonate



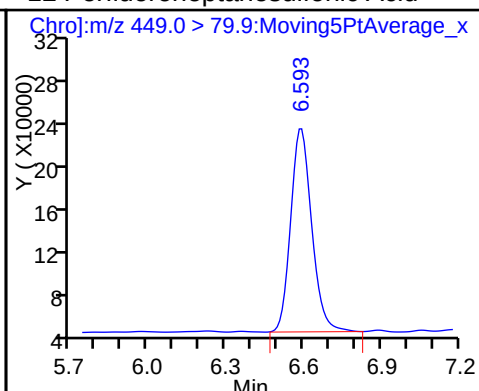
11 Perfluorohexanesulfonic acid



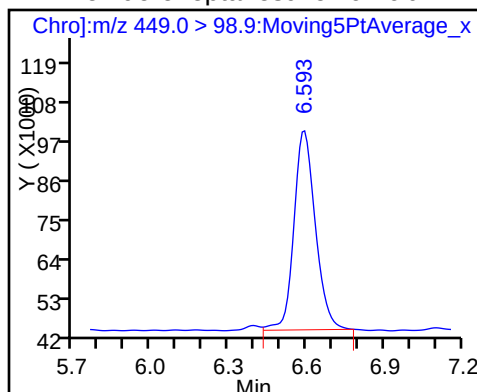
11 Perfluorohexanesulfonic acid



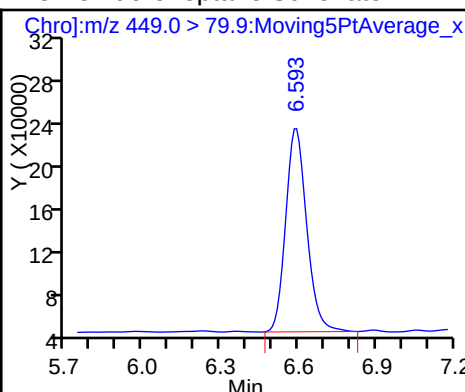
12 Perfluoroheptanesulfonic Acid



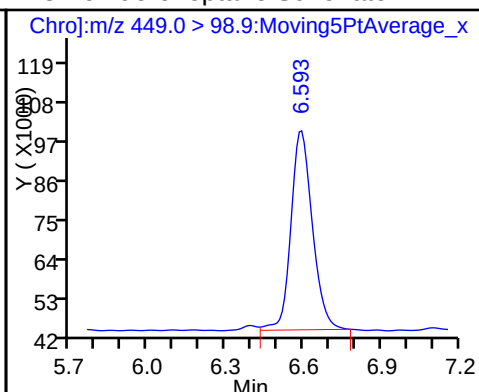
12 Perfluoroheptanesulfonic Acid



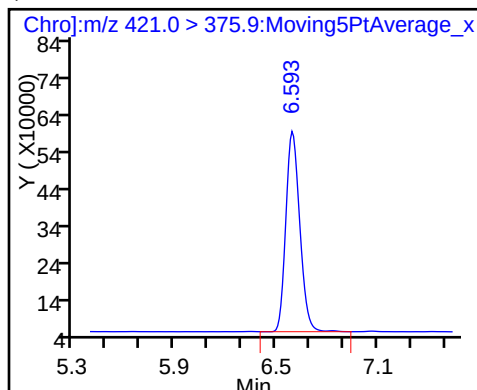
13 Perfluoroheptane Sulfonate



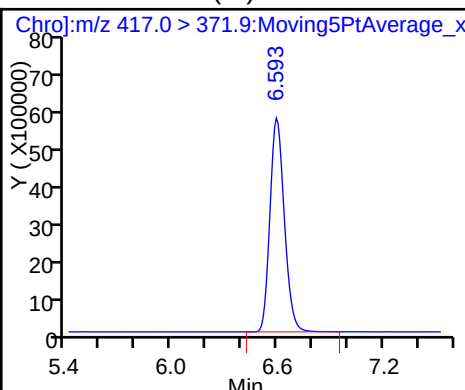
13 Perfluoroheptane Sulfonate



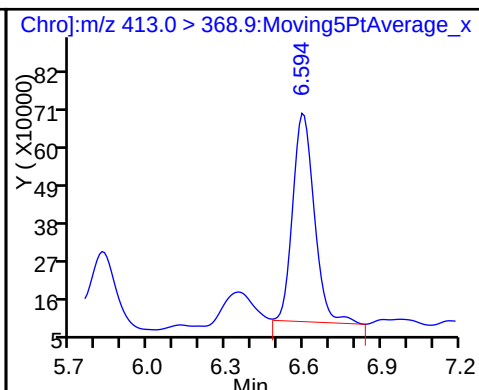
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



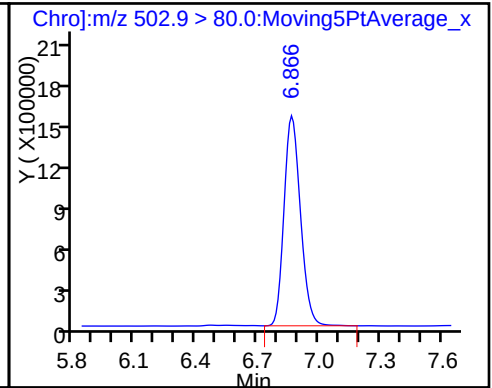
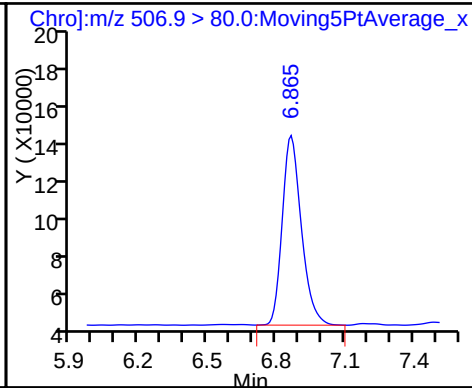
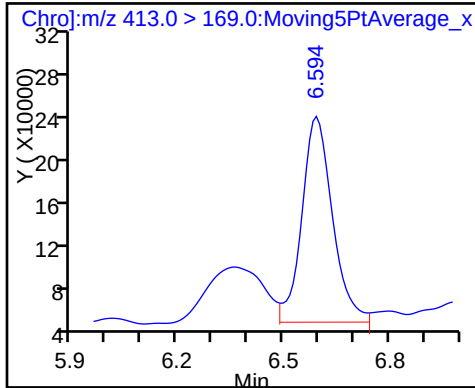
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

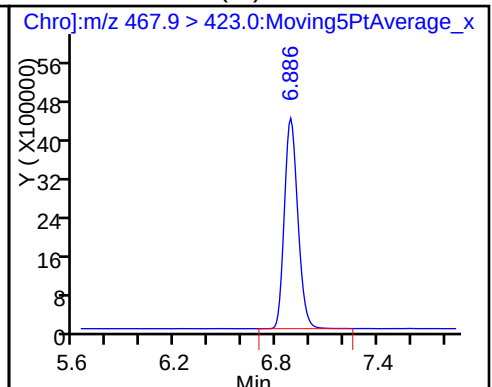
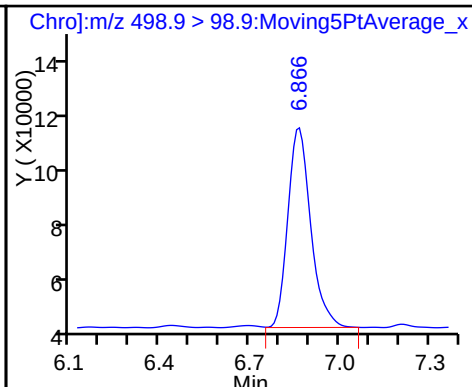
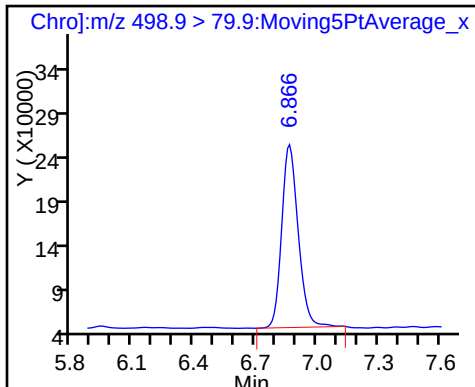
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

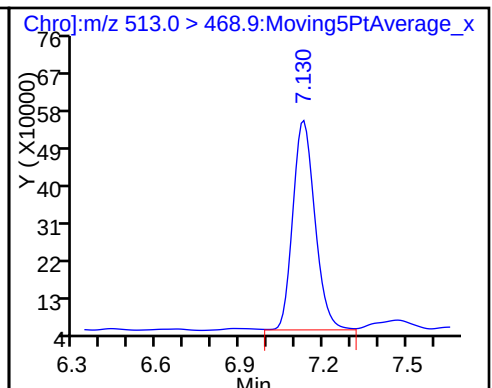
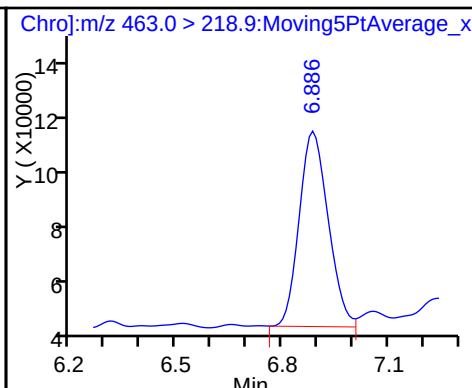
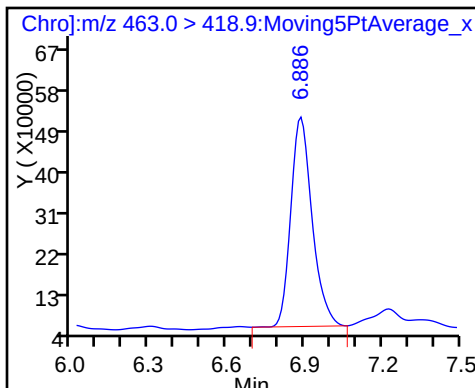
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

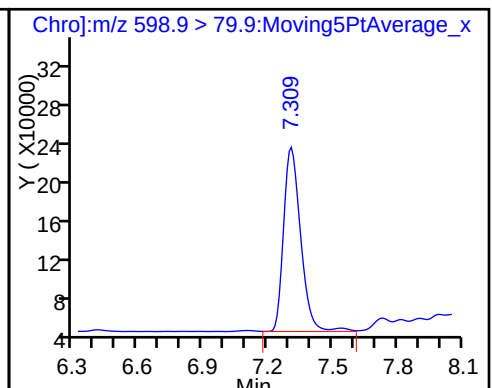
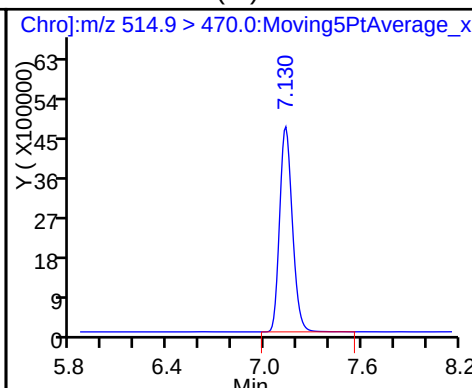
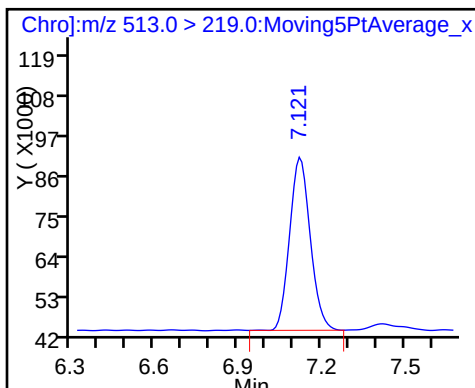
23 Perfluorodecanoic acid



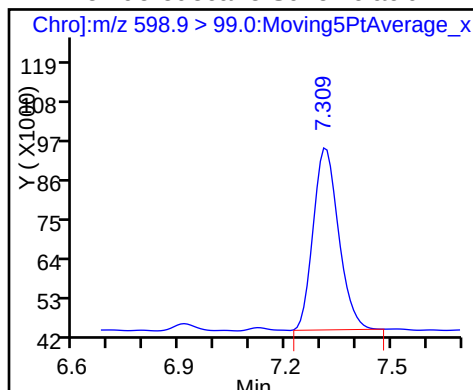
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

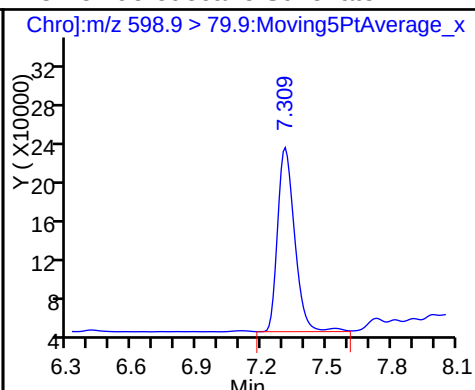
24 Perfluorodecane Sulfonic acid



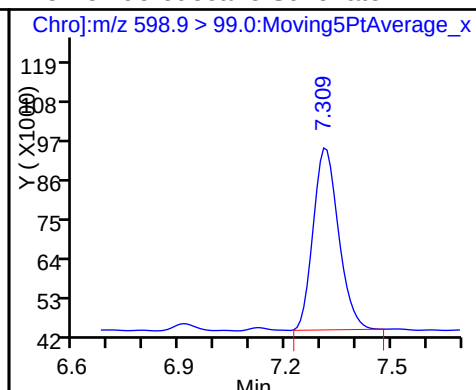
24 Perfluorodecane Sulfonic acid



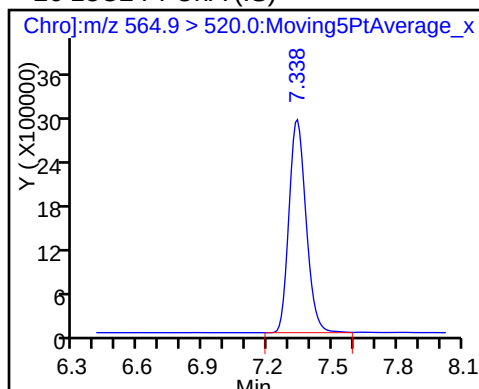
25 Perfluorodecane Sulfonate



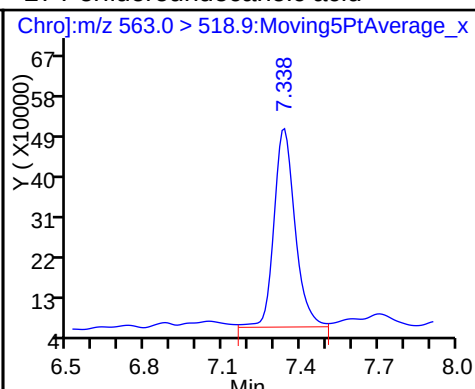
25 Perfluorodecane Sulfonate



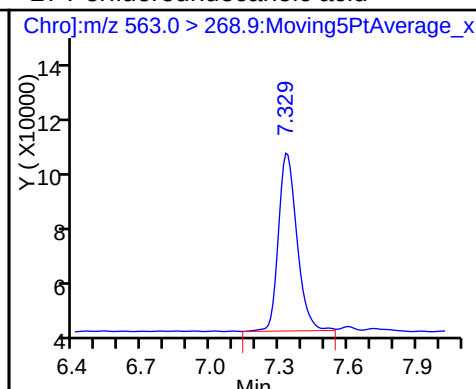
* 26 13C2 PFUnA (IS)



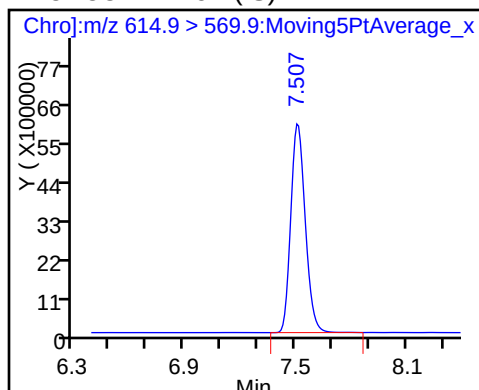
27 Perfluoroundecanoic acid



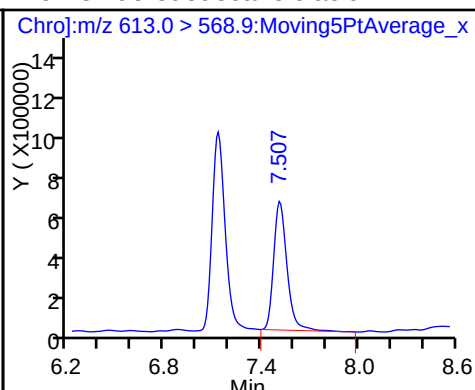
27 Perfluoroundecanoic acid



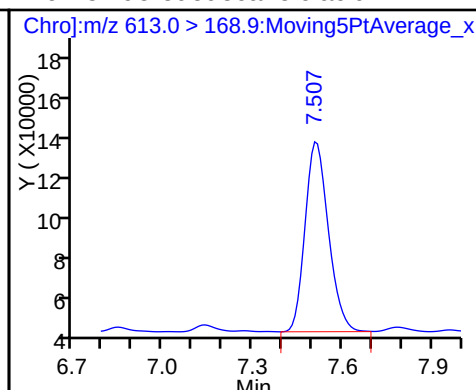
* 28 13C2 PFDaA (IS)



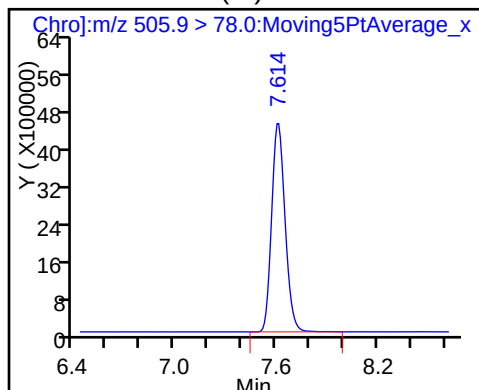
29 Perfluorododecanoic acid



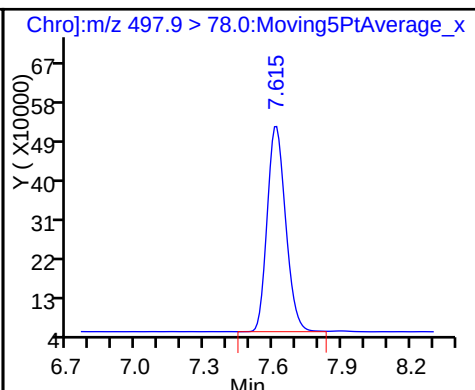
29 Perfluorododecanoic acid



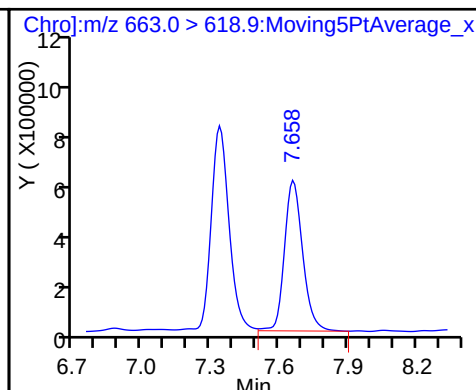
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

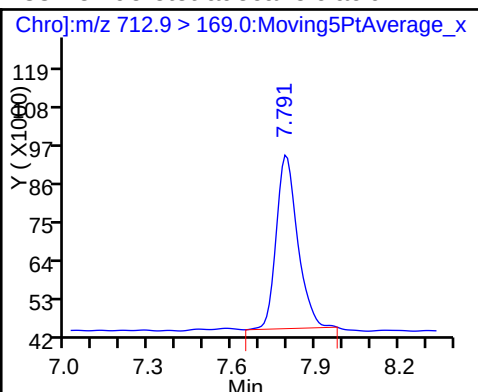
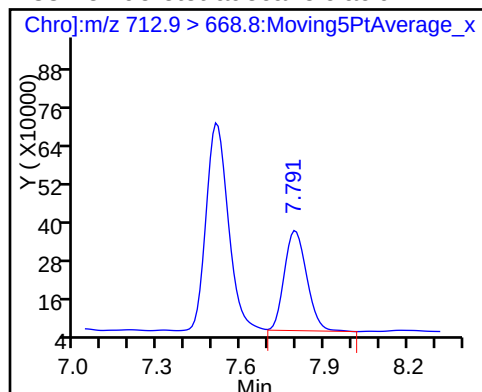


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



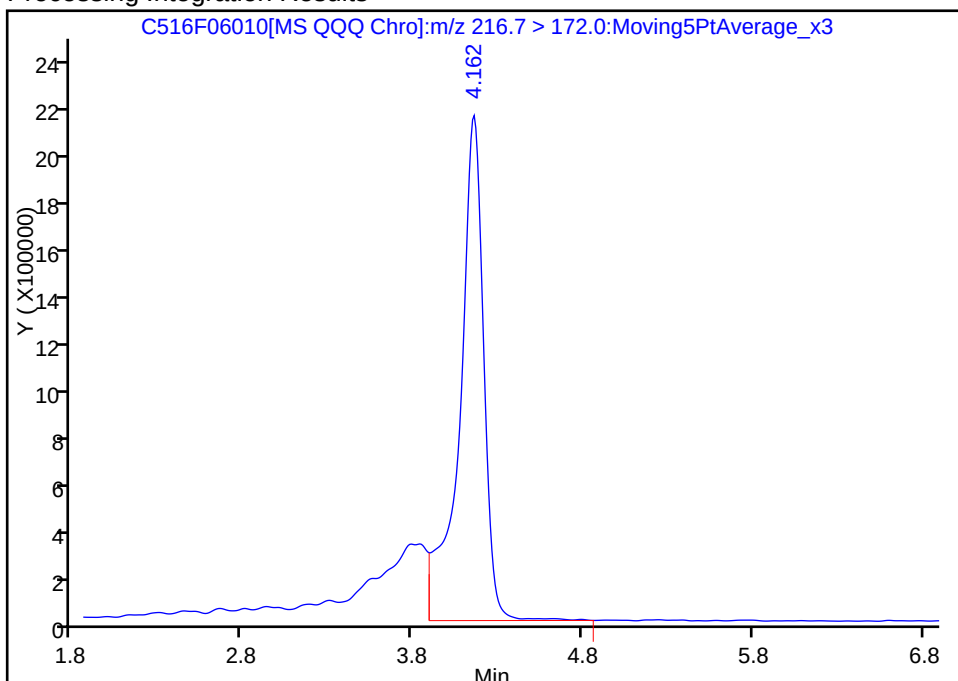
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
Injection Date: 06-Jun-2016 15:14:36 Instrument ID: LC_LCMS5
Lims ID: STD0010
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

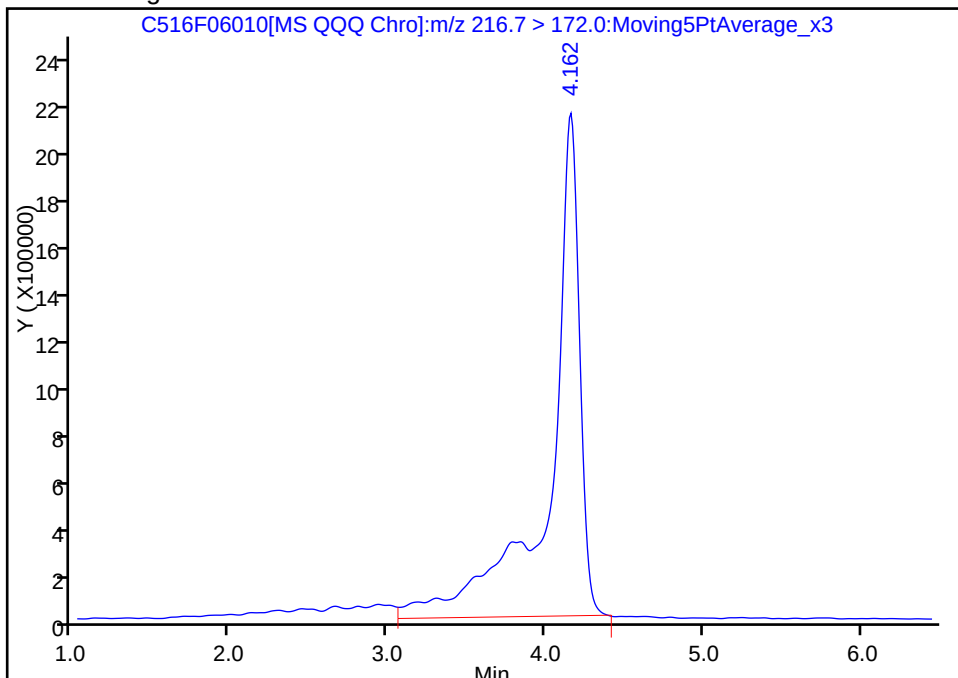
RT: 4.16
Area: 20559374
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 27598245
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:20
Audit Action: Manually Integrated
Audit Reason: Baseline

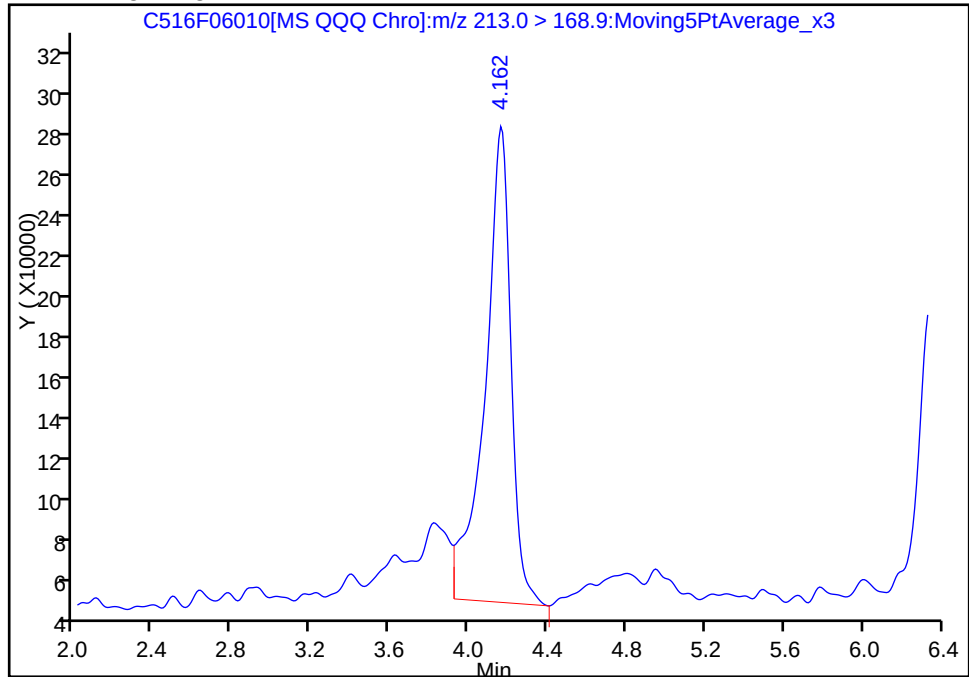
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
Injection Date: 06-Jun-2016 15:14:36 Instrument ID: LC_LCMS5
Lims ID: STD0010
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

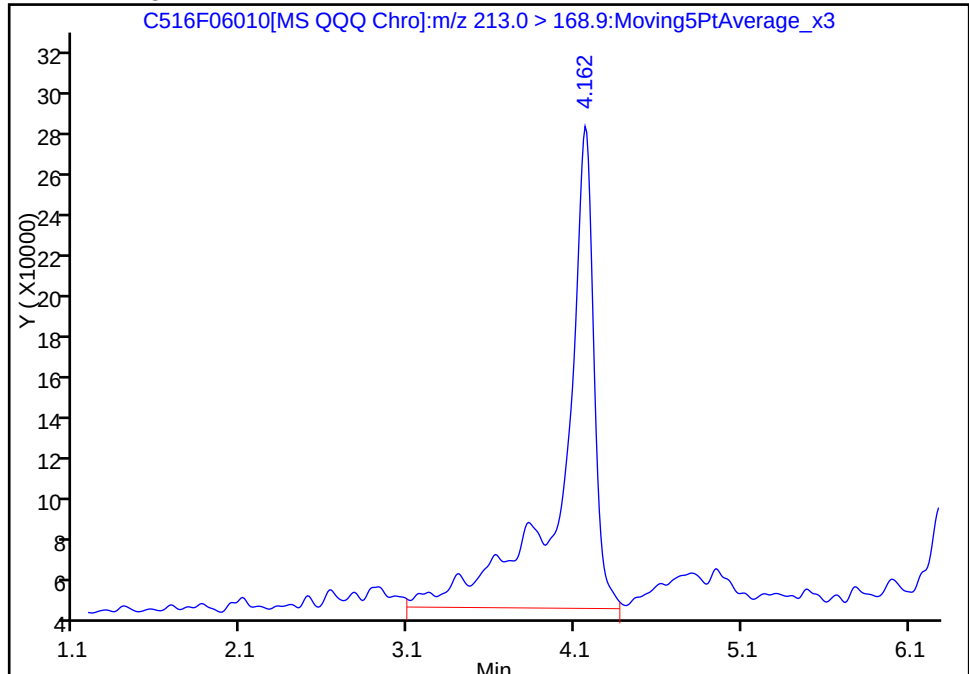
RT: 4.16
Area: 2073405
Amount: 0.770220
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 3038727
Amount: 1.029538
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:20
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
 Lims ID: STD0020
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 06-Jun-2016 15:26:53 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0020, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:54 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:56:38

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.162	0.0		26088805	10.0			M
2 Perfluorobutyric acid									M
213.0 > 168.9	4.162	4.162	0.0	1.000	5302668	1.90			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.232	5.232	0.0	0.899	5174660	1.90			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.364	5.364	0.0	0.858	2150148	1.59			
298.9 > 98.9	5.355	5.364	-0.009	0.856	668844		3.21(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.364	5.364	0.0	0.858	2150148	1.59			
298.9 > 98.9	5.355	5.364	-0.009	0.856	668844		3.21(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.819	5.819	0.0	1.000	4642778	2.13			
313.0 > 118.6	5.828	5.819	0.009	1.002	128162		36.23(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.818	5.818	0.0		22852723	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.244	6.244	0.0	0.947	5744336	1.96			
363.0 > 168.9	6.244	6.244	0.0	0.947	1519317		3.78(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.253	0.0		2458667	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.253	6.253	0.0	1.000	2005825	1.93			R
398.9 > 98.9	6.253	6.253	0.0	1.000	598069		3.35(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.253	6.253	0.0	1.000	2005825	1.93			
398.9 > 98.9	6.253	6.253	0.0	1.000	598069		3.35(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.959	2150073	1.87			
449.0 > 98.9	6.583	6.583	0.0	0.959	294863		7.29(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.959	2150073	1.87			
449.0 > 98.9	6.583	6.583	0.0	0.959	294863		7.29(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	5869974	2.15			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		33184339	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	6983614	1.96			
413.0 > 169.0	6.594	6.594	0.0	1.000	2269227		3.08(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	1266475	2.15			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		9090094	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	2158847	1.88			R
498.9 > 98.9	6.866	6.866	0.0	1.000	810717		2.66(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.886	0.0		25217378	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	1.000	5817495	2.02			
463.0 > 218.9	6.886	6.886	0.0	1.000	799914		7.27(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.130	0.0	1.000	5187930	1.96			
513.0 > 219.0	7.130	7.130	0.0	1.000	484901		10.70(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.130	0.0		25918394	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.318	7.318	0.0	1.066	2240490	1.87			
598.9 > 99.0	7.318	7.318	0.0	1.066	751846		2.98(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.318	7.318	0.0	1.066	2240490	1.87			
598.9 > 99.0	7.318	7.318	0.0	1.066	751846		2.98(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.347	7.347	0.0		17106034	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.347	7.347	0.0	1.000	4772902	1.93			R
563.0 > 268.9	7.338	7.347	-0.009	0.999	637651		7.49(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.517	0.0		33224124	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.517	0.0	1.000	6822134	1.95			
613.0 > 168.9	7.517	7.517	0.0	1.000	1007833		6.77(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.614	0.0		25464298	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.615	0.0	1.000	5393596	1.94			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.668	7.668	0.0	1.020	6520781	2.05			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.800	0.0	1.038	3642443	1.85			
712.9 > 169.0	7.800	7.800	0.0	1.038	615826		5.91(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 100.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d

Injection Date: 06-Jun-2016 15:26:53

Instrument ID: LC_LCMS5

Lims ID: STD0020

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

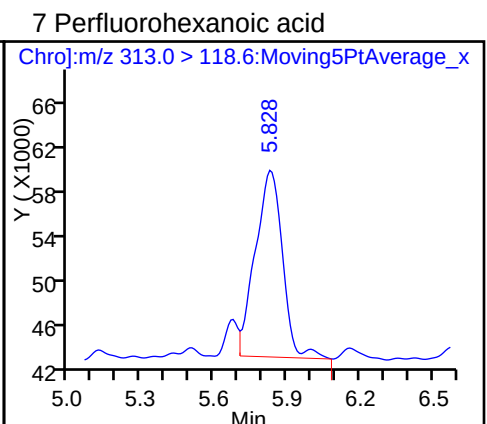
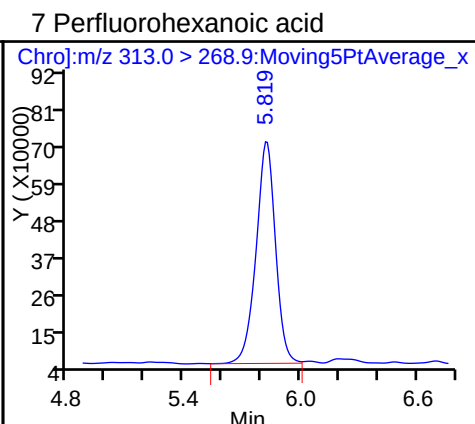
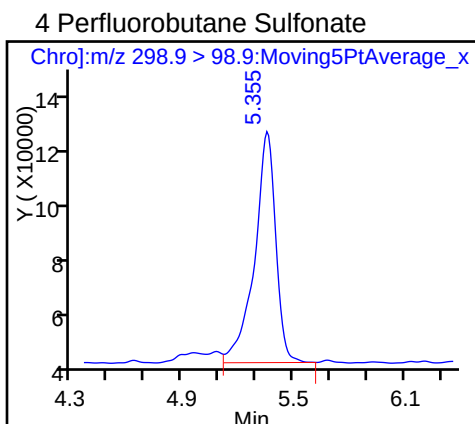
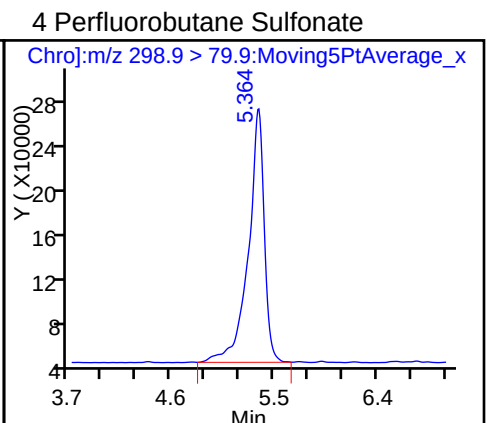
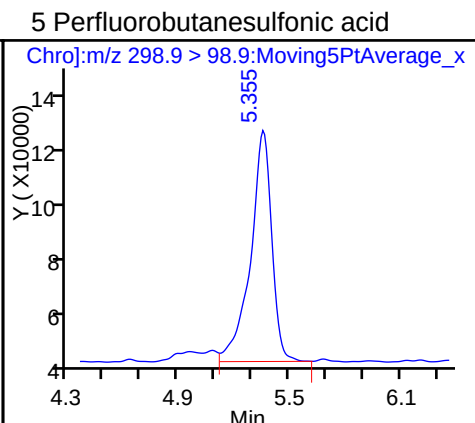
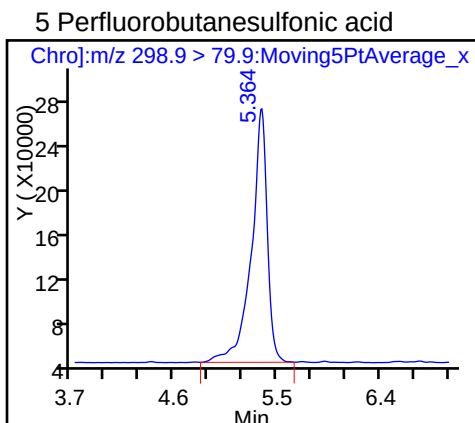
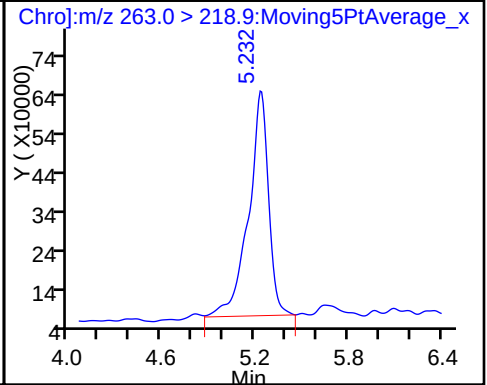
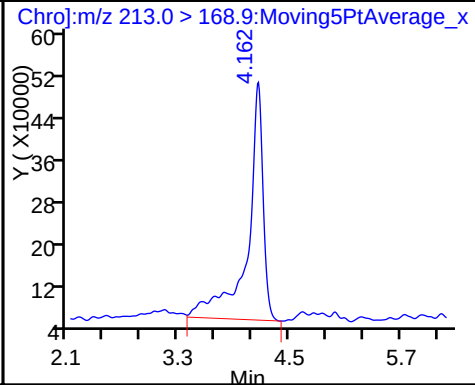
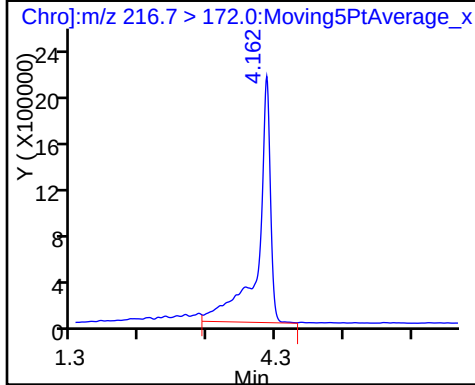
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid (M)

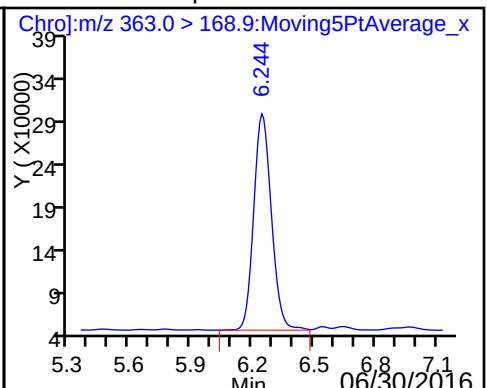
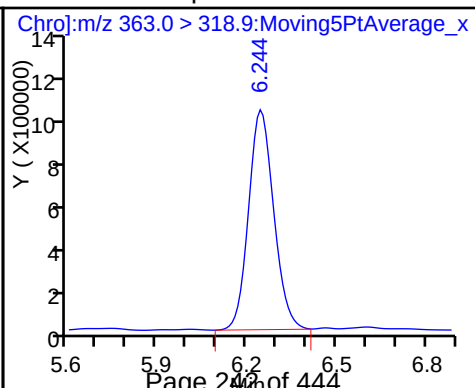
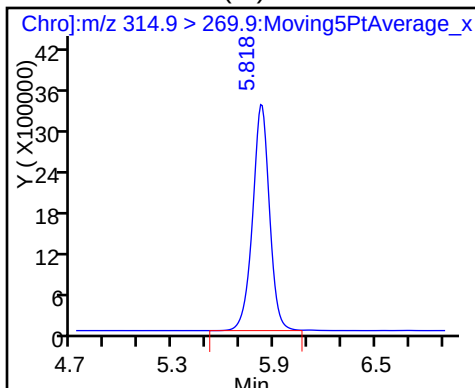
3 Perfluoropentanoic acid



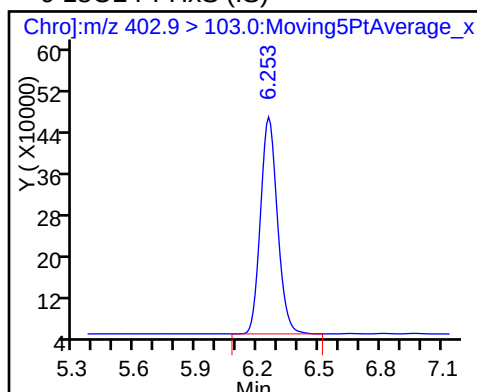
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

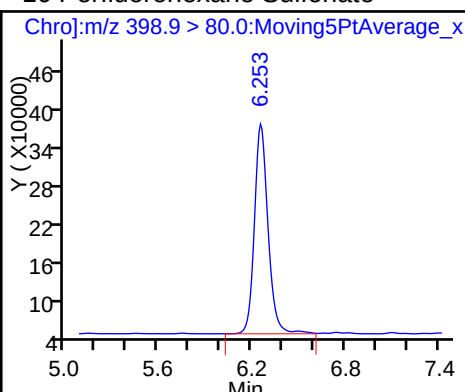
8 Perfluoroheptanoic acid



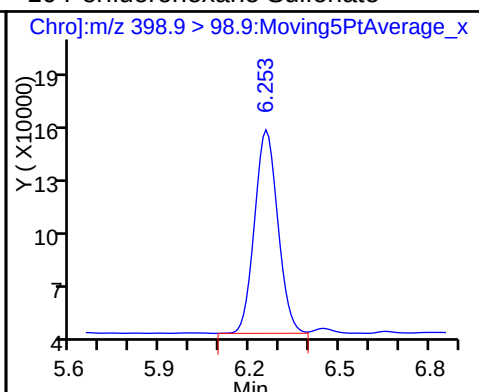
* 9 18O2 PFHxS (IS)



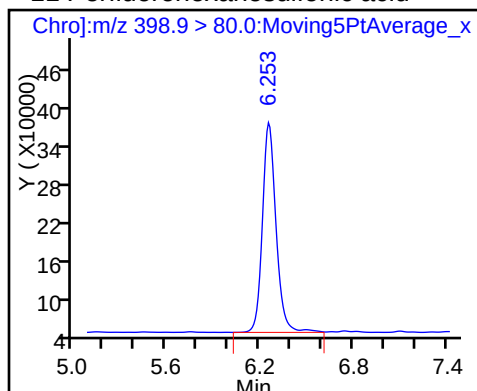
10 Perfluorohexane Sulfonate



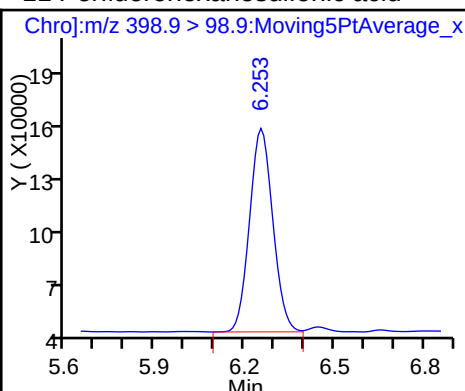
10 Perfluorohexane Sulfonate



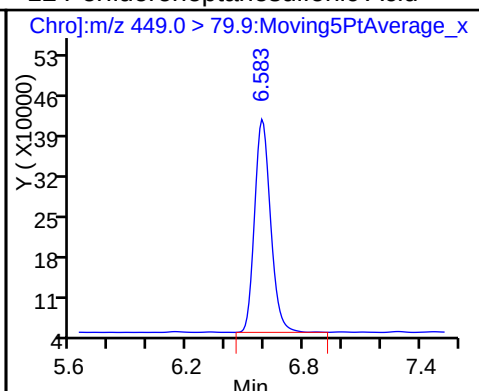
11 Perfluorohexanesulfonic acid



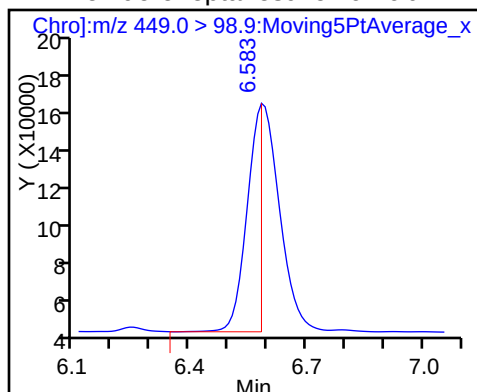
11 Perfluorohexanesulfonic acid



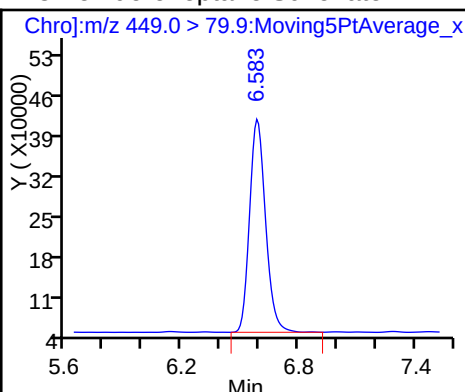
12 Perfluoroheptanesulfonic Acid



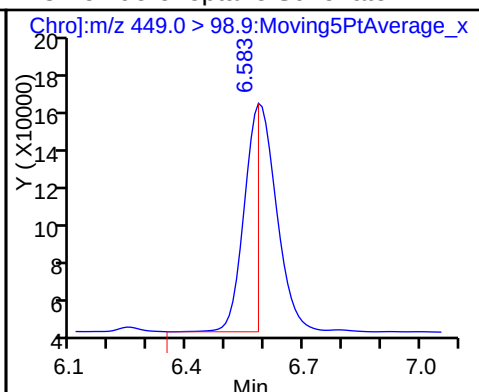
12 Perfluoroheptanesulfonic Acid



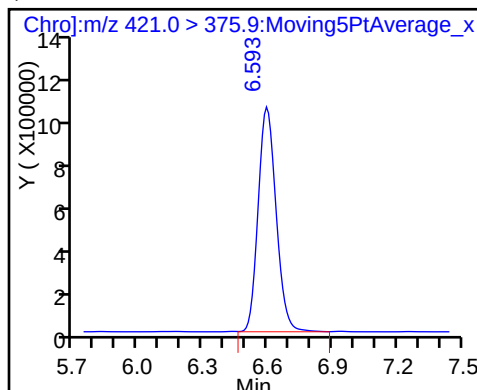
13 Perfluoroheptane Sulfonate



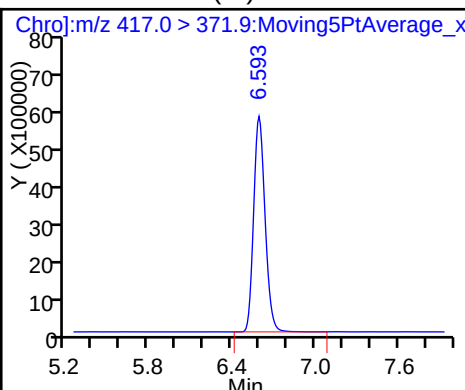
13 Perfluoroheptane Sulfonate



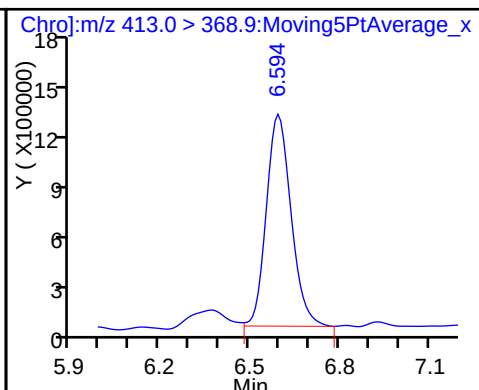
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



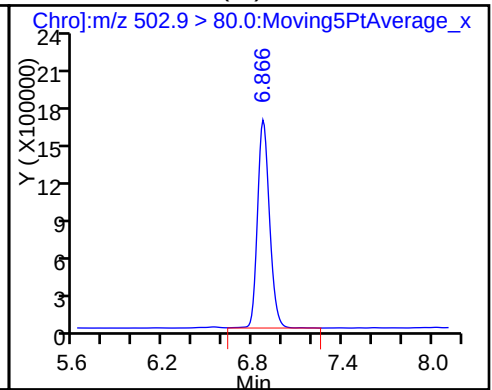
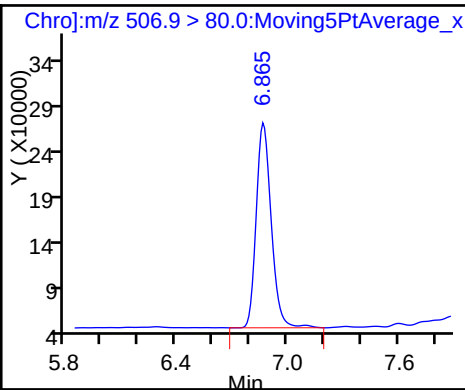
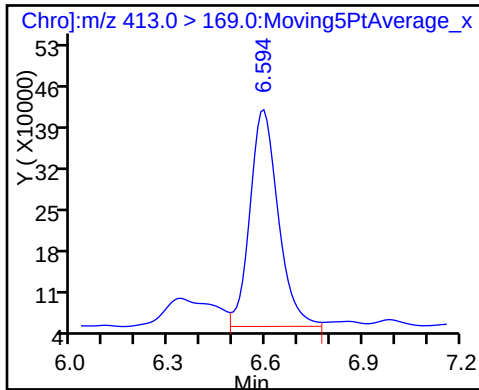
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

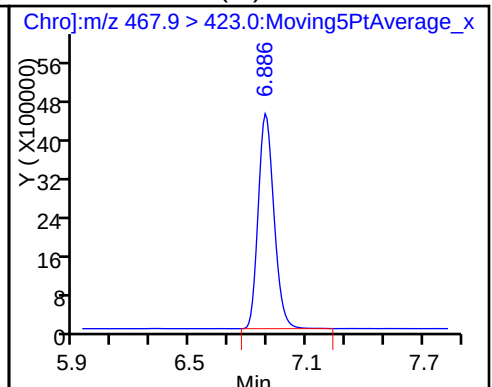
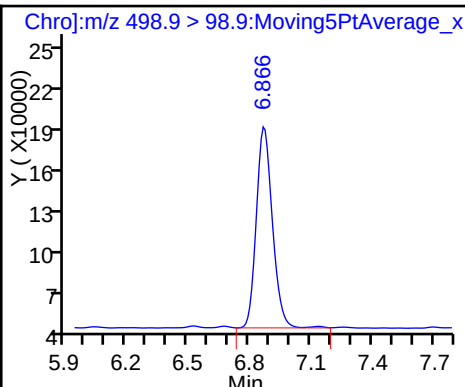
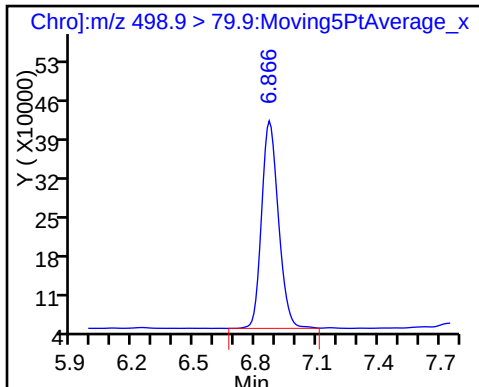
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

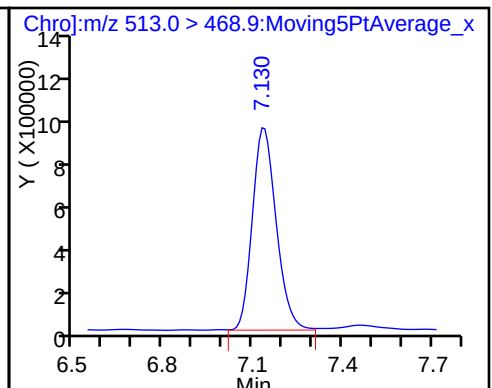
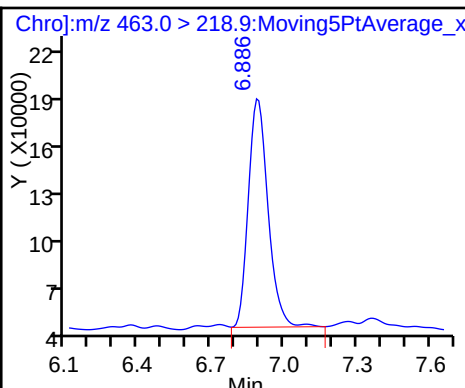
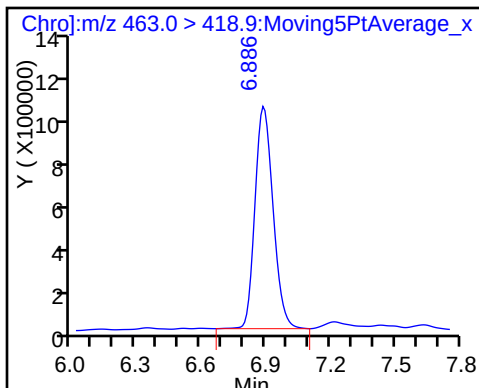
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

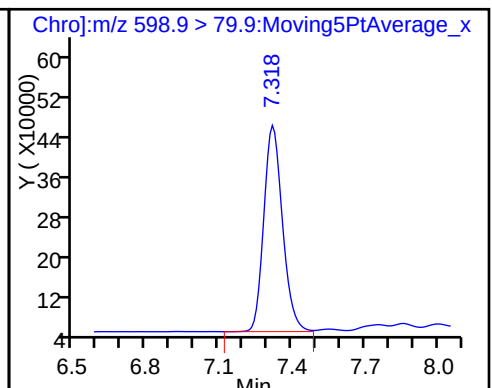
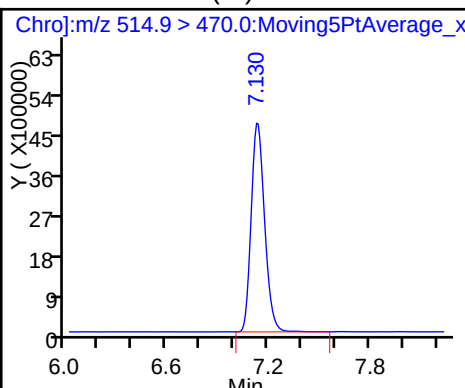
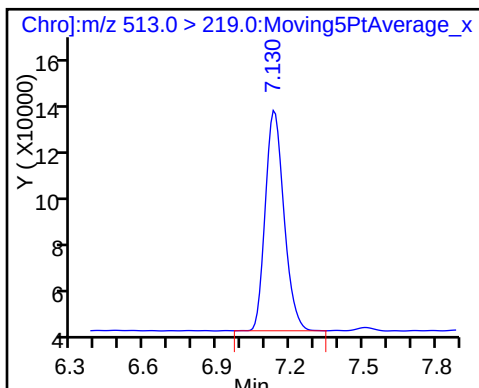
23 Perfluorodecanoic acid



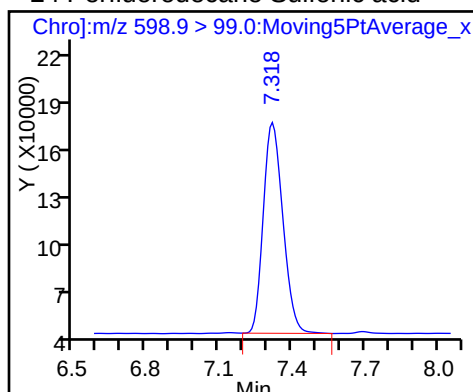
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

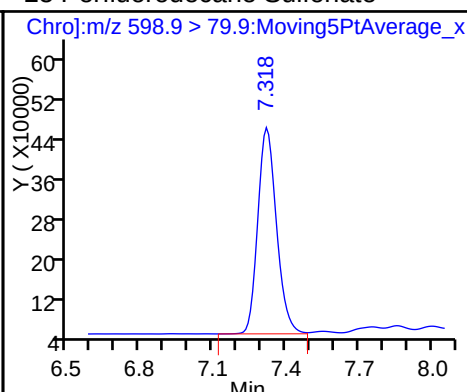
24 Perfluorodecane Sulfonic acid



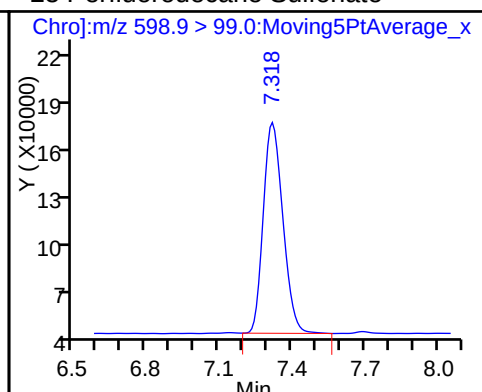
24 Perfluorodecane Sulfonic acid



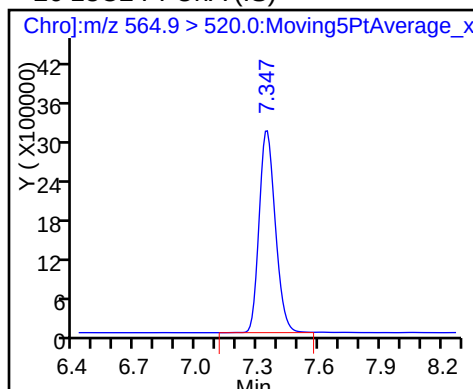
25 Perfluorodecane Sulfonate



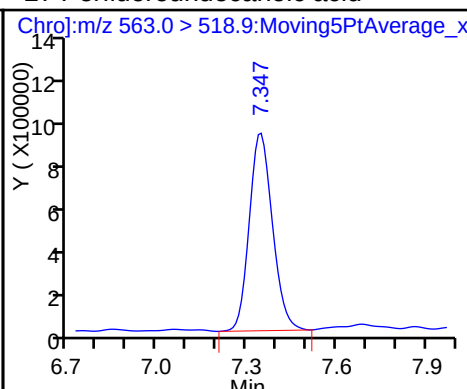
25 Perfluorodecane Sulfonate



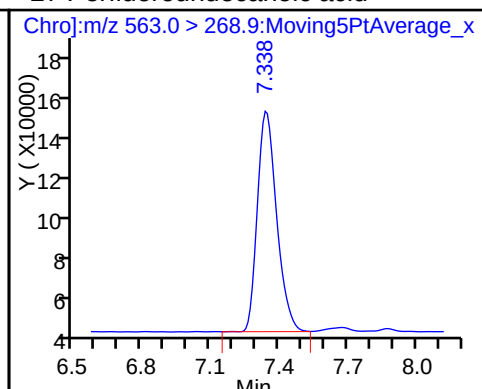
* 26 13C2 PFUnA (IS)



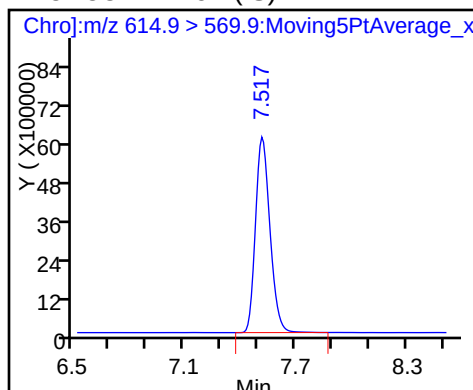
27 Perfluoroundecanoic acid



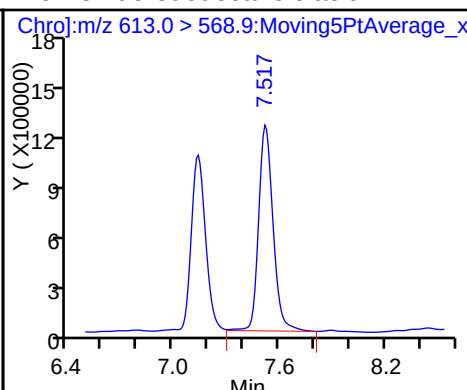
27 Perfluoroundecanoic acid



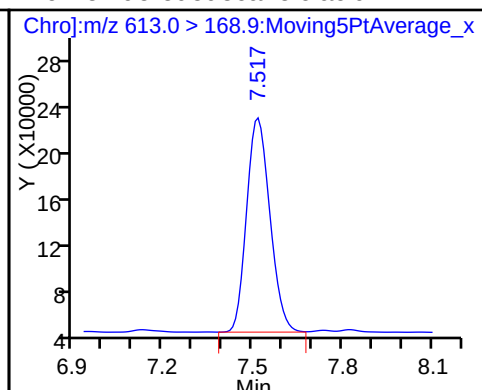
* 28 13C2 PFDaA (IS)



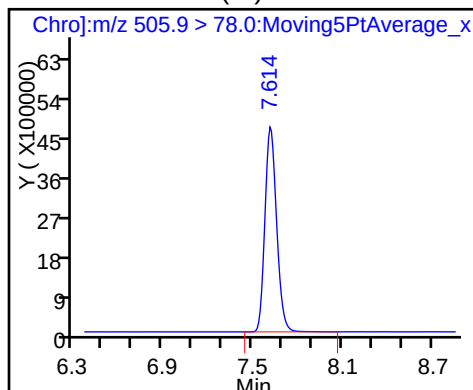
29 Perfluorododecanoic acid



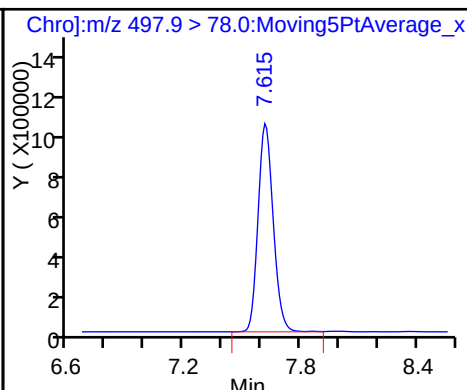
29 Perfluorododecanoic acid



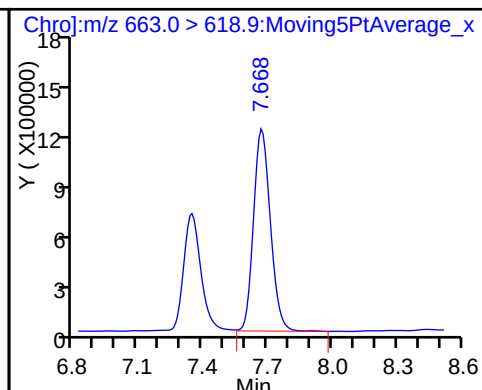
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

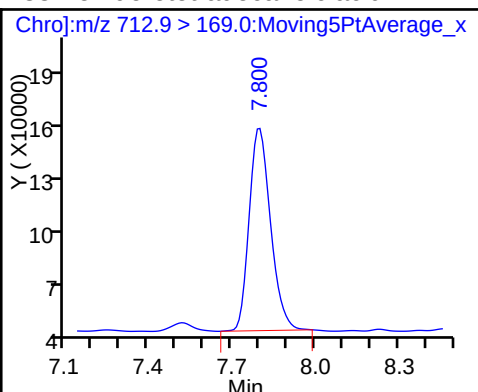
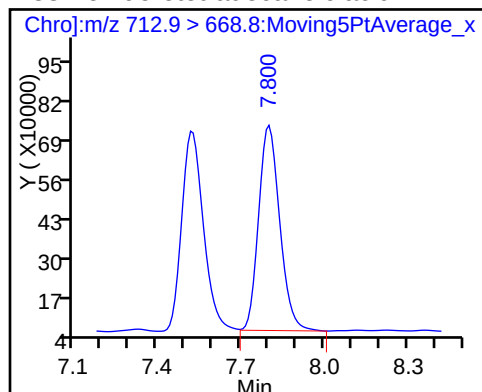


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



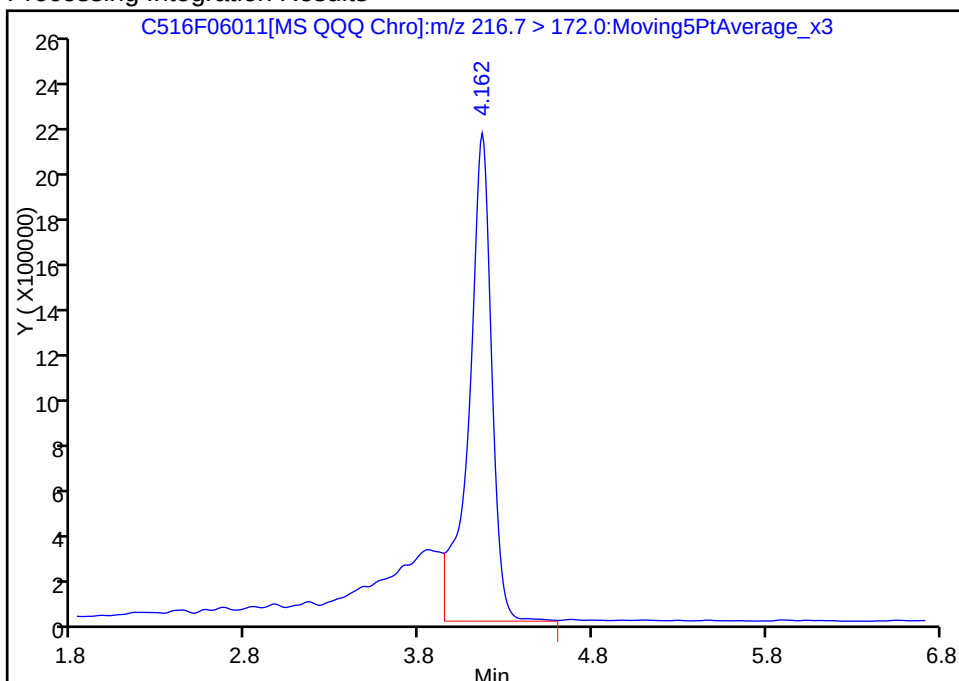
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
Injection Date: 06-Jun-2016 15:26:53 Instrument ID: LC_LCMS5
Lims ID: STD0020
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

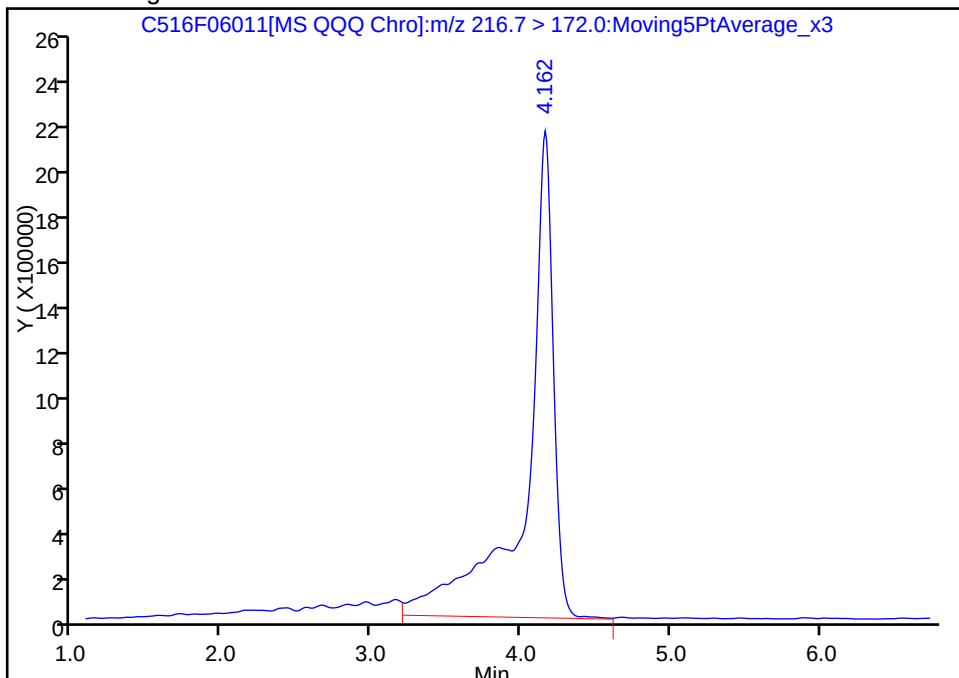
RT: 4.16
Area: 18712233
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 26088805
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:56:38
Audit Action: Manually Integrated
Audit Reason: Baseline

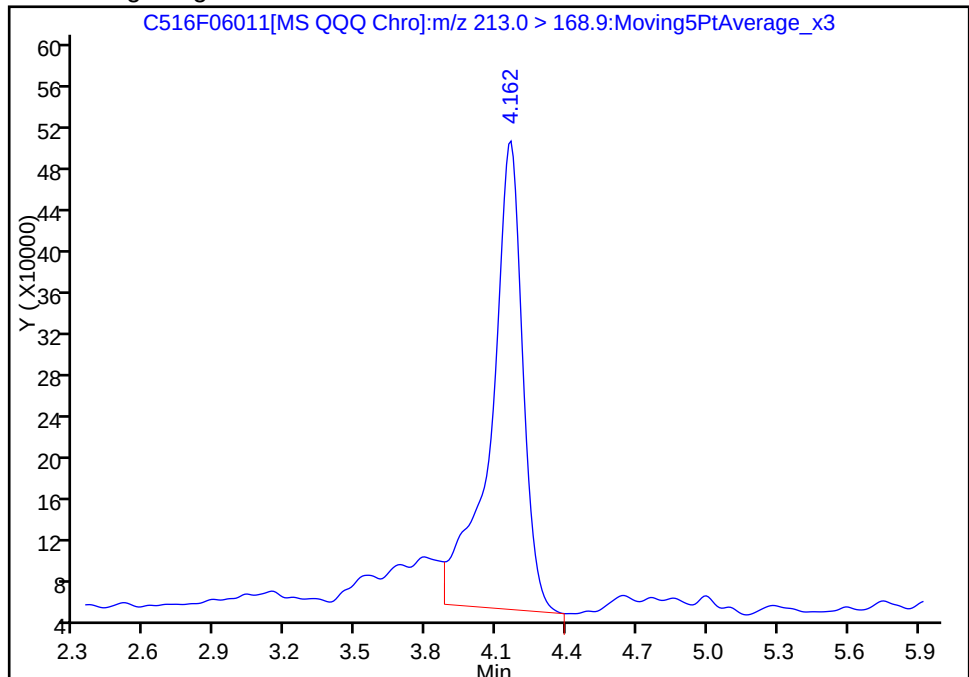
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
Injection Date: 06-Jun-2016 15:26:53 Instrument ID: LC_LCMS5
Lims ID: STD0020
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

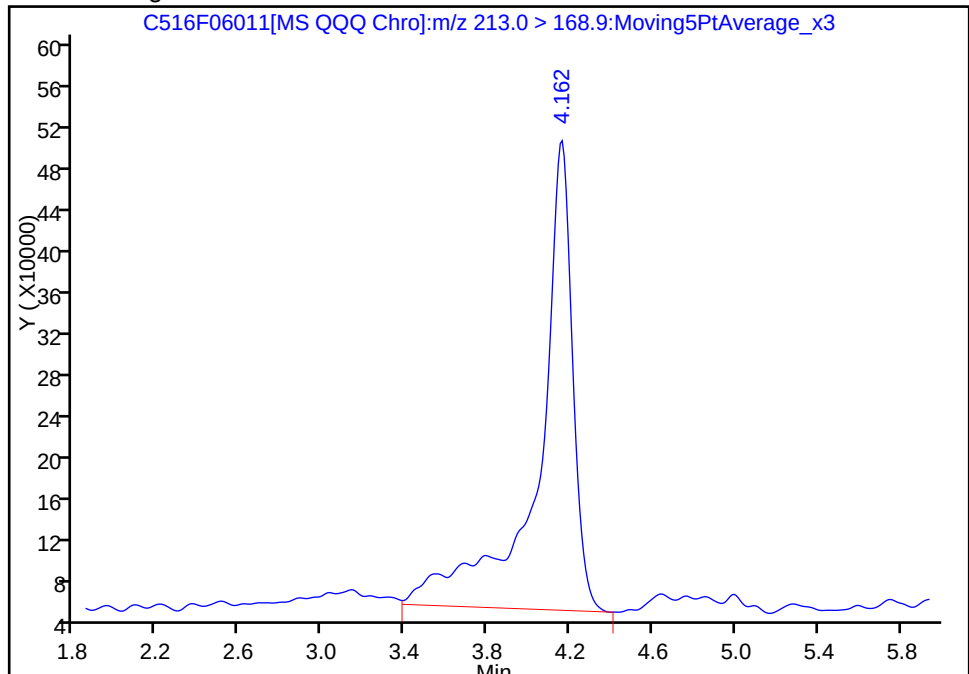
RT: 4.16
Area: 4262347
Amount: 0.917918
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 5302668
Amount: 1.897623
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:56:38
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d
 Lims ID: STD0050
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 06-Jun-2016 15:39:12 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0050, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:00 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:14

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.143	4.162	-0.019		30058395	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.153	4.162	-0.009	1.002	15646483	4.85			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.232	5.232	0.0	0.898	14121680	5.12			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.355	5.364	-0.009	0.855	5710734	4.49			
298.9 > 98.9	5.355	5.364	-0.009	0.855	1741559		3.28(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.355	5.364	-0.009	0.855	5710734	4.49			
298.9 > 98.9	5.355	5.364	-0.009	0.855	1741559		3.28(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.828	5.819	0.009	1.000	10659437	4.80			
313.0 > 118.6	5.838	5.819	0.019	1.002	355910		29.95(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.818	0.010		23405456	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.263	6.244	0.019	0.947	14292973	5.04			
363.0 > 168.9	6.263	6.244	0.019	0.947	3943282		3.62(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.253	0.010		2306359	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.272	6.253	0.019	1.002	4705477	4.95			R
398.9 > 98.9	6.272	6.253	0.019	1.002	1732235		2.72(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.272	6.253	0.019	1.002	4705477	4.95			
398.9 > 98.9	6.272	6.253	0.019	1.002	1732235		2.72(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.602	6.583	0.019	0.959	5403580	4.77			
449.0 > 98.9	6.602	6.583	0.019	0.959	1549855		3.49(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.602	6.583	0.019	0.959	5403580	4.77			
449.0 > 98.9	6.602	6.583	0.019	0.959	1549855		3.49(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.612	6.593	0.019	1.000	14613722	5.54			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.612	6.593	0.019		32493562	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.613	6.594	0.019	1.000	17252348	5.06			
413.0 > 169.0	6.613	6.594	0.019	1.000	5369504		3.21(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.884	6.865	0.019	1.000	2952684	5.15			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.885	6.866	0.019		8937624	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.885	6.866	0.019	1.000	5678428	5.15			R
498.9 > 98.9	6.885	6.866	0.019	1.000	2095239		2.71(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.905	6.886	0.019		23993318	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.905	6.886	0.019	1.000	14058059	5.20			
463.0 > 218.9	6.905	6.886	0.019	1.000	1958954		7.18(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.149	7.130	0.019	1.000	13455719	5.26			
513.0 > 219.0	7.149	7.130	0.019	1.000	1185162		11.35(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.149	7.130	0.019		25302155	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.328	7.318	0.010	1.064	5632521	4.85			
598.9 > 99.0	7.328	7.318	0.010	1.064	1578945		3.57(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.328	7.318	0.010	1.064	5632521	4.85			
598.9 > 99.0	7.328	7.318	0.010	1.064	1578945		3.57(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.357	7.347	0.010		16303477	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.357	7.347	0.010	1.000	11414147	4.91			R
563.0 > 268.9	7.357	7.347	0.010	1.000	1382008		8.26(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.517	0.009		34205513	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.526	7.517	0.009	1.000	17657166	5.00			
613.0 > 168.9	7.526	7.517	0.009	1.000	2239694		7.88(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.624	7.614	0.010		24753508	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.624	7.615	0.009	1.000	13895071	5.17			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.677	7.668	0.009	1.020	16402113	5.12			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.810	7.800	0.010	1.038	9715521	4.80			
712.9 > 169.0	7.810	7.800	0.010	1.038	1482345		6.55(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00078	Amount Added: 10.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 10.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d

Injection Date: 06-Jun-2016 15:39:12

Instrument ID: LC_LCMS5

Lims ID: STD0050

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 7

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

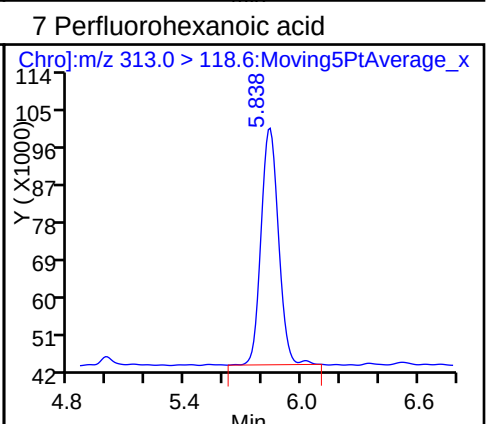
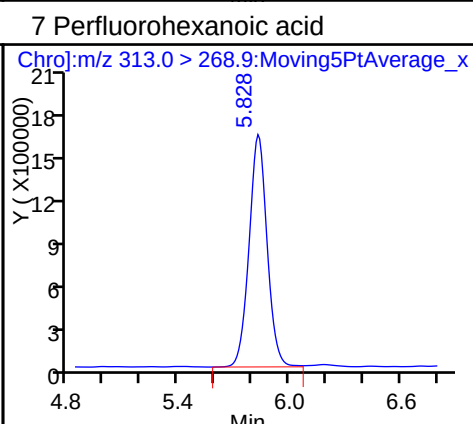
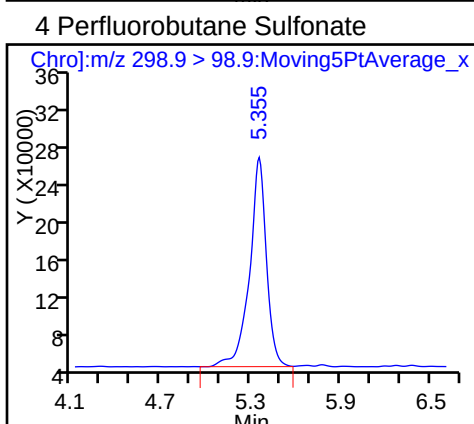
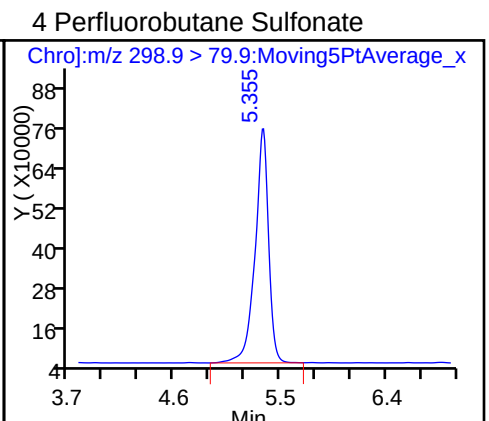
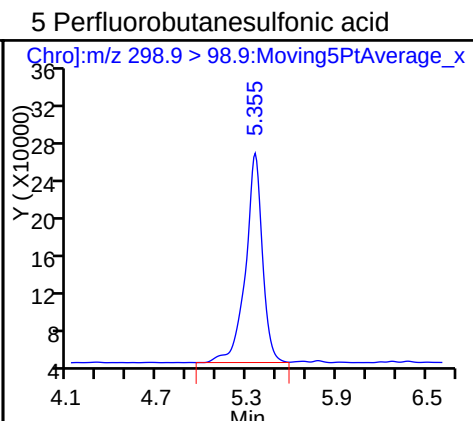
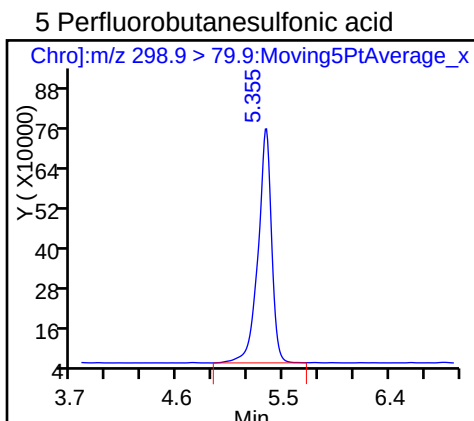
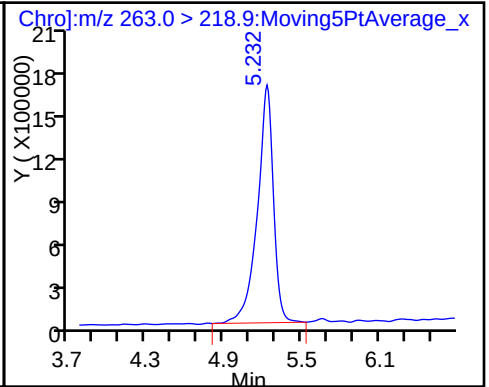
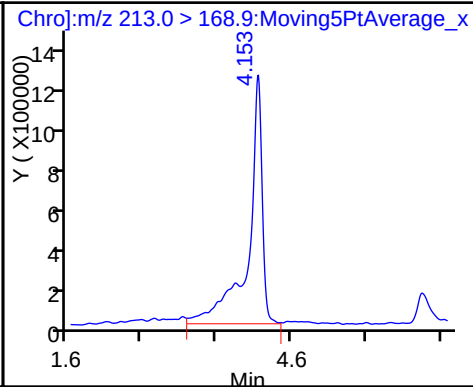
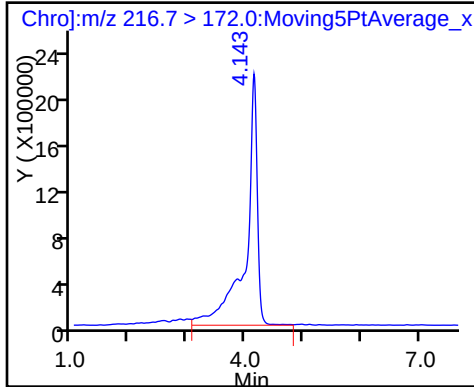
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

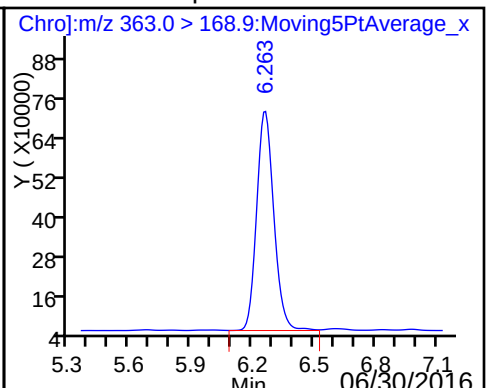
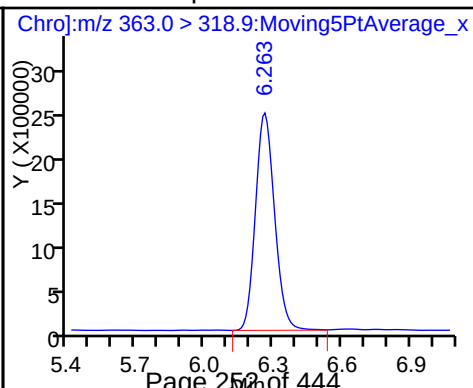
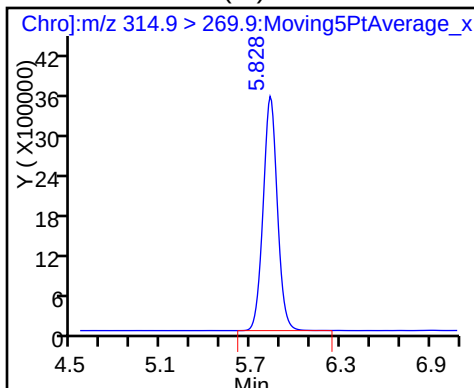
3 Perfluoropentanoic acid



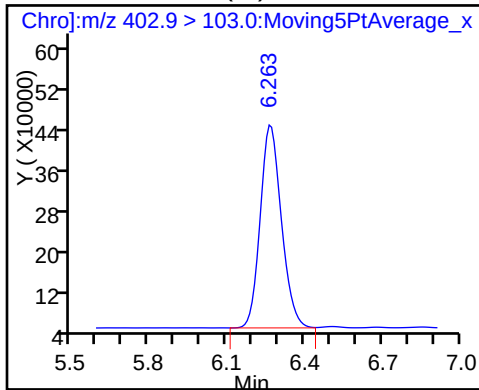
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

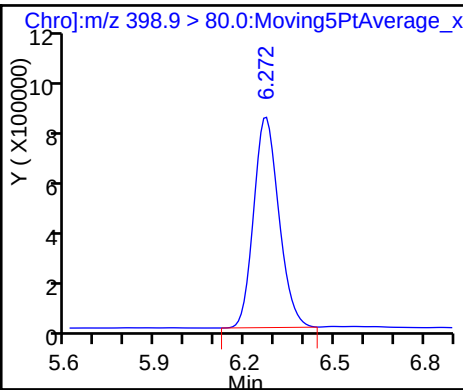
8 Perfluoroheptanoic acid



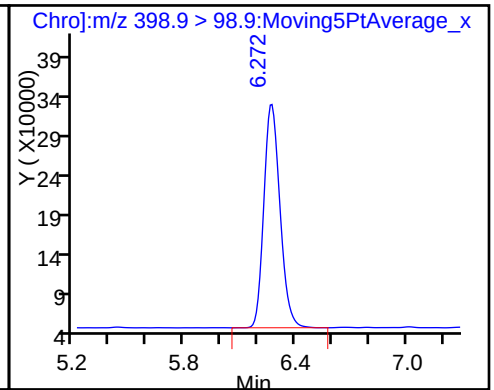
* 9 18O2 PFHxS (IS)



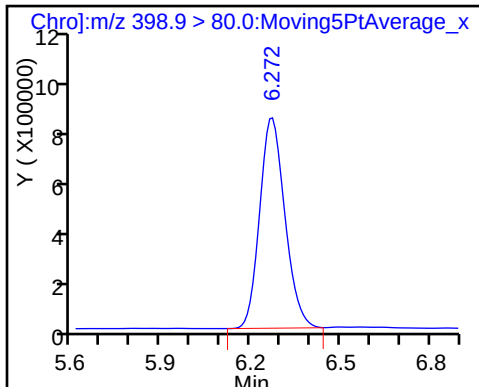
10 Perfluorohexane Sulfonate



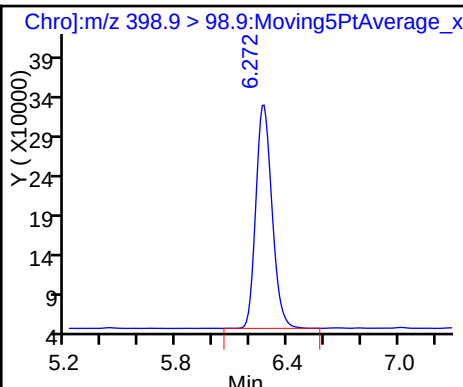
10 Perfluorohexane Sulfonate



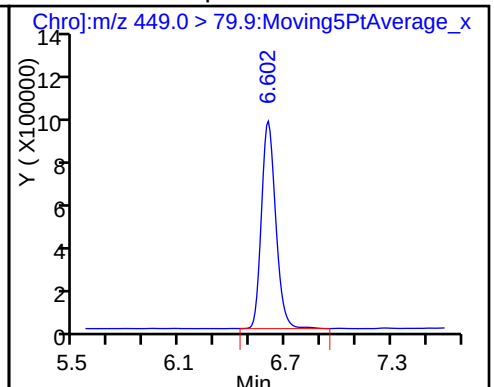
11 Perfluorohexanesulfonic acid



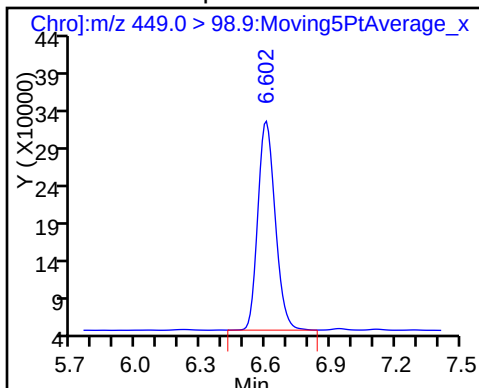
11 Perfluorohexanesulfonic acid



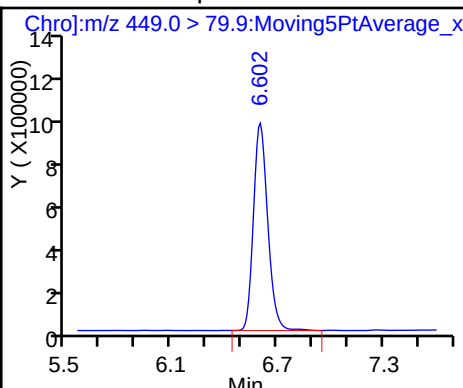
12 Perfluoroheptanesulfonic Acid



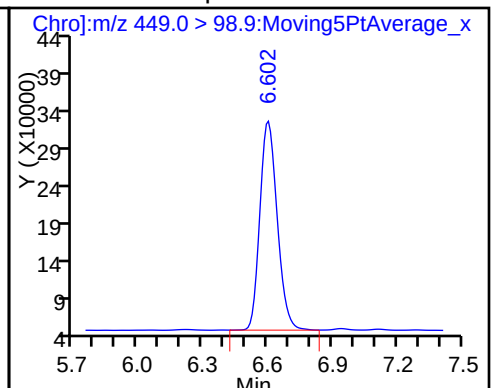
12 Perfluoroheptanesulfonic Acid



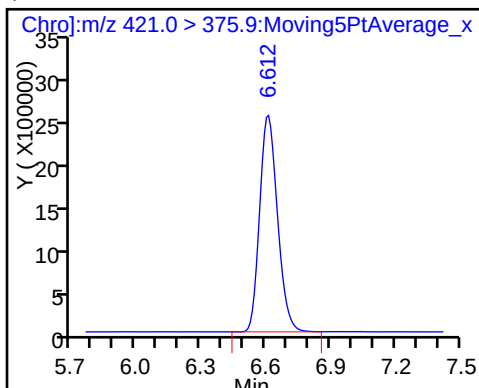
13 Perfluoroheptane Sulfonate



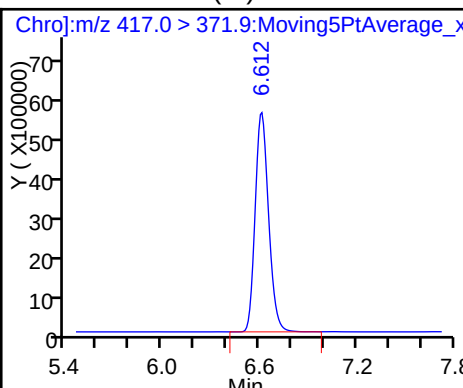
13 Perfluoroheptane Sulfonate



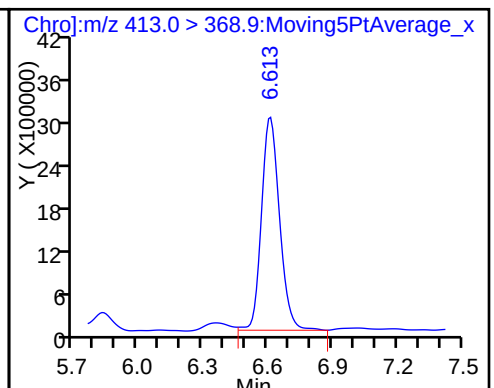
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



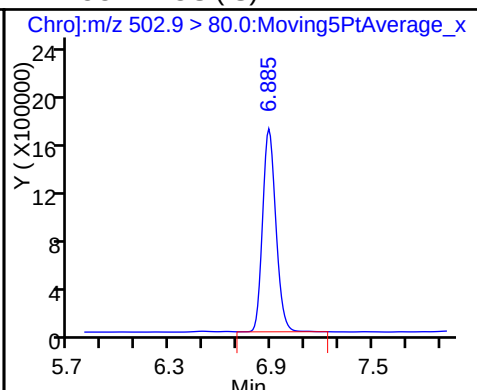
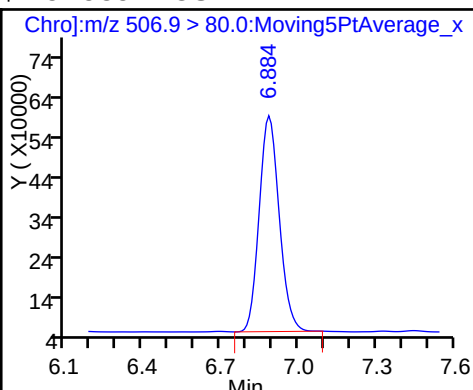
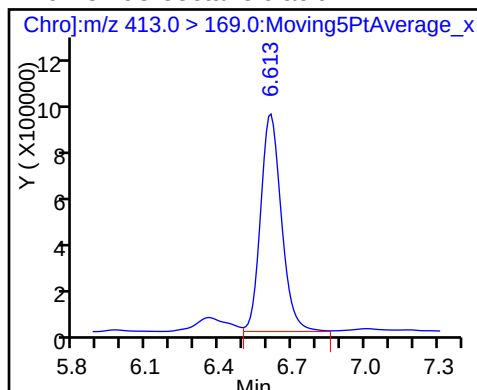
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

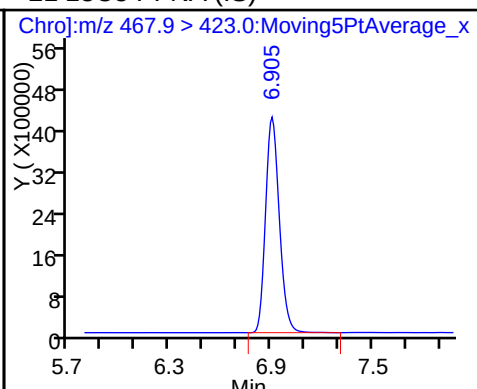
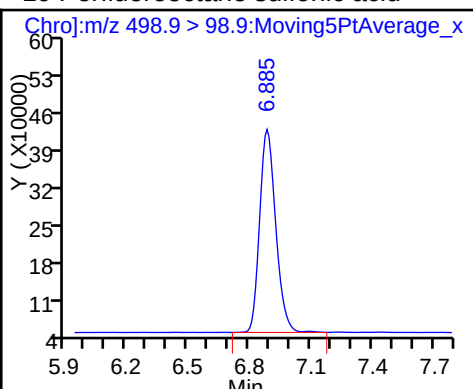
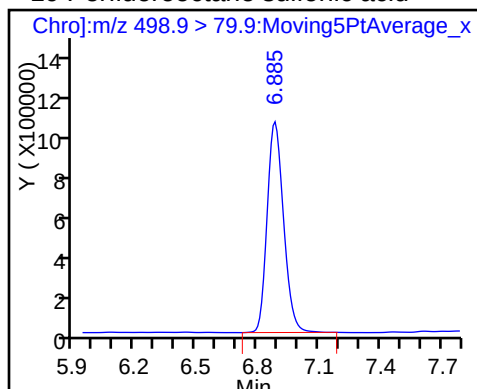
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

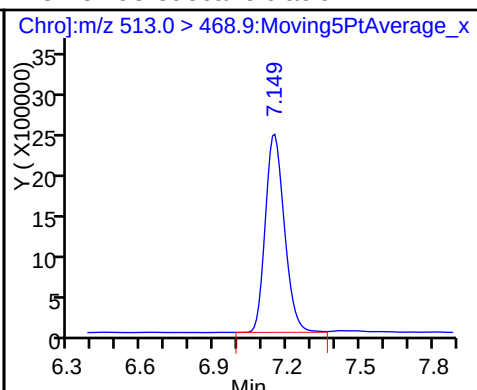
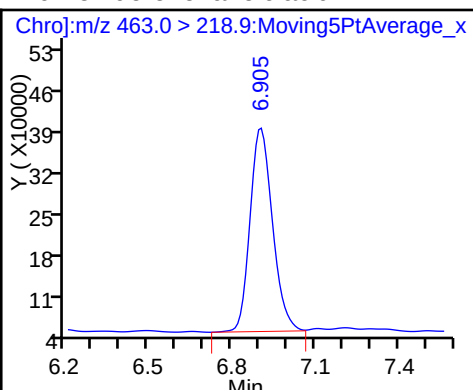
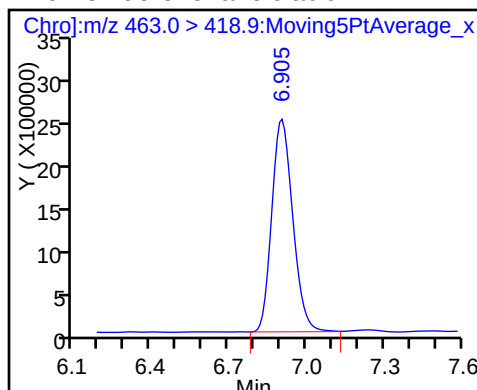
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

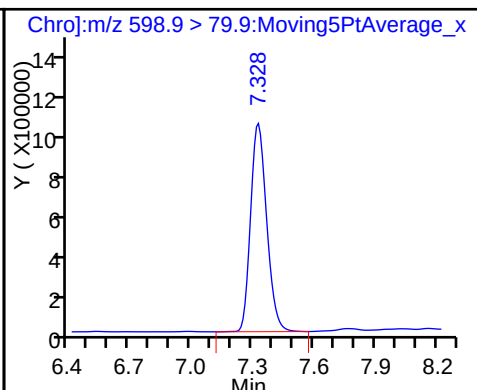
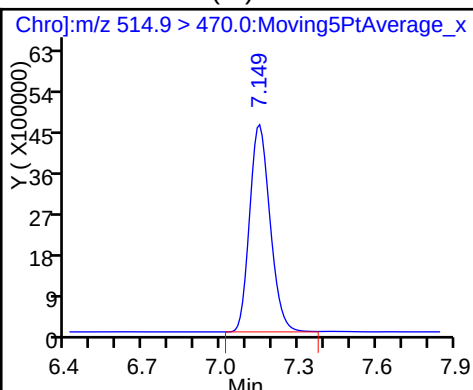
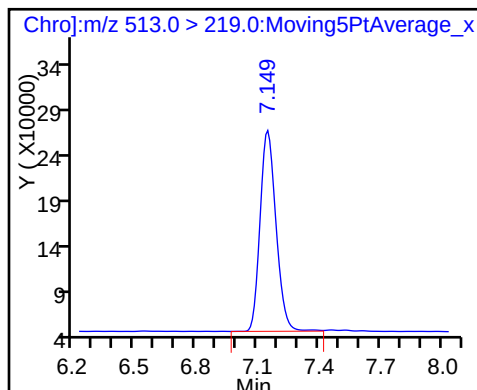
23 Perfluorodecanoic acid



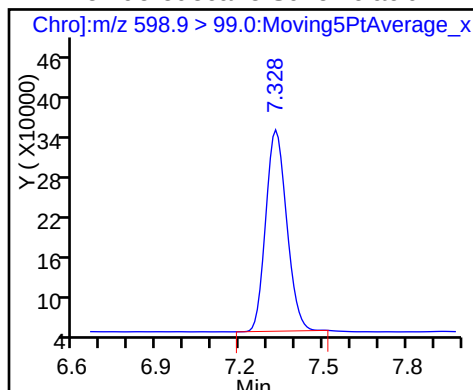
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

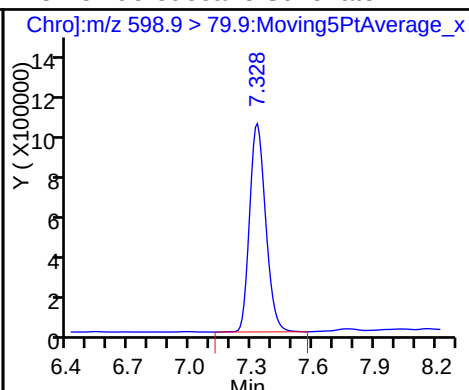
24 Perfluorodecane Sulfonic acid



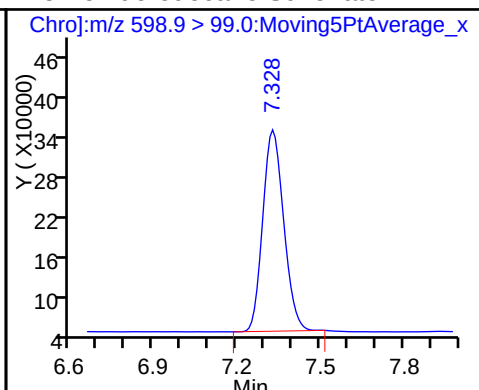
24 Perfluorodecane Sulfonic acid



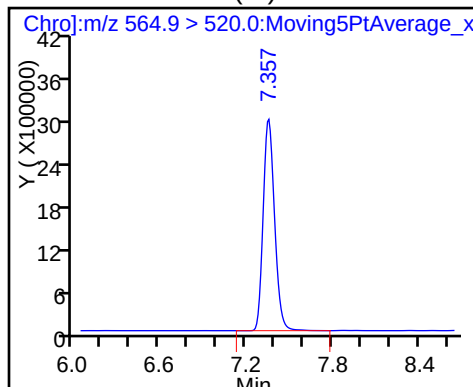
25 Perfluorodecane Sulfonate



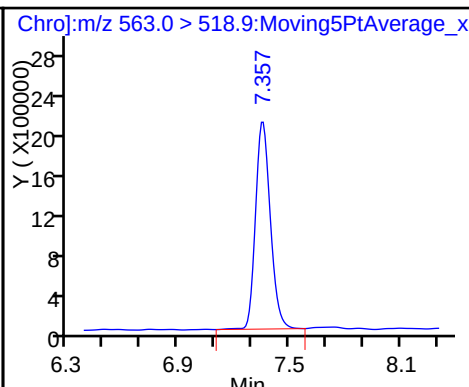
25 Perfluorodecane Sulfonate



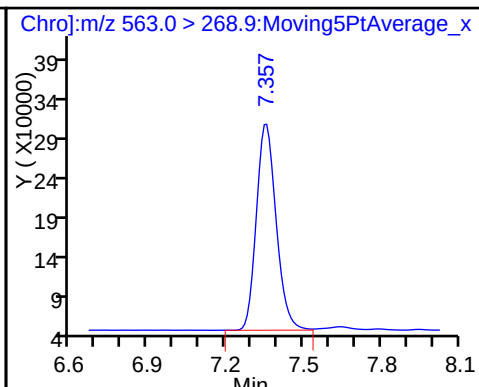
* 26 13C2 PFUnA (IS)



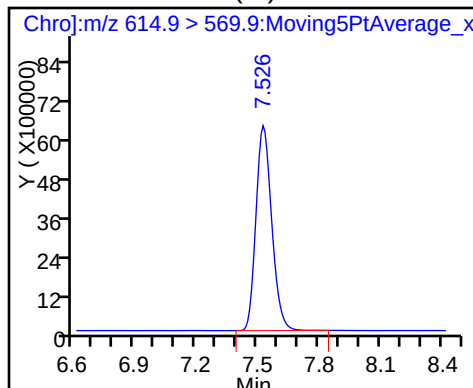
27 Perfluoroundecanoic acid



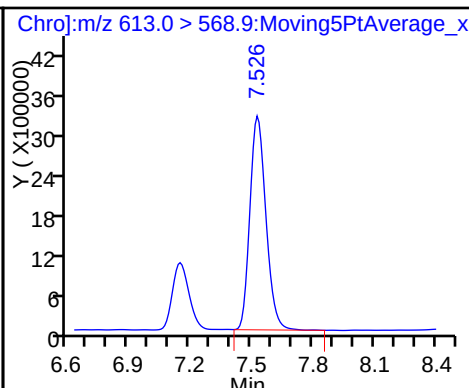
27 Perfluoroundecanoic acid



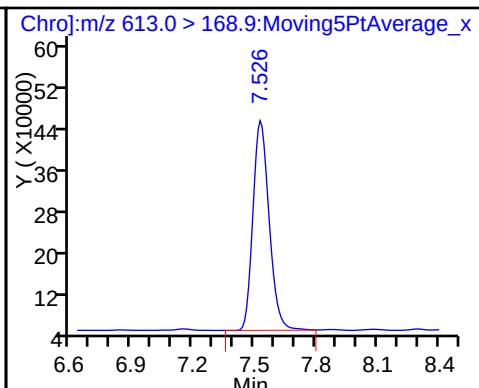
* 28 13C2 PFDaA (IS)



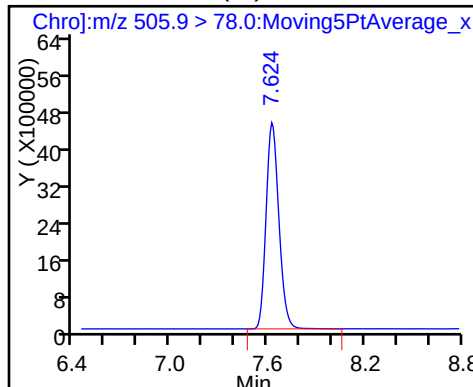
29 Perfluorododecanoic acid



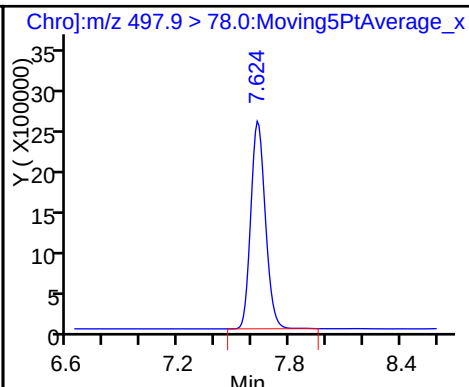
29 Perfluorododecanoic acid



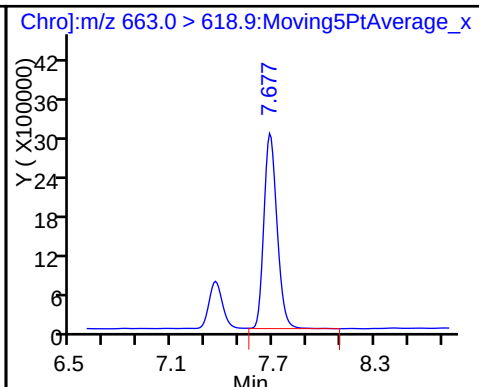
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

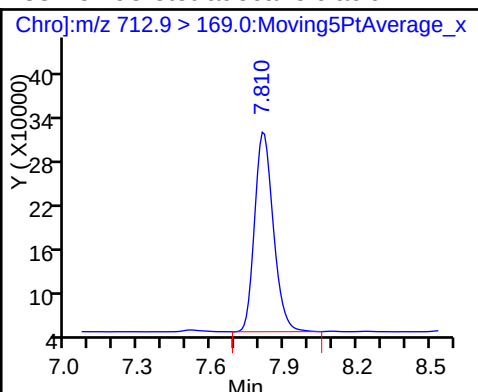
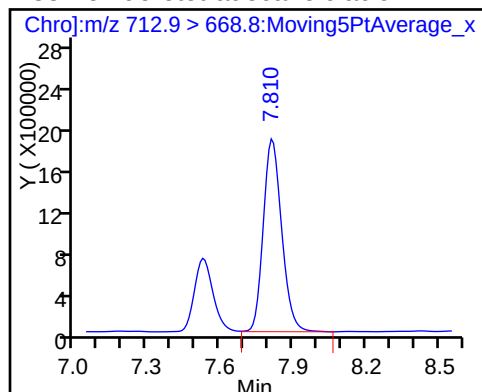


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



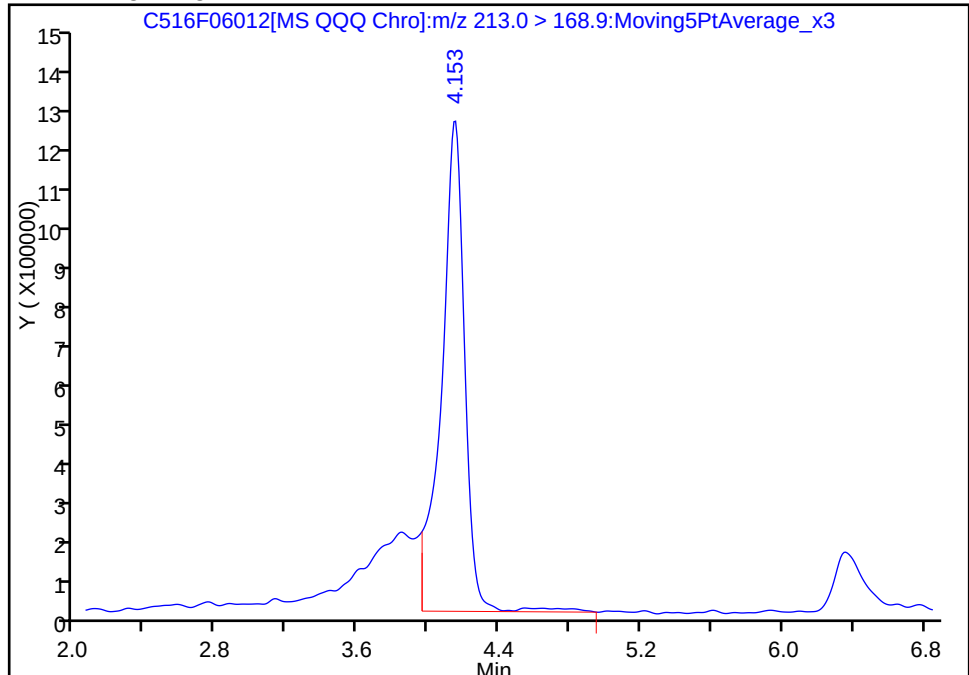
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d
Injection Date: 06-Jun-2016 15:39:12 Instrument ID: LC_LCMS5
Lims ID: STD0050
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

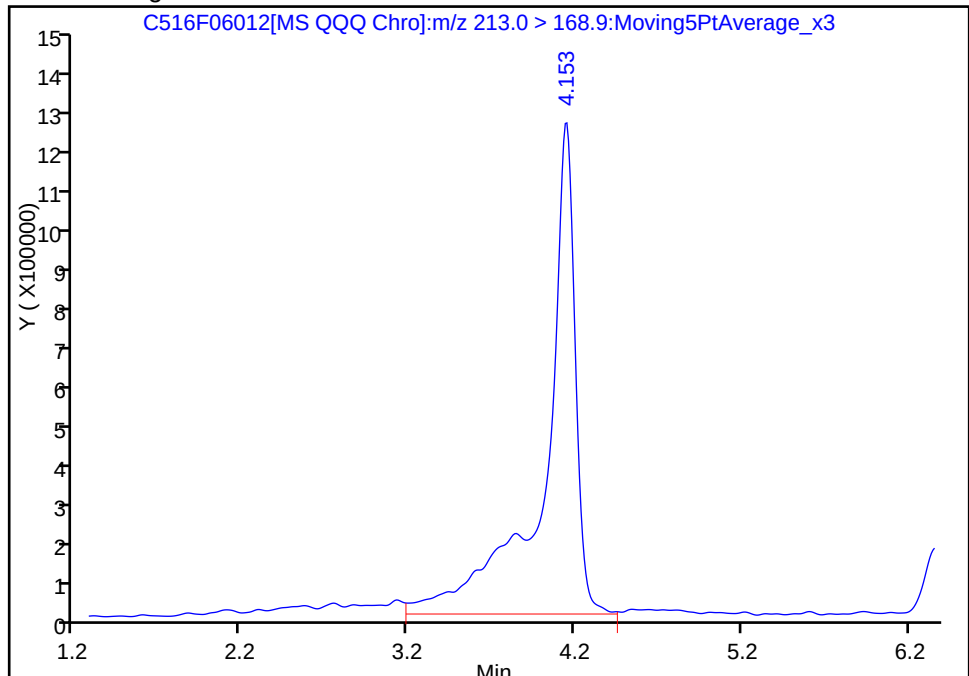
RT: 4.15
Area: 10960038
Amount: 3.437278
Amount Units: ug/L

Processing Integration Results



RT: 4.15
Area: 15646483
Amount: 4.854483
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:57:14
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06013.d
 Lims ID: STD0100
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 06-Jun-2016 15:51:29 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0100, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:06 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.143 4.162 -0.019 28249772 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.143 4.162 -0.019 1.000 30314584 10.0

3 Perfluoropentanoic acid

263.0 > 218.9 5.213 5.232 -0.019 0.896 26550357 10.3

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.345 5.364 -0.019 0.855 10998014 8.11

298.9 > 98.9 5.345 5.364 -0.019 0.855 3490279 3.15(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.345 5.364 -0.019 0.855 10998014 8.11

298.9 > 98.9 5.345 5.364 -0.019 0.855 3490279 3.15(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.818 5.818 0.0 21981575 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.819 5.819 0.0 1.000 20841959 10.0

313.0 > 118.6 5.819 5.819 0.0 1.000 627599 33.21(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.244 6.244 0.0 0.947 27517800 10.8

363.0 > 168.9 6.244 6.244 0.0 0.947 7342155 3.75(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.253 6.253 0.0 2455924 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.253 6.253 0.0 1.000 8927761 8.88

398.9 > 98.9 6.253 6.253 0.0 1.000 3322393 2.69(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.253 6.253 0.0 1.000 8927761 8.88

398.9 > 98.9 6.253 6.253 0.0 1.000 3322393 2.69(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.960	10232509	9.69			
449.0 > 98.9	6.583	6.583	0.0	0.960	3190245		3.21(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.960	10232509	9.69			
449.0 > 98.9	6.583	6.583	0.0	0.960	3190245		3.21(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	24662701	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		29389195	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	32009782	10.5			
413.0 > 169.0	6.594	6.594	0.0	1.000	9374363		3.41(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.856	6.865	-0.009	1.000	5353658	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.856	6.866	-0.010		8329164	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.857	6.866	-0.009	1.000	10470143	10.3			R
498.9 > 98.9	6.857	6.866	-0.009	1.000	3923550		2.67(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.876	6.886	-0.010		22181375	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.877	6.886	-0.010	1.000	25021117	10.1			
463.0 > 218.9	6.877	6.886	-0.010	1.000	3962775		6.31(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		24664744	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	25238466	10.2			R
513.0 > 219.0	7.121	7.130	-0.009	1.000	2479122		10.18(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.066	10758635	9.98			
598.9 > 99.0	7.309	7.318	-0.009	1.066	3209764		3.35(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.066	10758635	9.98			
598.9 > 99.0	7.309	7.318	-0.009	1.066	3209764		3.35(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		14532277	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.329	7.347	-0.019	0.999	21285381	10.3			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	2714333		7.84(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		31864705	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	33735988	10.3			
613.0 > 168.9	7.507	7.517	-0.010	1.000	4286959		7.87(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		23840347	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	26107207	10.1			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	30556604	10.3			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	18737310	9.95			
712.9 > 169.0	7.791	7.800	-0.009	1.038	2736267		6.85(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06013.d

Injection Date: 06-Jun-2016 15:51:29

Instrument ID: LC_LCMS5

Lims ID: STD0100

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 8

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

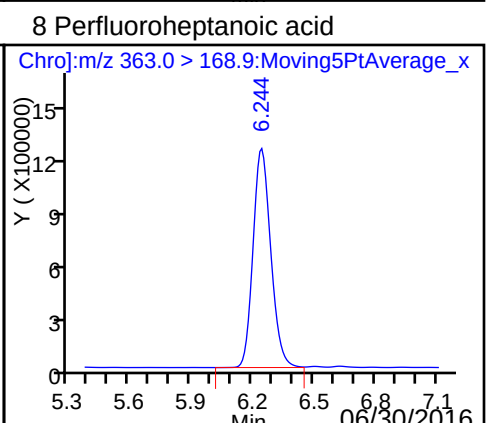
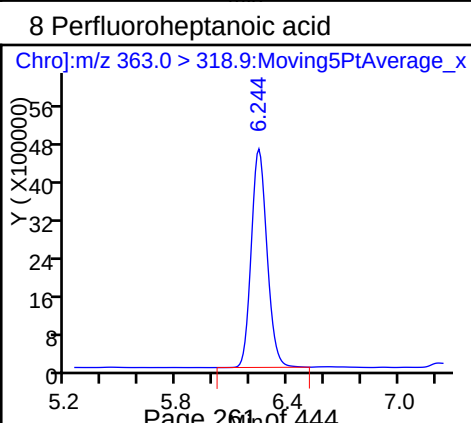
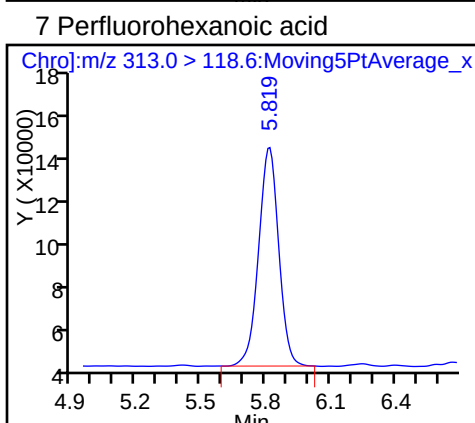
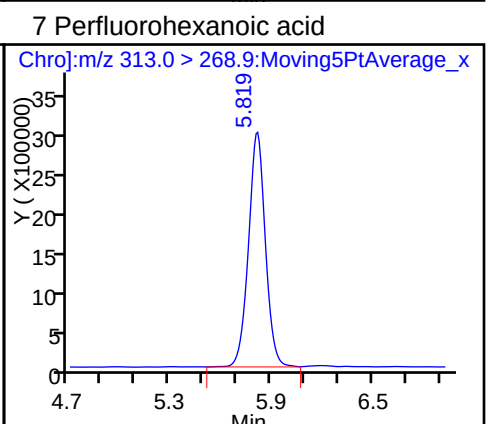
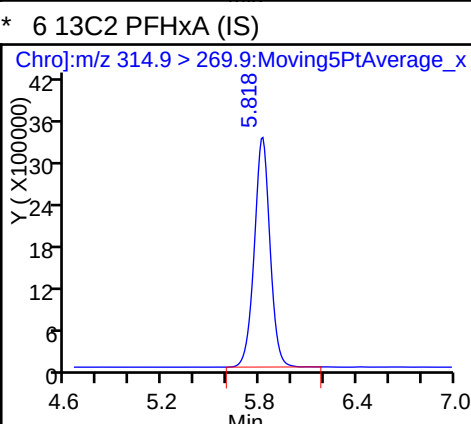
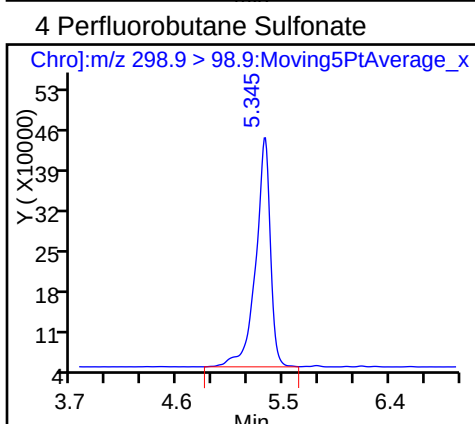
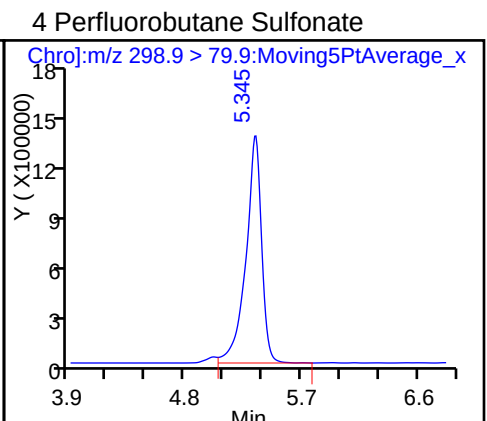
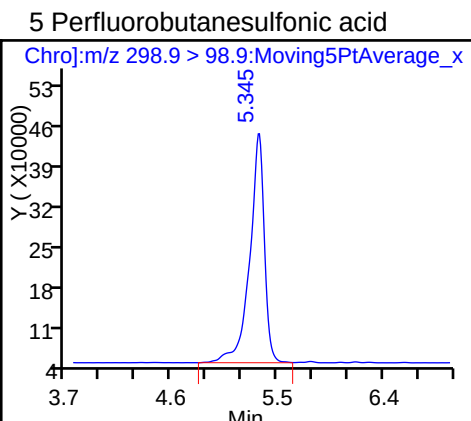
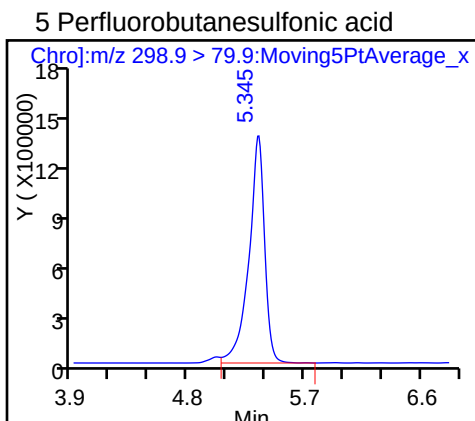
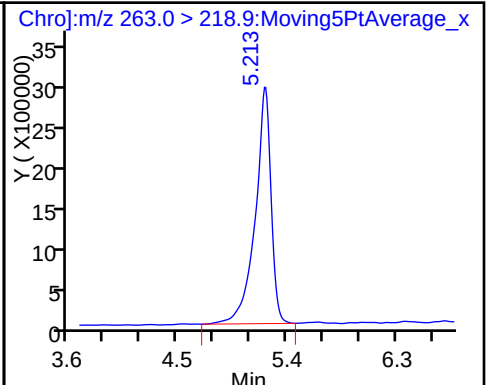
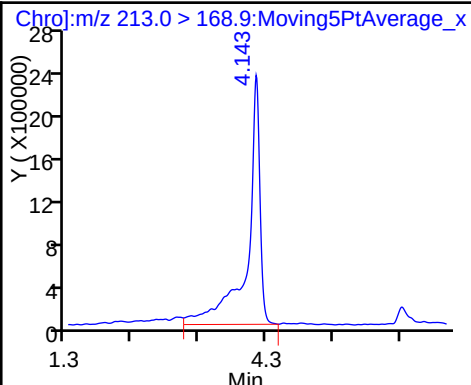
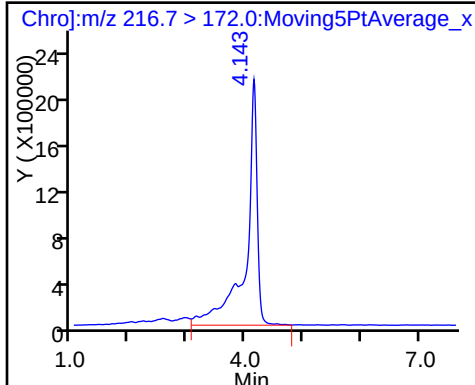
Method: 8321_PFC

Limit Group: LC - PFC

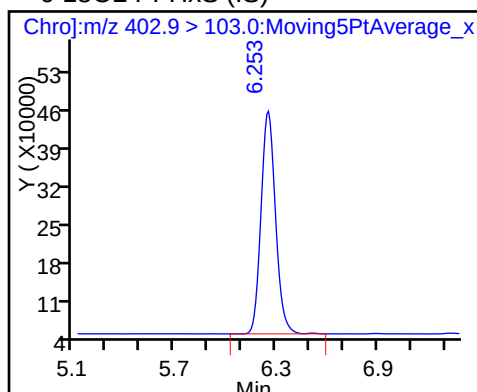
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

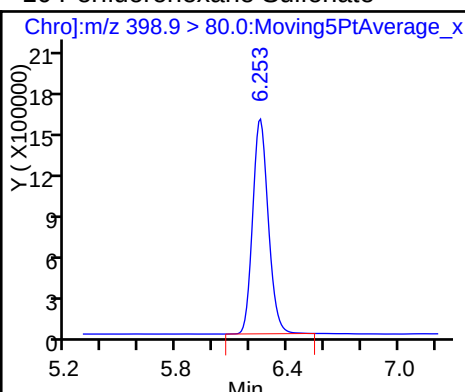
3 Perfluoropentanoic acid



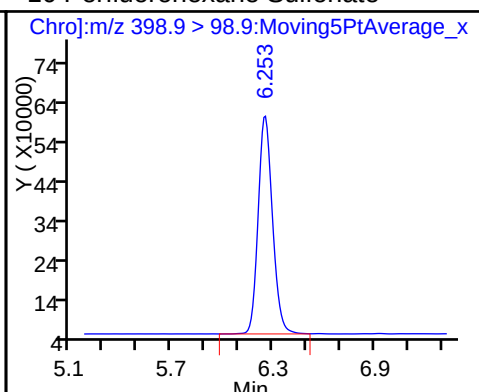
* 9 18O2 PFHxS (IS)



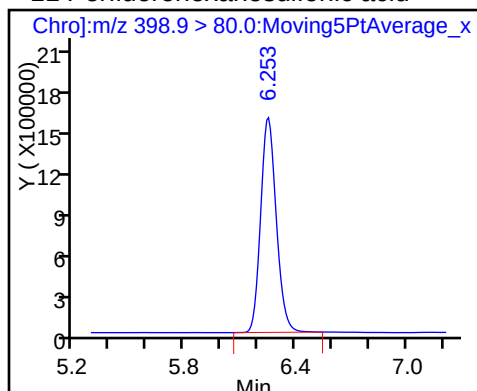
10 Perfluorohexane Sulfonate



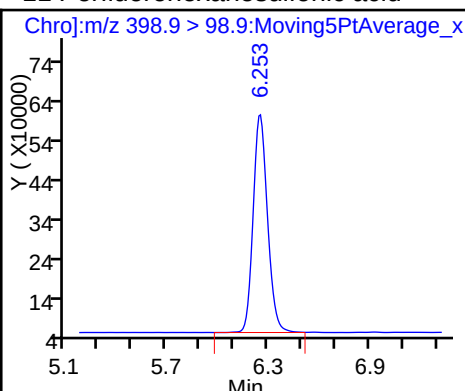
10 Perfluorohexane Sulfonate



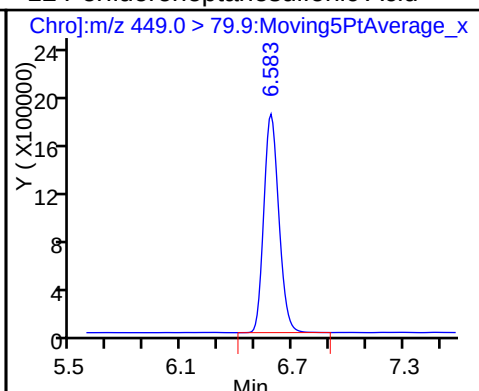
11 Perfluorohexanesulfonic acid



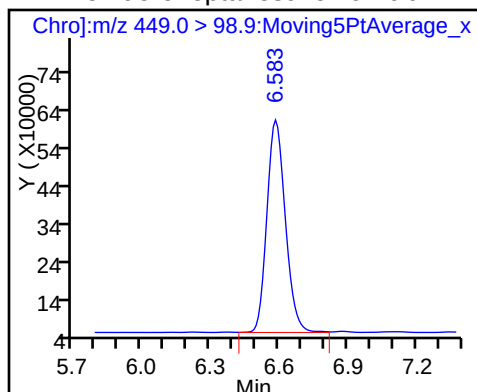
11 Perfluorohexanesulfonic acid



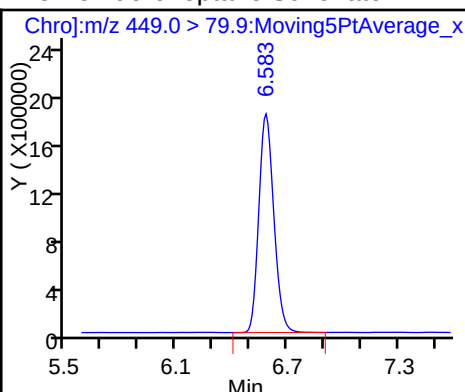
12 Perfluoroheptanesulfonic Acid



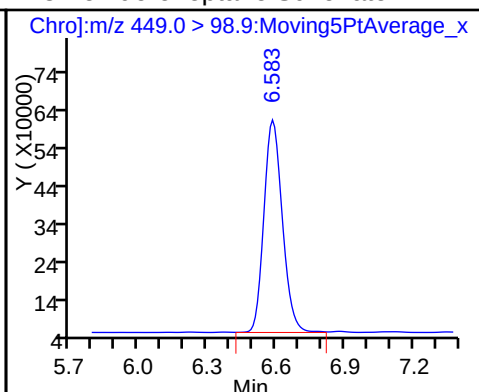
12 Perfluoroheptanesulfonic Acid



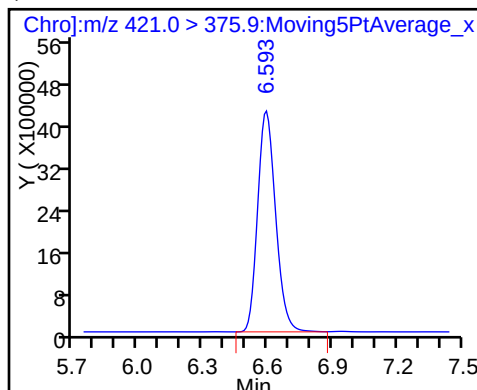
13 Perfluoroheptane Sulfonate



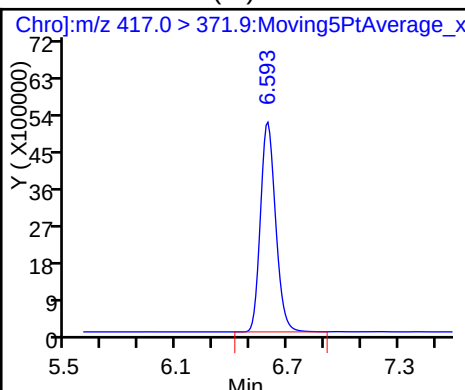
13 Perfluoroheptane Sulfonate



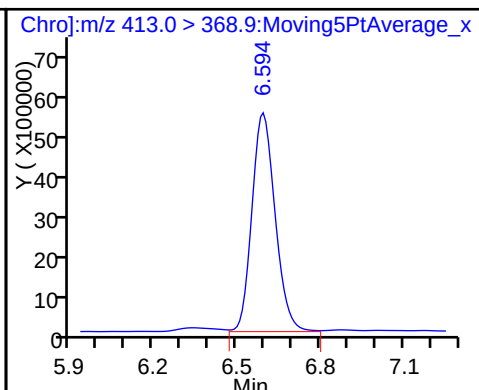
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



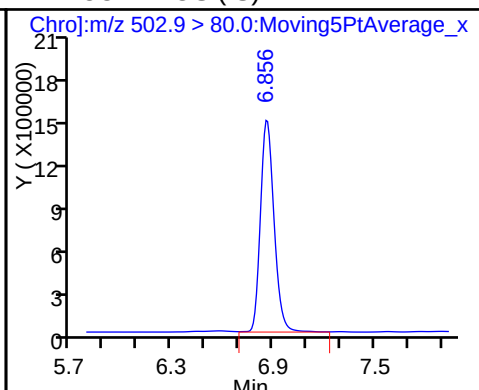
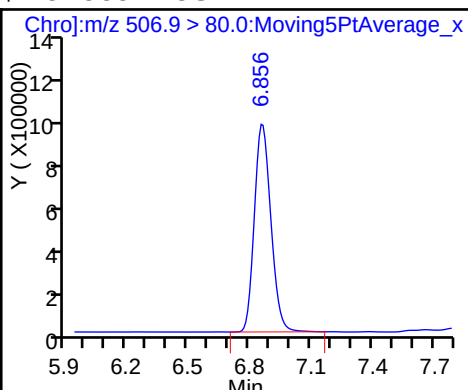
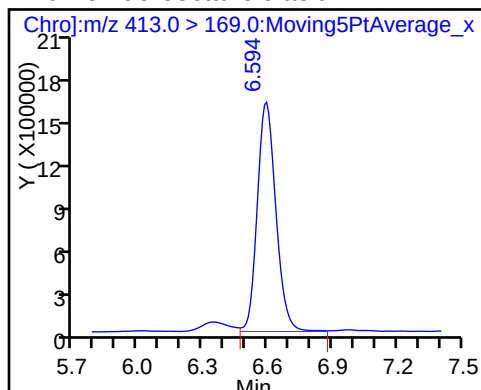
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

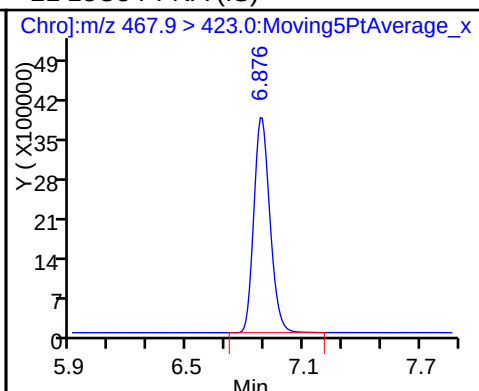
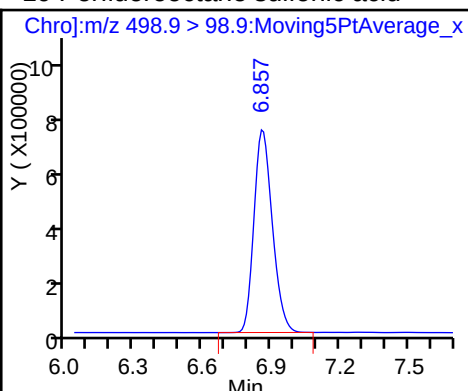
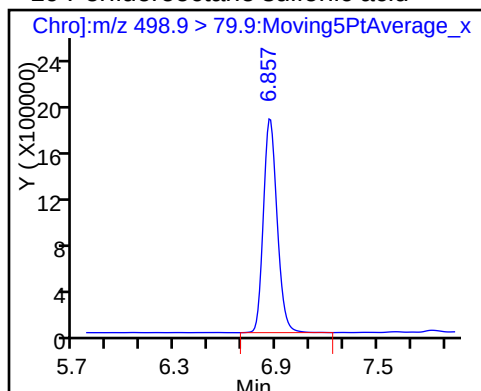
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

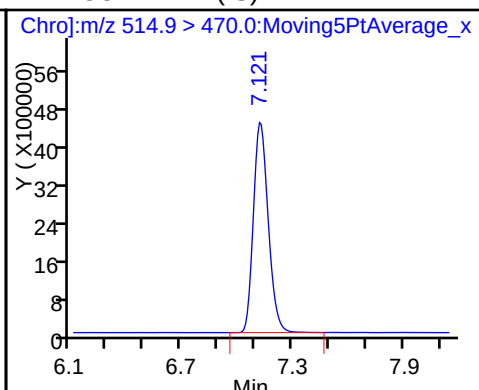
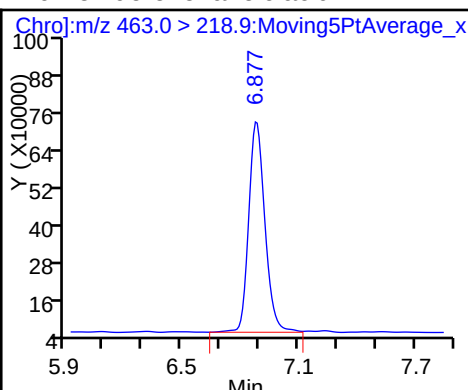
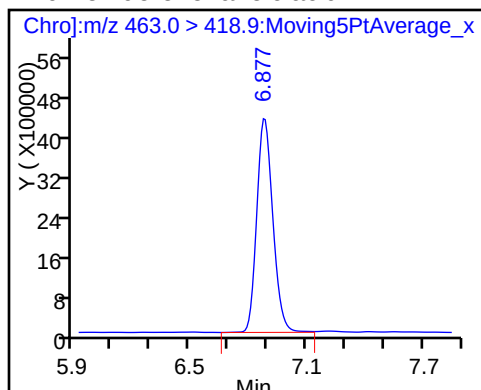
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

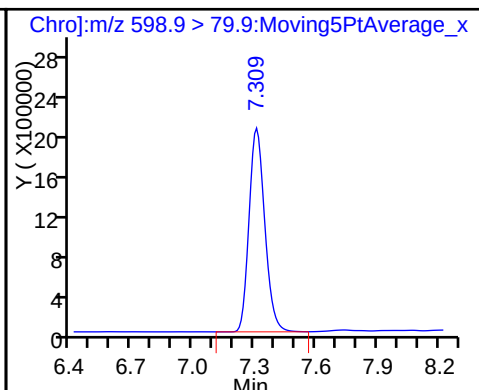
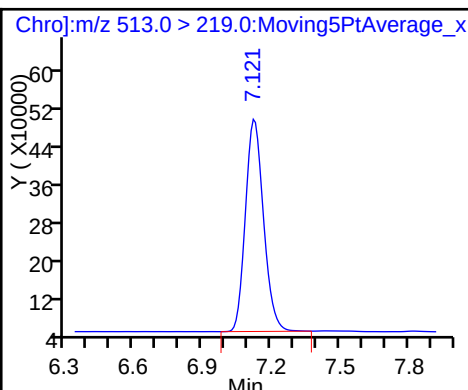
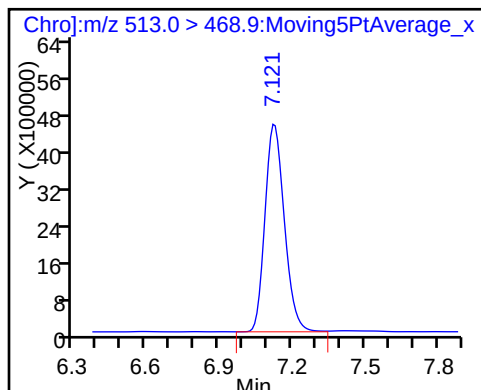
* 22 13C2 PFDA (IS)



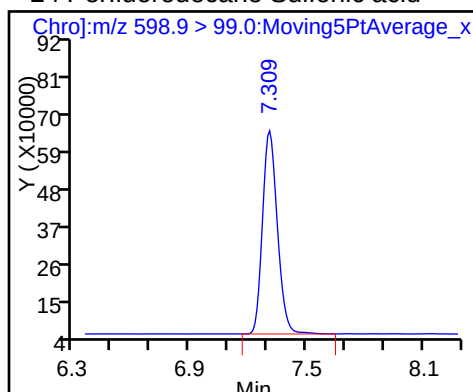
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

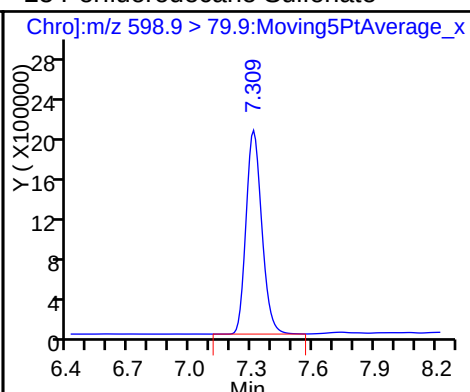
24 Perfluorodecane Sulfonic acid



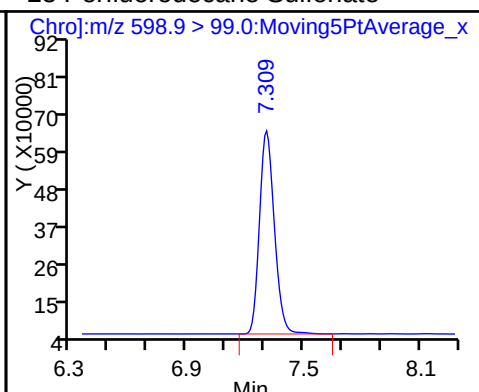
24 Perfluorodecane Sulfonic acid



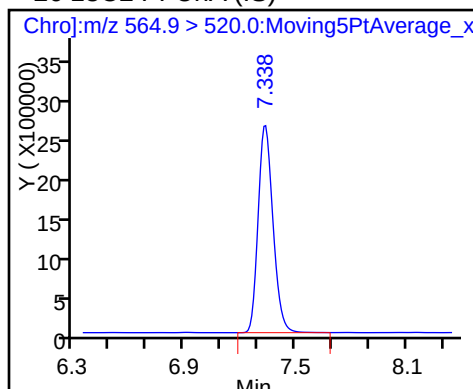
25 Perfluorodecane Sulfonate



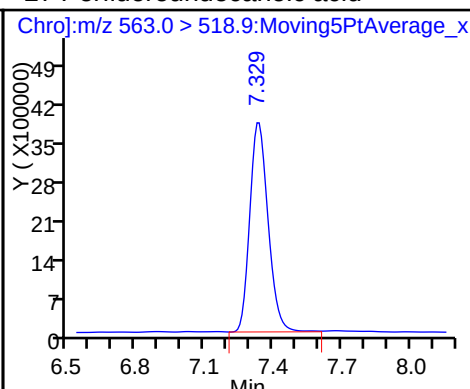
25 Perfluorodecane Sulfonate



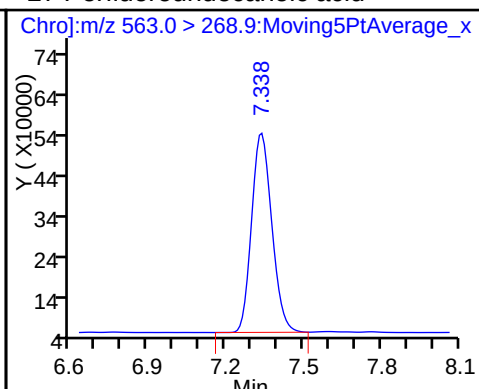
* 26 13C2 PFUnA (IS)



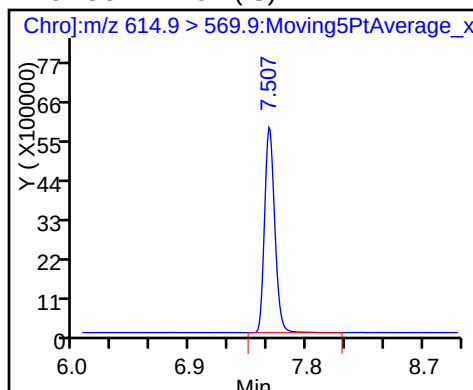
27 Perfluoroundecanoic acid



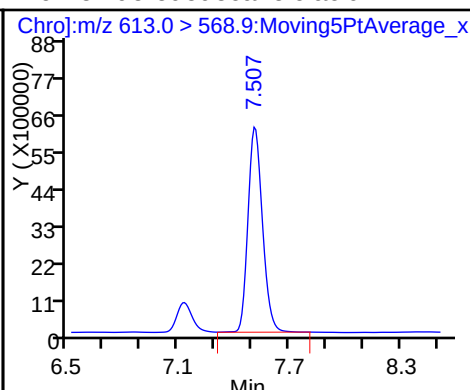
27 Perfluoroundecanoic acid



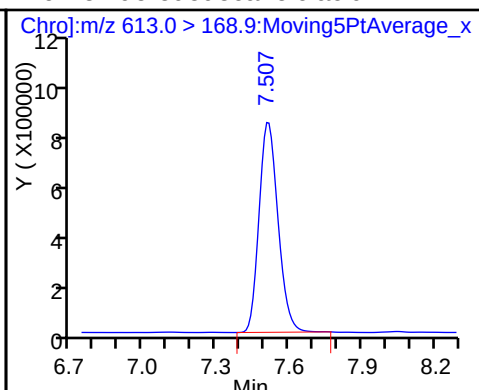
* 28 13C2 PFDaA (IS)



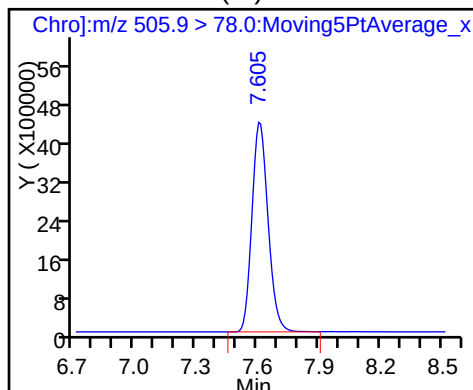
29 Perfluorododecanoic acid



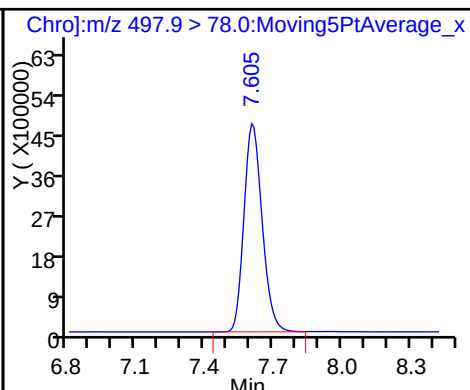
29 Perfluorododecanoic acid



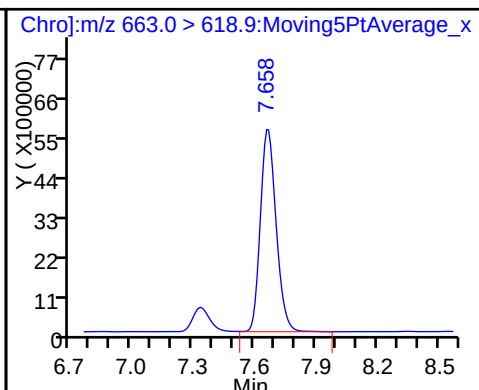
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

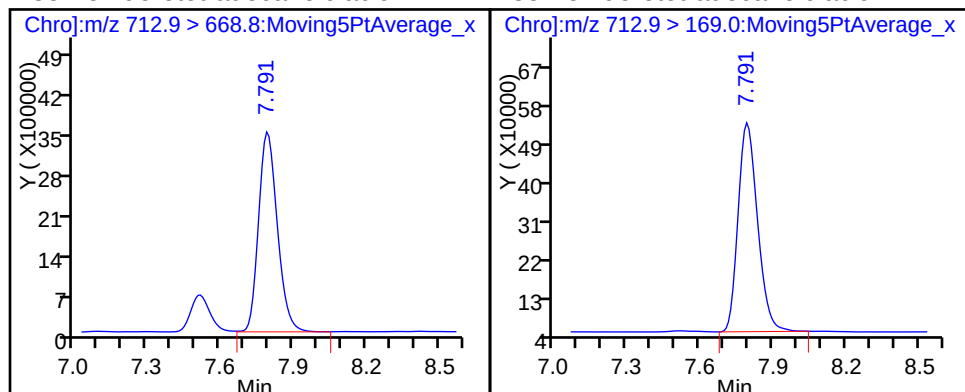


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d
 Lims ID: STD0200
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 06-Jun-2016 16:03:46 ALS Bottle#: 0 Worklist Smp#: 9
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0200, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:11 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.162	0.0		29015390	10.0			M
2 Perfluorobutyric acid									
213.0 > 168.9	4.162	4.162	0.0	1.000	64808389	20.8			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.251	5.232	0.019	0.900	52945593	20.8			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.374	5.364	0.010	0.858	21952626	17.8			
298.9 > 98.9	5.374	5.364	0.010	0.858	6871828		3.19(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.374	5.364	0.010	0.858	21952626	17.8			
298.9 > 98.9	5.374	5.364	0.010	0.858	6871828		3.19(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.837	5.818	0.019		21659671	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.838	5.819	0.019	1.000	40945931	20.0			
313.0 > 118.6	5.838	5.819	0.019	1.000	1093299		37.45(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.244	0.010	0.947	50554239	20.9			
363.0 > 168.9	6.254	6.244	0.010	0.947	13048171		3.87(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.253	0.010		2237000	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.253	0.010	1.000	17932033	19.7			R
398.9 > 98.9	6.263	6.253	0.010	1.000	6554762		2.74(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.253	0.010	1.000	17932033	19.7			
398.9 > 98.9	6.263	6.253	0.010	1.000	6554762		2.74(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.583	0.010	0.960	20264466	18.8			
449.0 > 98.9	6.593	6.583	0.010	0.960	6205577		3.27(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.583	0.010	0.960	20264466	18.8			
449.0 > 98.9	6.593	6.583	0.010	0.960	6205577		3.27(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.603	6.593	0.010	1.000	41702455	18.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.603	6.593	0.010		27817355	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.603	6.594	0.009	1.000	60046068	20.8			
413.0 > 169.0	6.603	6.594	0.009	1.000	17669896		3.40(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	9525828	17.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		8502855	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	19674973	18.9			R
498.9 > 98.9	6.866	6.866	0.0	1.000	7257361		2.71(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.886	0.009		19553054	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	0.999	43845776	20.0			
463.0 > 218.9	6.886	6.886	0.0	0.999	6517013		6.73(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.130	0.0		25049763	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.130	0.0	1.000	48421431	19.2			R
513.0 > 219.0	7.130	7.130	0.0	1.000	4857980		9.97(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.065	21695661	19.8			
598.9 > 99.0	7.309	7.318	-0.009	1.065	6263537		3.46(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.065	21695661	19.8			
598.9 > 99.0	7.309	7.318	-0.009	1.065	6263537		3.46(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		14324439	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.347	-0.009	1.000	39180966	19.3			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	5065272		7.74(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		30670086	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	63246783	20.1			
613.0 > 168.9	7.507	7.517	-0.010	1.000	8435480		7.50(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		24516831	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	51602388	19.4			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	59415459	20.9			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	39118116	21.6			
712.9 > 169.0	7.791	7.800	-0.009	1.038	5375239		7.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00078	Amount Added: 40.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 40.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d

Injection Date: 06-Jun-2016 16:03:46

Instrument ID: LC_LCMS5

Lims ID: STD0200

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

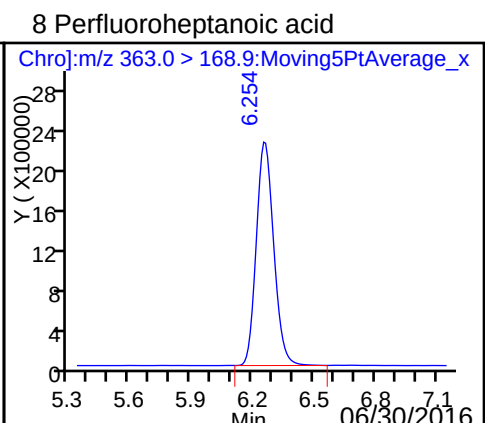
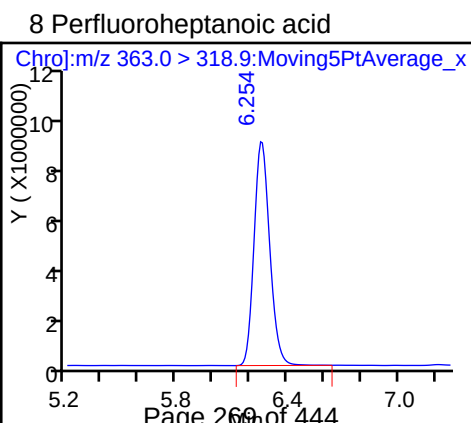
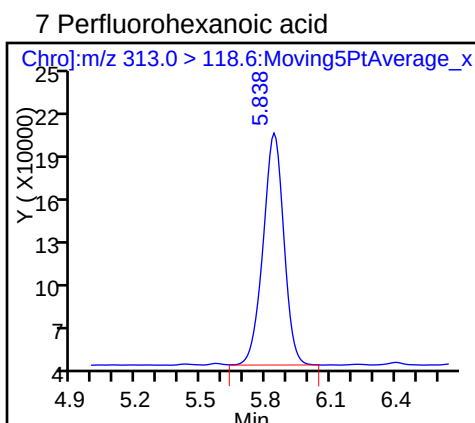
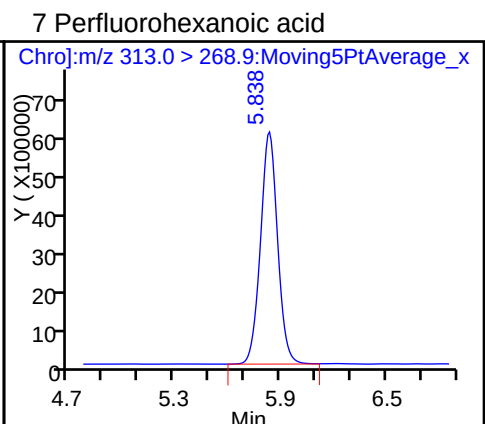
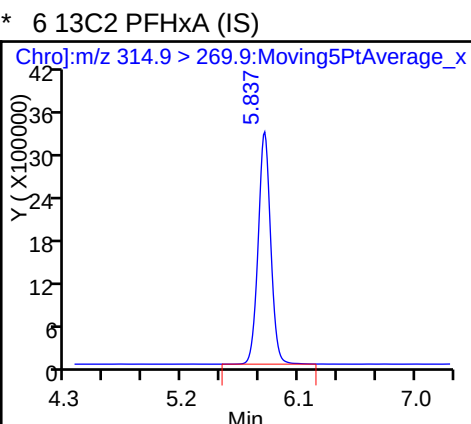
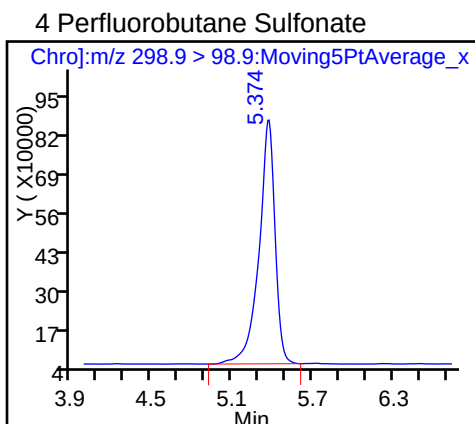
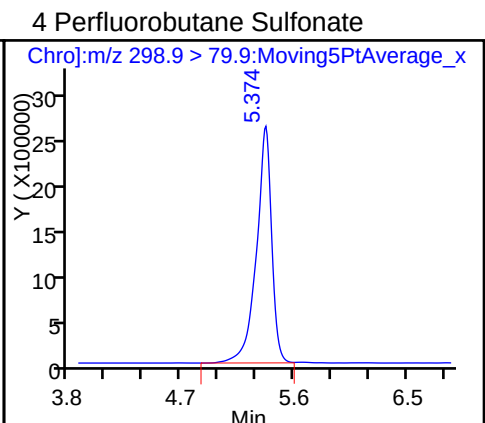
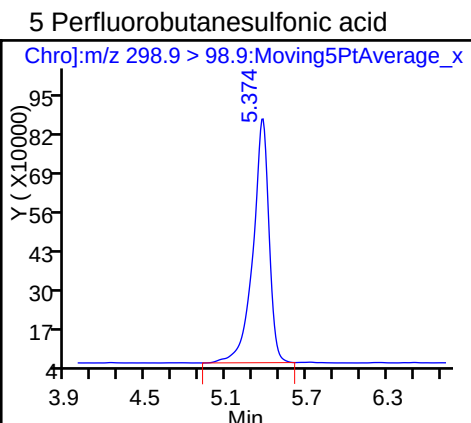
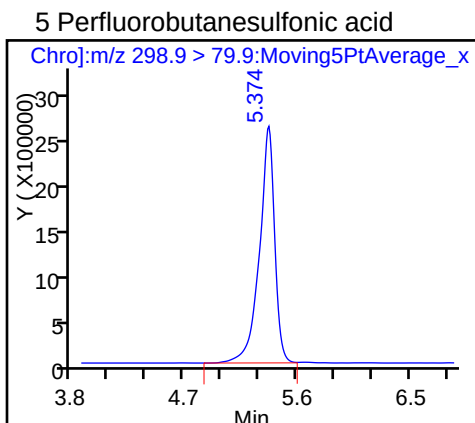
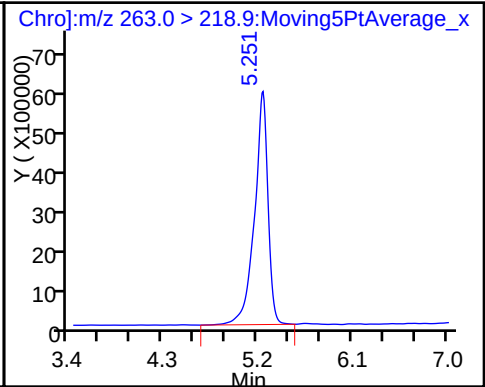
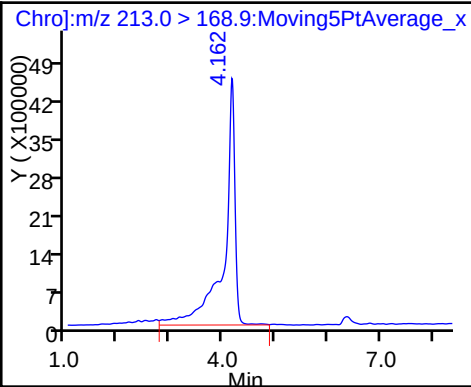
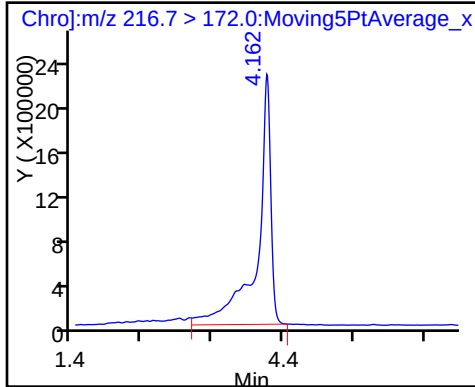
Method: 8321_PFC

Limit Group: LC - PFC

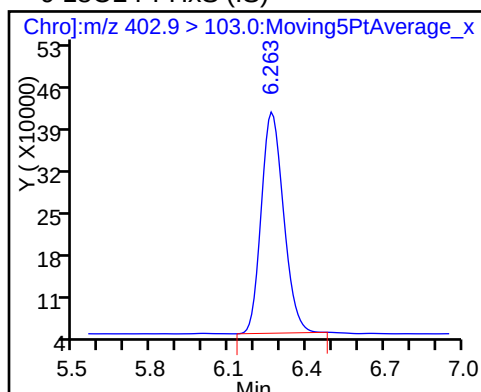
* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid

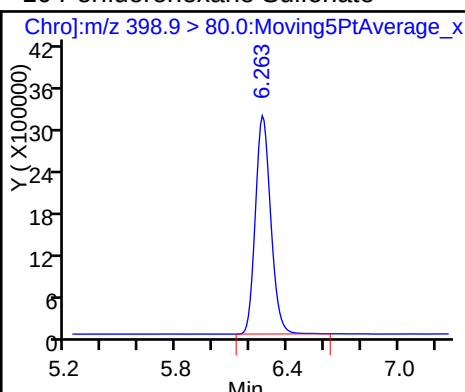
3 Perfluoropentanoic acid



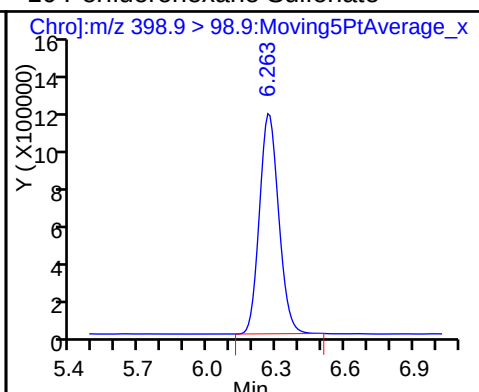
* 9 18O2 PFHxS (IS)



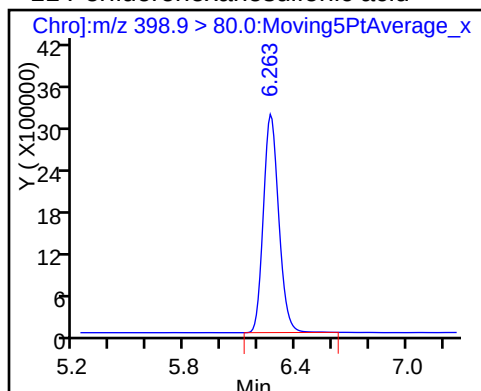
10 Perfluorohexane Sulfonate



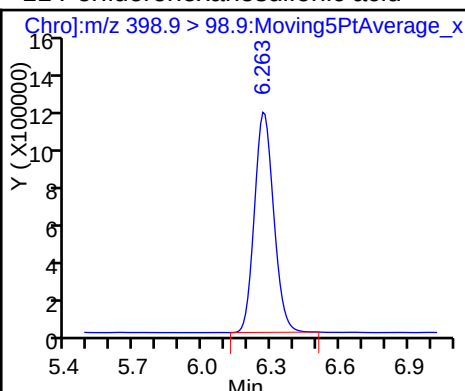
10 Perfluorohexane Sulfonate



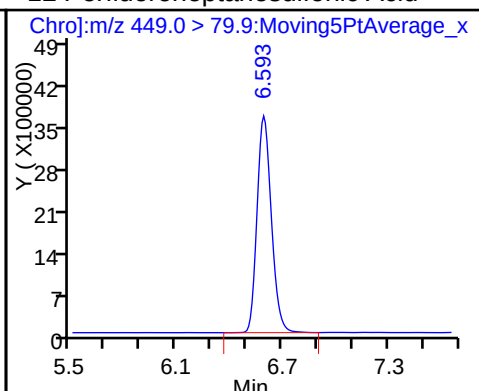
11 Perfluorohexanesulfonic acid



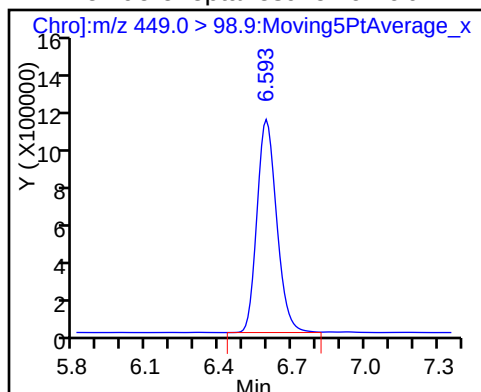
11 Perfluorohexanesulfonic acid



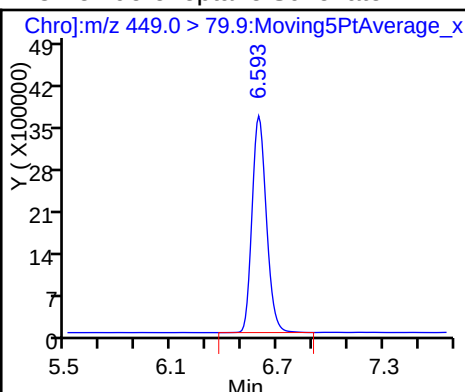
12 Perfluoroheptanesulfonic Acid



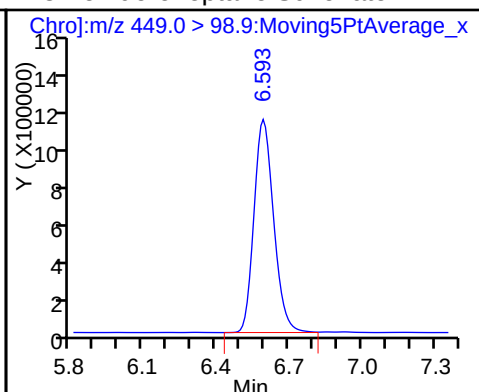
12 Perfluoroheptanesulfonic Acid



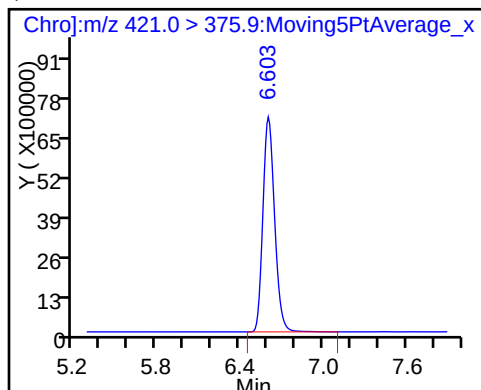
13 Perfluoroheptane Sulfonate



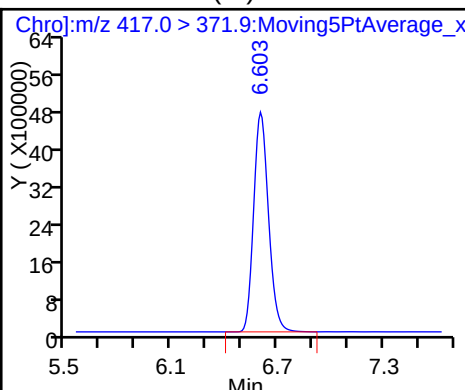
13 Perfluoroheptane Sulfonate



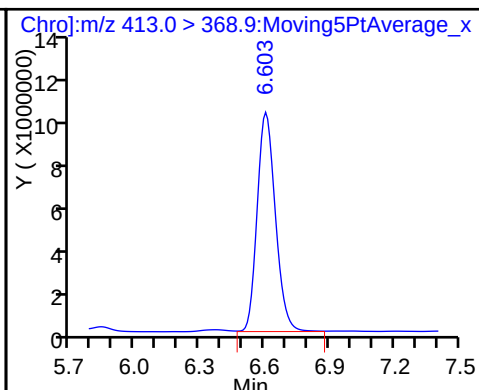
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



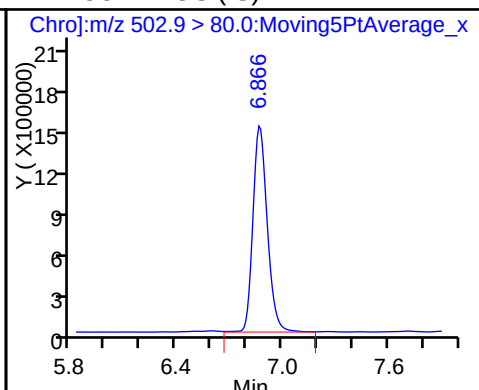
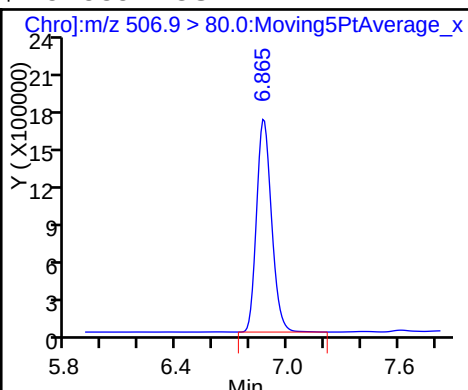
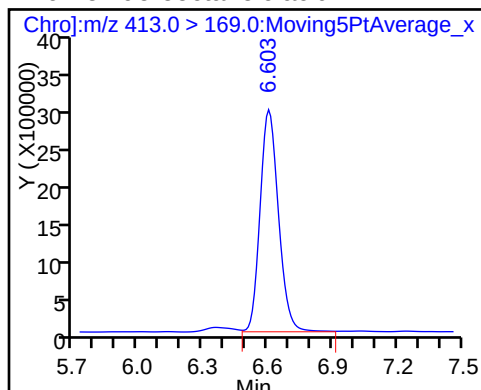
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

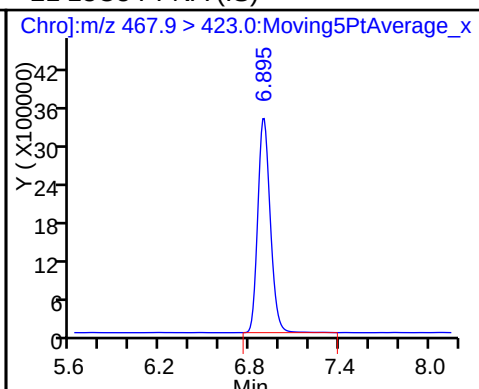
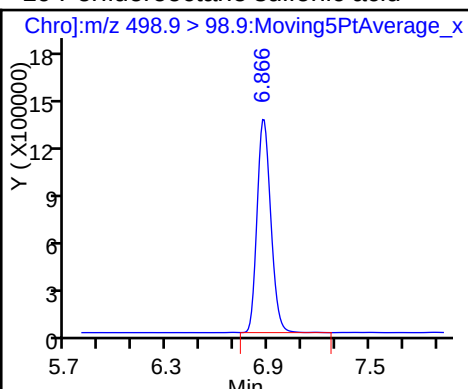
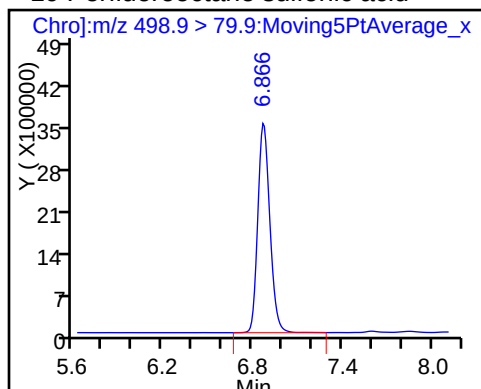
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

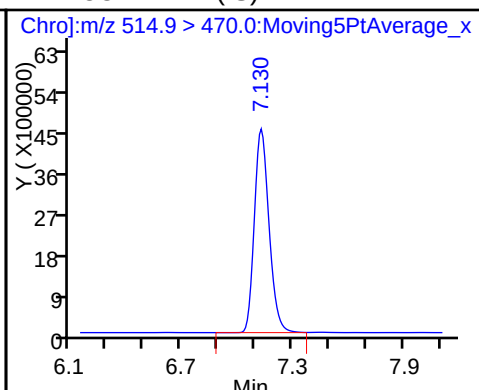
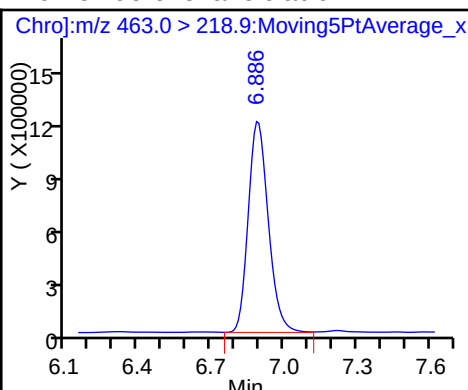
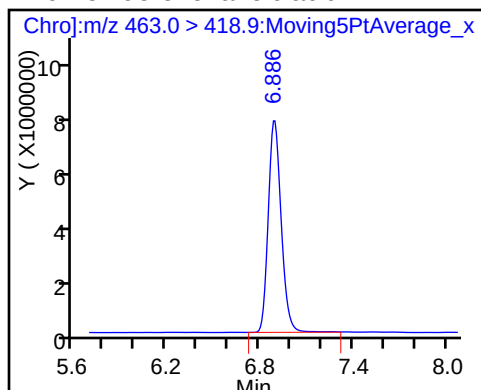
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

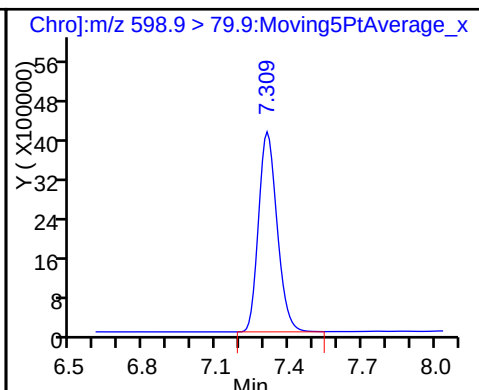
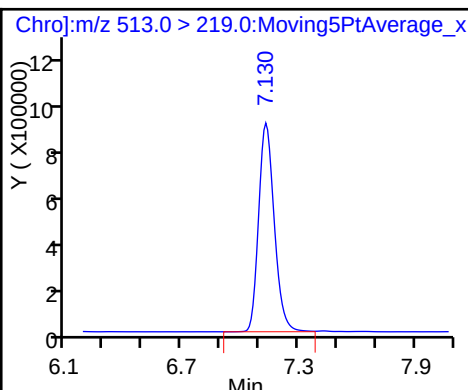
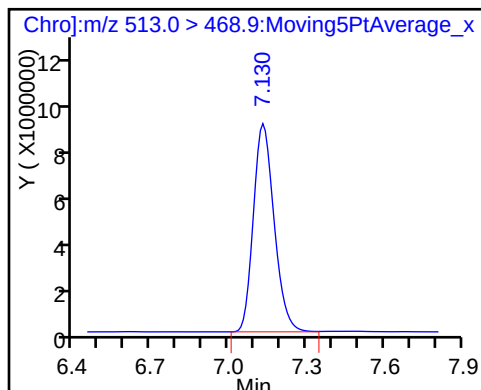
* 22 13C2 PFDA (IS)



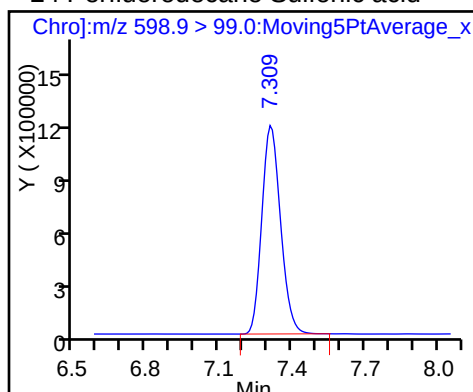
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

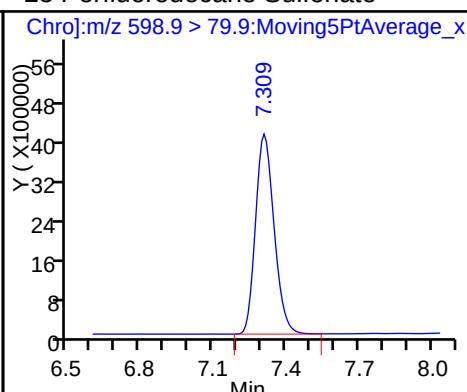
24 Perfluorodecane Sulfonic acid



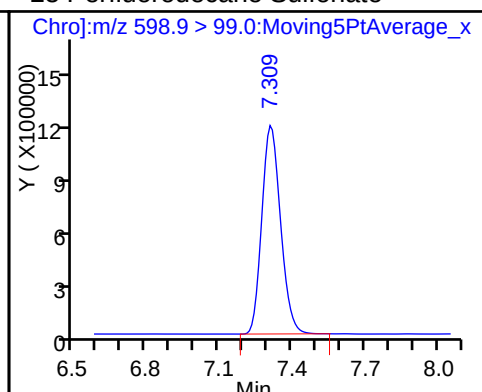
24 Perfluorodecane Sulfonic acid



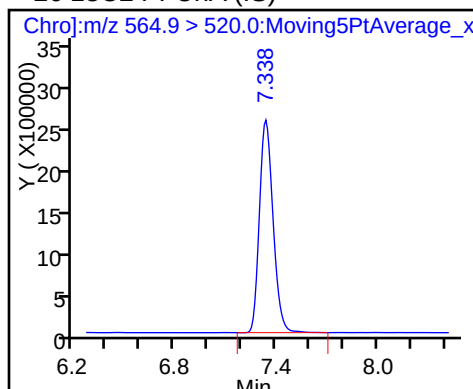
25 Perfluorodecane Sulfonate



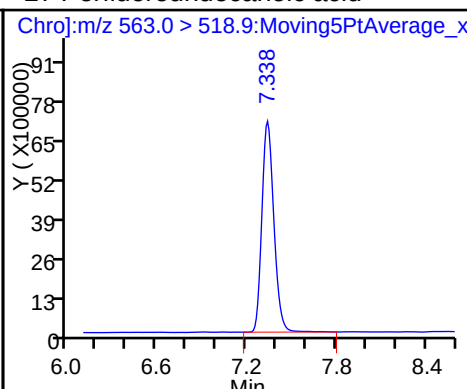
25 Perfluorodecane Sulfonate



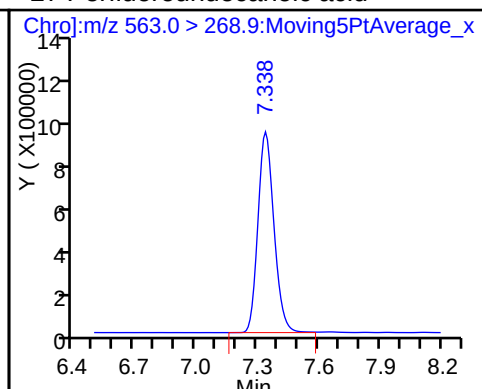
* 26 13C2 PFUnA (IS)



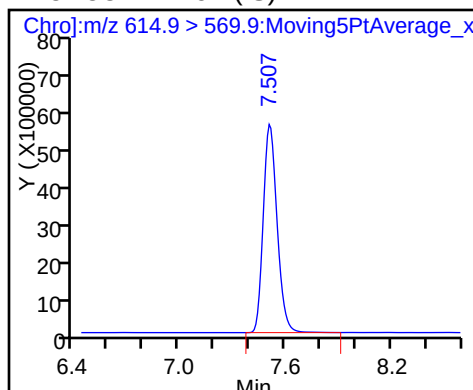
27 Perfluoroundecanoic acid



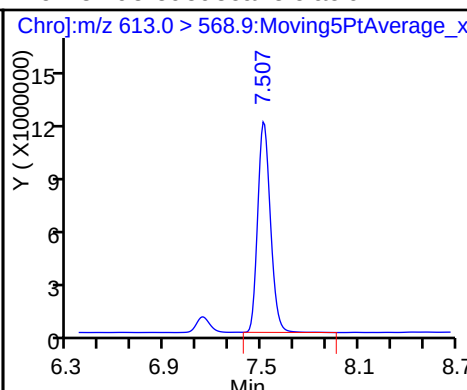
27 Perfluoroundecanoic acid



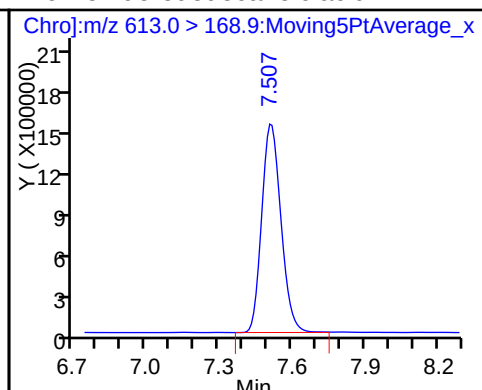
* 28 13C2 PFDaA (IS)



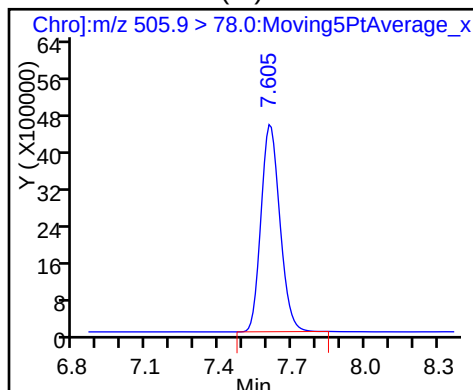
29 Perfluorododecanoic acid



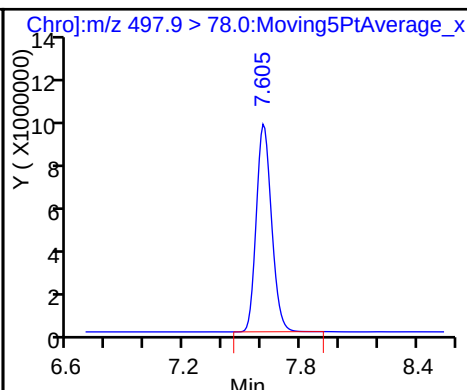
29 Perfluorododecanoic acid



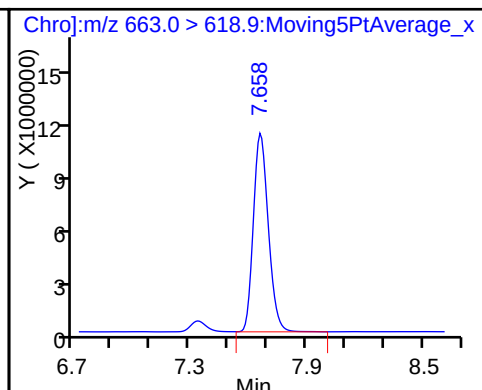
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



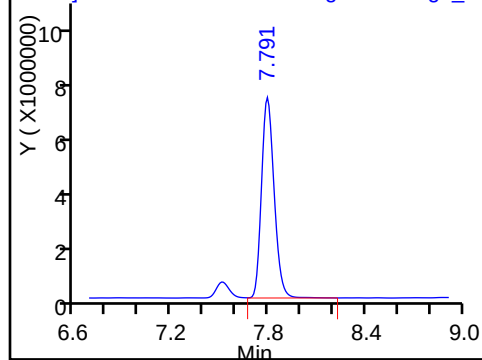
30 Perfluorotridecanoic acid



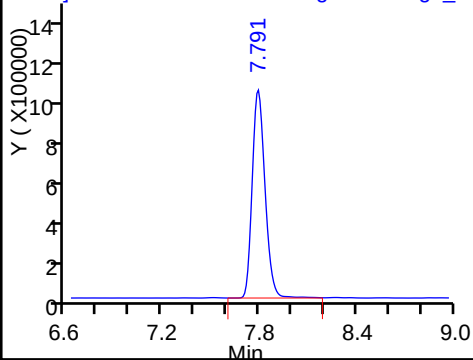
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



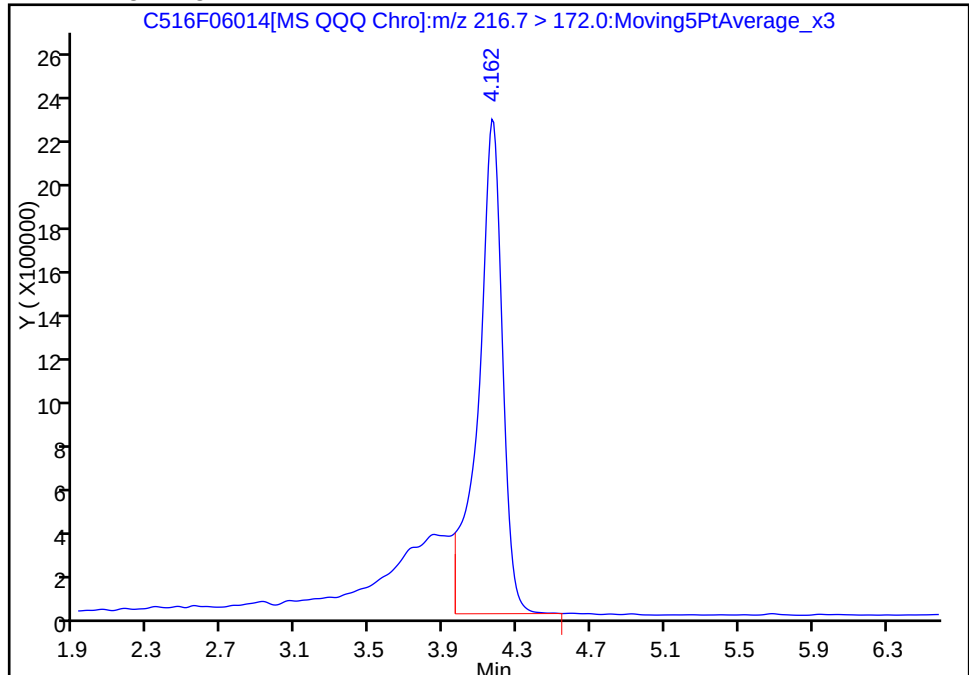
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d
Injection Date: 06-Jun-2016 16:03:46 Instrument ID: LC_LCMS5
Lims ID: STD0200
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

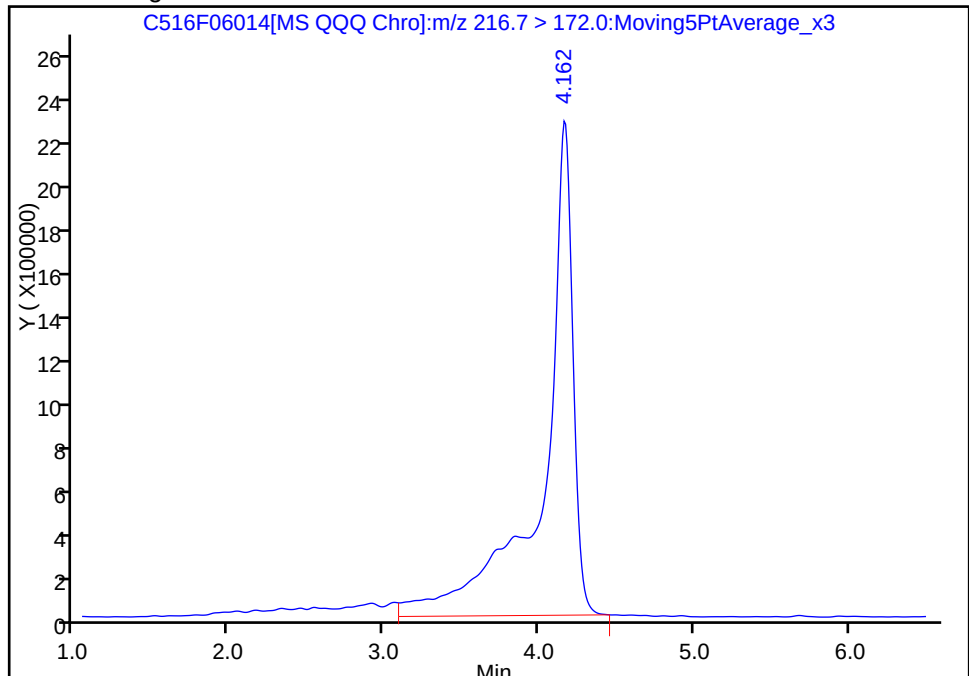
RT: 4.16
Area: 19722665
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 29015390
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:57:55
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06015.d
 Lims ID: STD0500
 Client ID:
 Sample Type: IC Calib Level: 8
 Inject. Date: 06-Jun-2016 16:16:04 ALS Bottle#: 0 Worklist Smp#: 10
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0500, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:17 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:58:12

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.162 4.162 0.0 28899590 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 4.162 0.0 1.000 157344591 50.7

3 Perfluoropentanoic acid

263.0 > 218.9 5.232 5.232 0.0 0.898 120508960 51.5

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.355 5.364 -0.009 0.855 52661159 46.7

298.9 > 98.9 5.355 5.364 -0.009 0.855 15734279 3.35(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.355 5.364 -0.009 0.855 52661159 46.7

298.9 > 98.9 5.355 5.364 -0.009 0.855 15734279 3.35(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.828 5.818 0.010 19918903 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.828 5.819 0.009 1.000 92031312 48.9

313.0 > 118.6 5.819 5.819 0.0 0.998 2416833 38.08(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.254 6.244 0.010 0.948 102889489 48.9

363.0 > 168.9 6.254 6.244 0.010 0.948 26954929 3.82(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.263 6.253 0.010 2040676 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.263 6.253 0.010 1.000 37926174 45.7

398.9 > 98.9 6.263 6.253 0.010 1.000 13830962 2.74(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.263 6.253 0.010 1.000 37926174 45.7

398.9 > 98.9 6.263 6.253 0.010 1.000 13830962 2.74(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.959	43315154	47.2			
449.0 > 98.9	6.583	6.583	0.0	0.959	13564341		3.19(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.959	43315154	47.2			
449.0 > 98.9	6.583	6.583	0.0	0.959	13564341		3.19(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	85046612	43.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		24245688	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	118077119	47.0			
413.0 > 169.0	6.594	6.594	0.0	1.000	34953467		3.38(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	19830288	43.0			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		7235826	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	40197453	45.6			R
498.9 > 98.9	6.866	6.866	0.0	1.000	14750225		2.73(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.886	0.0		16026593	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	1.000	90947910	50.8			
463.0 > 218.9	6.886	6.886	0.0	1.000	13125494		6.93(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		21729944	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	109010928	49.9			
513.0 > 219.0	7.121	7.130	-0.009	1.000	10212681		10.67(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.065	47343835	50.7			
598.9 > 99.0	7.309	7.318	-0.009	1.065	13810385		3.43(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.065	47343835	50.7			
598.9 > 99.0	7.309	7.318	-0.009	1.065	13810385		3.43(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		11601224	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.347	-0.009	1.000	77899378	47.6			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	9857109		7.90(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		28794485	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	142077526	48.2			
613.0 > 168.9	7.507	7.517	-0.010	1.000	18271384		7.78(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		21576040	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06015.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	117575149	50.2			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	121132497	45.5			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	88331768	51.9			
712.9 > 169.0	7.791	7.800	-0.009	1.038	13420452		6.58(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 100.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 100.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06015.d

Injection Date: 06-Jun-2016 16:16:04

Instrument ID: LC_LCMS5

Lims ID: STD0500

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

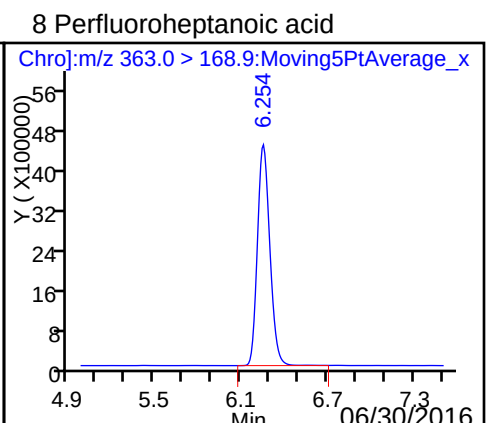
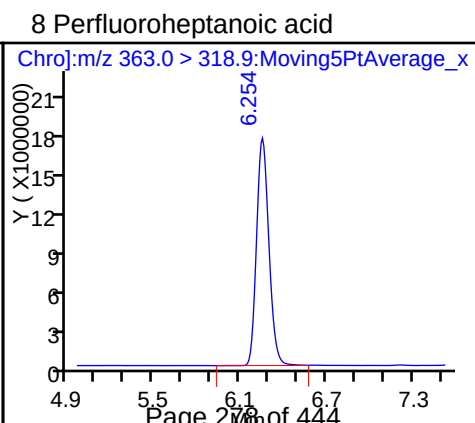
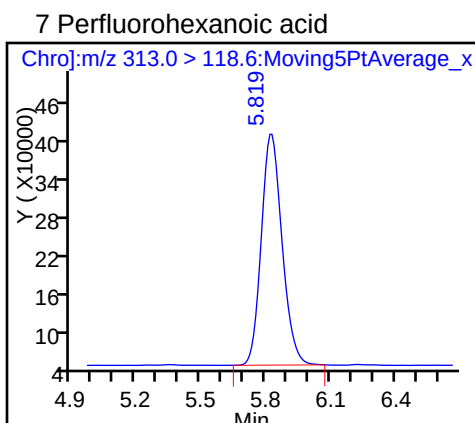
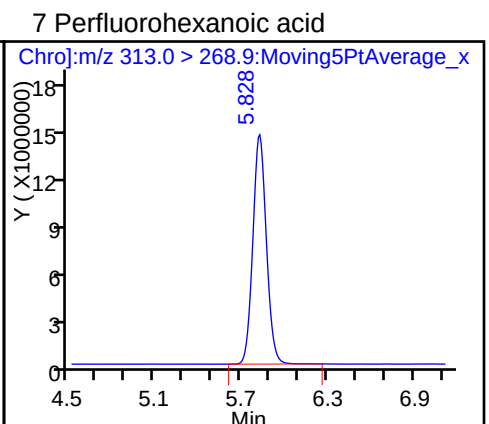
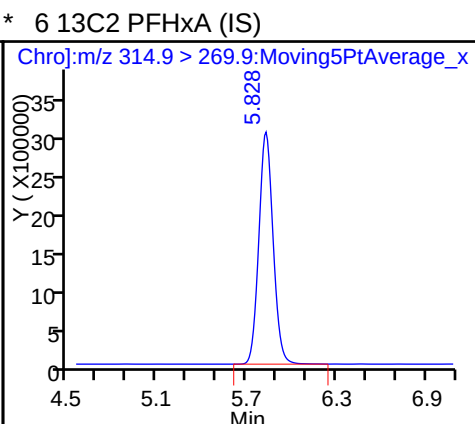
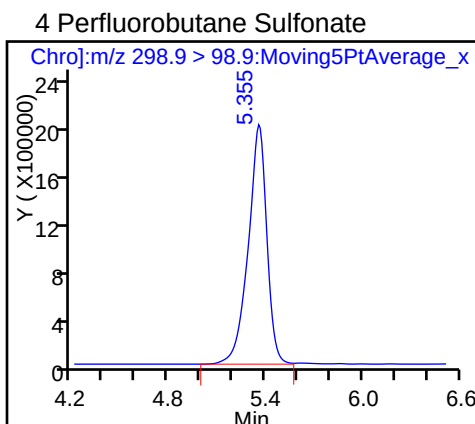
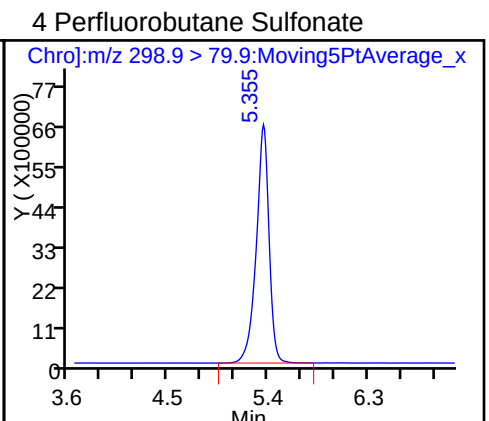
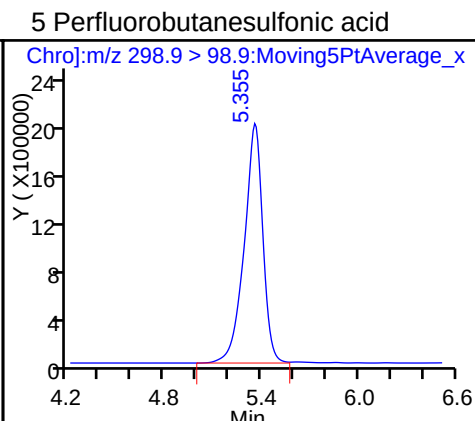
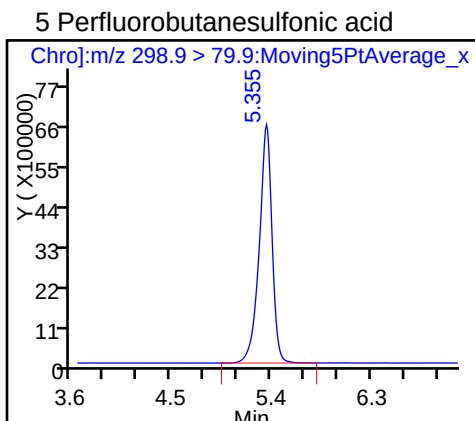
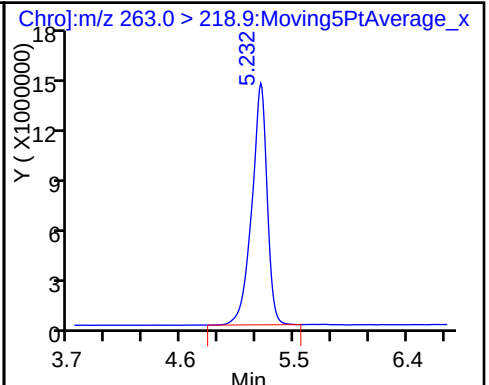
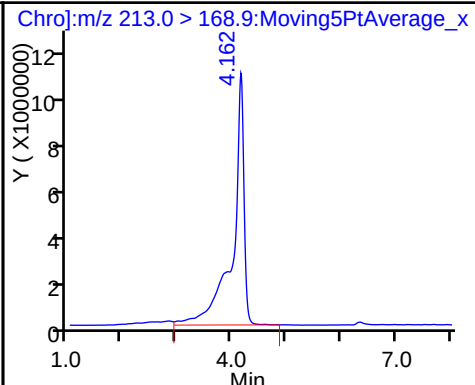
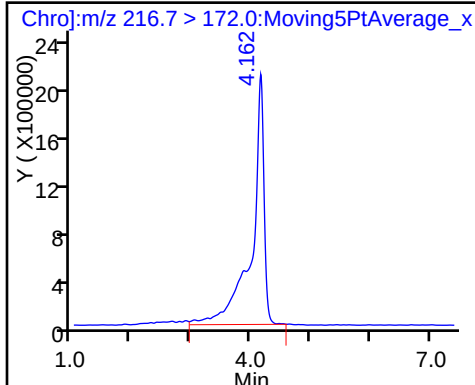
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

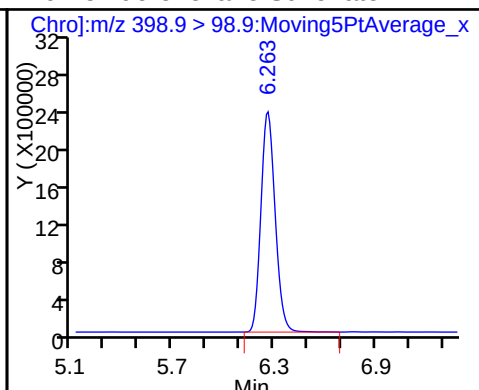
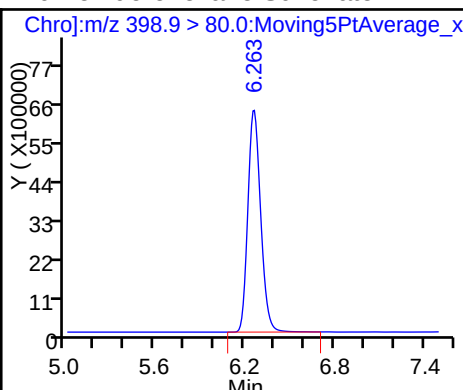
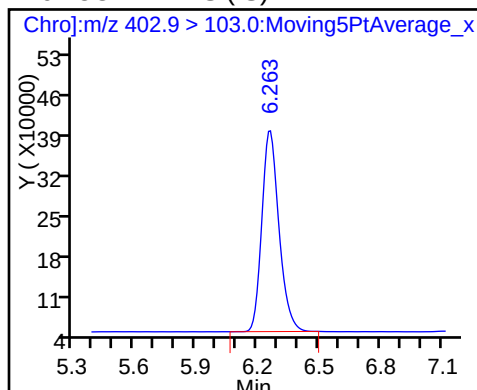
3 Perfluoropentanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

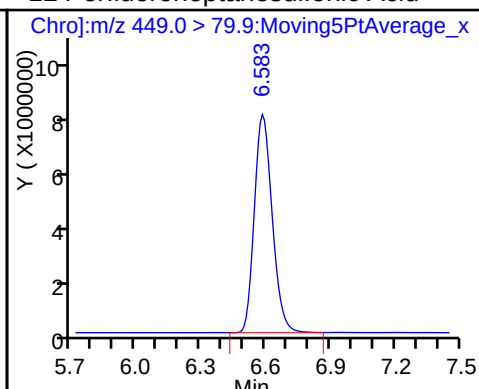
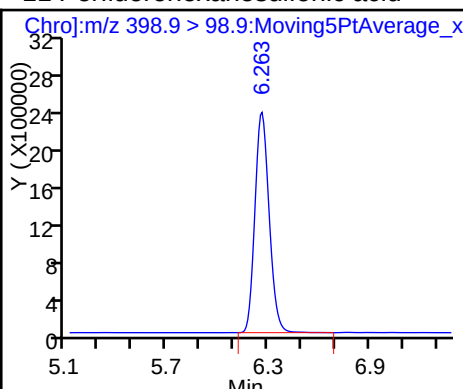
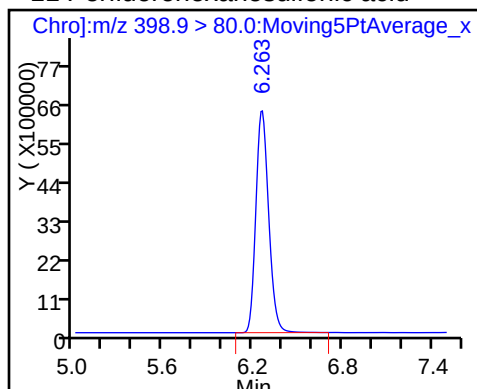
10 Perfluorohexane Sulfonate



11 Perfluorohexanesulfonic acid

11 Perfluorohexanesulfonic acid

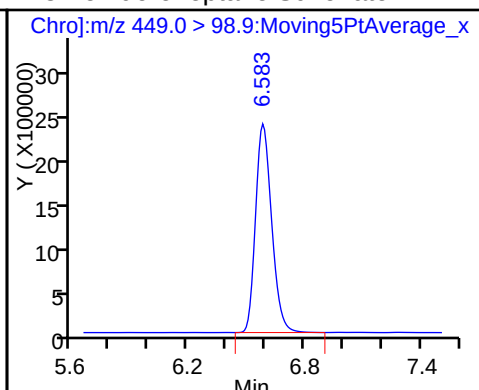
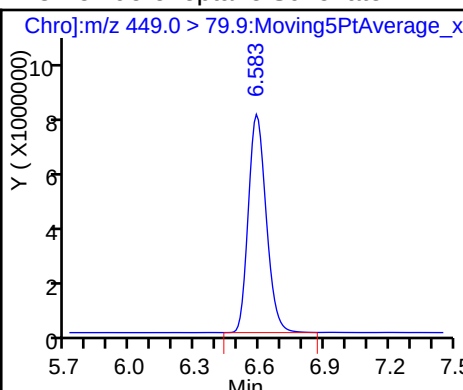
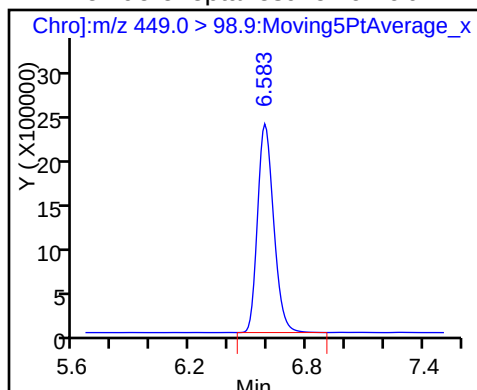
12 Perfluoroheptanesulfonic Acid



12 Perfluoroheptanesulfonic Acid

13 Perfluoroheptane Sulfonate

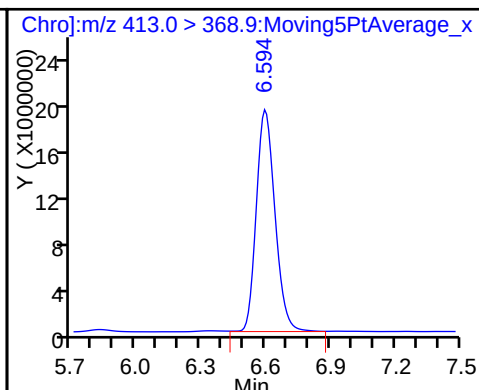
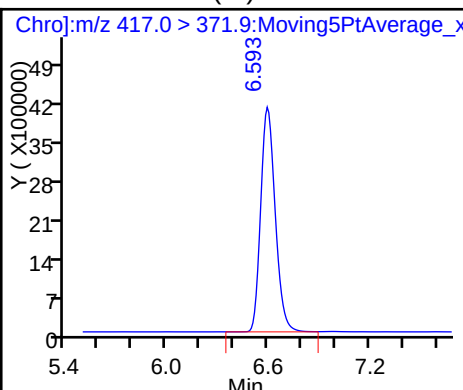
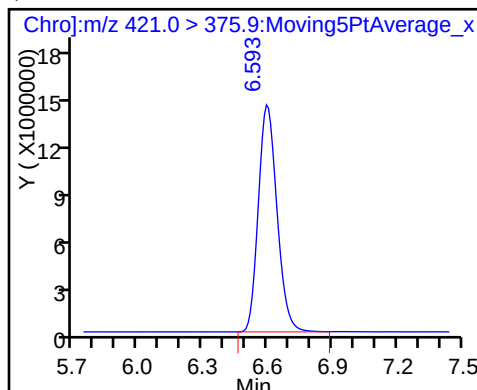
13 Perfluoroheptane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

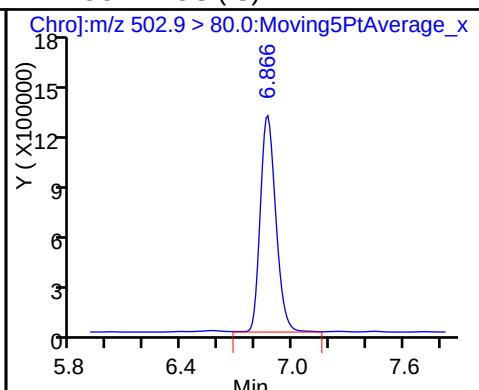
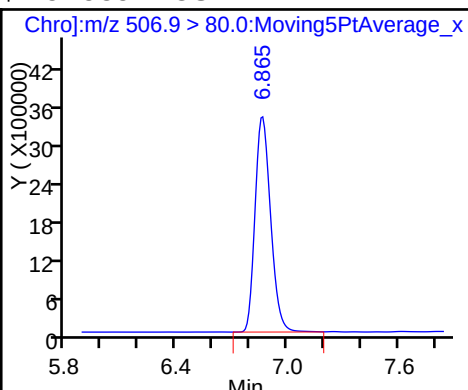
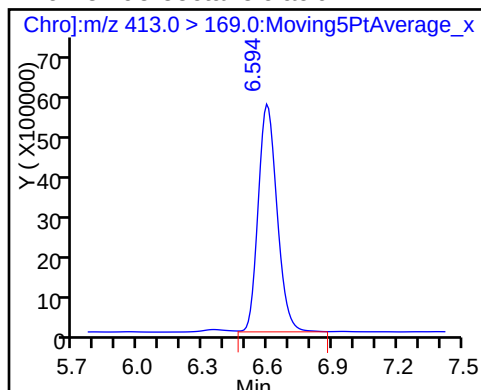
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

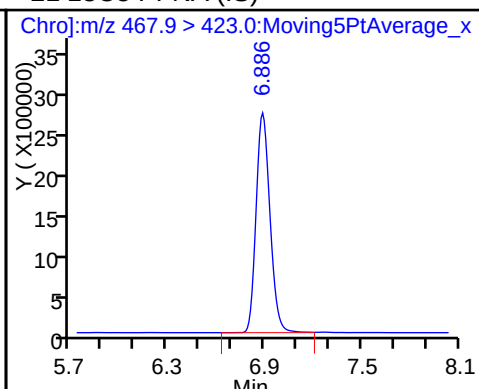
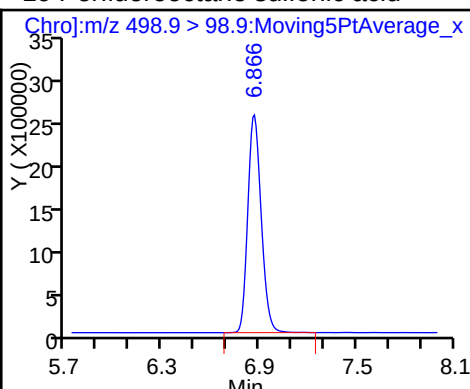
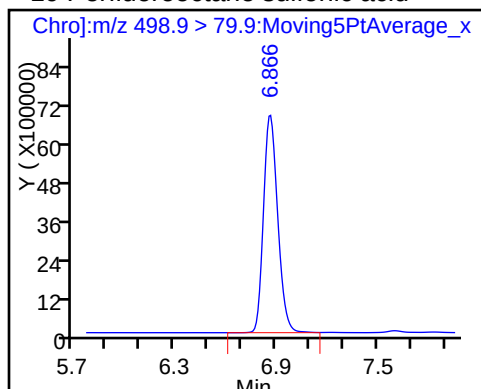
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

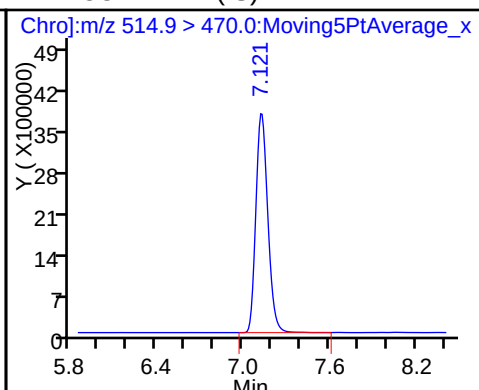
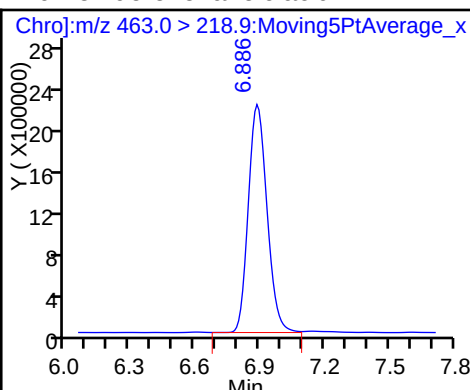
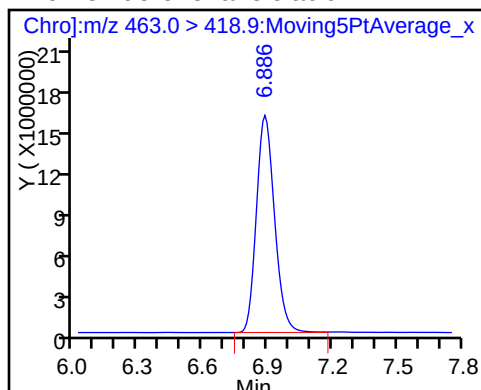
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

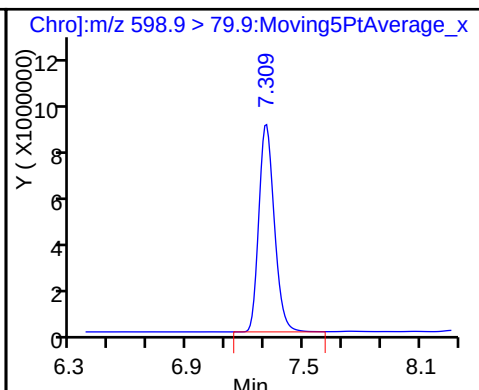
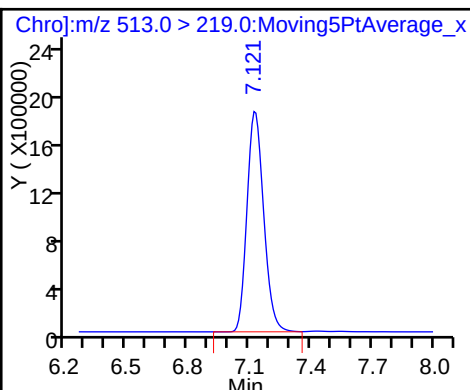
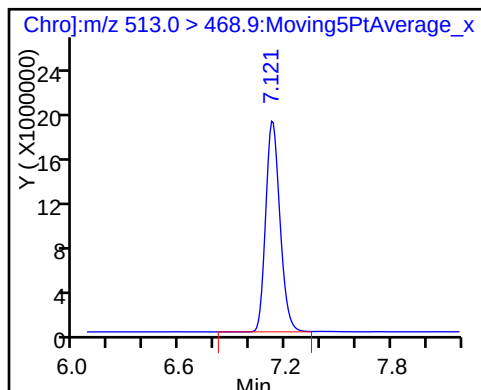
* 22 13C2 PFDA (IS)



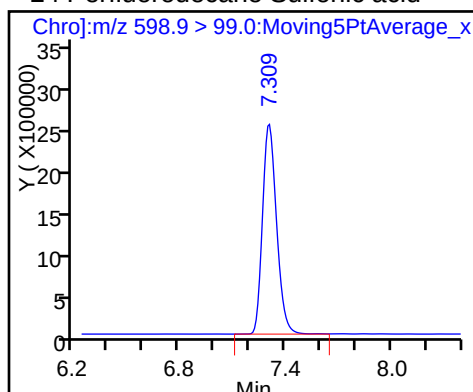
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

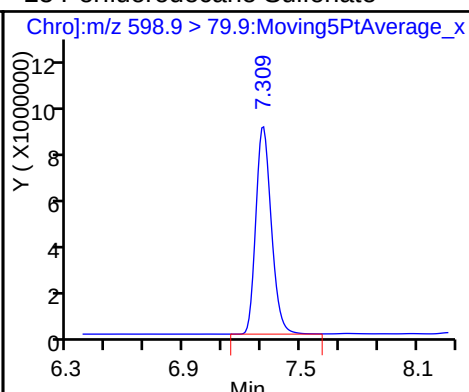
24 Perfluorodecane Sulfonic acid



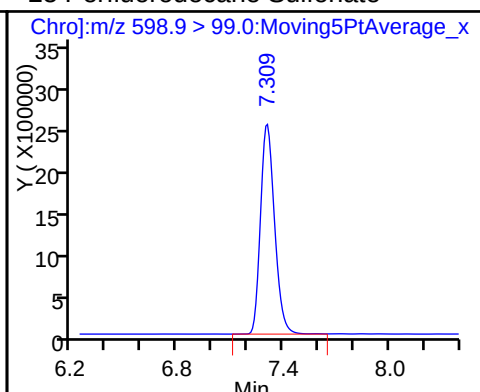
24 Perfluorodecane Sulfonic acid



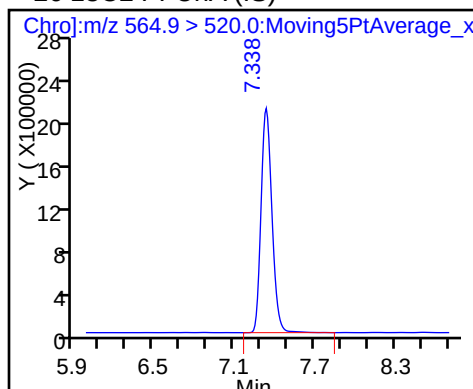
25 Perfluorodecane Sulfonate



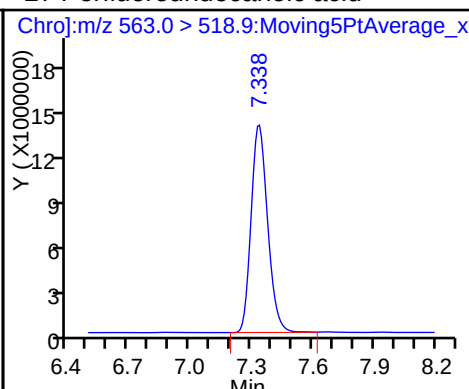
25 Perfluorodecane Sulfonate



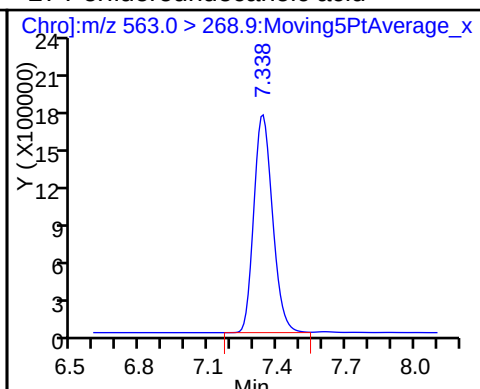
* 26 13C2 PFUnA (IS)



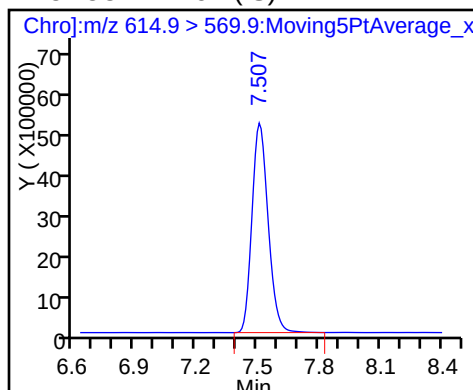
27 Perfluoroundecanoic acid



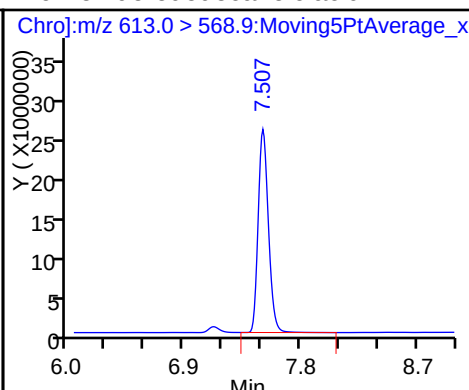
27 Perfluoroundecanoic acid



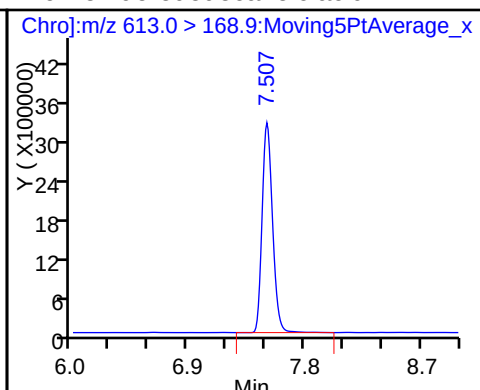
* 28 13C2 PFDaA (IS)



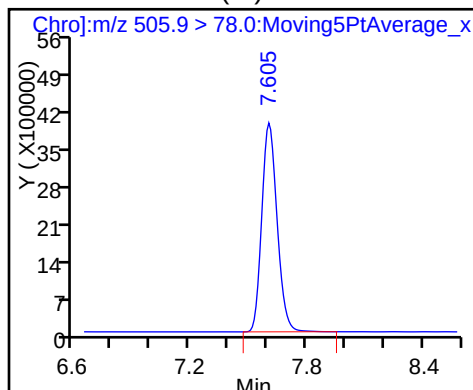
29 Perfluorododecanoic acid



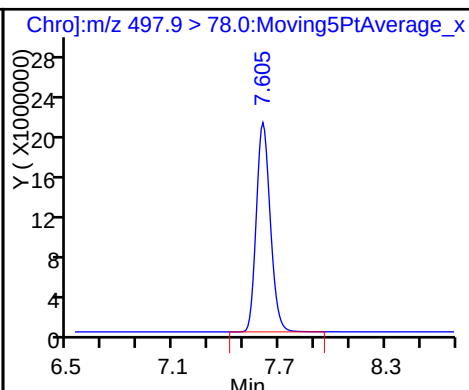
29 Perfluorododecanoic acid



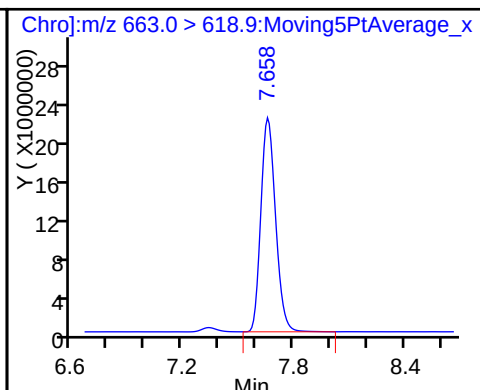
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

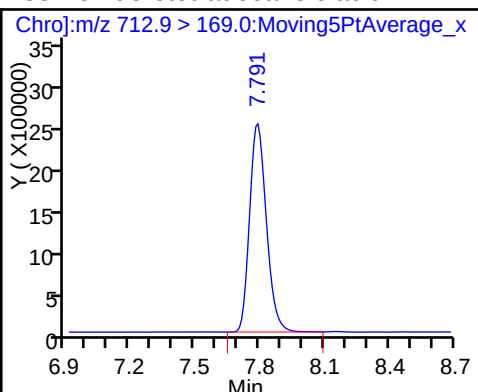
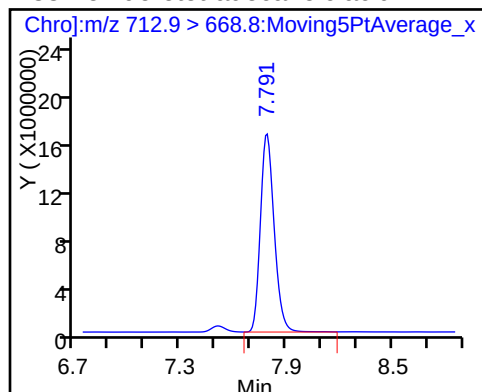


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Lims ID: STD1250
 Client ID:
 Sample Type: IC Calib Level: 9
 Inject. Date: 06-Jun-2016 16:28:22 ALS Bottle#: 0 Worklist Smp#: 11
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 1250, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:24 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:58:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.162 4.162 0.0 28007845 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 4.162 0.0 1.000 394160471 131.2

3 Perfluoropentanoic acid

263.0 > 218.9 5.232 5.232 0.0 0.899 255912628 126.3

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.355 5.364 -0.009 0.856 113831493 126.6

298.9 > 98.9 5.355 5.364 -0.009 0.856 33531607 3.39(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.355 5.364 -0.009 0.856 113831493 126.6

298.9 > 98.9 5.355 5.364 -0.009 0.856 33531607 3.39(1.80-3.35)

R
R

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.818 5.818 0.0 17267639 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.819 5.819 0.0 1.000 196806552 120.8

313.0 > 118.6 5.819 5.819 0.0 1.000 5432175 36.23(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.244 6.244 0.0 0.947 201805611 119.2

363.0 > 168.9 6.244 6.244 0.0 0.947 53021334 3.81(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.253 6.253 0.0 1627148 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.253 6.253 0.0 1.000 77830813 117.9

398.9 > 98.9 6.253 6.253 0.0 1.000 26968813 2.89(1.30-2.41)

R
R

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.253 6.253 0.0 1.000 77830813 117.9

398.9 > 98.9 6.253 6.253 0.0 1.000 26968813 2.89(1.85-1.85)

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.574	6.583	-0.009	0.959	81786282	103.6			
449.0 > 98.9	6.574	6.583	-0.009	0.959	25958942		3.15(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.574	6.583	-0.009	0.959	81786282	103.6			
449.0 > 98.9	6.574	6.583	-0.009	0.959	25958942		3.15(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.584	6.593	-0.009	0.999	162199054	103.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		19521527	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.584	6.594	-0.010	0.999	220819164	109.3			
413.0 > 169.0	6.594	6.594	0.0	1.000	64227565		3.44(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.856	6.865	-0.009	1.000	36728856	92.6			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.856	6.866	-0.010		6220431	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.857	6.866	-0.009	1.000	74481235	98.3			R
498.9 > 98.9	6.857	6.866	-0.009	1.000	26876105		2.77(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.876	6.886	-0.010		11951584	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.877	6.886	-0.010	1.000	168854641	126.5			
463.0 > 218.9	6.877	6.886	-0.010	1.000	25008074		6.75(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		17676292	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	219177035	123.5			R
513.0 > 219.0	7.121	7.130	-0.009	1.000	21075182		10.40(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.299	7.318	-0.019	1.065	90907790	113.4			
598.9 > 99.0	7.299	7.318	-0.019	1.065	27106961		3.35(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.299	7.318	-0.019	1.065	90907790	113.4			
598.9 > 99.0	7.299	7.318	-0.019	1.065	27106961		3.35(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.328	7.347	-0.019		8840302	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.329	7.347	-0.019	1.000	154032440	123.5			R
563.0 > 268.9	7.329	7.347	-0.019	1.000	19397481		7.94(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.498	7.517	-0.019		23005975	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.498	7.517	-0.019	1.000	293807930	125.0			
613.0 > 168.9	7.498	7.517	-0.019	1.000	37965617		7.74(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.595	7.614	-0.019		18054962	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.596	7.615	-0.019	1.000	250150013	127.7			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.649	7.668	-0.019	1.020	254423900	119.8			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.781	7.800	-0.019	1.038	191754560	141.1			
712.9 > 169.0	7.781	7.800	-0.019	1.038	27998880		6.85(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 250.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 250.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Injection Date: 06-Jun-2016 16:28:22

Instrument ID: LC_LCMS5

Lims ID: STD1250

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 11

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

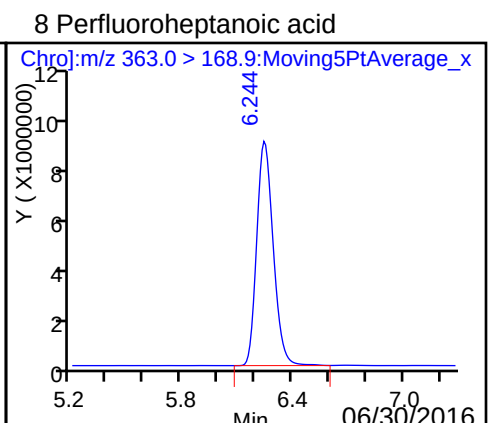
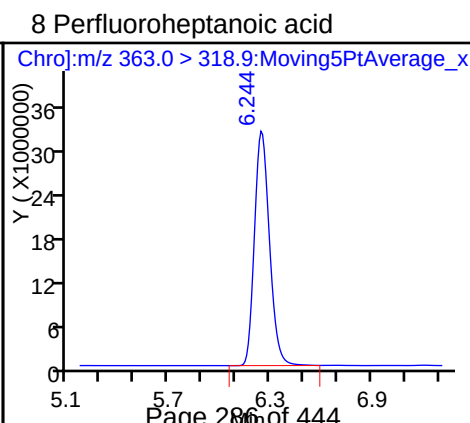
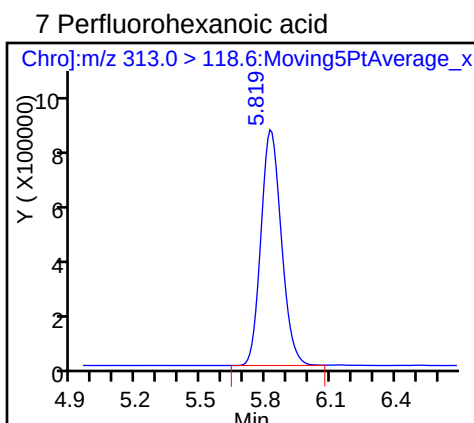
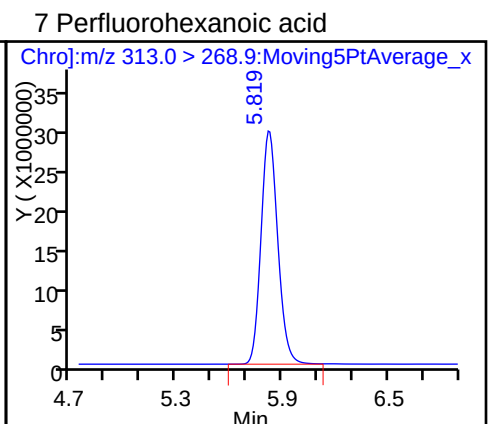
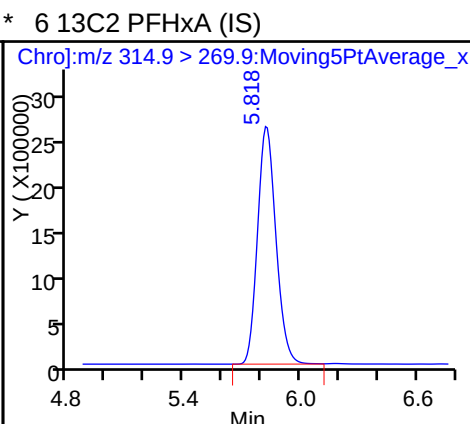
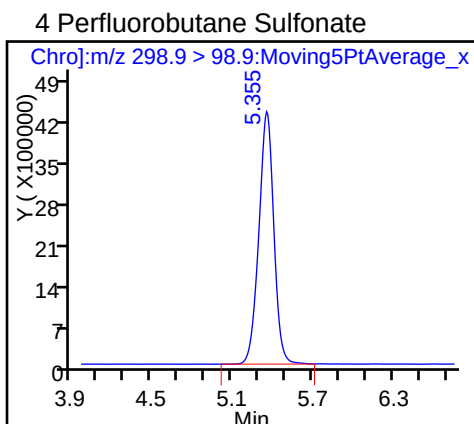
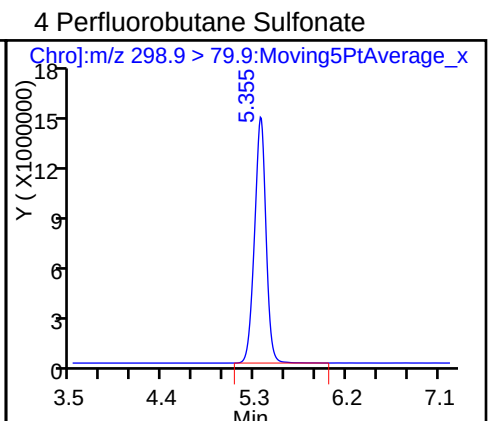
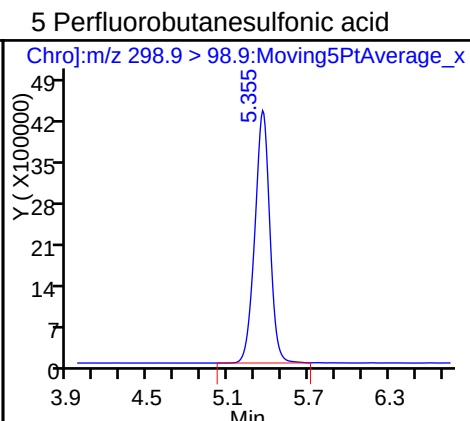
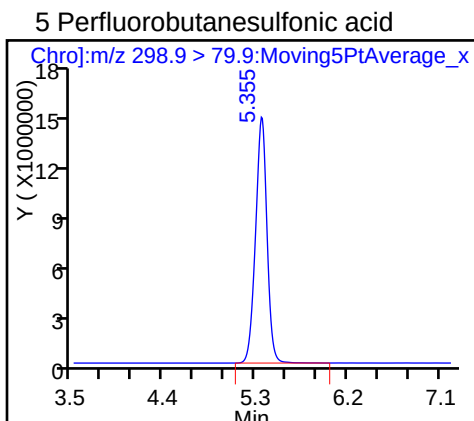
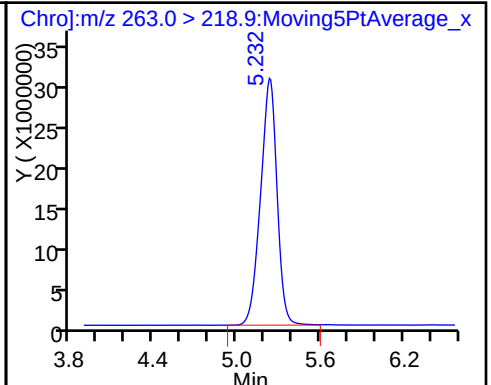
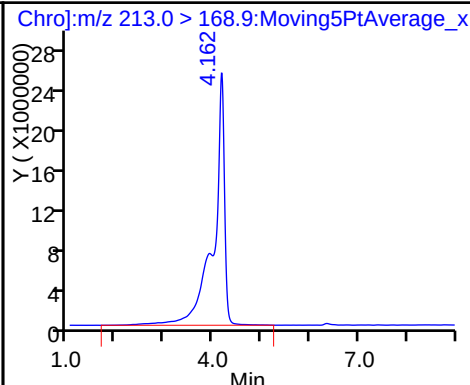
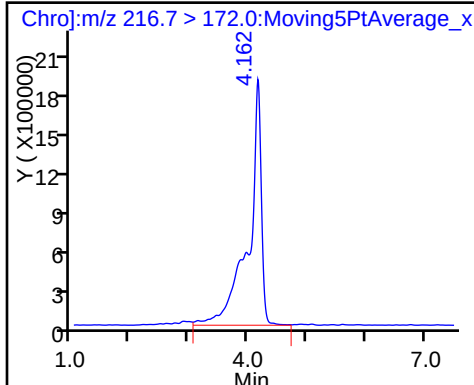
Method: 8321_PFC

Limit Group: LC - PFC

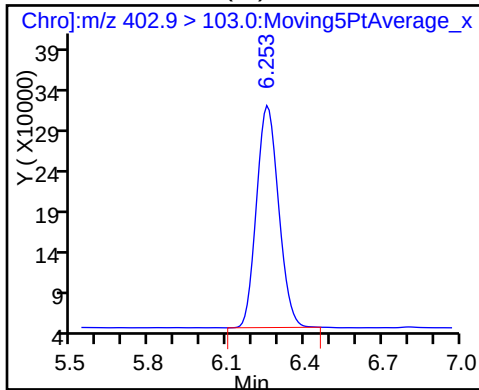
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

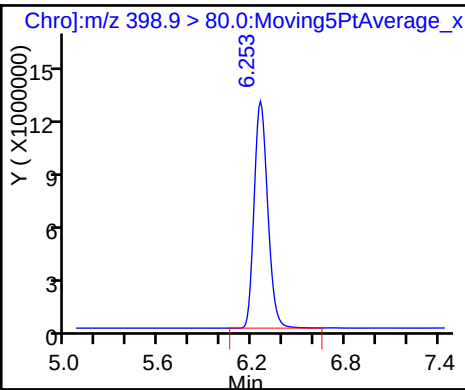
3 Perfluoropentanoic acid



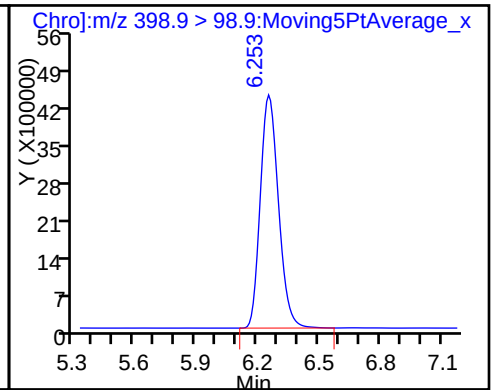
* 9 18O2 PFHxS (IS)



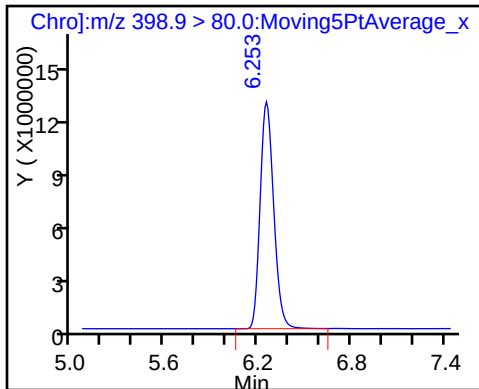
10 Perfluorohexane Sulfonate



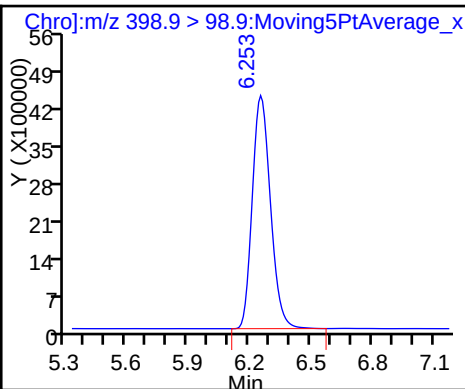
10 Perfluorohexane Sulfonate



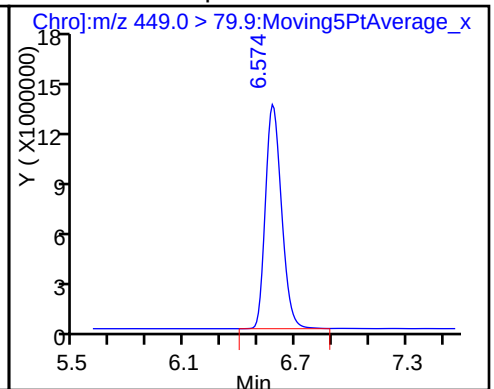
11 Perfluorohexanesulfonic acid



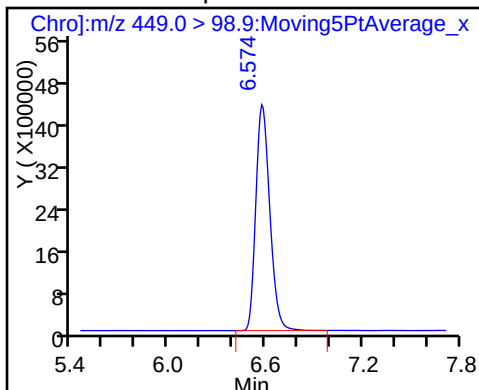
11 Perfluorohexanesulfonic acid



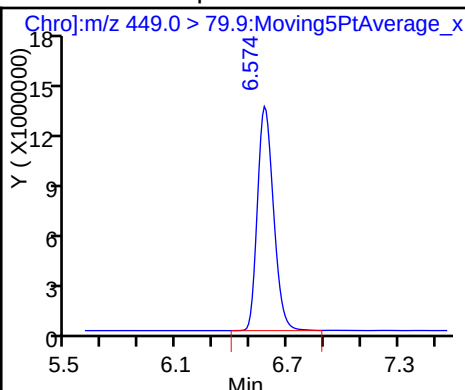
12 Perfluoroheptanesulfonic Acid



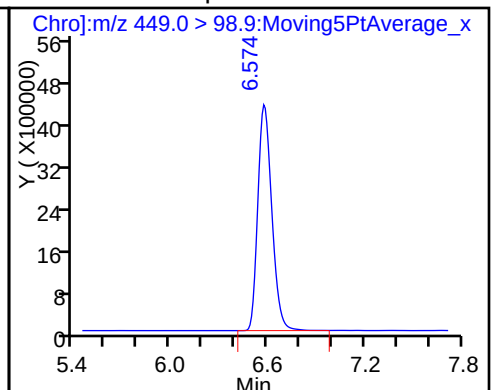
12 Perfluoroheptanesulfonic Acid



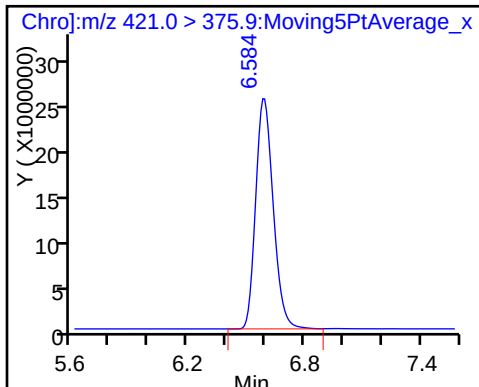
13 Perfluoroheptane Sulfonate



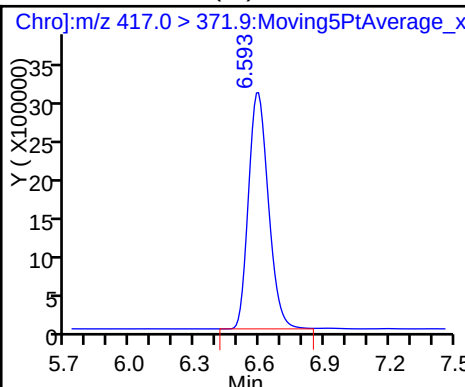
13 Perfluoroheptane Sulfonate



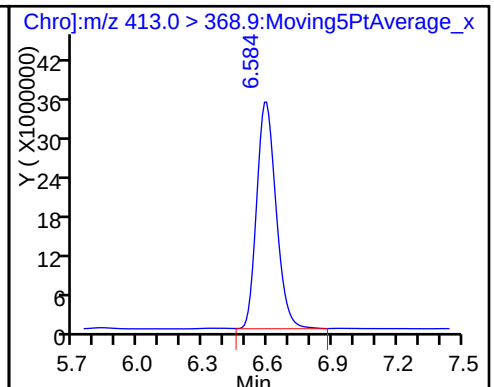
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



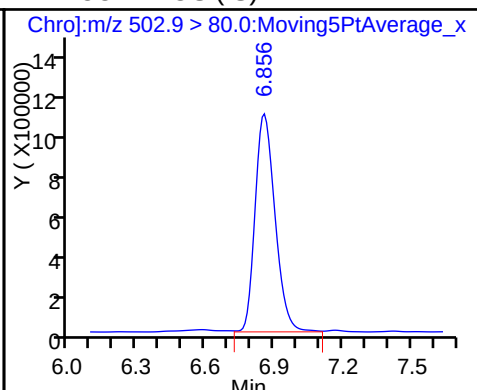
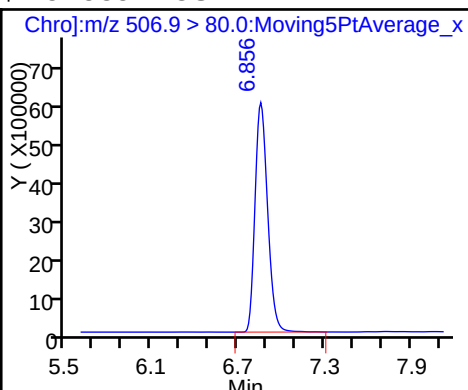
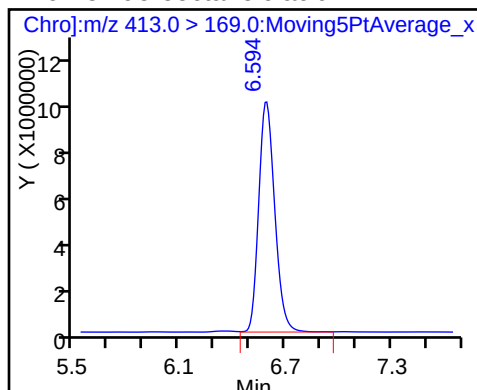
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

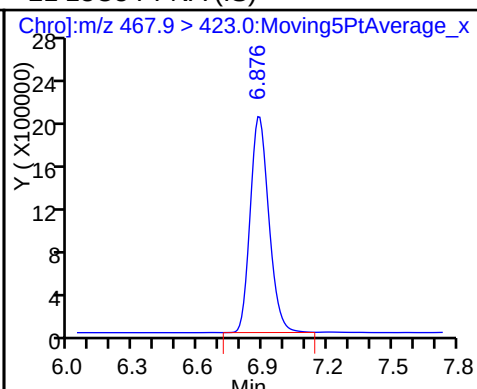
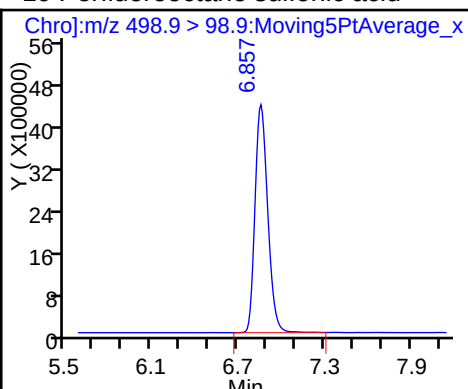
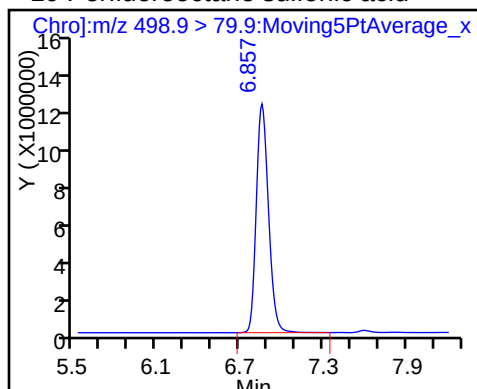
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

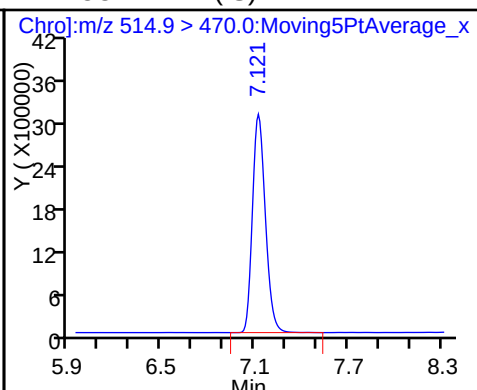
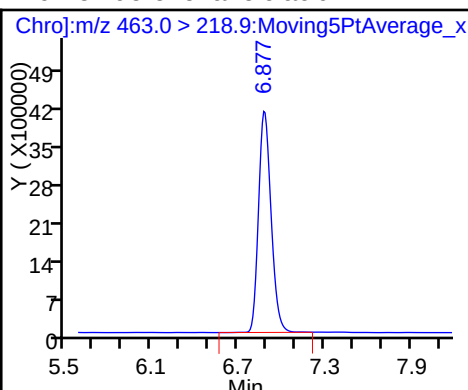
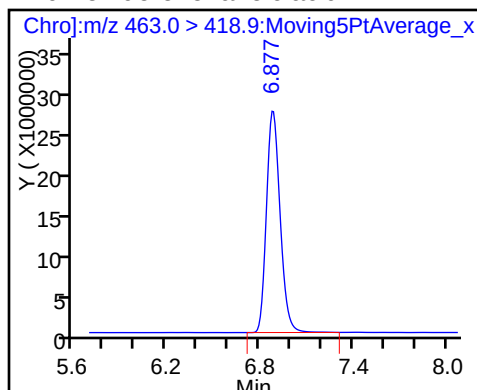
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

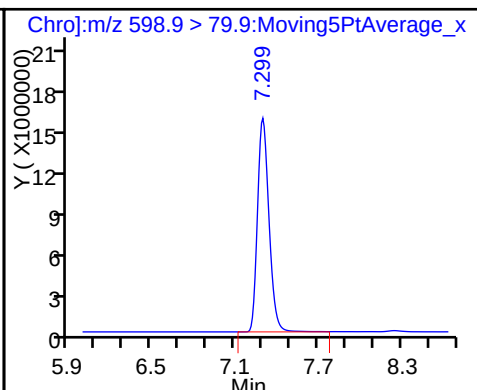
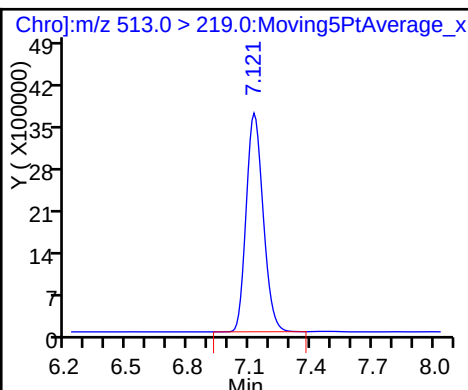
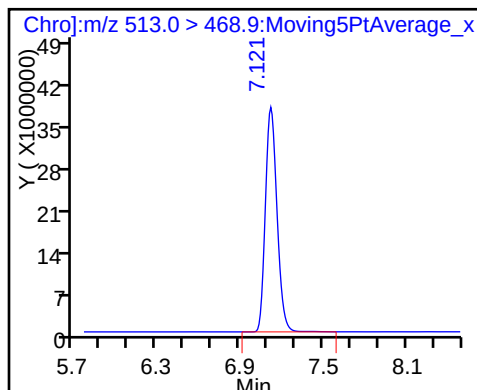
* 22 13C2 PFDA (IS)



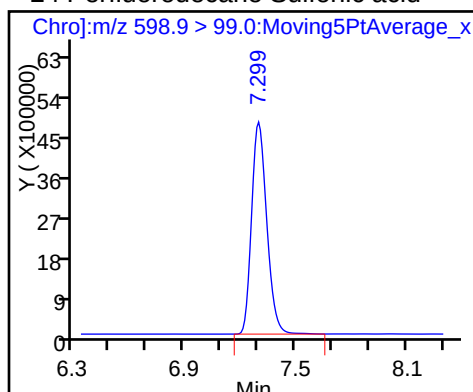
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

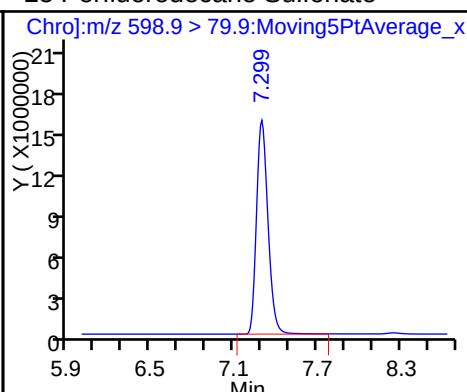
24 Perfluorodecane Sulfonic acid



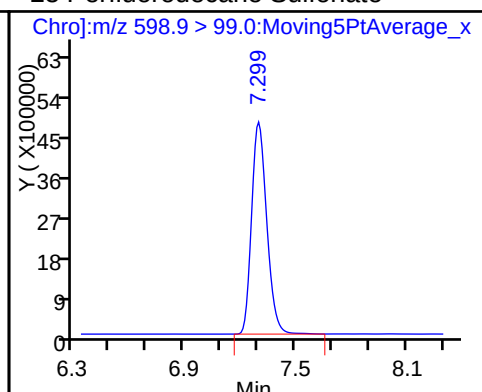
24 Perfluorodecane Sulfonic acid



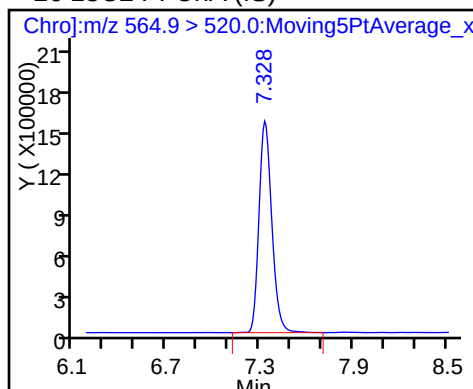
25 Perfluorodecane Sulfonate



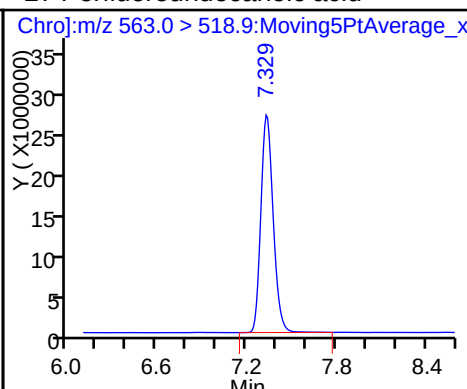
25 Perfluorodecane Sulfonate



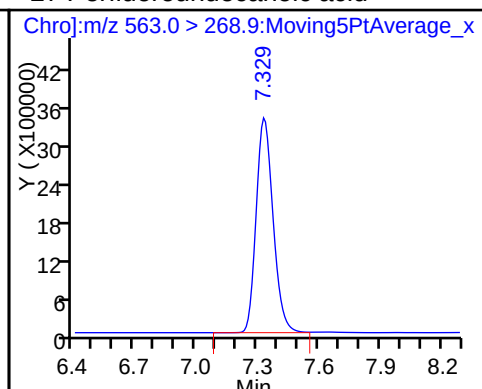
* 26 13C2 PFUnA (IS)



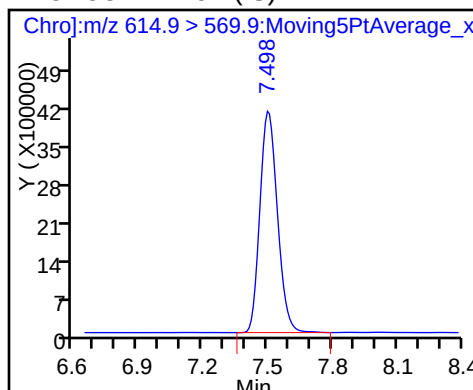
27 Perfluoroundecanoic acid



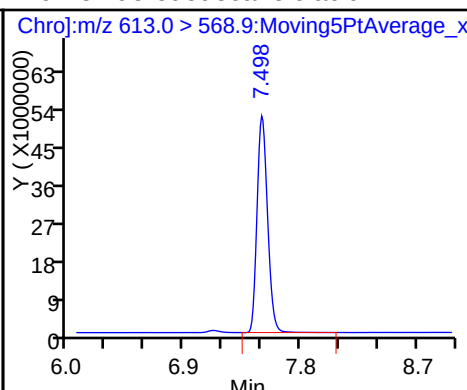
27 Perfluoroundecanoic acid



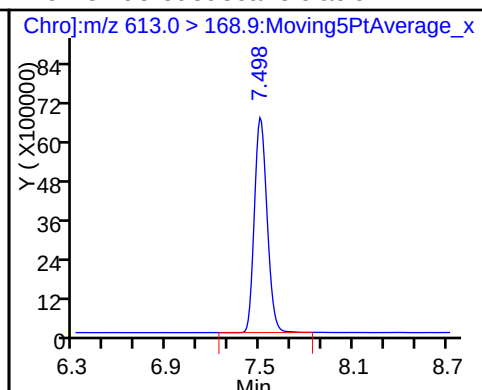
* 28 13C2 PFDaA (IS)



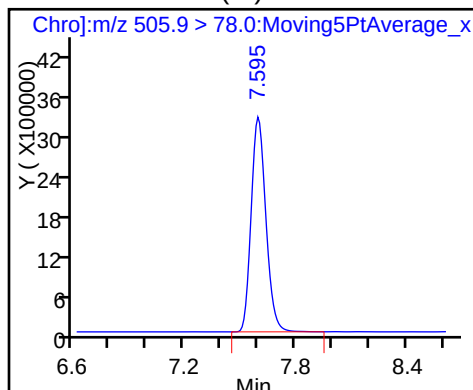
29 Perfluorododecanoic acid



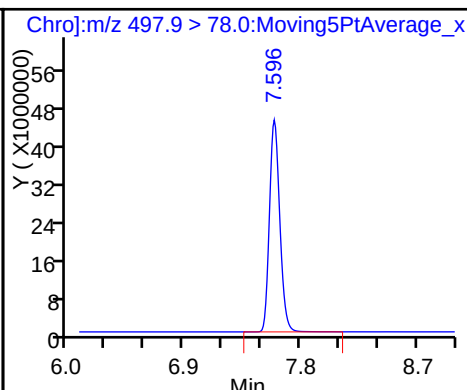
29 Perfluorododecanoic acid



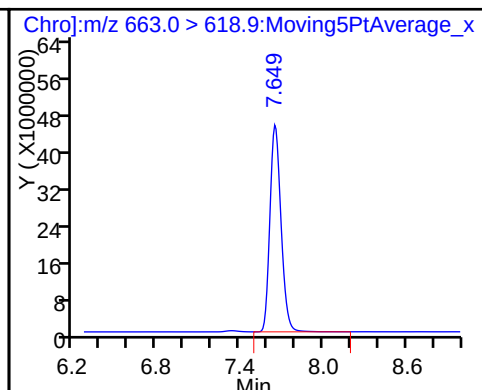
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

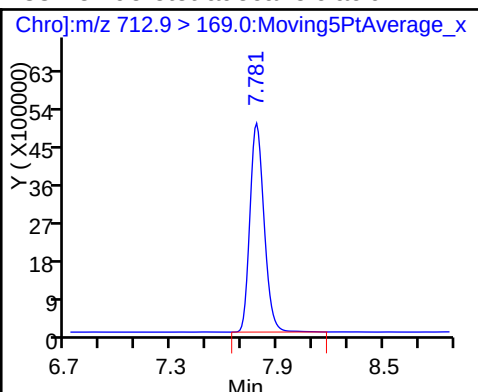
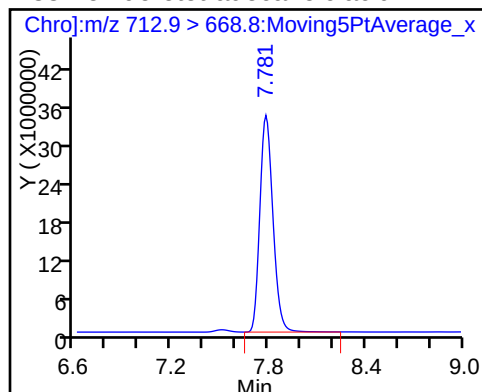


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Lab Sample ID: ICV 280-328740/13 Calibration Date: 06/06/2016 16:53

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F06018.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.068		1.99	2.00	-0.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.192		2.01	2.00	0.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		5.275		1.79	1.77	1.3	30.0
Perfluorobutanesulfonic acid (PFHxA)	Lin2		5.275		1.79	1.77	1.3	30.0
Perfluorohexanoic acid (PFHxS)	Lin2		1.031		2.16	2.00	8.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.421		2.01	1.82	10.5	30.0
Perfluorohexanesulfonic acid (PFHpA)	Lin2		4.421		2.01	1.82	10.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9850		2.24	2.00	11.9	30.0
Perfluoroheptane Sulfonate (PFHpS)	Lin2		1.229		1.94	1.90	1.8	30.0
Perfluoroheptanesulfonic acid (PFHpS)	Lin2		1.229		1.94	1.90	1.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.111		2.08	2.00	3.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.331		2.22	2.00	10.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.177		2.06	2.00	3.2	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.049		2.05	2.00	2.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.196		1.83	1.93	-4.9	30.0
Perfluorodecane Sulfonic acid (PFUnA)	Lin2		1.196		1.83	1.93	-4.9	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.377		1.90	2.00	-5.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.036		1.97	2.00	-1.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.131		2.08	2.00	3.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8932		1.86	2.00	-7.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6095		2.06	2.00	2.9	30.0
13C8 PFOA	Lin2		0.8307		10.3	10.0	2.8	30.0
13C8 PFOS	Lin2		0.5950		9.30	9.56	-2.7	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 06-Jun-2016 16:53:00 ALS Bottle#: 0 Worklist Smp#: 13
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: ICV, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub2
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:01:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0	4.465	4.465	0.0		32017793	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.465	4.465	0.0	1.000	6838874	1.99			M

3 Perfluoropentanoic acid

263.0 > 218.9	5.336	5.336	0.0	0.907	5621809	2.01			

5 Perfluorobutanesulfonic acid

298.9 > 79.9	5.440	5.440	0.0	0.863	2478614	1.79			
298.9 > 98.9	5.450	5.440	0.010	0.865	814315		3.04(2.57-2.57)		

4 Perfluorobutane Sulfonate

298.9 > 79.9	5.440	5.440	0.0	0.863	2478614	1.79			
298.9 > 98.9	5.450	5.440	0.010	0.865	814315		3.04(1.80-3.35)		

* 6 13C2 PFHxA (IS)

314.9 > 269.9	5.885	5.885	0.0		23574022	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.885	5.885	0.0	1.000	4860408	2.16			
313.0 > 118.6	5.876	5.885	-0.009	0.998	148939		32.63(34.05-63.23)		

8 Perfluoroheptanoic acid

363.0 > 318.9	6.292	6.292	0.0	0.949	6515774	2.24			
363.0 > 168.9	6.292	6.292	0.0	0.949	1577933		4.13(3.35-6.23)		

* 9 18O2 PFHxS (IS)

402.9 > 103.0	6.300	6.300	0.0		2511258	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.291	6.291	0.0	0.999	2138144	2.01			R
398.9 > 98.9	6.301	6.291	0.010	1.000	735033		2.91(1.30-2.41)		

11 Perfluorohexanesulfonic acid

398.9 > 80.0	6.291	6.291	0.0	0.999	2138144	2.01			
398.9 > 98.9	6.301	6.291	0.010	1.000	735033		2.91(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.621	6.621	0.0	0.959	2366786	1.94			
449.0 > 98.9	6.621	6.621	0.0	0.959	812675		2.91(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.621	6.621	0.0	0.959	2366786	1.94			
449.0 > 98.9	6.621	6.621	0.0	0.959	812675		2.91(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.631	0.0	1.000	27475708	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.631	0.0		33074850	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.632	0.0	1.000	7348842	2.08			
413.0 > 169.0	6.632	6.632	0.0	1.000	2155704		3.41(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.894	6.894	0.0	0.999	5752747	9.30			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.904	0.0		9669285	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.895	6.895	0.0	0.999	2692274	2.22			R
498.9 > 98.9	6.895	6.895	0.0	0.999	893875		3.01(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.914	0.0		25183863	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.924	6.924	0.0	1.001	5925743	2.06			
463.0 > 218.9	6.914	6.924	-0.010	1.000	1008448		5.88(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.158	0.0		27322567	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.159	7.159	0.0	1.000	5730976	2.05			R
513.0 > 219.0	7.159	7.159	0.0	1.000	575203		9.96(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.337	7.337	0.0	1.063	2332951	1.83			
598.9 > 99.0	7.337	7.337	0.0	1.063	660422		3.53(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.337	7.337	0.0	1.063	2332951	1.83			
598.9 > 99.0	7.337	7.337	0.0	1.063	660422		3.53(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.366	0.0		17486001	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.366	7.366	0.0	1.000	4817084	1.90			R
563.0 > 268.9	7.357	7.366	-0.009	0.999	609957		7.90(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.545	7.545	0.0		34783992	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.545	7.545	0.0	1.000	7204407	1.97			
613.0 > 168.9	7.545	7.545	0.0	1.000	1003485		7.18(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.642	0.0		26768431	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.643	0.0	1.000	6056968	2.08			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.696	7.696	0.0	1.020	6213513	1.85			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.829	7.829	0.0	1.038	4240024	2.06			
712.9 > 169.0	7.829	7.829	0.0	1.038	763420		5.55(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_ICV-2_00001	Amount Added: 20.00	Units: uL
PFHpS-LCS_00002	Amount Added: 4.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d

Injection Date: 06-Jun-2016 16:53:00

Instrument ID: LC_LCMS5

Lims ID: ICV

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 13

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

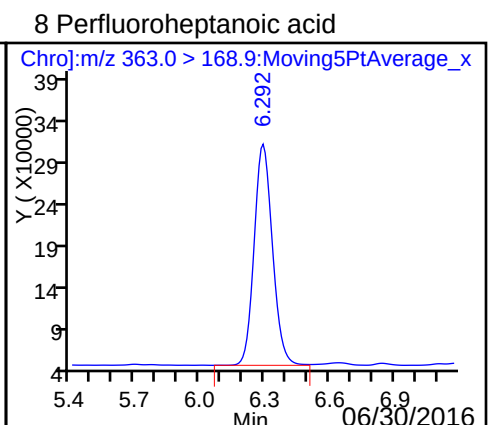
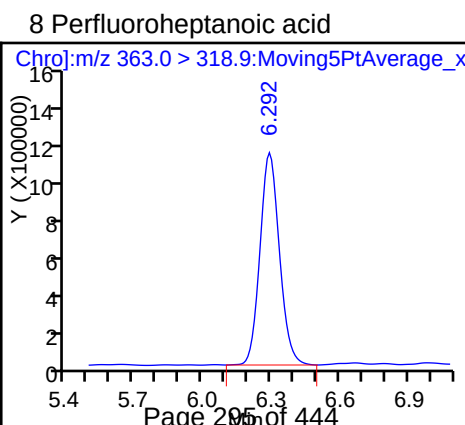
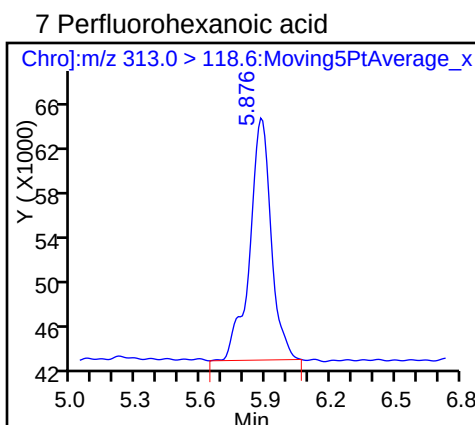
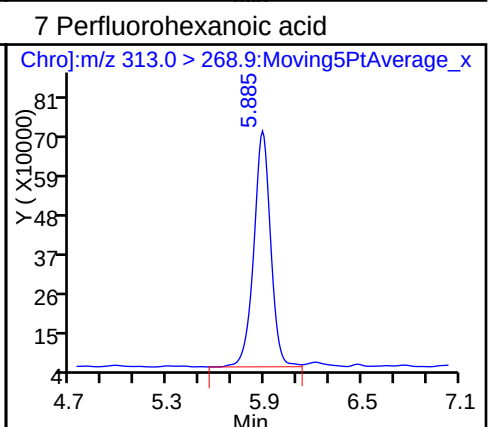
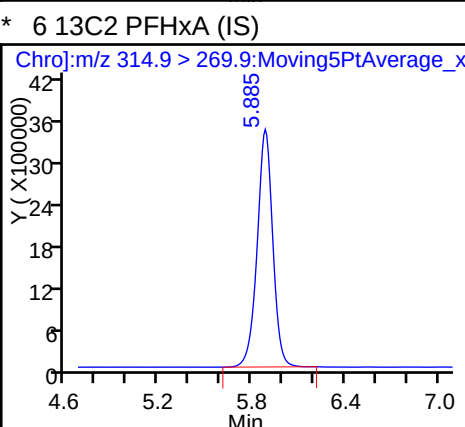
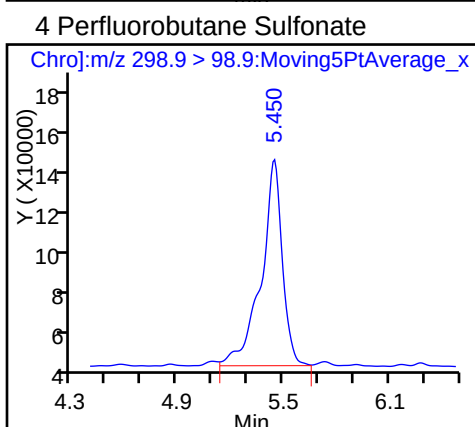
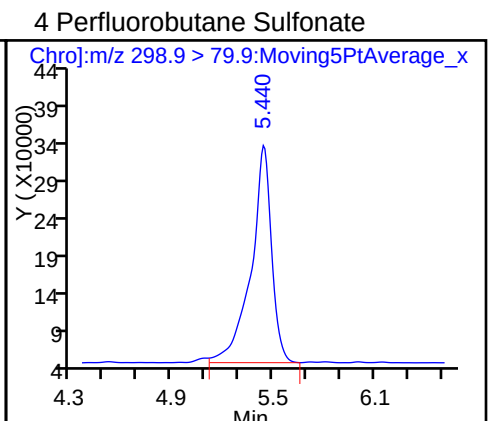
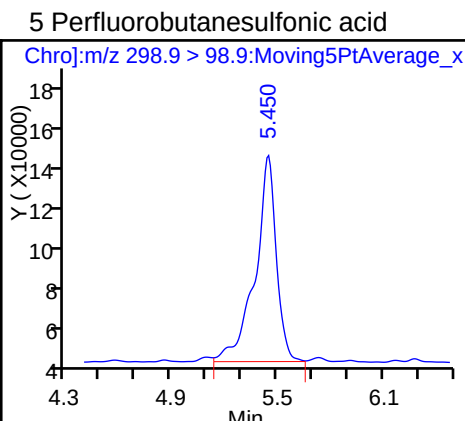
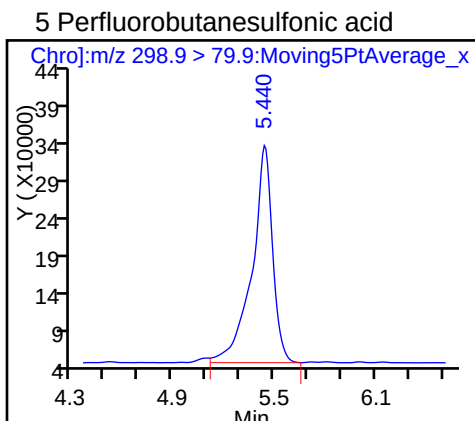
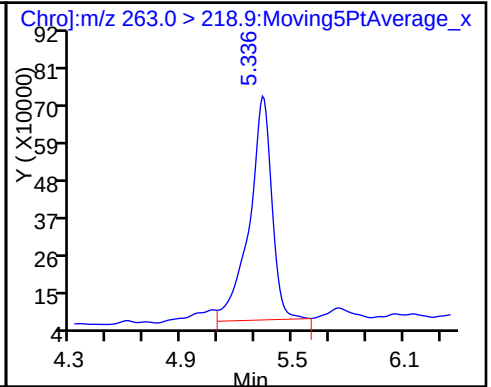
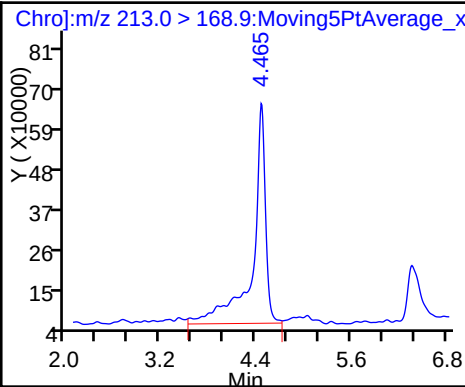
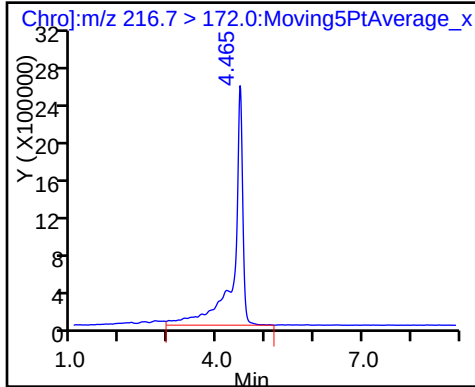
Method: 8321_PFC

Limit Group: LC - PFC

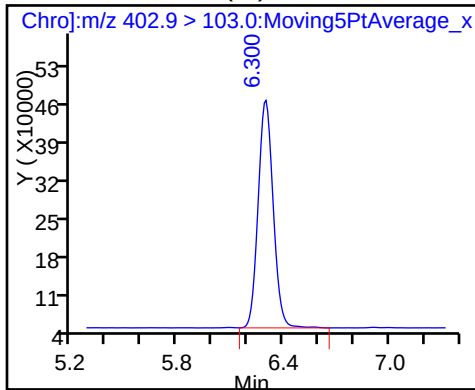
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

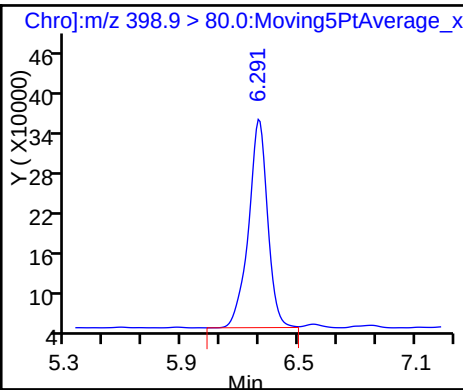
3 Perfluoropentanoic acid



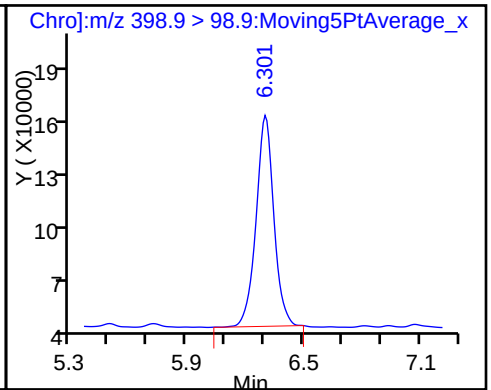
* 9 18O2 PFHxS (IS)



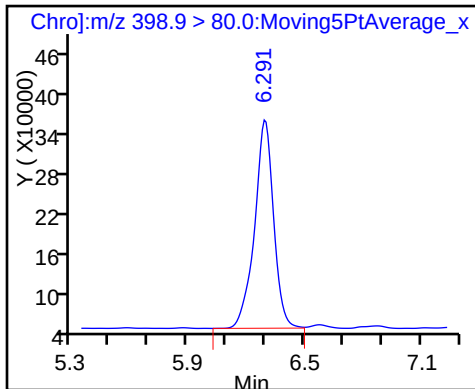
10 Perfluorohexane Sulfonate



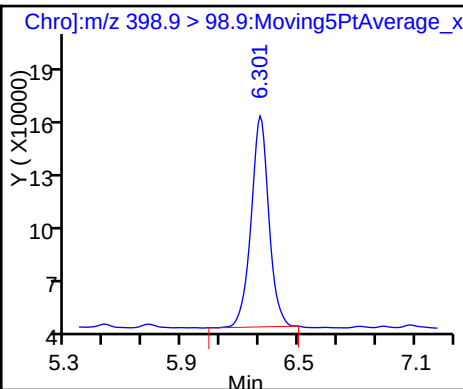
10 Perfluorohexane Sulfonate



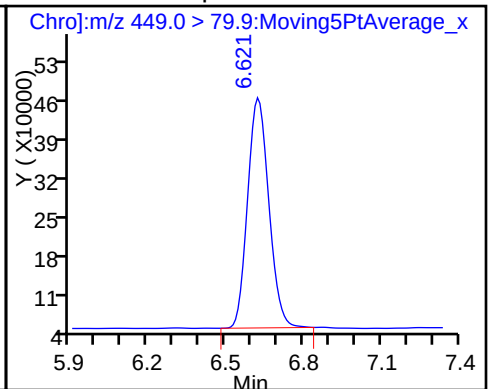
11 Perfluorohexanesulfonic acid



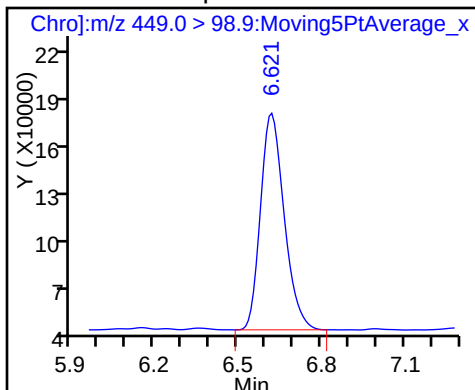
11 Perfluorohexanesulfonic acid



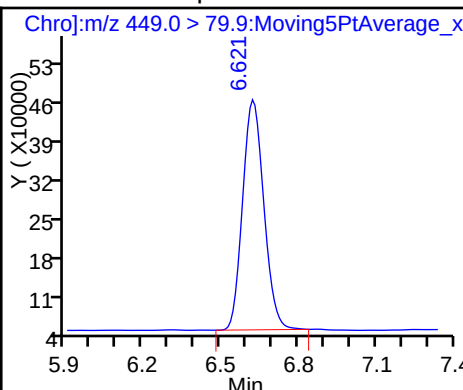
12 Perfluoroheptanesulfonic Acid



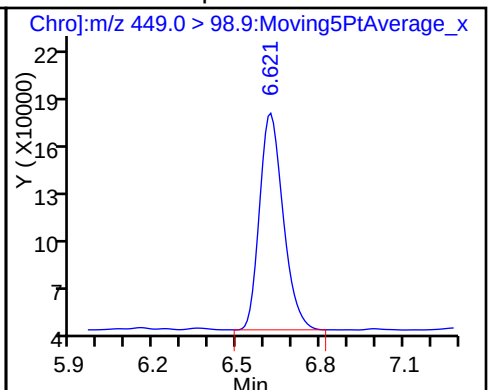
12 Perfluoroheptanesulfonic Acid



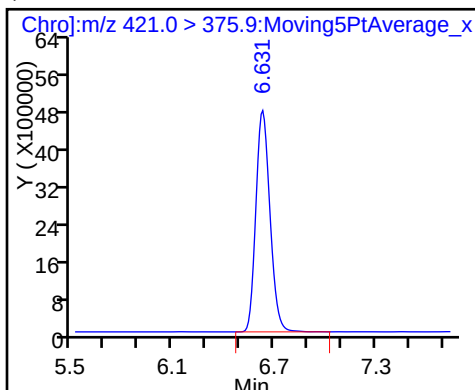
13 Perfluoroheptane Sulfonate



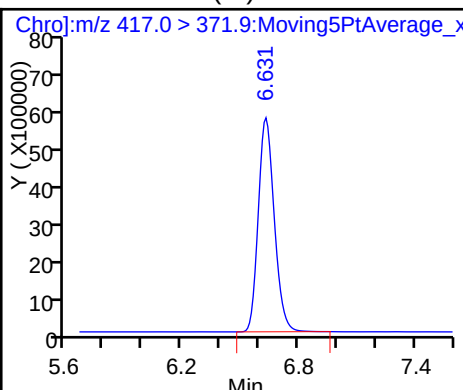
13 Perfluoroheptane Sulfonate



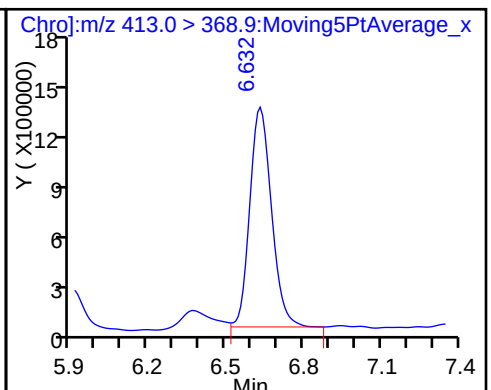
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



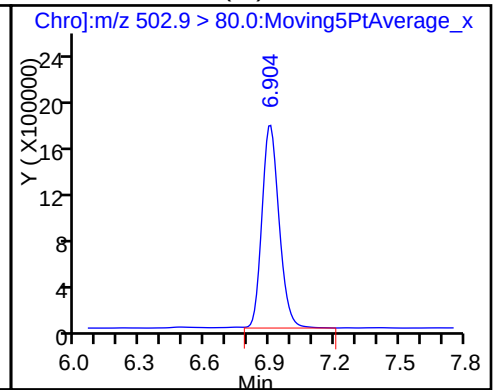
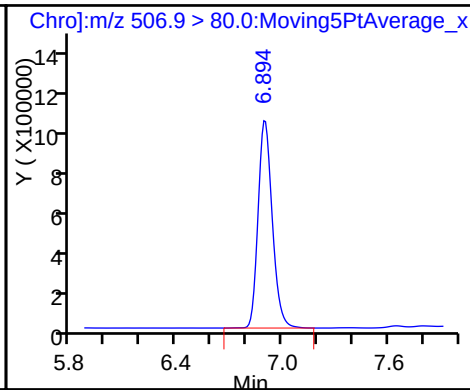
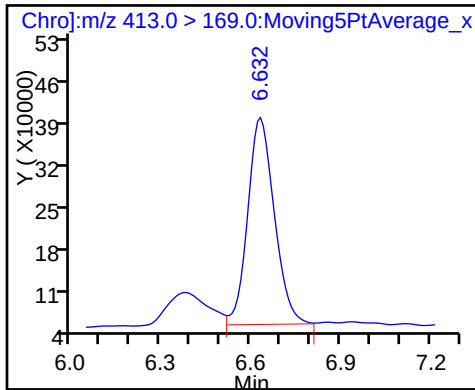
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

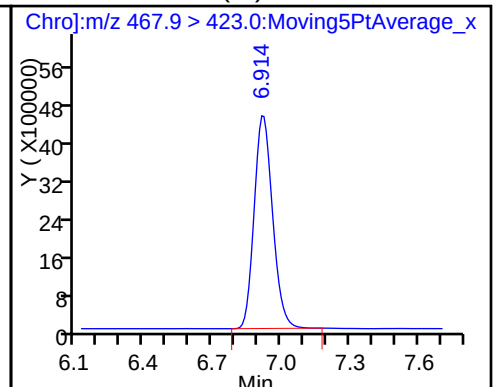
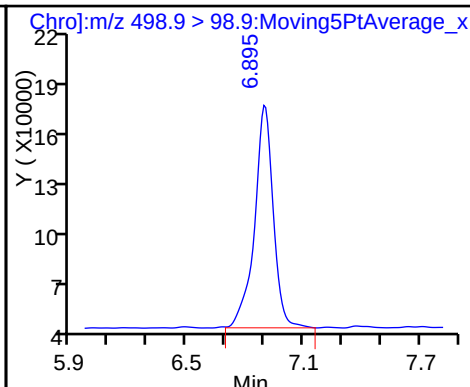
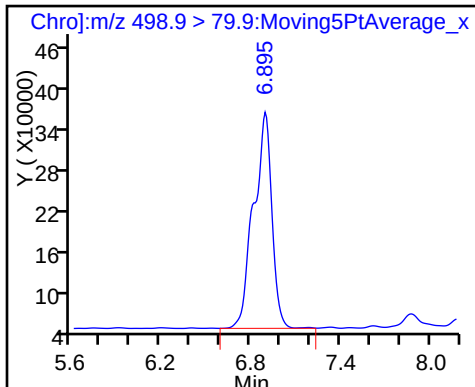
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

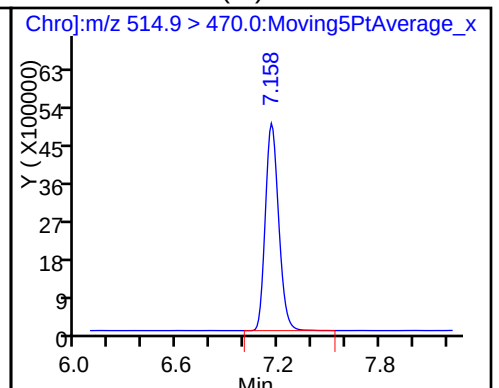
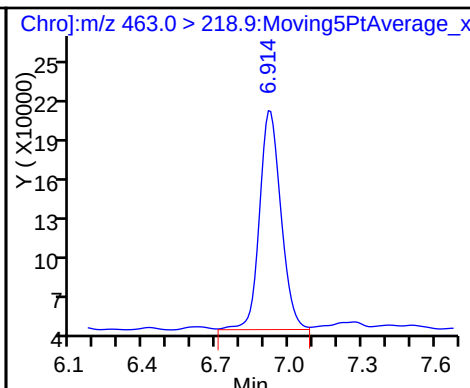
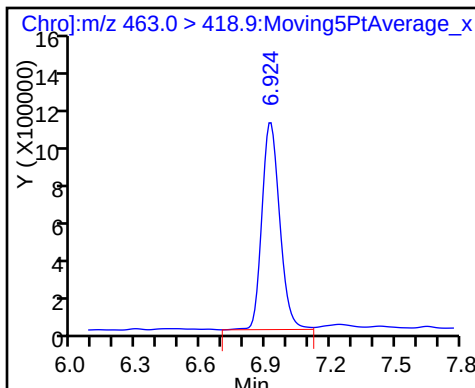
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

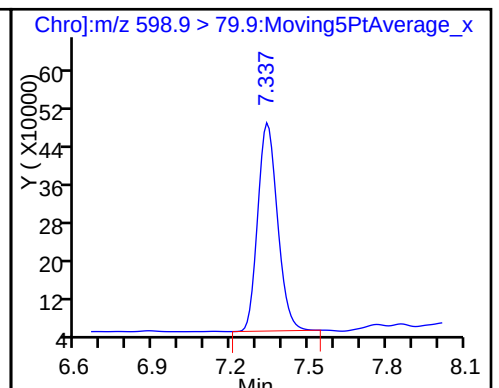
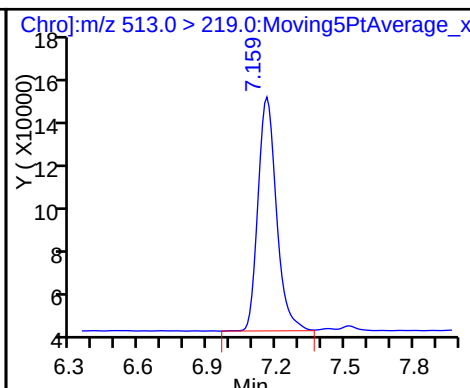
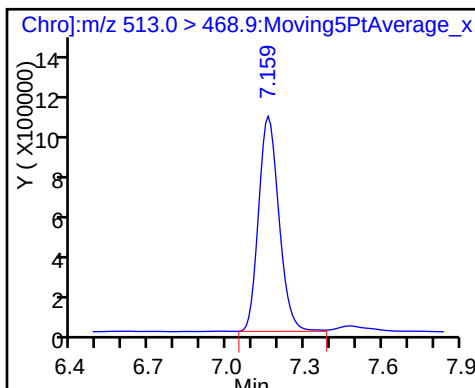
* 22 13C2 PFDA (IS)



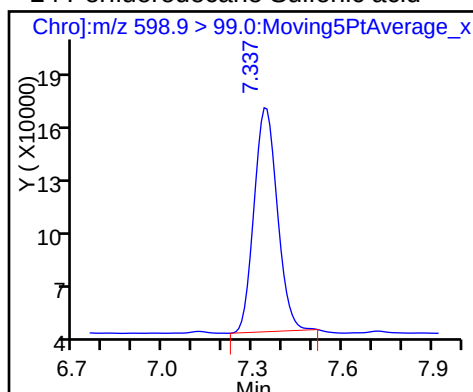
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

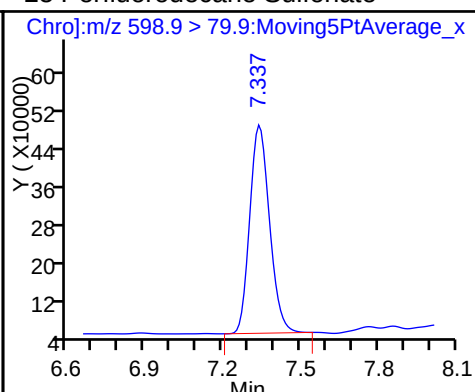
24 Perfluorodecane Sulfonic acid



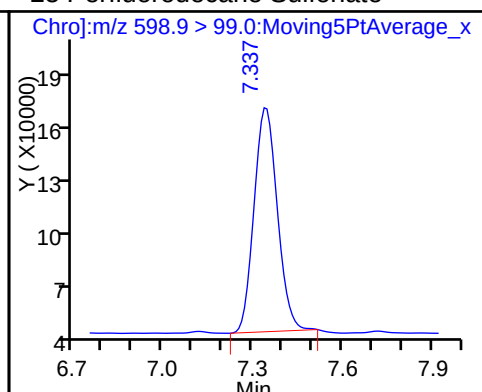
24 Perfluorodecane Sulfonic acid



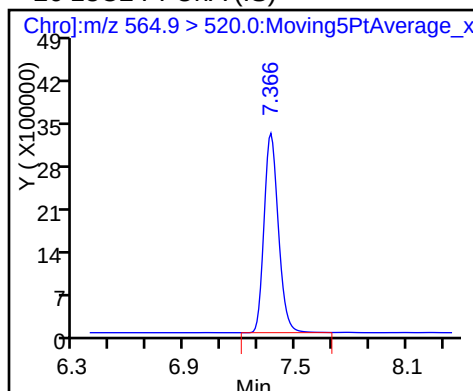
25 Perfluorodecane Sulfonate



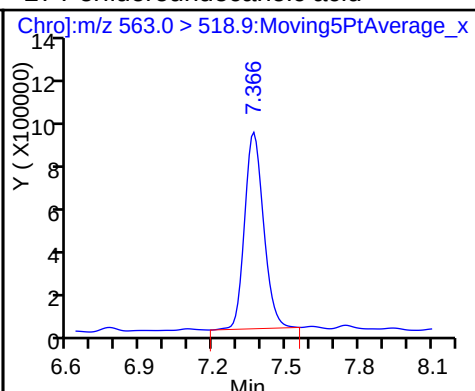
25 Perfluorodecane Sulfonate



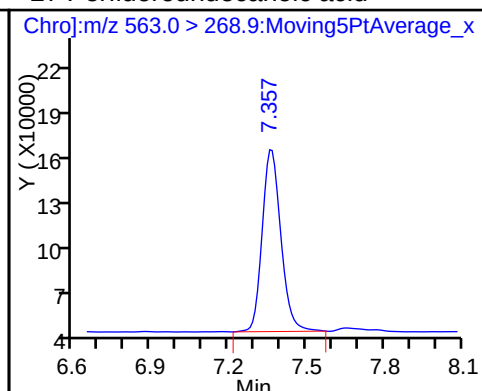
* 26 13C2 PFUnA (IS)



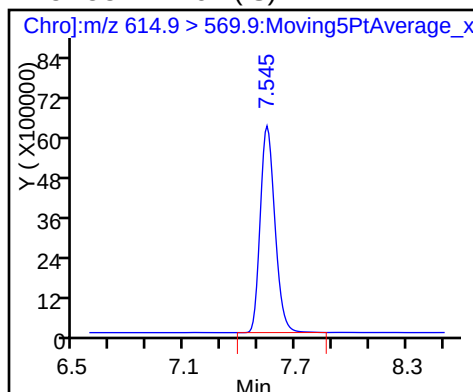
27 Perfluoroundecanoic acid



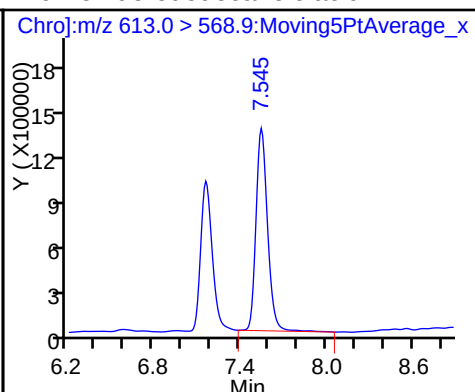
27 Perfluoroundecanoic acid



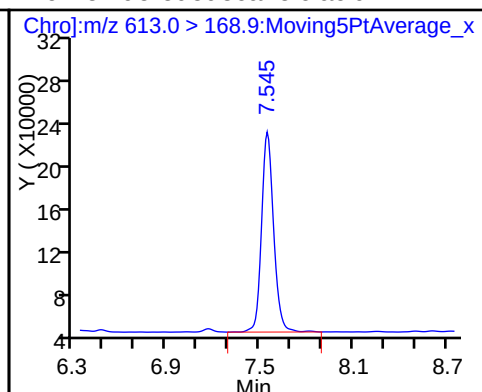
* 28 13C2 PFDaA (IS)



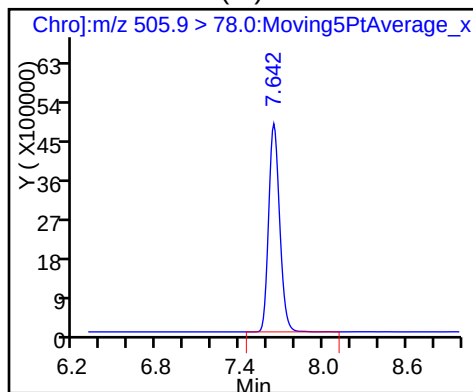
29 Perfluorododecanoic acid



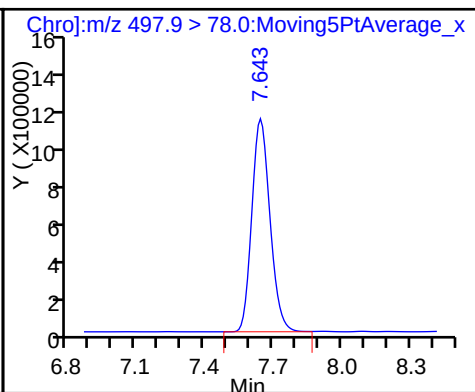
29 Perfluorododecanoic acid



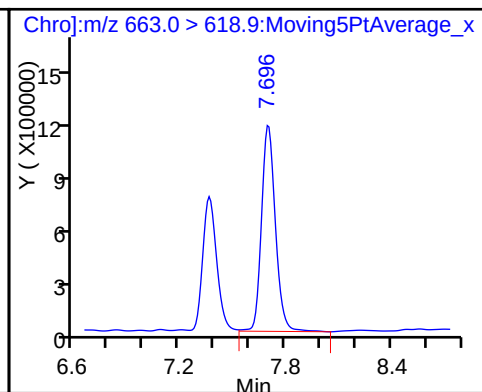
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

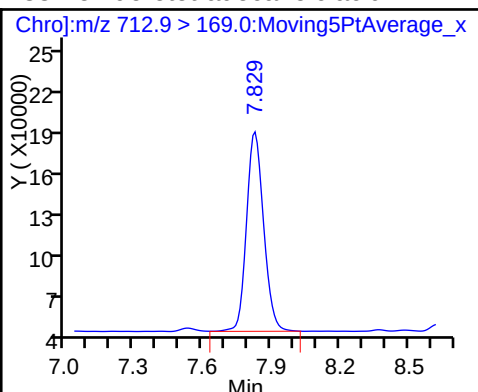
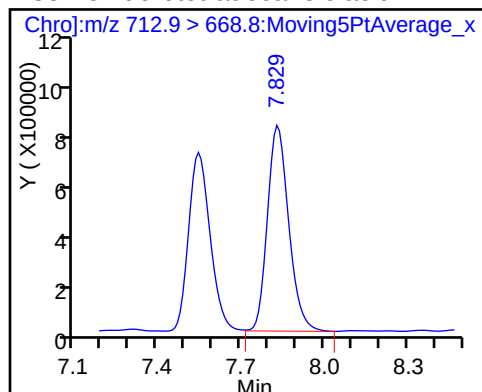


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



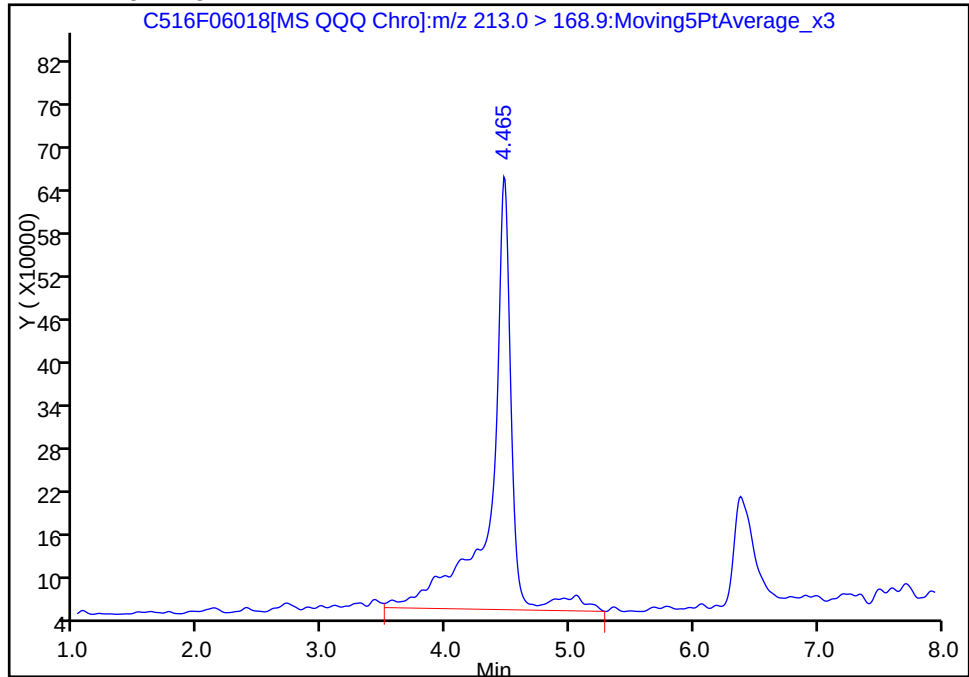
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d
Injection Date: 06-Jun-2016 16:53:00 Instrument ID: LC_LCMS5
Lims ID: ICV
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

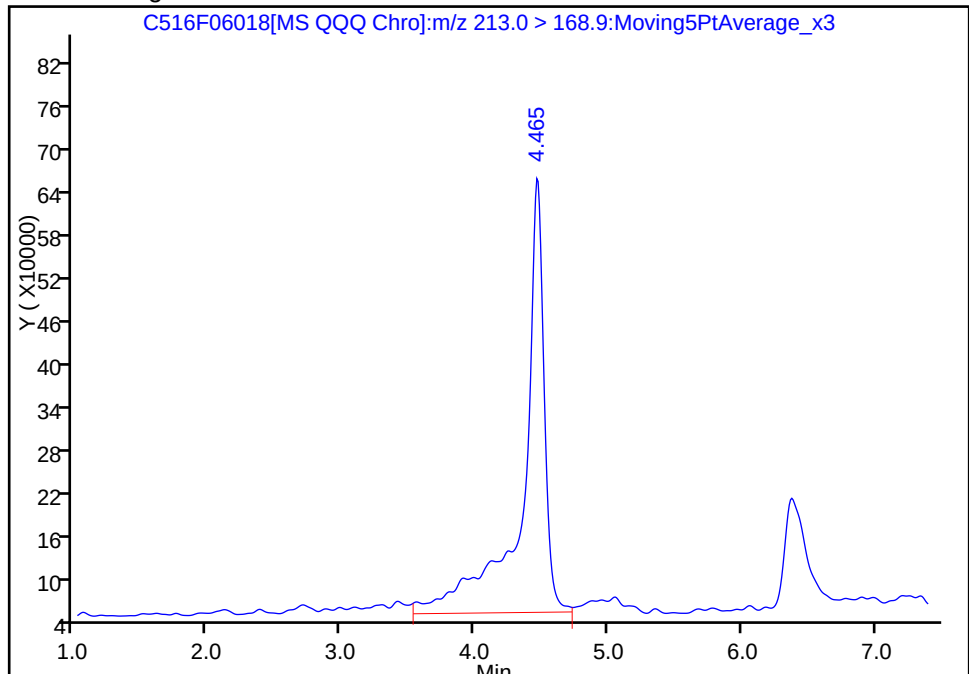
RT: 4.47
Area: 7042596
Amount: 2.053296
Amount Units: ug/L

Processing Integration Results



RT: 4.47
Area: 6838874
Amount: 1.993999
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 13:01:54
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Lab Sample ID: CCV 280-332053/3 Calibration Date: 06/30/2016 08:44

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F20008.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9880		9.21	10.0	-7.9	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.216		10.3	10.0	3.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.177		7.08	8.85	-20.0	30.0
Perfluorobutanesulfonic acid	Lin2		4.177		7.08	8.85	-20.0	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9298		9.83	10.0	-1.7	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.722		9.08	9.45	-3.9	30.0
Perfluorohexanesulfonic acid	Lin2		3.722		9.08	9.45	-3.9	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9050		10.4	10.0	4.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.089		8.55	9.52	-10.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.089		8.55	9.52	-10.2	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.075		10.3	10.0	3.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.113		9.07	9.55	-5.0	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.070		9.53	10.0	-4.7	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.007		10.00	10.0	-0.0	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.119		8.73	9.65	-9.6	30.0
Perfluorodecane Sulfonic acid	Lin2		1.119		8.73	9.65	-9.6	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.408		9.93	10.0	-0.7	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.050		10.2	10.0	2.2	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.087		10.0	10.0	0.1	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9565		10.3	10.0	2.9	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7084		12.0	10.0	19.9	30.0
13C8 PFOA	Lin2		0.8607		10.7	10.0	6.5	30.0
13C8 PFOS	Lin2		0.6446		10.1	9.56	5.4	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20008.d
 Lims ID: CCV PFC L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Jun-2016 08:44:54 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L6, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 17:14:18 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK033

First Level Reviewer: meyer

Date: 30-Jun-2016 12:10:42

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.153 4.153 0.0 31855403 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 4.162 0.0 1.002 31473945 9.21

3 Perfluoropentanoic acid

263.0 > 218.9 5.213 5.213 0.0 0.899 24130517 10.3

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.327 5.327 0.0 0.854 10260364 7.08

298.9 > 98.9 5.336 5.327 0.009 0.856 3213264 3.19(1.80-3.35)

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.327 5.327 0.0 0.854 10260364 7.08

298.9 > 98.9 5.336 5.327 0.009 0.856 3213264 3.19(2.57-2.57)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.800 5.800 0.0 19849630 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.800 5.800 0.0 1.000 18455611 9.83

313.0 > 118.6 5.800 5.800 0.0 1.000 631064 29.25(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.235 6.235 0.0 0.947 27697349 10.4

363.0 > 168.9 6.235 6.235 0.0 0.947 7063178 3.92(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.234 6.234 0.0 2625847 9.46

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.234 6.234 0.0 1.000 9763363 9.08

398.9 > 98.9 6.234 6.234 0.0 1.000 3171823 3.08(1.85-1.85)

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.234 6.234 0.0 1.000 9763363 9.08

398.9 > 98.9 6.234 6.234 0.0 1.000 3171823 3.08(1.30-2.41)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.564	6.564	0.0	0.959	9827899	8.55			
449.0 > 98.9	6.574	6.564	0.010	0.960	3215554		3.06(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.564	6.564	0.0	0.959	9827899	8.55			
449.0 > 98.9	6.574	6.564	0.010	0.960	3215554		3.06(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.584	6.584	0.0	1.000	26341544	10.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.584	6.584	0.0		30604837	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.584	6.584	0.0	1.000	32903324	10.3			
413.0 > 169.0	6.584	6.584	0.0	1.000	9977202		3.30(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.847	6.847	0.0	1.000	5843797	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.847	6.847	0.0		9066084	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.847	6.847	0.0	1.000	10081715	9.07			R
498.9 > 98.9	6.847	6.847	0.0	1.000	3628531		2.78(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.867	6.867	0.0		23344347	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.877	6.877	0.0	1.001	24971008	9.53			
463.0 > 218.9	6.867	6.877	-0.009	1.000	3624429		6.89(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.121	0.0		26495545	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.111	7.111	0.0	0.999	26683080	10.0			R
513.0 > 219.0	7.111	7.111	0.0	0.999	2629124		10.15(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.299	7.299	0.0	1.066	10238145	8.72			
598.9 > 99.0	7.299	7.299	0.0	1.066	3232227		3.17(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.299	7.299	0.0	1.066	10238145	8.72			
598.9 > 99.0	7.299	7.299	0.0	1.066	3232227		3.17(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.328	7.328	0.0		16364124	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.319	7.319	0.0	0.999	23039528	9.93			R
563.0 > 268.9	7.329	7.319	0.009	1.000	2795385		8.24(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.507	0.0		32876141	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.498	7.498	0.0	0.999	34506527	10.2			
613.0 > 168.9	7.498	7.498	0.0	0.999	4282381		8.06(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.586	7.586	0.0		26634663	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.587	7.587	0.0	1.000	28954559	10.0			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.658	0.0	1.020	31447312	10.3			
33 Perfluorotetradecanoic acid									M
712.9 > 668.8	7.791	7.791	0.0	1.038	23288043	12.0			
712.9 > 169.0	7.791	7.791	0.0	1.038	3618123		6.44(8.28-8.28)		M

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00078	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20008.d

Injection Date: 30-Jun-2016 08:44:54

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

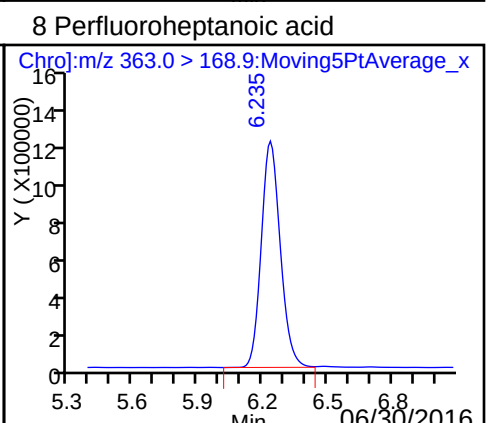
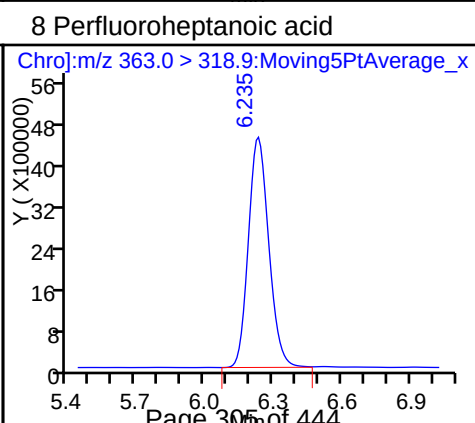
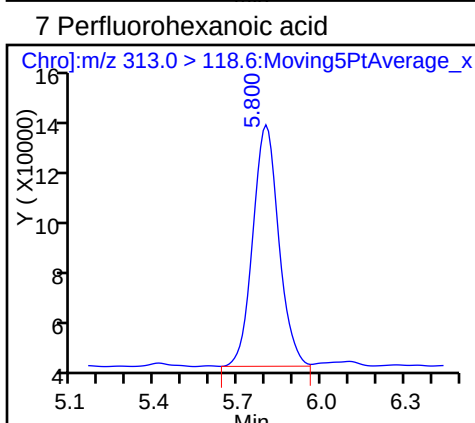
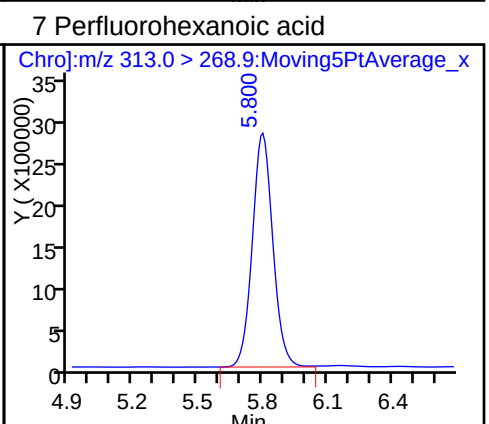
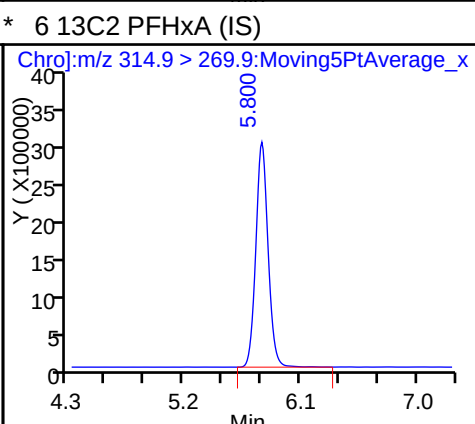
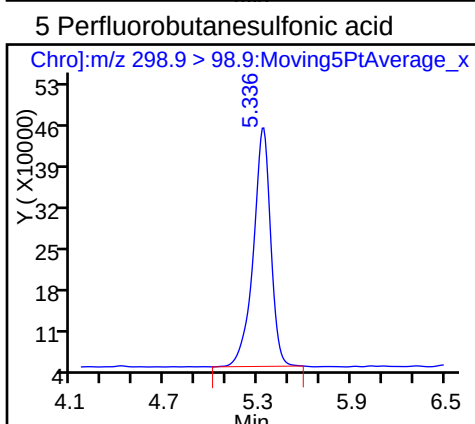
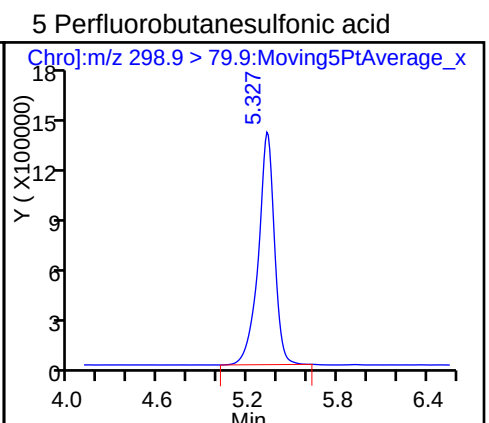
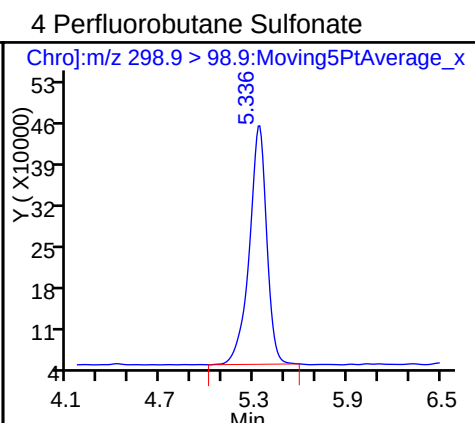
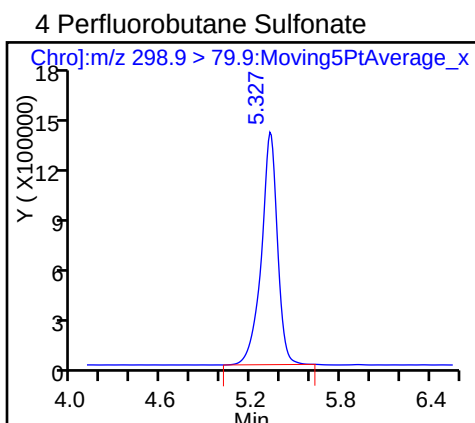
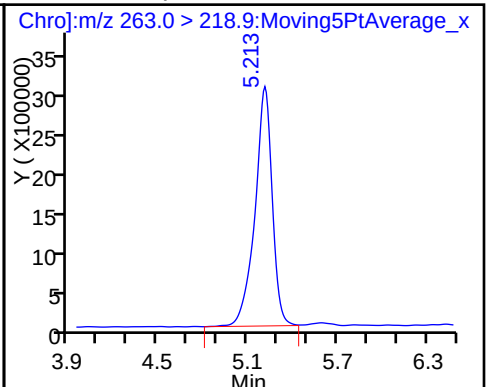
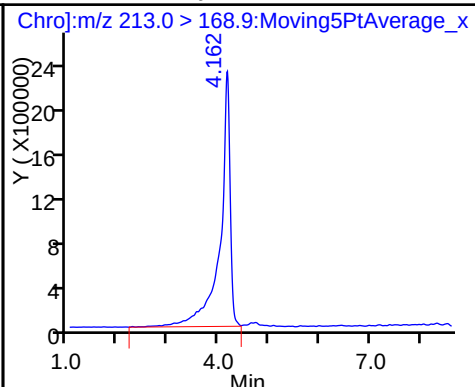
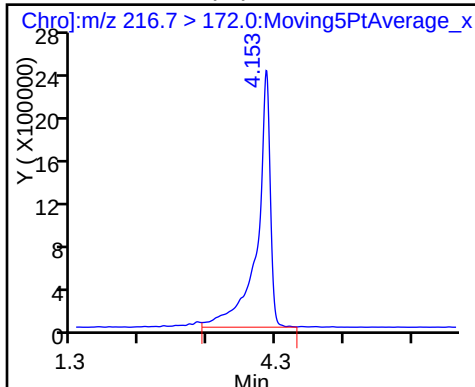
Method: 8321_PFC

Limit Group: LC - PFC

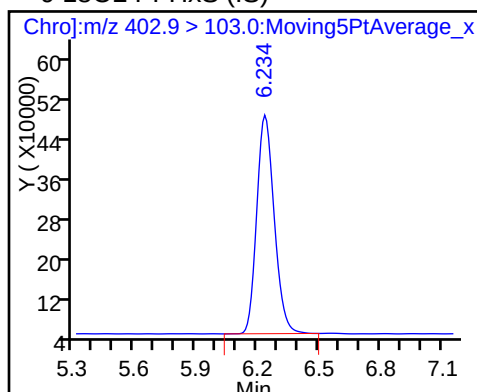
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

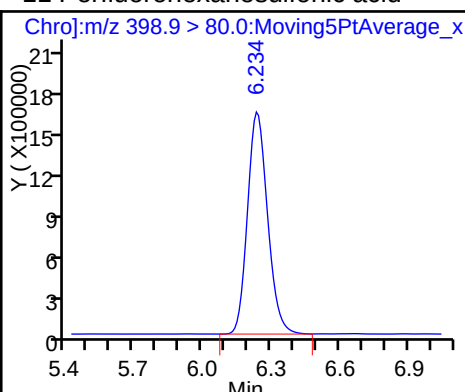
3 Perfluoropentanoic acid



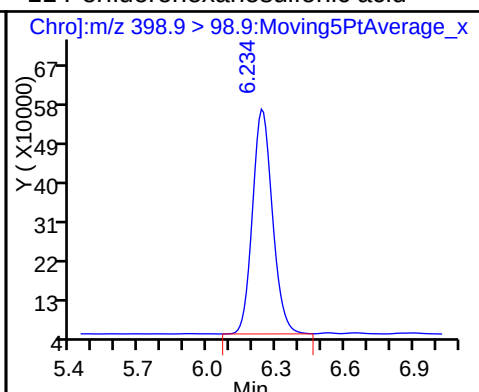
* 9 18O2 PFHxS (IS)



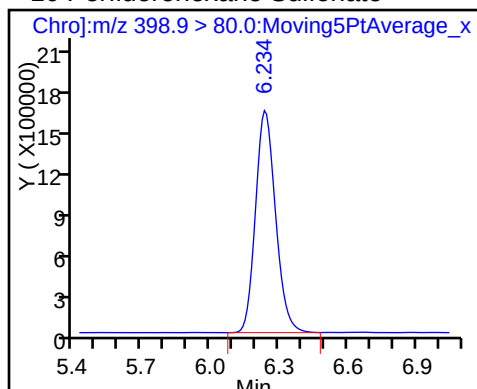
11 Perfluorohexanesulfonic acid



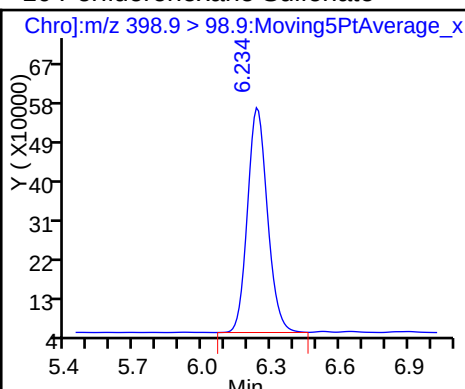
11 Perfluorohexanesulfonic acid



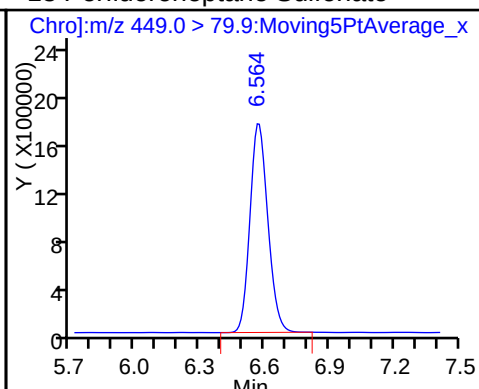
10 Perfluorohexane Sulfonate



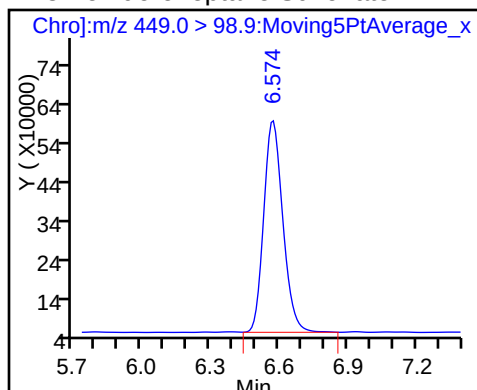
10 Perfluorohexane Sulfonate



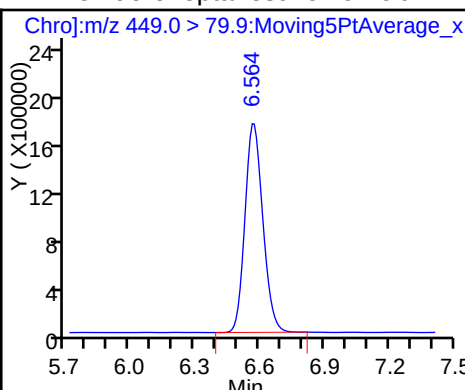
13 Perfluoroheptane Sulfonate



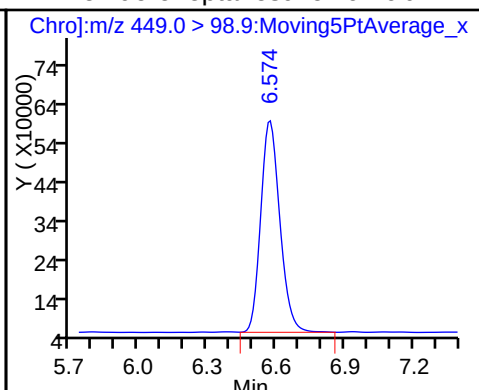
13 Perfluoroheptane Sulfonate



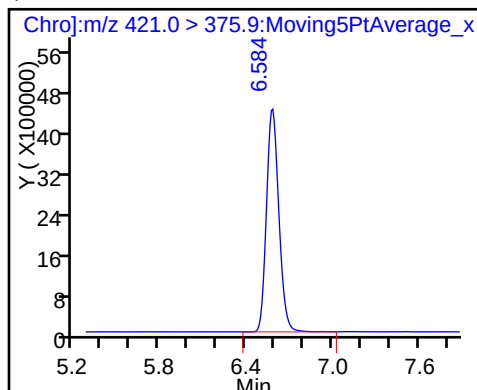
12 Perfluoroheptanesulfonic Acid



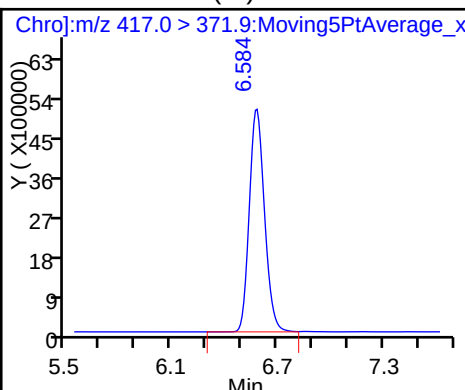
12 Perfluoroheptanesulfonic Acid



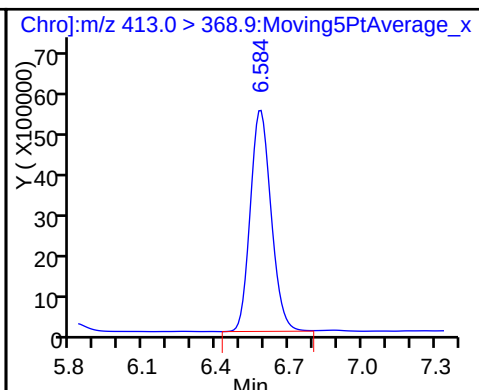
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



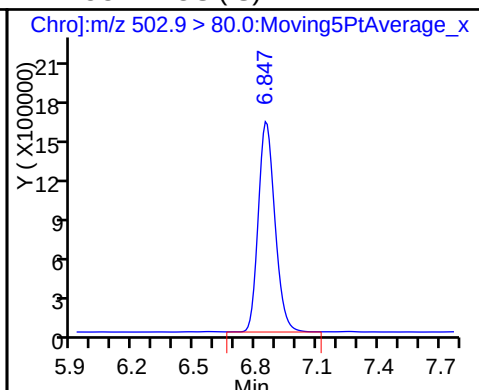
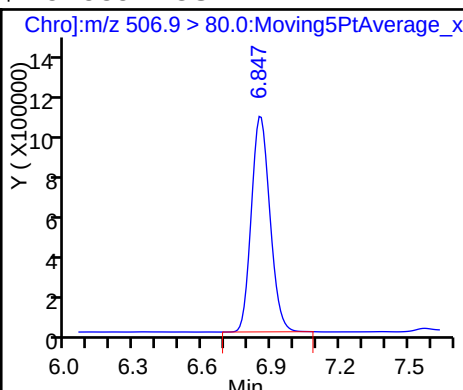
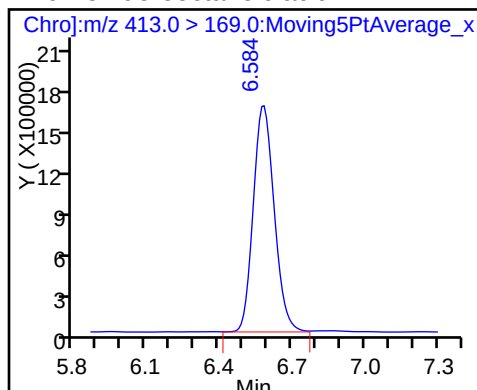
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

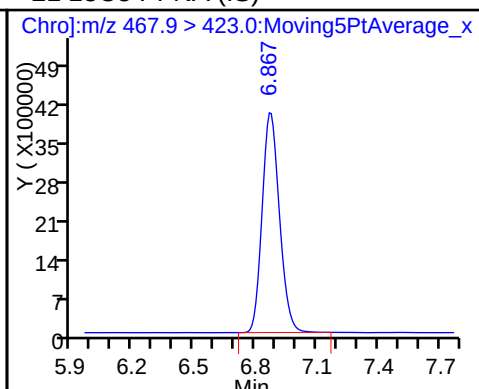
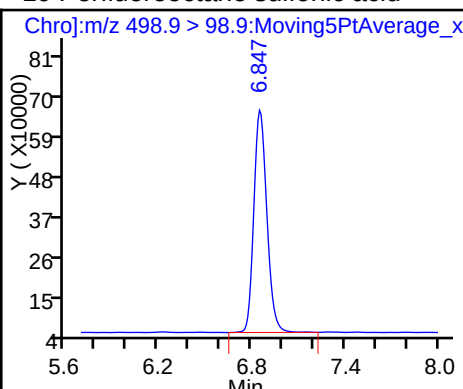
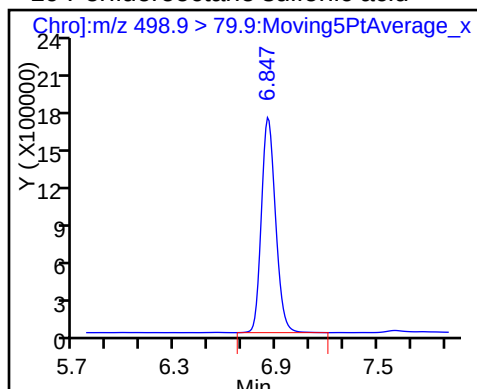
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

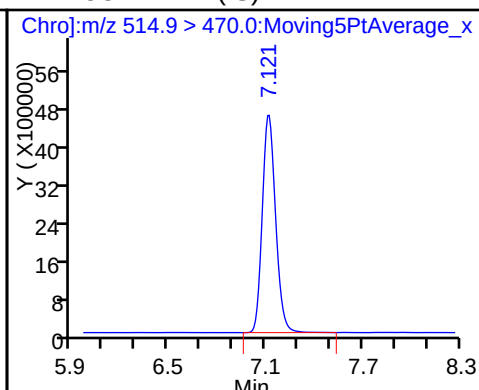
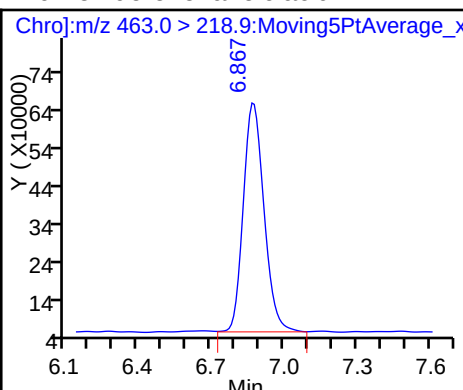
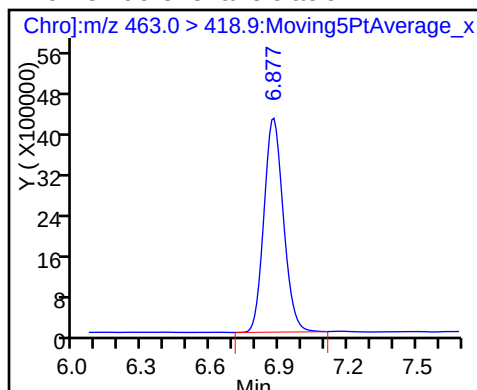
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

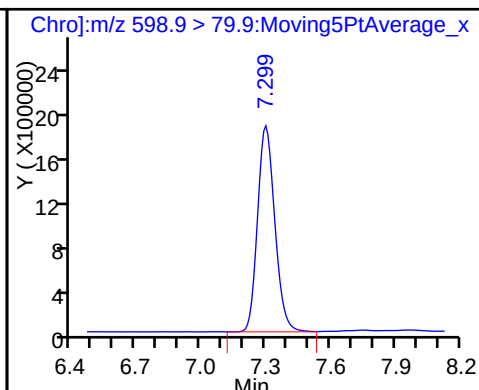
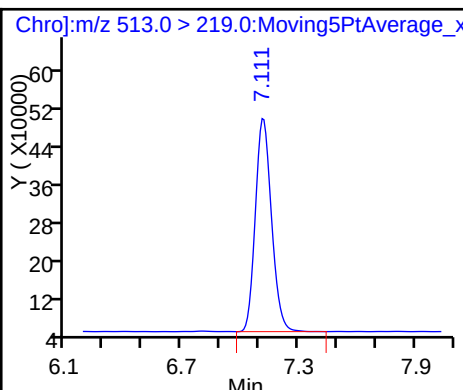
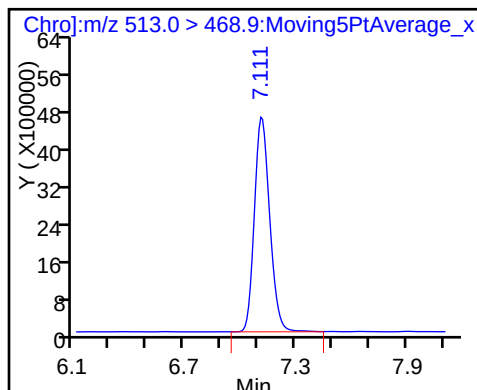
* 22 13C2 PFDA (IS)



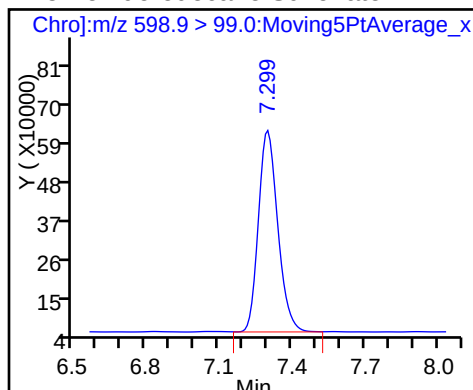
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

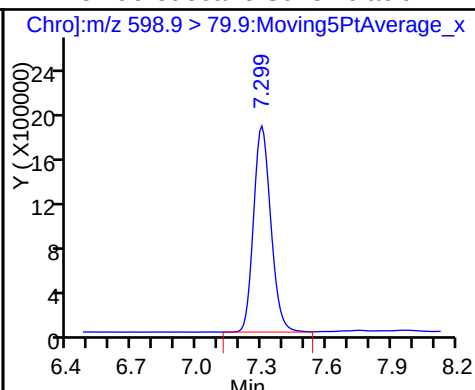
25 Perfluorodecane Sulfonate



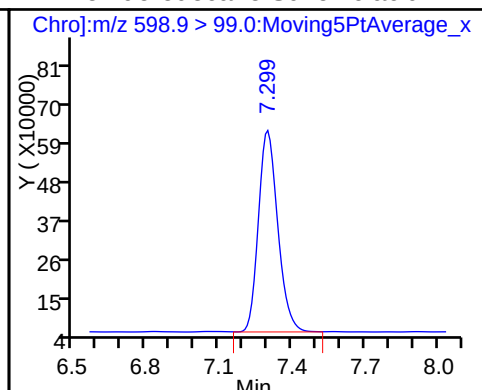
25 Perfluorodecane Sulfonate



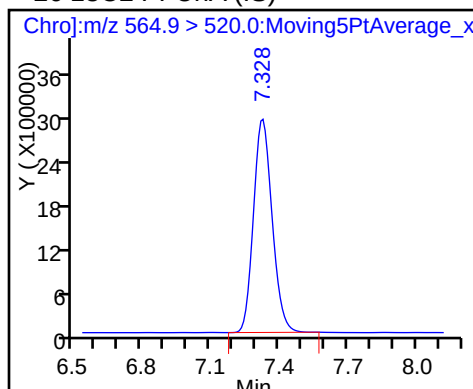
24 Perfluorodecane Sulfonic acid



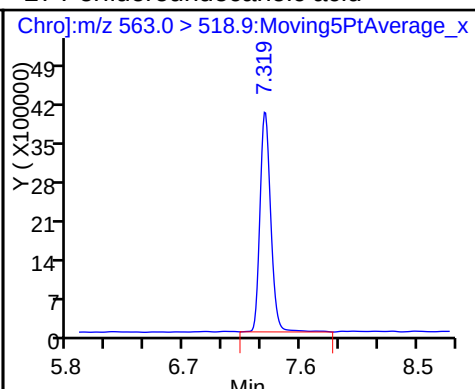
24 Perfluorodecane Sulfonic acid



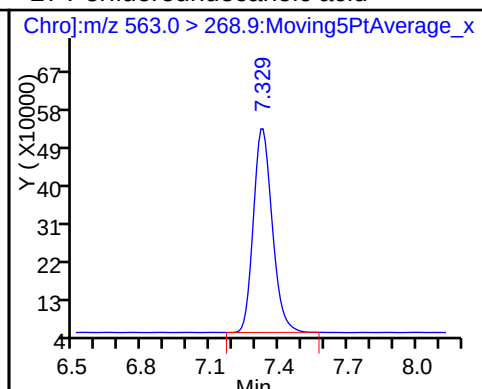
* 26 13C2 PFUnA (IS)



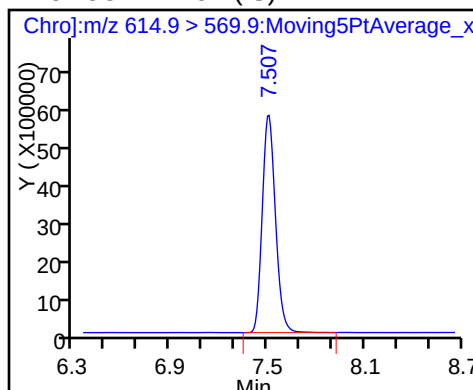
27 Perfluoroundecanoic acid



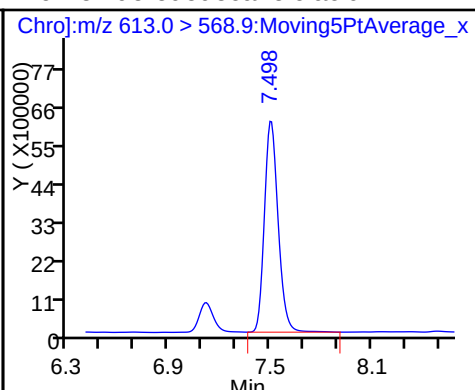
27 Perfluoroundecanoic acid



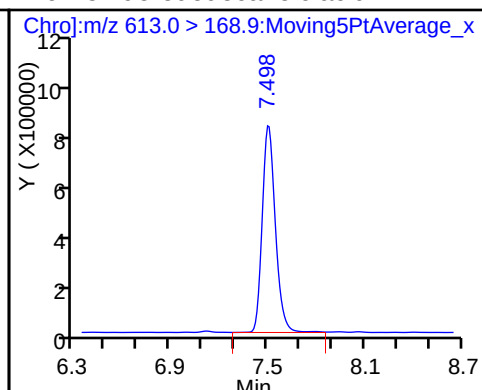
* 28 13C2 PFDaA (IS)



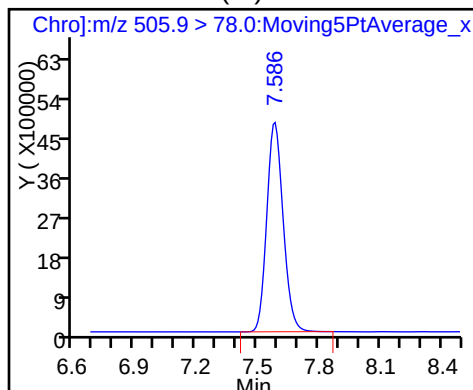
29 Perfluorododecanoic acid



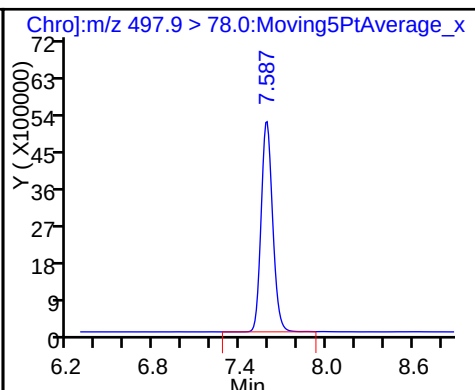
29 Perfluorododecanoic acid



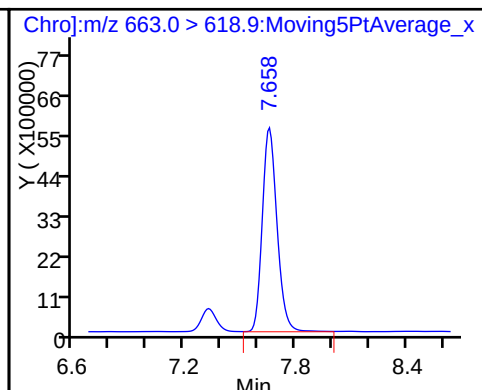
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

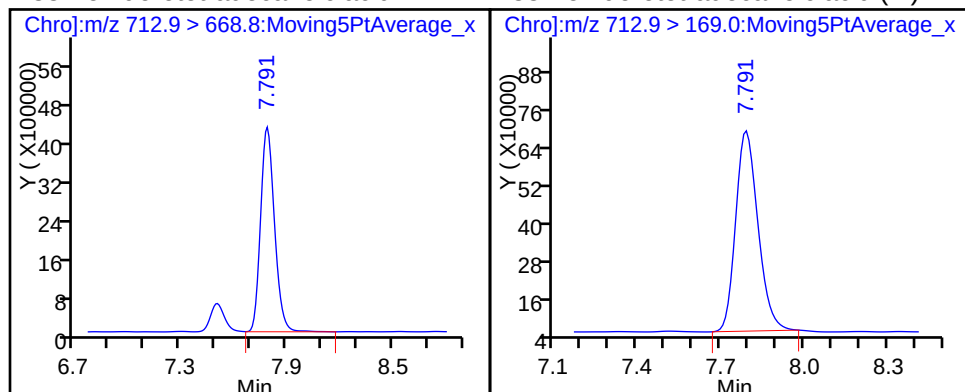


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid (M)



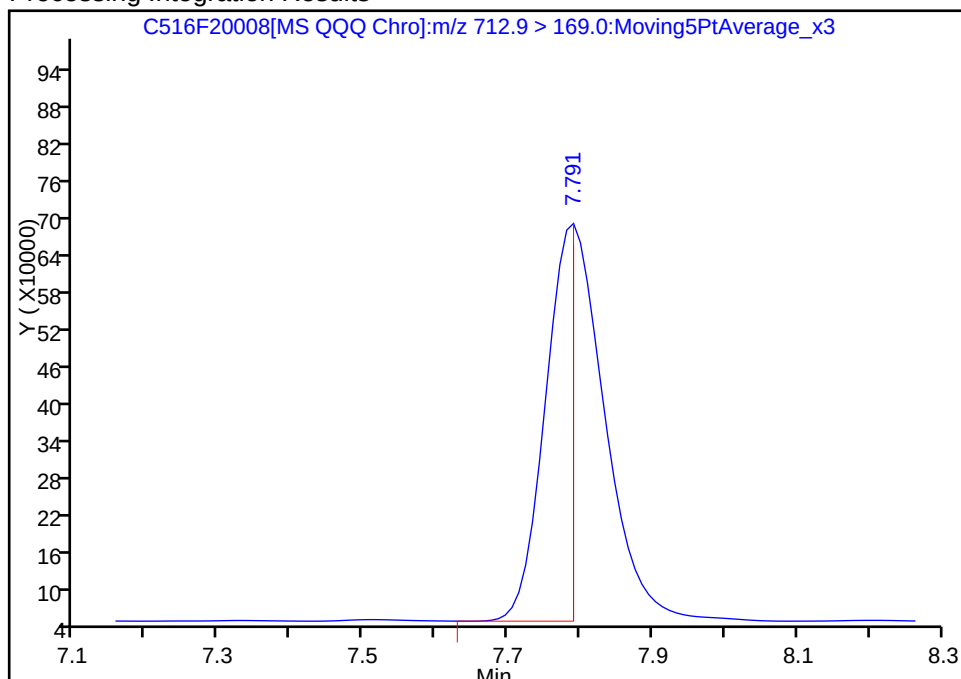
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20008.d		
Injection Date:	30-Jun-2016 08:44:54	Instrument ID:	LC_LCMS5
Lims ID:	CCV PFC L6		
Client ID:			
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector	MS QQQ
		Worklist Smp#:	3

33 Perfluorotetradecanoic acid, CAS: 376-06-7

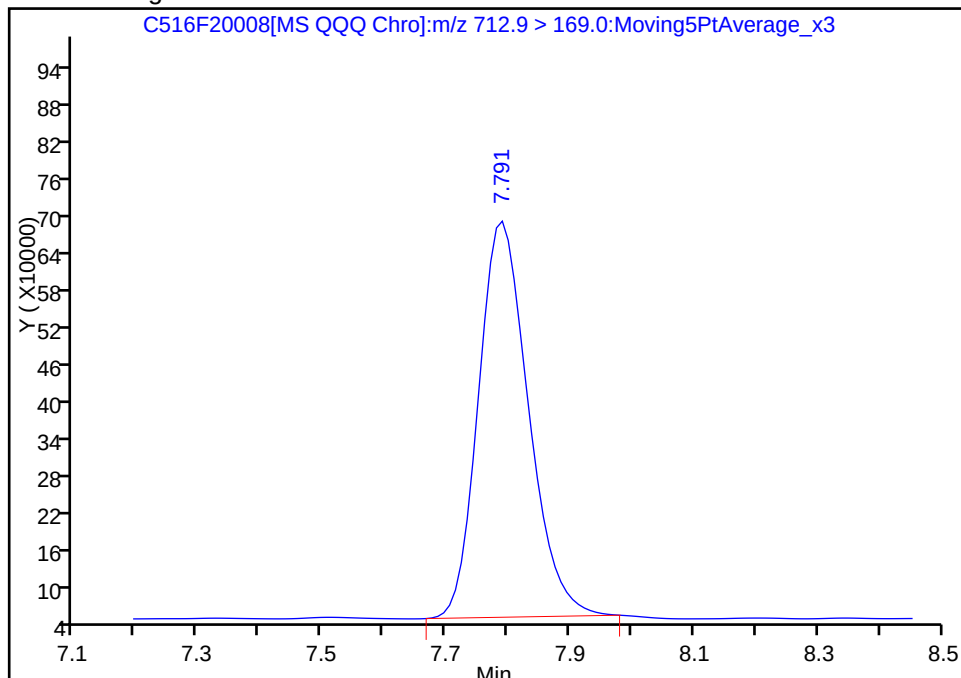
RT: 7.79
Area: 1703026
Amount: 11.989164
Amount Units: ug/L

Processing Integration Results



RT: 7.79
Area: 3618123
Amount: 11.989164
Amount Units: ug/L

Manual Integration Results



Reviewer: tinkhams, 30-Jun-2016 17:14:17
Audit Action: Manually Integrated
Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Lab Sample ID: CCV 280-332053/14 Calibration Date: 06/30/2016 11:00

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F20019.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.012		4.72	5.00	-5.7	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.307		5.54	5.00	10.9	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.840		4.10	4.43	-7.3	30.0
Perfluorobutanesulfonic acid	Lin2		4.840		4.10	4.43	-7.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9405		4.96	5.00	-0.8	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9341		5.35	5.00	7.1	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.964		4.80	4.73	1.5	30.0
Perfluorohexanesulfonic acid	Lin2		3.964		4.80	4.73	1.5	30.0
Perfluoroheptane Sulfonate	Lin2		1.109		4.36	4.76	-8.4	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.109		4.36	4.76	-8.4	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.151		5.49	5.00	9.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.201		4.86	4.78	1.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.114		4.94	5.00	-1.1	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.044		5.17	5.00	3.3	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.139		4.42	4.83	-8.3	30.0
Perfluorodecane Sulfonic acid	Lin2		1.139		4.42	4.83	-8.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.472		5.17	5.00	3.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.061		5.13	5.00	2.7	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.127		5.19	5.00	3.7	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9177		4.89	5.00	-2.2	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6824		5.77	5.00	15.4	30.0
13C8 PFOA	Lin2		0.9172		5.65	5.00	13.0	30.0
13C8 PFOS	Lin2		0.7020		5.47	4.78	14.5	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20019.d
 Lims ID: CCV PFC L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Jun-2016 11:00:11 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L5, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:15:53

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.020	0.0		27592290	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.020	4.020	0.0	1.000	13955829	4.72			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.896	12340362	5.54			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.232	0.0	0.850	5189385	4.10			
298.9 > 98.9	5.241	5.232	0.009	0.851	1559811		3.33(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.232	0.0	0.850	5189385	4.10			
298.9 > 98.9	5.241	5.232	0.009	0.851	1559811		3.33(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.705	0.0		18885610	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.714	0.0	1.002	8881272	4.96			
313.0 > 118.6	5.705	5.714	-0.009	1.000	229868		38.64(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.150	0.0	0.946	14239665	5.35			
363.0 > 168.9	6.150	6.150	0.0	0.946	3942043		3.61(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		2292340	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.159	6.159	0.0	1.000	4539141	4.80			R
398.9 > 98.9	6.149	6.159	-0.010	0.998	1718133		2.64(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.159	0.0	1.000	4539141	4.80			
398.9 > 98.9	6.149	6.159	-0.010	0.998	1718133		2.64(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.489	6.489	0.0	0.958	4747961	4.36			
449.0 > 98.9	6.489	6.489	0.0	0.958	1479352		3.21(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.489	6.489	0.0	0.958	4747961	4.36			
449.0 > 98.9	6.489	6.489	0.0	0.958	1479352		3.21(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.498	0.0	1.000	13982780	5.65			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.499	0.0		30489028	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.499	0.0	1.000	17551642	5.49			
413.0 > 169.0	6.499	6.499	0.0	1.000	5287880		3.32(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.771	0.0	1.000	3018004	5.47			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.771	0.0		8598328	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.771	0.0	1.000	5159164	4.86			R
498.9 > 98.9	6.771	6.771	0.0	1.000	2037344		2.53(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		22843017	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.791	0.0	1.000	12724452	4.94			
463.0 > 218.9	6.791	6.791	0.0	1.000	1980454		6.43(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.035	0.0		24636761	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.036	7.036	0.0	1.000	12860386	5.16			R
513.0 > 219.0	7.026	7.036	-0.010	0.999	1239956		10.37(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.067	4944124	4.42			
598.9 > 99.0	7.224	7.224	0.0	1.067	1577543		3.13(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.067	4944124	4.42			
598.9 > 99.0	7.224	7.224	0.0	1.067	1577543		3.13(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.243	0.0		15110820	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.243	0.0	1.000	11120675	5.17			R
563.0 > 268.9	7.243	7.243	0.0	1.000	1386724		8.02(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.422	0.0		31072934	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.422	7.422	0.0	1.000	16477606	5.13			
613.0 > 168.9	7.422	7.422	0.0	1.000	2059650		8.00(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.557	0.0		23803203	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.558	0.0	1.000	13412161	5.19			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.573	0.0	1.020	14257061	4.89			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.705	0.0	1.038	10602617	5.77			
712.9 > 169.0	7.715	7.705	0.010	1.039	1887300		5.62(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 10.00	Units: uL
PFC-LCS_00078	Amount Added: 10.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20019.d

Injection Date: 30-Jun-2016 11:00:11

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

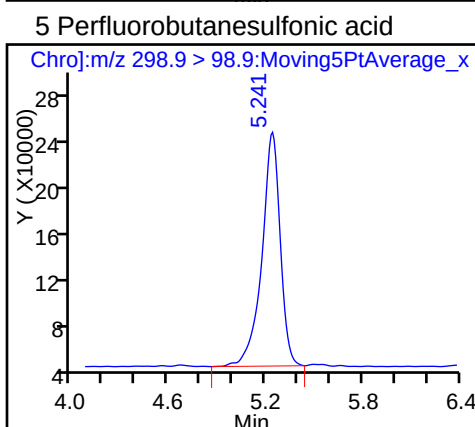
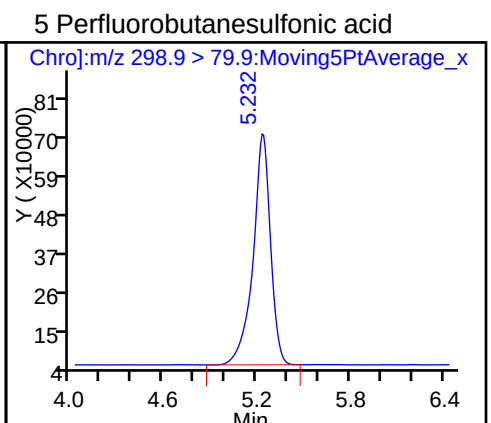
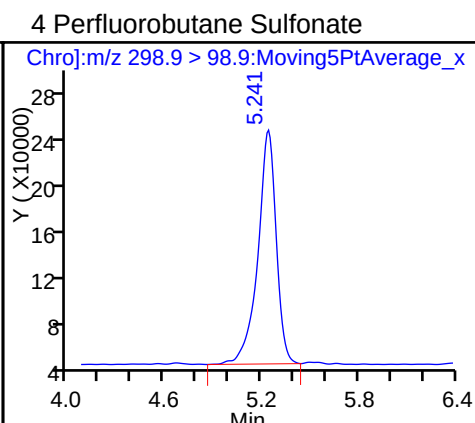
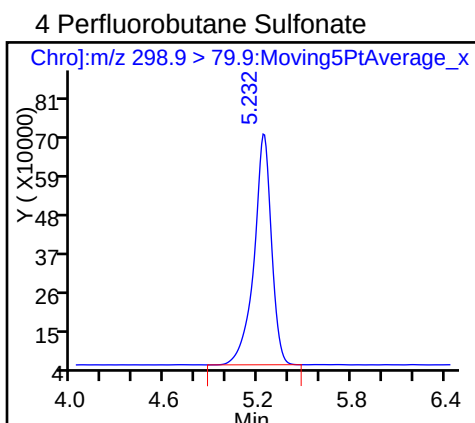
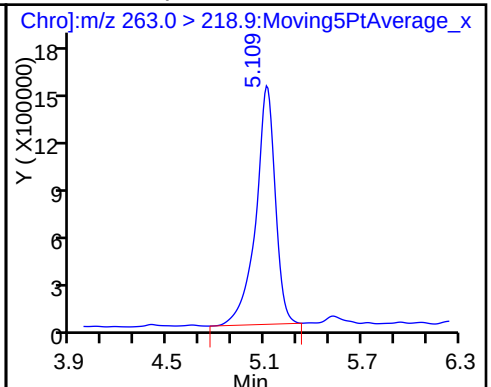
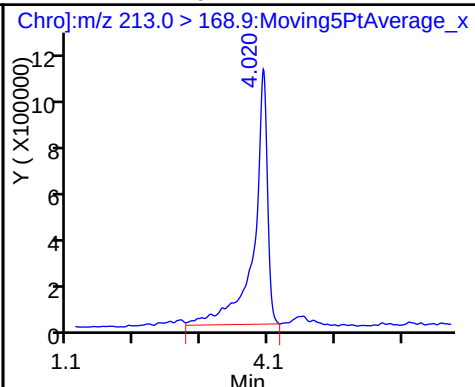
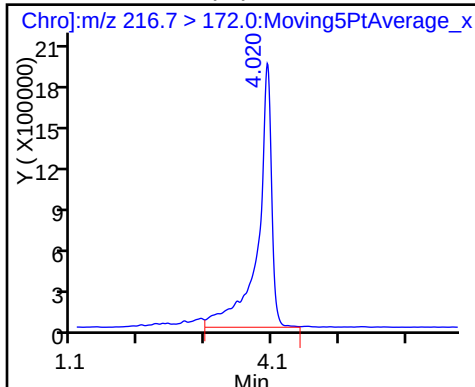
Method: 8321_PFC

Limit Group: LC - PFC

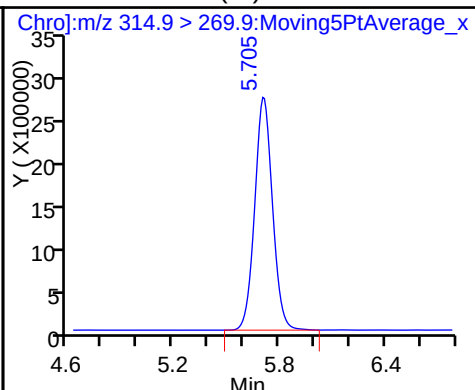
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

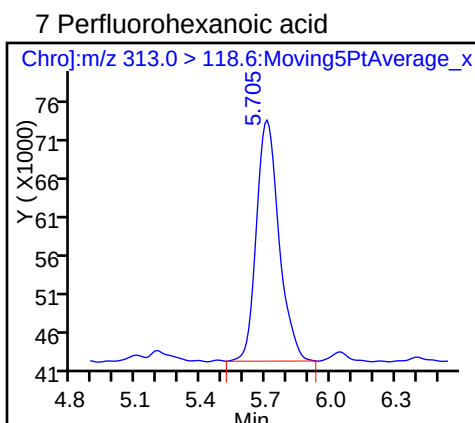
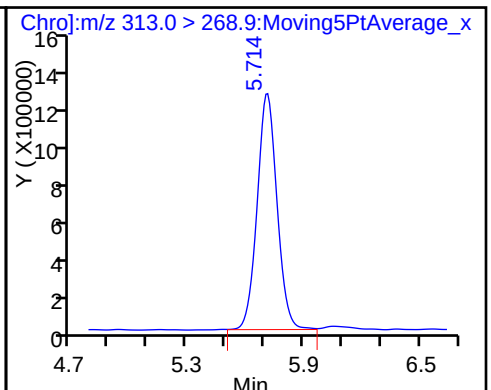
3 Perfluoropentanoic acid



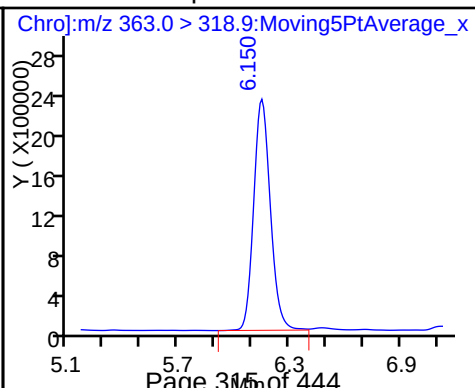
* 6 13C2 PFHxA (IS)



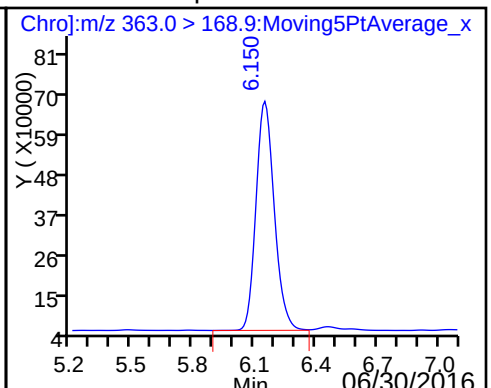
7 Perfluorohexanoic acid



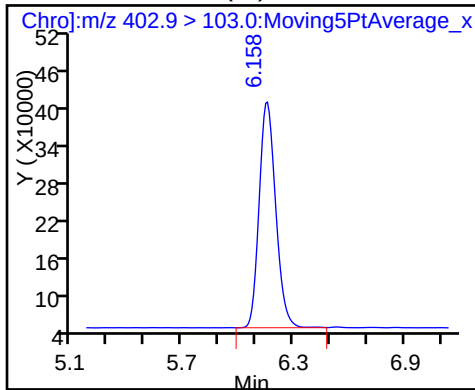
8 Perfluoroheptanoic acid



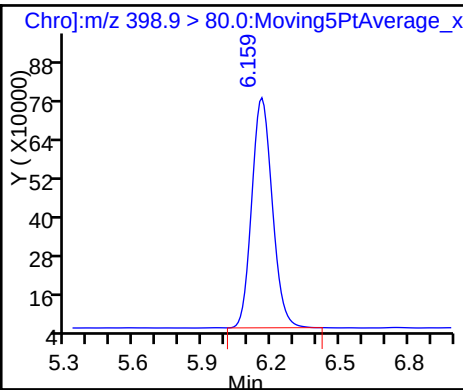
8 Perfluoroheptanoic acid



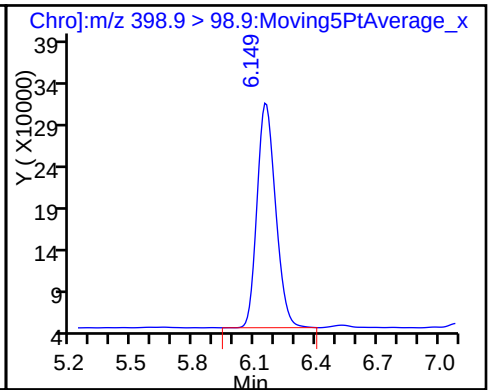
* 9 18O2 PFHxS (IS)



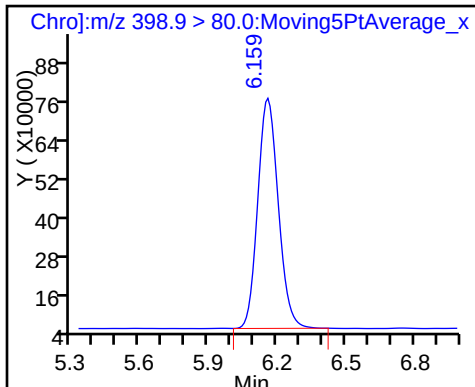
10 Perfluorohexane Sulfonate



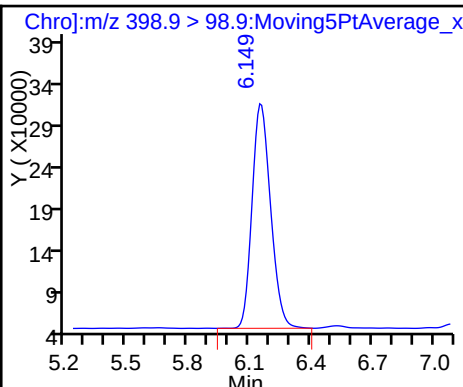
10 Perfluorohexane Sulfonate



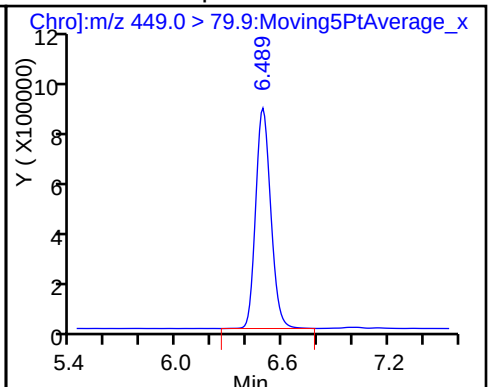
11 Perfluorohexanesulfonic acid



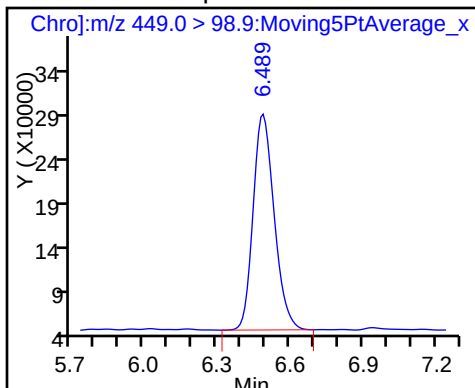
11 Perfluorohexanesulfonic acid



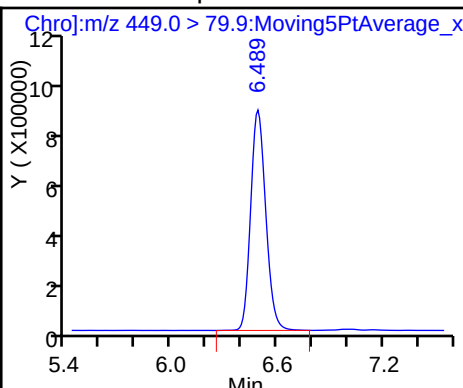
13 Perfluoroheptane Sulfonate



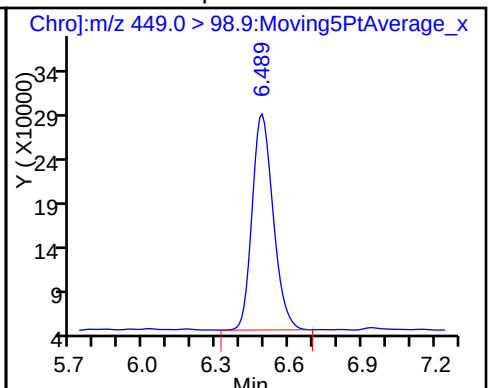
13 Perfluoroheptane Sulfonate



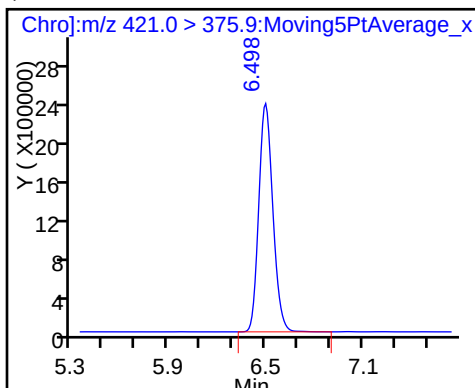
12 Perfluoroheptanesulfonic Acid



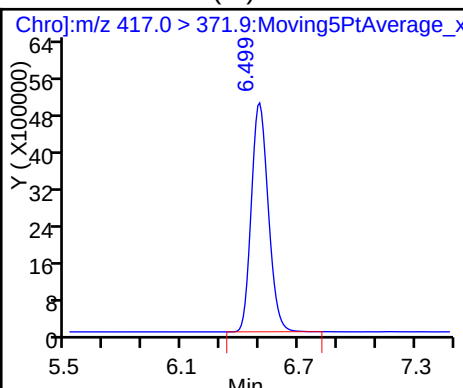
12 Perfluoroheptanesulfonic Acid



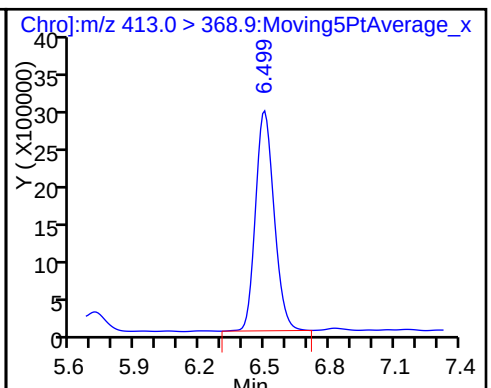
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



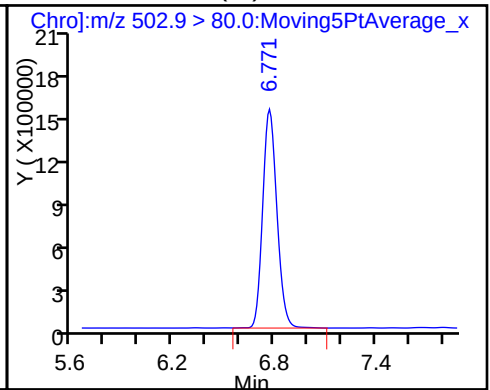
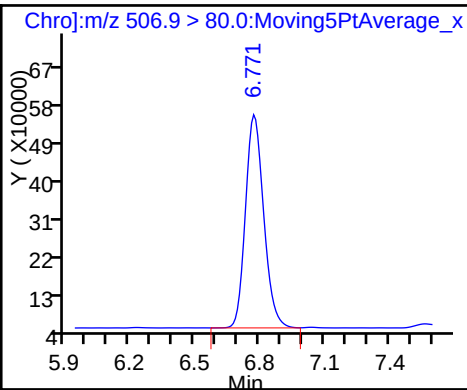
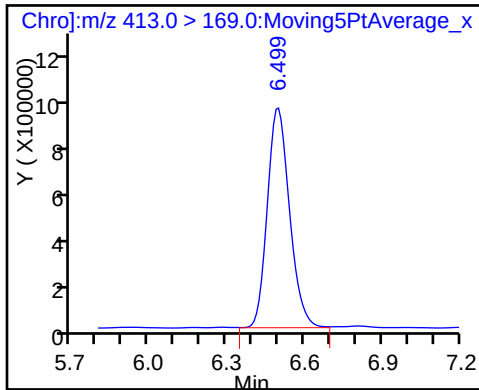
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

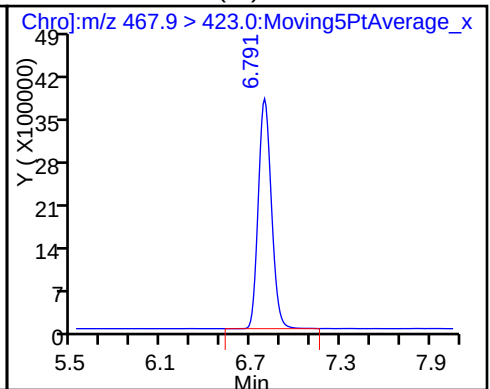
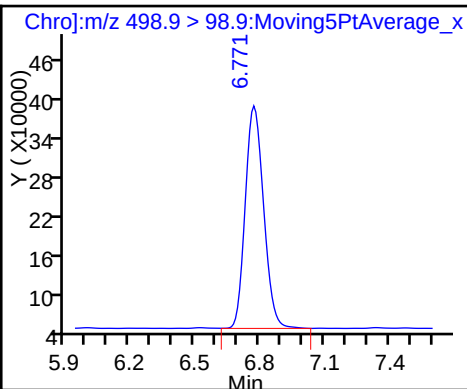
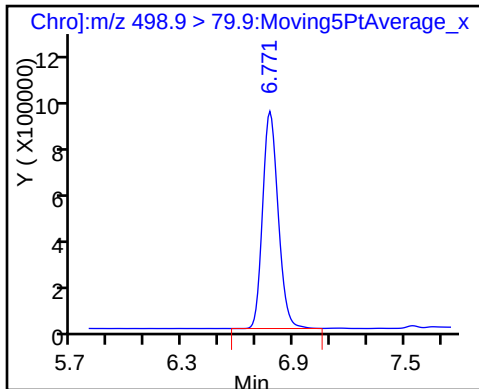
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

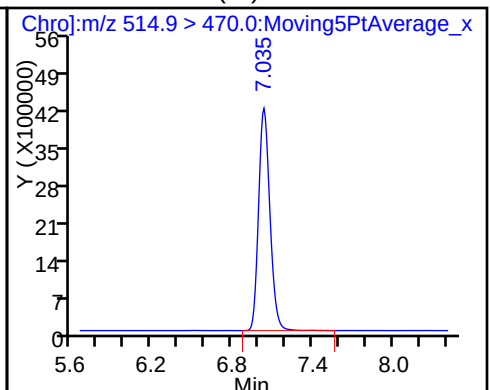
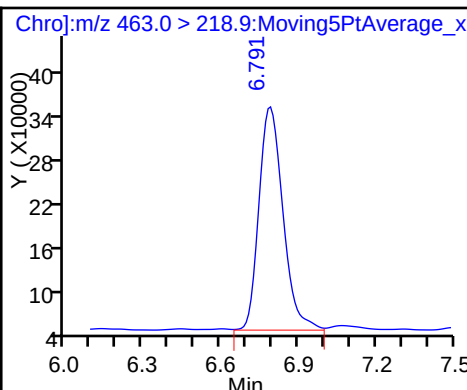
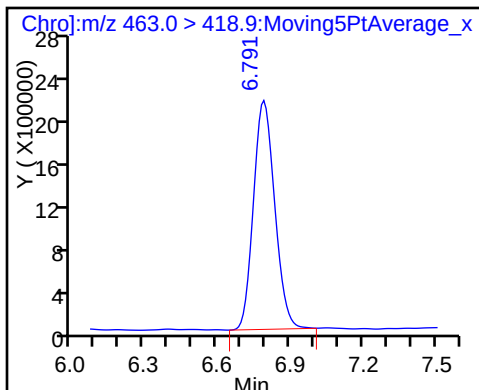
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

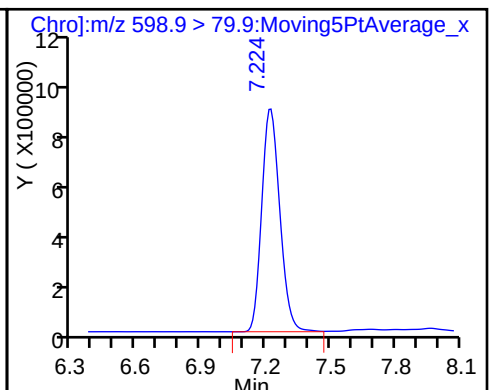
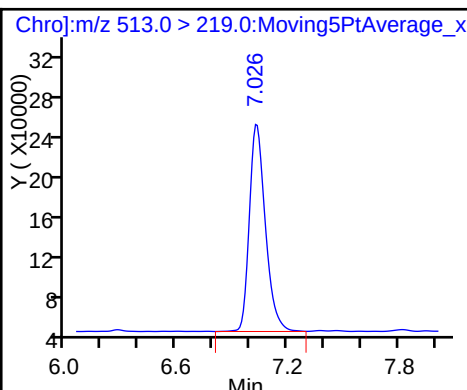
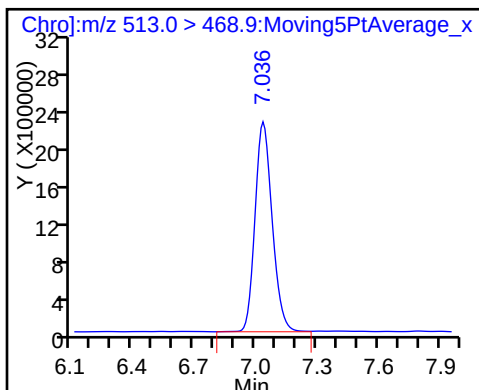
* 22 13C2 PFDA (IS)



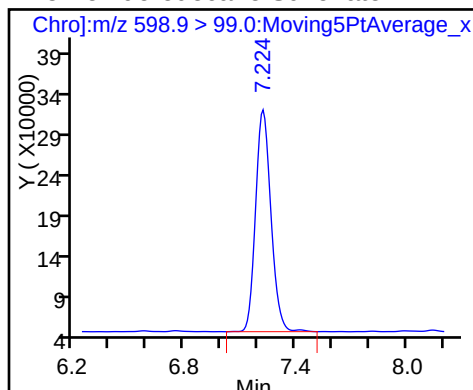
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

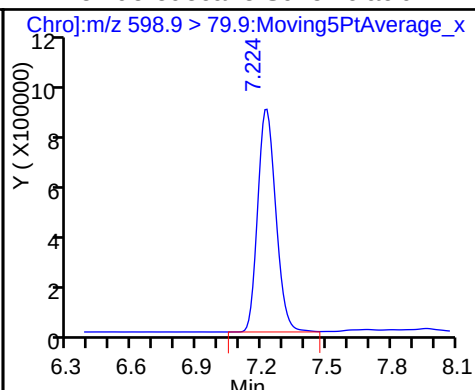
25 Perfluorodecane Sulfonate



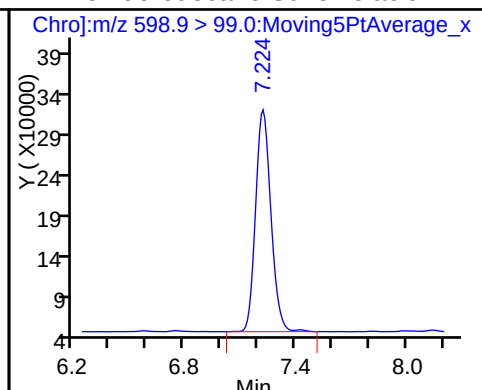
25 Perfluorodecane Sulfonate



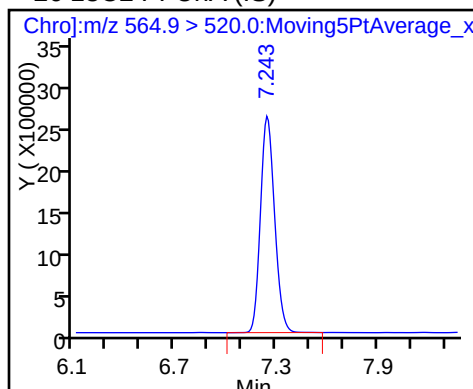
24 Perfluorodecane Sulfonic acid



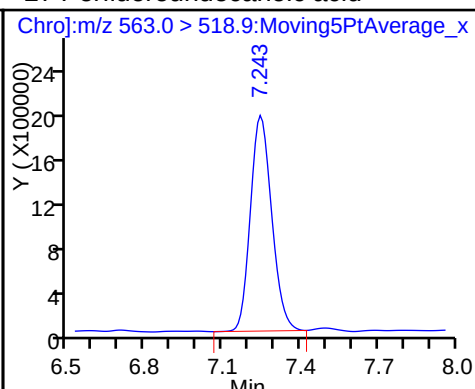
24 Perfluorodecane Sulfonic acid



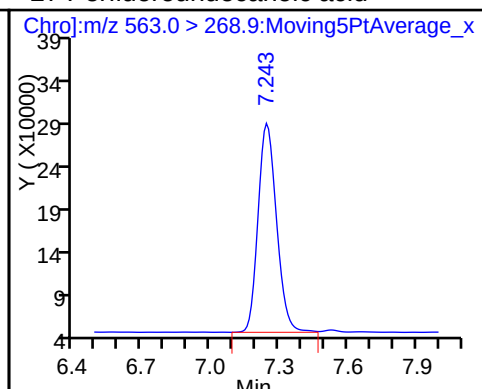
* 26 13C2 PFUnA (IS)



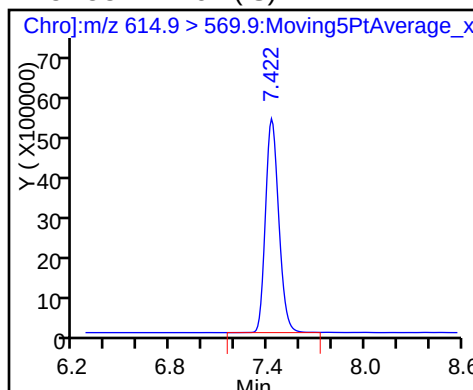
27 Perfluoroundecanoic acid



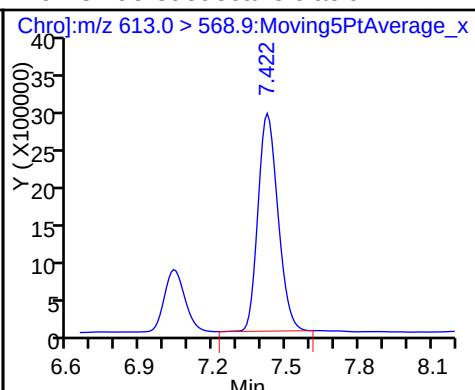
27 Perfluoroundecanoic acid



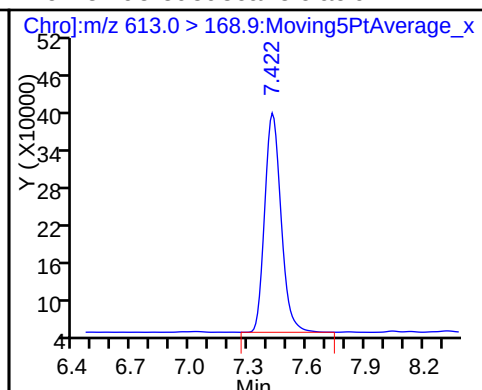
* 28 13C2 PFDaA (IS)



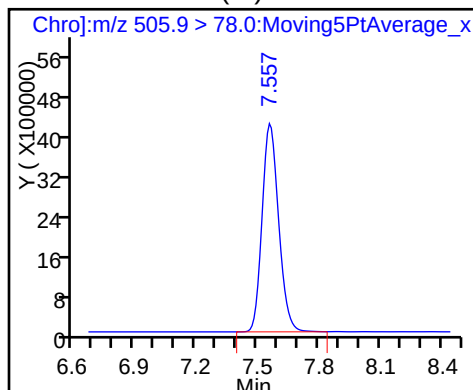
29 Perfluorododecanoic acid



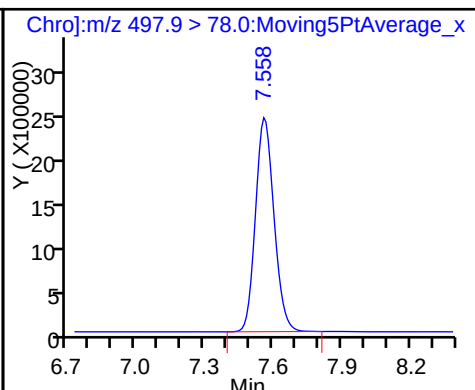
29 Perfluorododecanoic acid



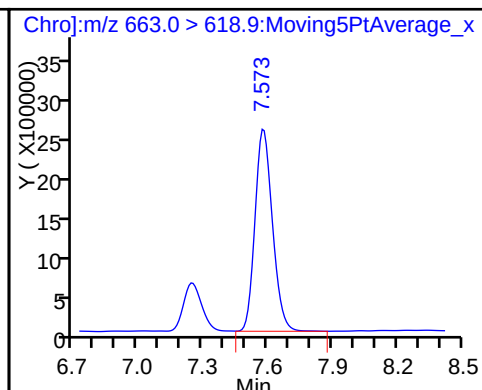
* 31 13C8 FOSA (IS)



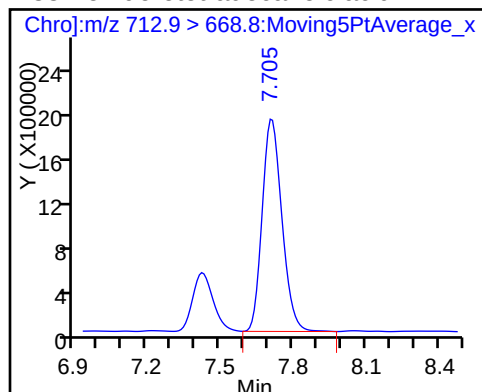
32 Perfluorooctane Sulfonamide



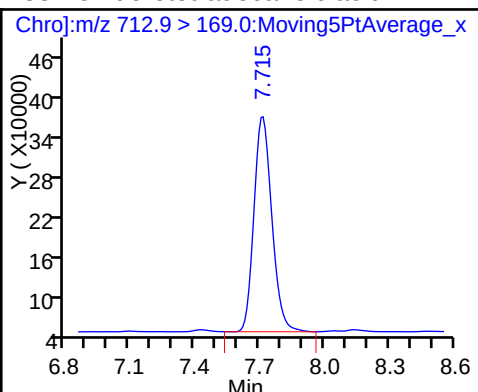
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid



33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Lab Sample ID: CCV 280-332053/25 Calibration Date: 06/30/2016 13:15

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F20030.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.037		9.67	10.0	-3.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.307		11.1	10.0	11.1	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.377		7.42	8.85	-16.2	30.0
Perfluorobutanesulfonic acid	Lin2		4.377		7.42	8.85	-16.2	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9696		10.3	10.0	2.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8855		10.2	10.0	1.8	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.679		8.98	9.45	-5.0	30.0
Perfluorohexanesulfonic acid	Lin2		3.679		8.98	9.45	-5.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.087		8.54	9.52	-10.3	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.087		8.54	9.52	-10.3	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.070		10.3	10.0	2.7	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.129		9.20	9.55	-3.7	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.141		10.2	10.0	1.7	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9704		9.63	10.0	-3.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.090		8.50	9.65	-11.9	30.0
Perfluorodecane Sulfonic acid	Lin2		1.090		8.50	9.65	-11.9	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.352		9.54	10.0	-4.6	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.027		10.0	10.0	0.0	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.058		9.74	10.0	-2.6	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8692		9.34	10.0	-6.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6739		11.4	10.0	14.1	30.0
13C8 PFOA	Lin2		0.8692		10.8	10.0	7.5	30.0
13C8 PFOS	Lin2		0.6315		9.88	9.56	3.3	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20030.d
 Lims ID: CCV PFC L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Jun-2016 13:15:28 ALS Bottle#: 0 Worklist Smp#: 25
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L6, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 14:36:19

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.067	4.067	0.0		27727152	10.0			M
2 Perfluorobutyric acid									
213.0 > 168.9	4.077	4.077	0.0	1.002	28754000	9.67			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.128	5.128	0.0	0.897	24091824	11.1			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.251	5.251	0.0	0.853	10022478	7.42			R
298.9 > 98.9	5.251	5.251	0.0	0.853	2972859		3.37(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.251	5.251	0.0	0.853	10022478	7.42			
298.9 > 98.9	5.251	5.251	0.0	0.853	2972859		3.37(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.714	0.0		18432363	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.714	0.0	1.000	17871309	10.3			
313.0 > 118.6	5.714	5.714	0.0	1.000	584088		30.60(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		2447731	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.159	0.0	1.000	8995333	8.98			
398.9 > 98.9	6.159	6.159	0.0	1.000	3133329		2.87(1.85-1.85)		
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.159	6.159	0.0	1.000	8995333	8.98			R
398.9 > 98.9	6.159	6.159	0.0	1.000	3133329		2.87(1.30-2.41)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.150	0.0	0.946	26384766	10.2			
363.0 > 168.9	6.150	6.150	0.0	0.946	6783943		3.89(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.958	9409289	8.54			
449.0 > 98.9	6.498	6.498	0.0	0.958	3137693		3.00(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.958	9409289	8.54			
449.0 > 98.9	6.498	6.498	0.0	0.958	3137693		3.00(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.498	0.0	1.000	25899215	10.8			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.499	0.0		29797467	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.001	31877447	10.3			
413.0 > 169.0	6.508	6.508	0.0	1.001	9693960		3.29(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	5487657	9.88			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		8689539	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.781	6.781	0.0	1.000	9802251	9.20			R
498.9 > 98.9	6.781	6.781	0.0	1.000	3394132		2.89(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.801	0.0		20842826	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.000	23785888	10.2			
463.0 > 218.9	6.801	6.801	0.0	1.000	3606560		6.60(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.045	7.045	0.0	1.000	23648257	9.63			R
513.0 > 219.0	7.045	7.045	0.0	1.000	2396920		9.87(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.045	0.0		24369323	10.0			
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.065	9564582	8.50			
598.9 > 99.0	7.224	7.224	0.0	1.065	3027816		3.16(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.065	9564582	8.50			
598.9 > 99.0	7.224	7.224	0.0	1.065	3027816		3.16(2.84-2.84)		
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.253	7.253	0.0	1.000	19293829	9.54			R
563.0 > 268.9	7.253	7.253	0.0	1.000	2597406		7.43(3.47-6.45)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		14265403	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.432	7.432	0.0	1.000	31352958	10.0			
613.0 > 168.9	7.432	7.432	0.0	1.000	3807027		8.24(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.431	0.0		30516121	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.576	7.576	0.0		24794698	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.577	7.577	0.0	1.000	26229977	9.74			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.583	7.583	0.0	1.020	26523317	9.34			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.715	7.715	0.0	1.038	20564849	11.4			
712.9 > 169.0	7.715	7.715	0.0	1.038	3296111		6.24(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-LCS_00078	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20030.d

Injection Date: 30-Jun-2016 13:15:28

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 25

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

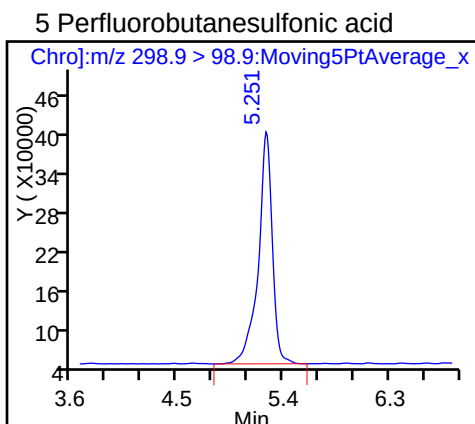
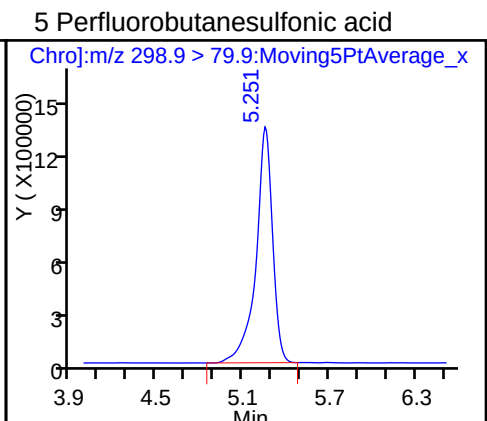
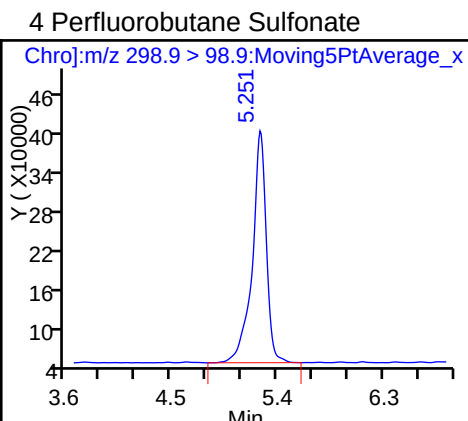
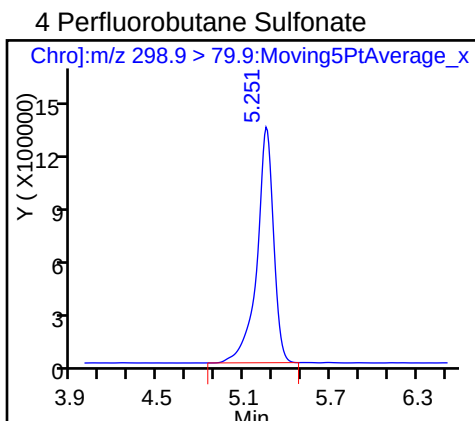
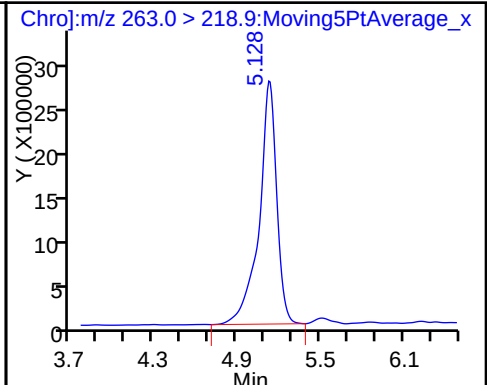
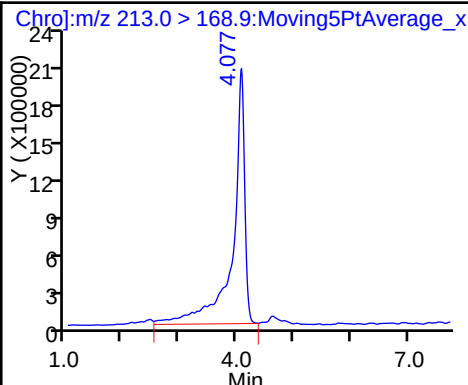
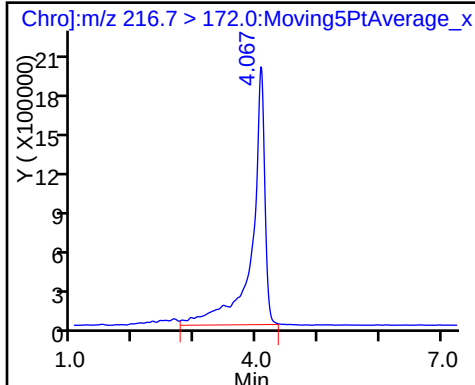
Method: 8321_PFC

Limit Group: LC - PFC

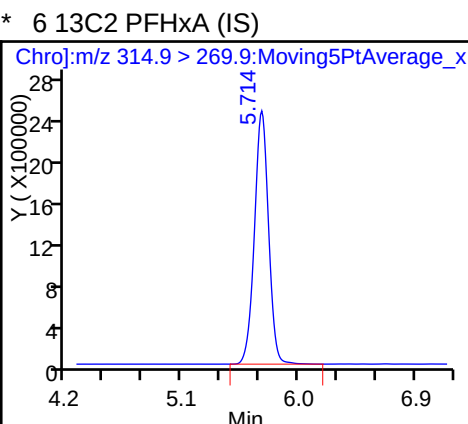
* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid

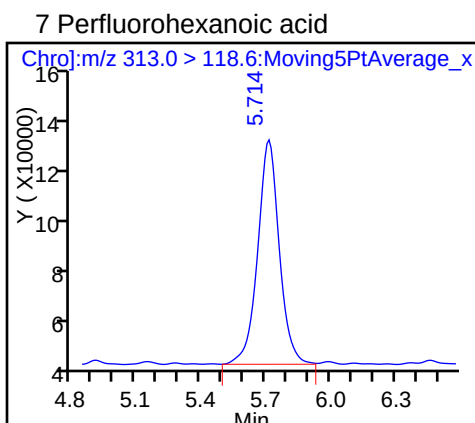
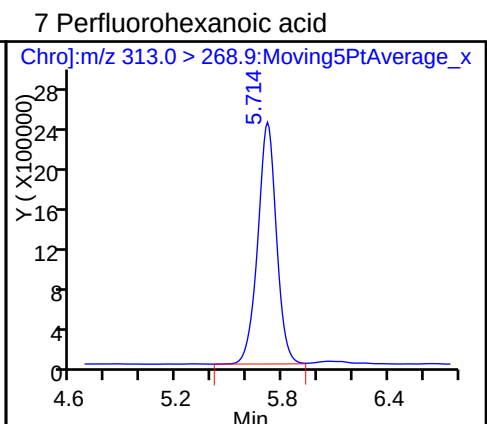
3 Perfluoropentanoic acid



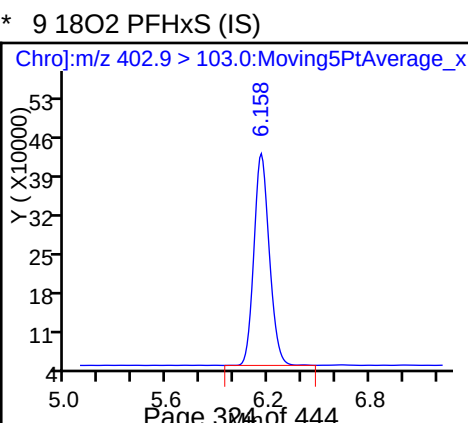
* 6 13C2 PFHxA (IS)



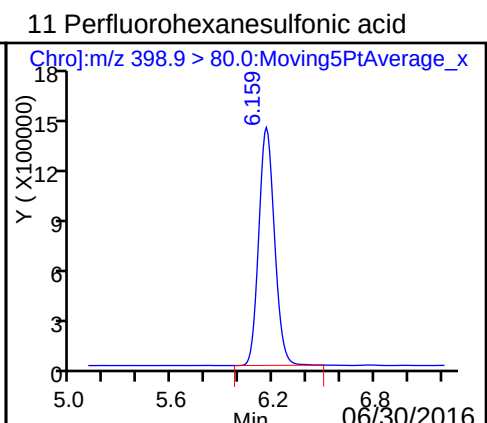
7 Perfluorohexanoic acid

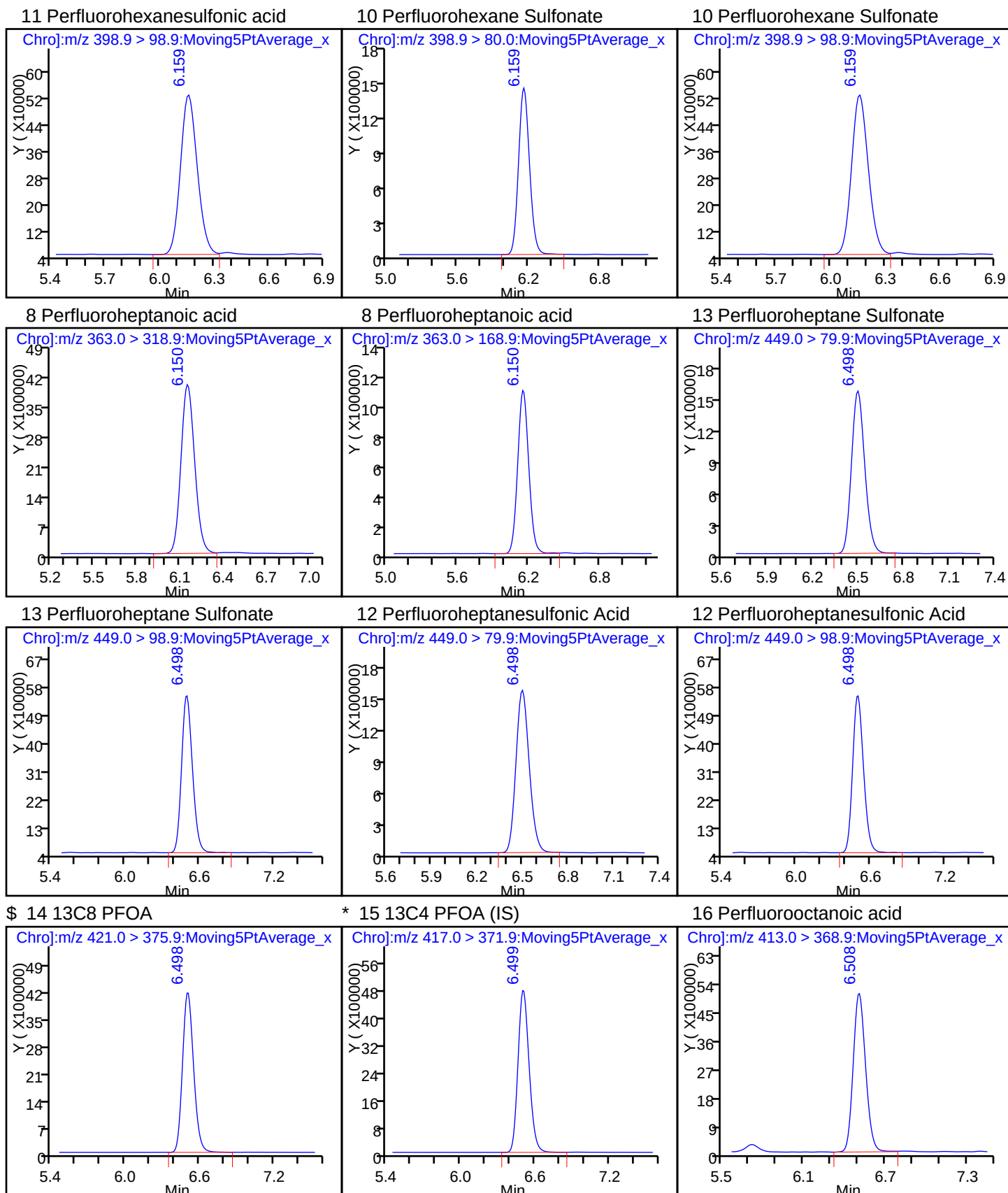


* 9 18O2 PFHxS (IS)



11 Perfluorohexanesulfonic acid

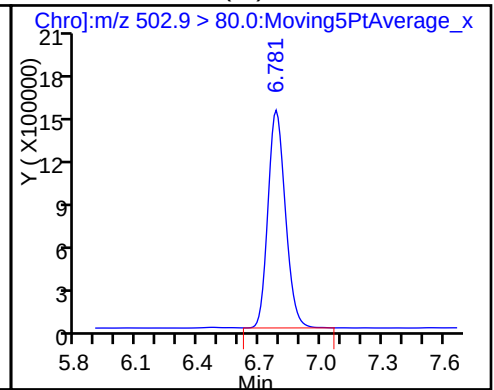
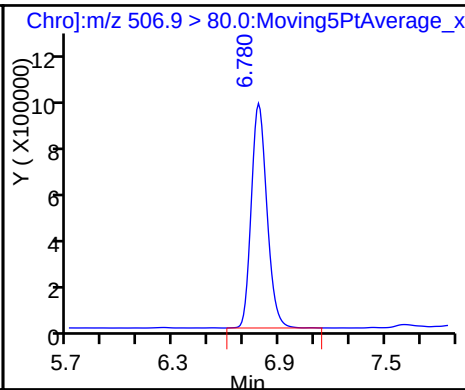
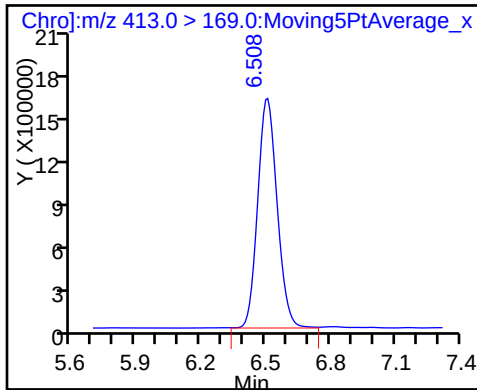




16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

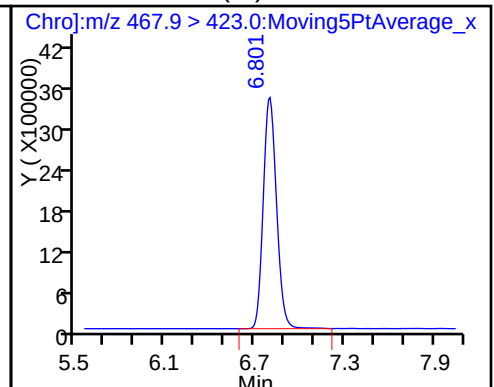
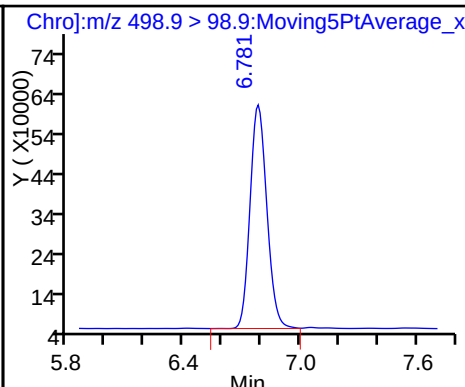
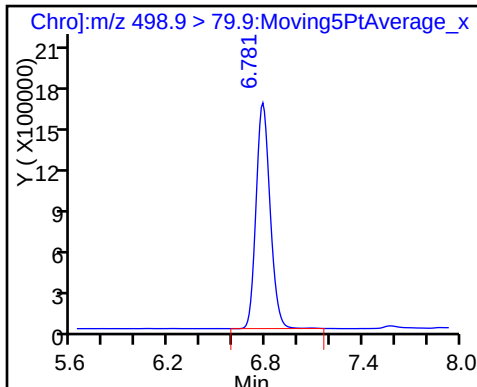
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

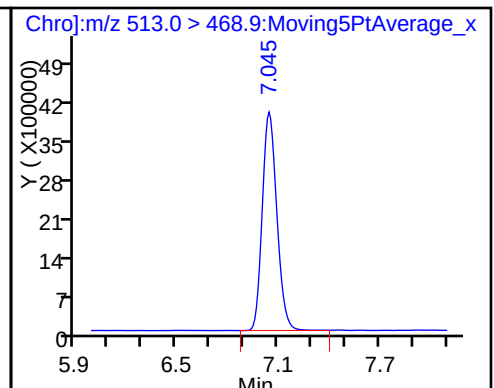
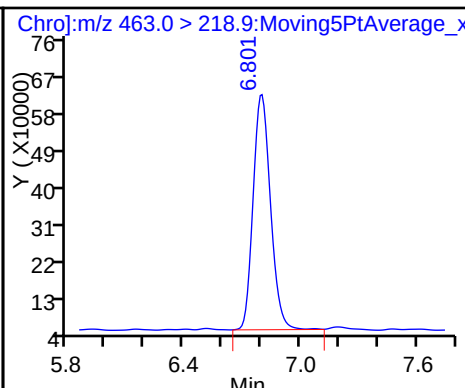
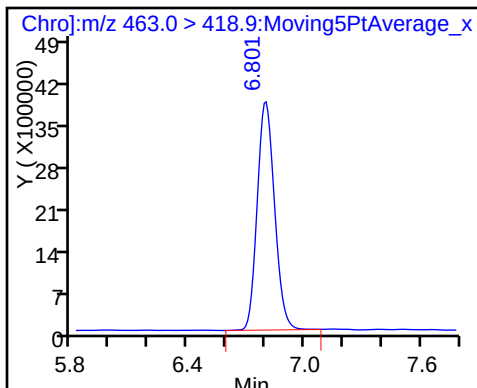
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

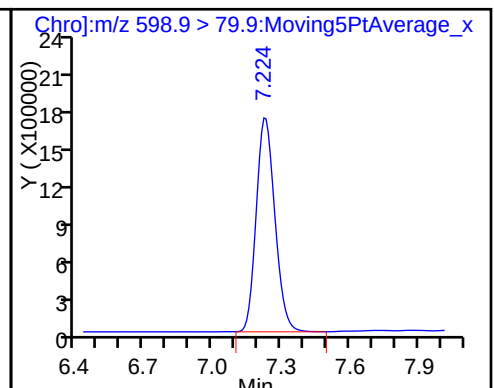
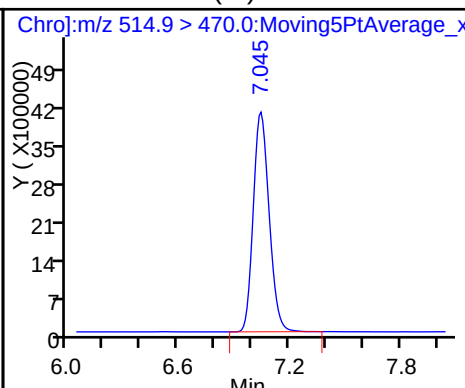
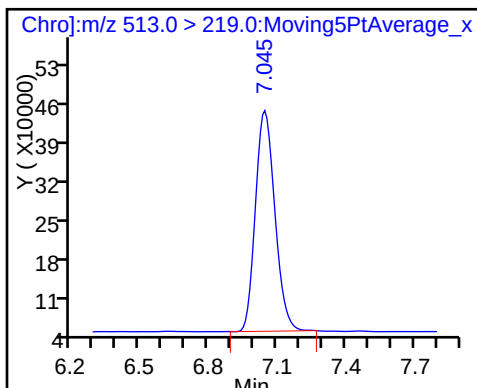
23 Perfluorodecanoic acid



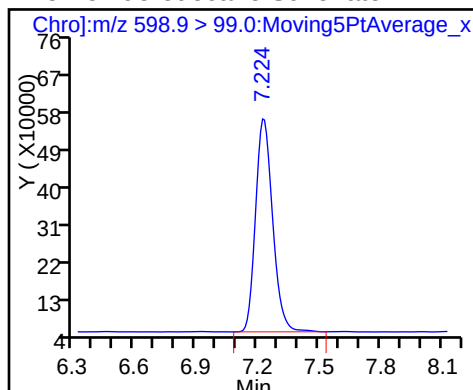
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

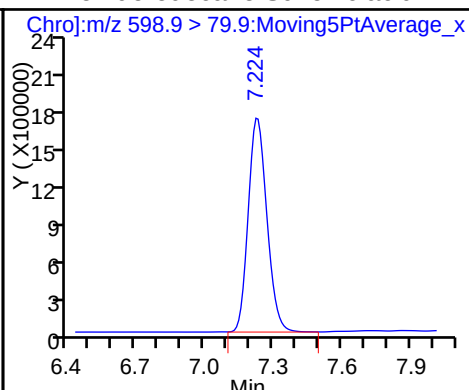
25 Perfluorodecane Sulfonate



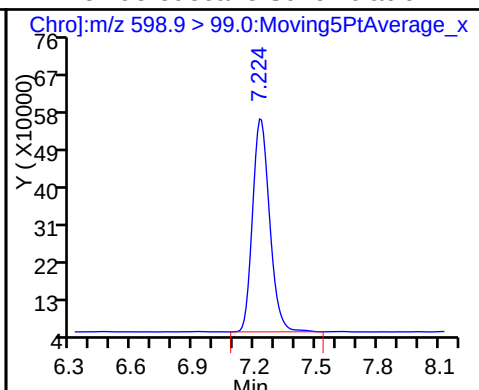
25 Perfluorodecane Sulfonate



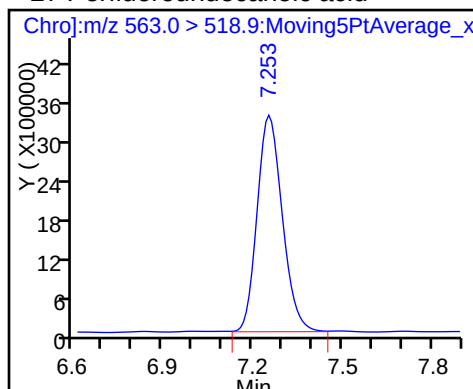
24 Perfluorodecane Sulfonic acid



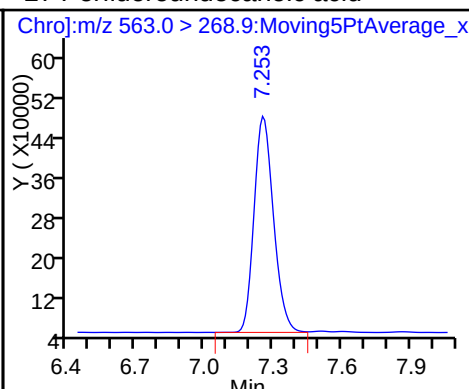
24 Perfluorodecane Sulfonic acid



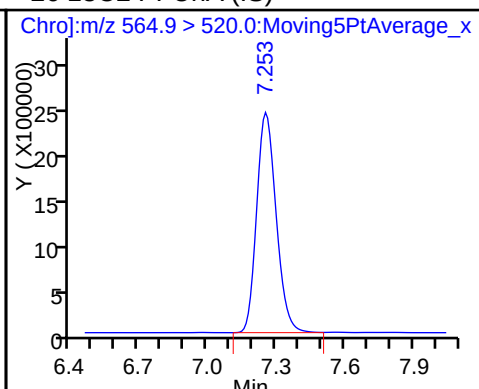
27 Perfluoroundecanoic acid



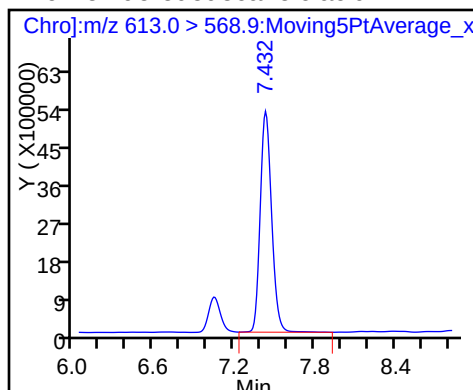
27 Perfluoroundecanoic acid



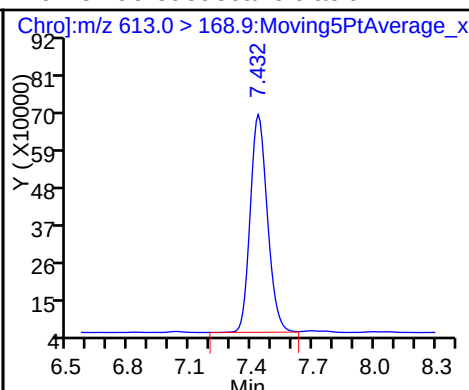
* 26 13C2 PFUnA (IS)



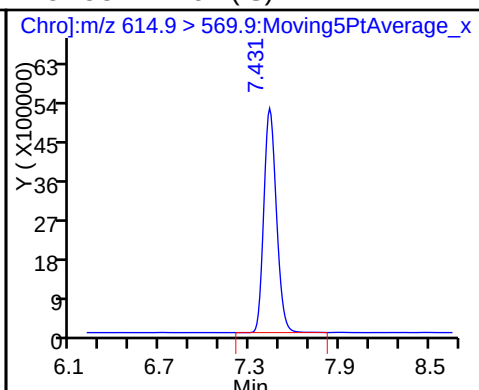
29 Perfluorododecanoic acid



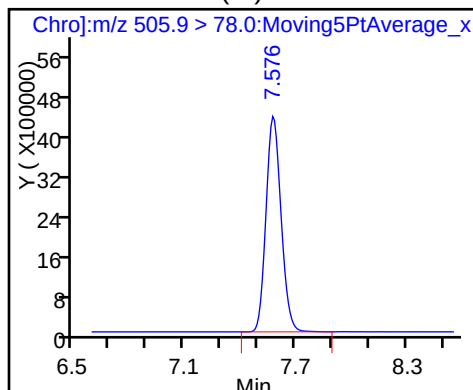
29 Perfluorododecanoic acid



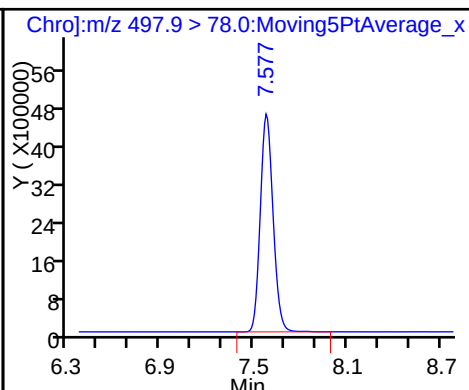
* 28 13C2 PFDa (IS)



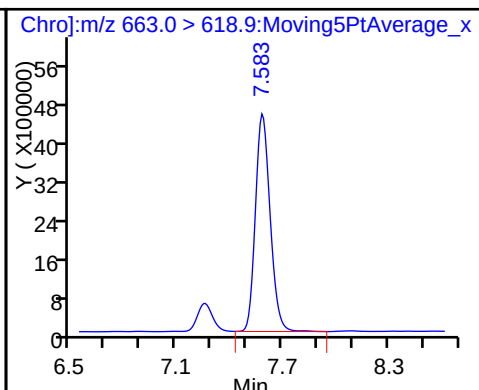
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

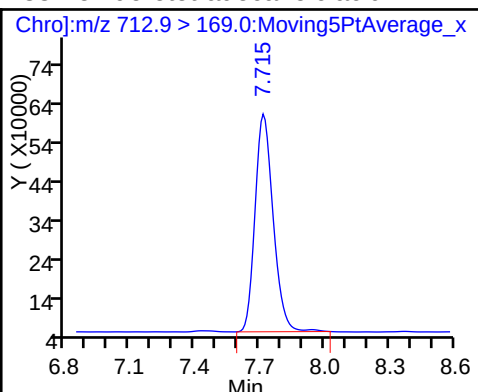
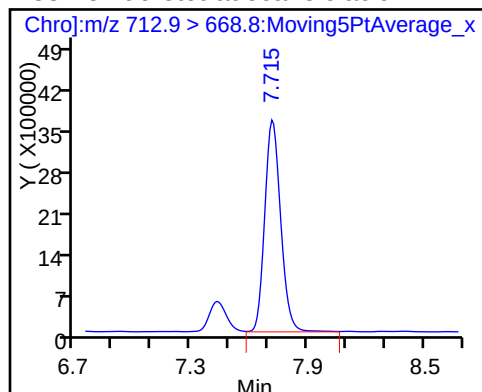


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



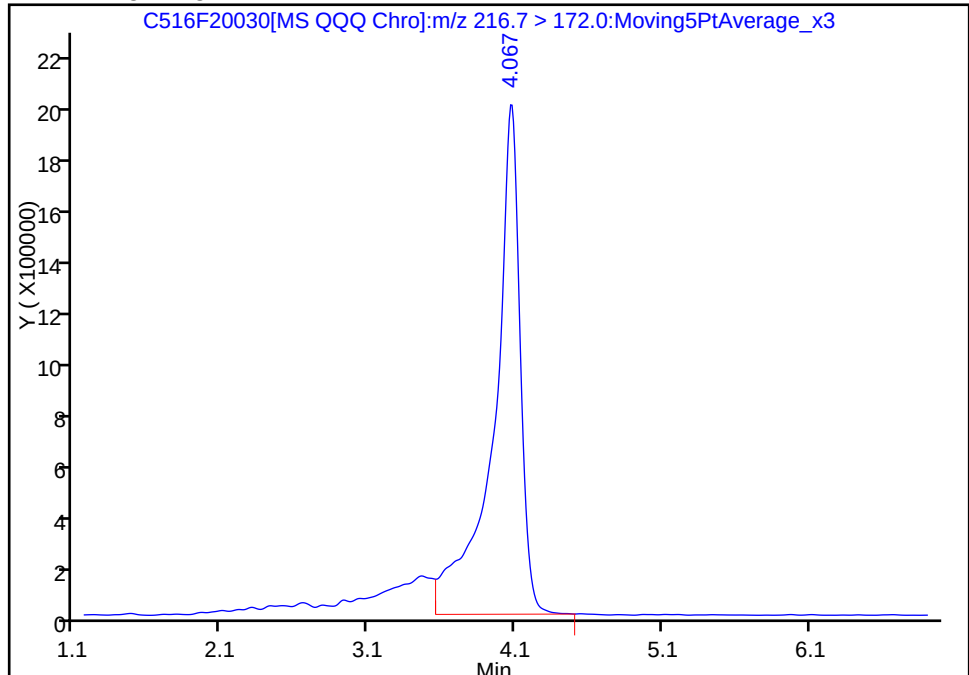
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20030.d		
Injection Date:	30-Jun-2016 13:15:28	Instrument ID:	LC_LCMS5
Lims ID:	CCV PFC L6		
Client ID:			
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector:	MS QQQ
		Worklist Smp#:	25

* 1 13C4 PFBA (IS), CAS: STL01003

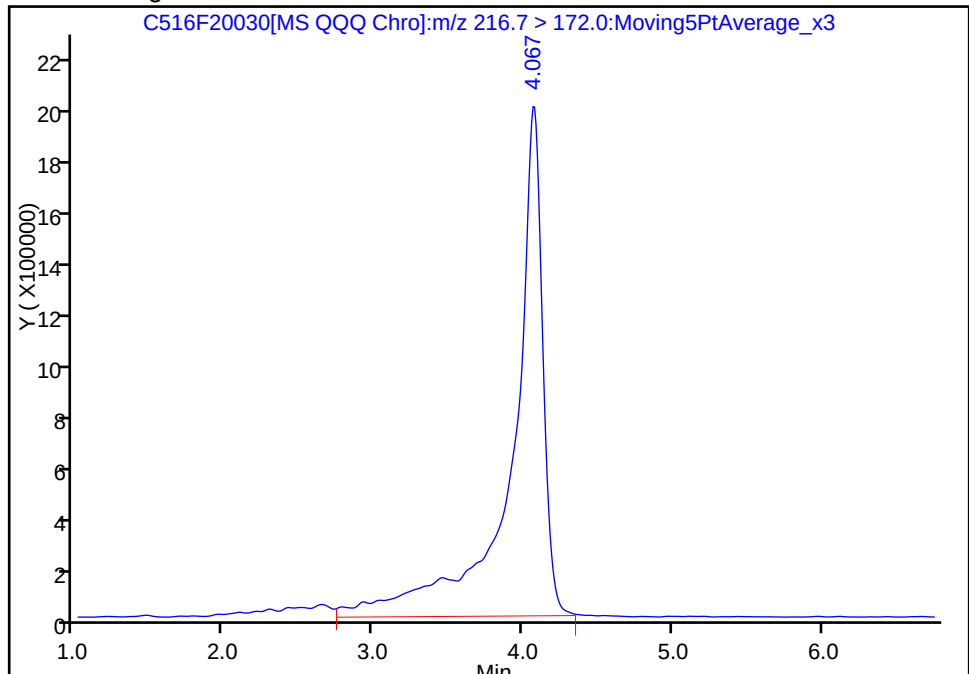
RT: 4.07
Area: 23783573
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.07
Area: 27727152
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 14:36:19
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Lab Sample ID: CCV 280-332053/35 Calibration Date: 06/30/2016 15:18
 Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28
 Lab File ID: PC516F20040.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.005		4.69	5.00	-6.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.261		5.35	5.00	7.0	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.703		3.99	4.43	-9.9	30.0
Perfluorobutanesulfonic acid	Lin2		4.703		3.99	4.43	-9.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9564		5.05	5.00	0.9	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9224		5.29	5.00	5.7	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		3.913		4.73	4.73	0.2	30.0
Perfluorohexanesulfonic acid	Lin2		3.913		4.73	4.73	0.2	30.0
Perfluoroheptane Sulfonate	Lin2		1.155		4.54	4.76	-4.6	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.155		4.54	4.76	-4.6	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.179		5.63	5.00	12.6	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.222		4.95	4.78	3.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.164		5.17	5.00	3.3	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.049		5.19	5.00	3.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.128		4.38	4.83	-9.2	30.0
Perfluorodecane Sulfonic acid	Lin2		1.128		4.38	4.83	-9.2	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.472		5.17	5.00	3.4	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.093		5.29	5.00	5.8	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.144		5.27	5.00	5.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9659		5.15	5.00	3.1	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7058		5.97	5.00	19.4	30.0
13C8 PFOA	Lin2		0.9000		5.54	5.00	10.9	30.0
13C8 PFOS	Lin2		0.6890		5.37	4.78	12.4	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20040.d
 Lims ID: CCV PFC L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Jun-2016 15:18:29 ALS Bottle#: 0 Worklist Smp#: 35
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L5, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:40:08 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 16:35:41

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.067 4.067 0.0 25865026 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.068 4.068 0.0 1.000 12992231 4.68

3 Perfluoropentanoic acid

263.0 > 218.9 5.147 5.147 0.0 0.898 11973174 5.35

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.270 5.270 0.0 0.854 5114632 3.99

298.9 > 98.9 5.270 5.270 0.0 0.854 1518697 3.37(1.80-3.35)

R
R

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.270 5.270 0.0 0.854 5114632 3.99

298.9 > 98.9 5.270 5.270 0.0 0.854 1518697 3.37(2.57-2.57)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.733 5.733 0.0 18985734 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.733 5.733 0.0 1.000 9078539 5.05

313.0 > 118.6 5.733 5.733 0.0 1.000 233990 38.80(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.159 6.159 0.0 0.946 13709913 5.29

363.0 > 168.9 6.159 6.159 0.0 0.946 3654469 3.75(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.168 6.168 0.0 2324952 9.46

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.168 6.168 0.0 1.000 4543988 4.73

398.9 > 98.9 6.168 6.168 0.0 1.000 1631625 2.78(1.85-1.85)

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.168 6.168 0.0 1.000 4543988 4.73

398.9 > 98.9 6.168 6.168 0.0 1.000 1631625 2.78(1.30-2.41)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.958	4799067	4.54			
449.0 > 98.9	6.498	6.498	0.0	0.958	1356754		3.54(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.958	4799067	4.54			
449.0 > 98.9	6.498	6.498	0.0	0.958	1356754		3.54(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	13377365	5.54			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		29728142	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	17530864	5.63			
413.0 > 169.0	6.508	6.508	0.0	1.000	5250355		3.34(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	2874506	5.37			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		8343823	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.781	6.781	0.0	1.000	5094092	4.95			R
498.9 > 98.9	6.781	6.781	0.0	1.000	1899340		2.68(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.801	0.0		21818061	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.000	12693772	5.17			
463.0 > 218.9	6.801	6.801	0.0	1.000	1914767		6.63(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.035	0.0		23101549	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.036	7.036	0.0	1.000	12111253	5.19			R
513.0 > 219.0	7.036	7.036	0.0	1.000	1260904		9.61(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.065	4750519	4.38			
598.9 > 99.0	7.224	7.224	0.0	1.065	1528651		3.11(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.065	4750519	4.38			
598.9 > 99.0	7.224	7.224	0.0	1.065	1528651		3.11(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		14462130	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.253	7.253	0.0	1.000	10645753	5.17			RM
563.0 > 268.9	7.243	7.253	-0.010	0.999	1239697		8.59(3.47-6.45)		RM
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.431	0.0		29977866	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.432	7.432	0.0	1.000	16380759	5.29			
613.0 > 168.9	7.422	7.432	-0.010	0.999	1983447		8.26(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.576	7.576	0.0		23777834	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.577	7.577	0.0	1.000	13602485	5.26			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.583	7.583	0.0	1.020	14478327	5.15			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.715	7.715	0.0	1.038	10578365	5.97			
712.9 > 169.0	7.715	7.715	0.0	1.038	1581058		6.69(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 10.00	Units: uL
PFC-LCS_00078	Amount Added: 10.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20040.d

Injection Date: 30-Jun-2016 15:18:29

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 35

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

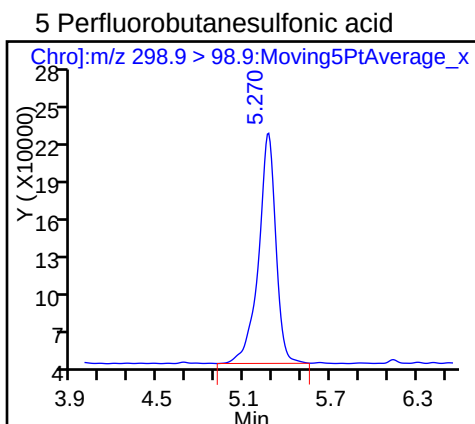
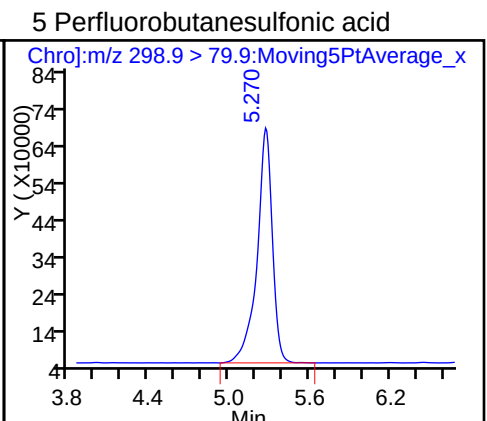
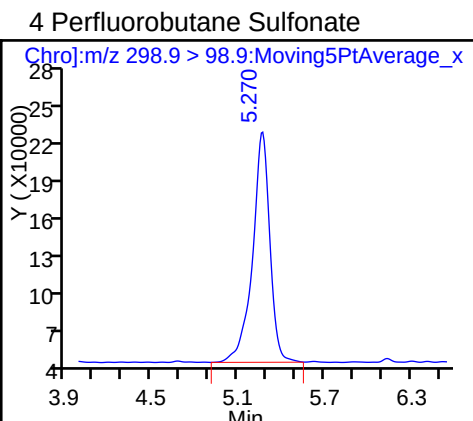
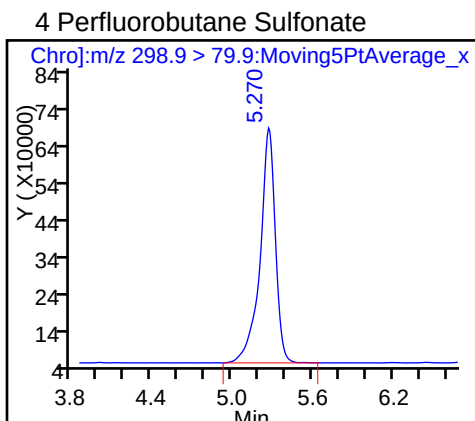
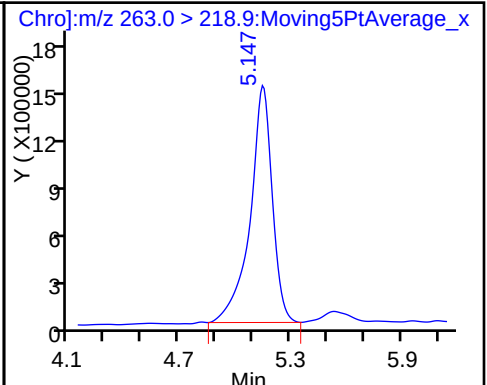
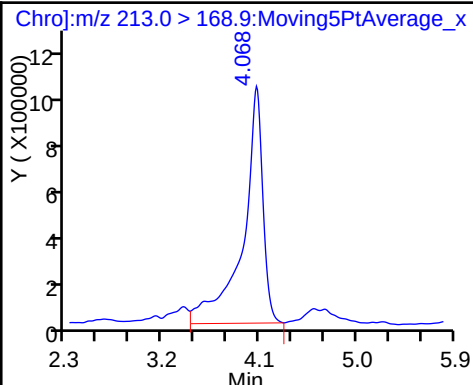
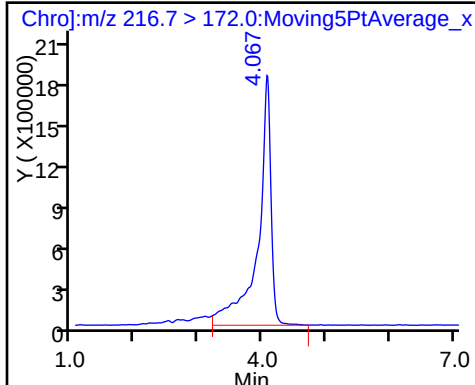
Method: 8321_PFC

Limit Group: LC - PFC

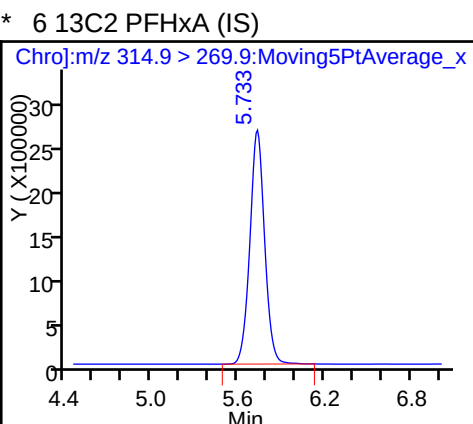
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

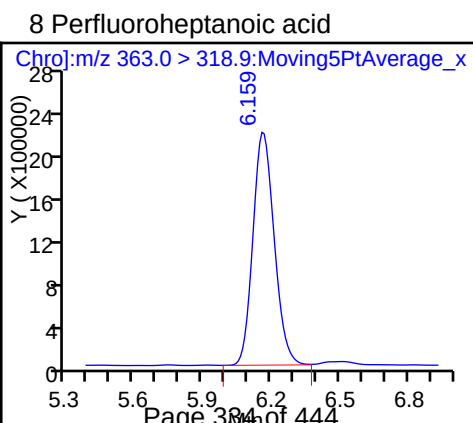
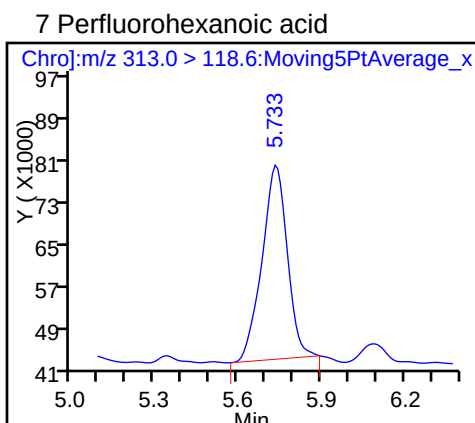
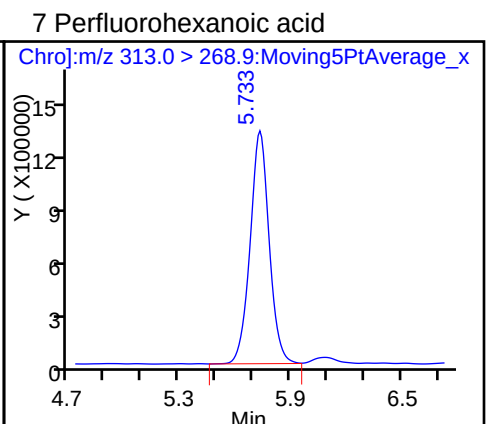
3 Perfluoropentanoic acid



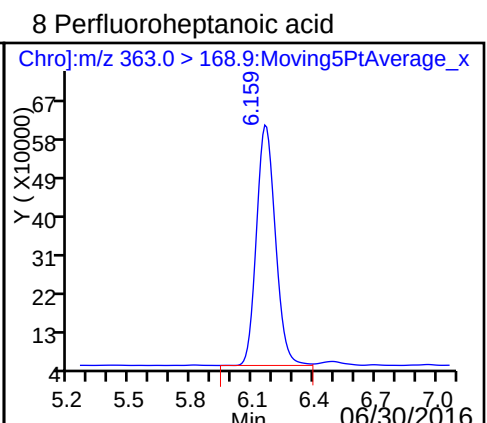
* 6 13C2 PFHxA (IS)



7 Perfluorohexanoic acid



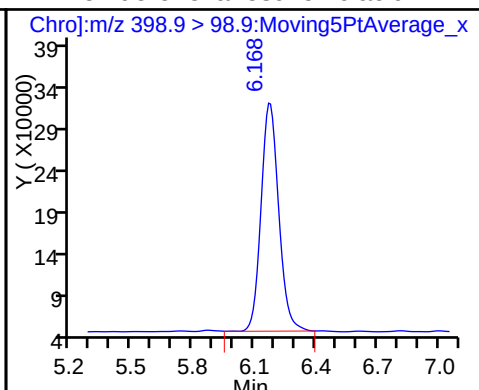
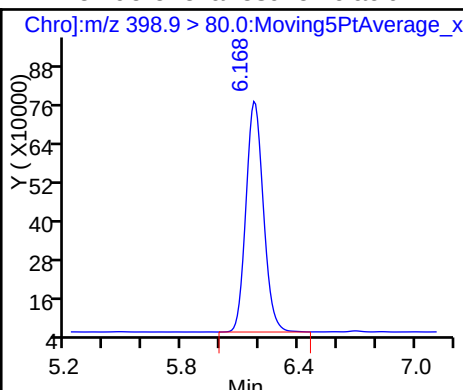
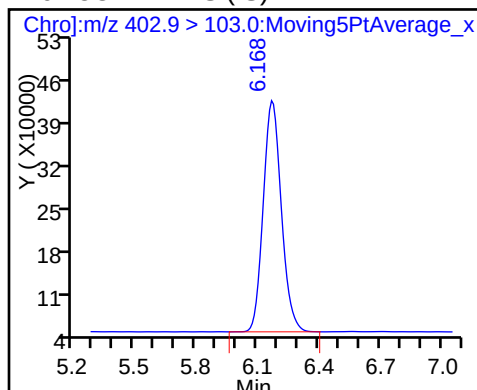
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

11 Perfluorohexanesulfonic acid

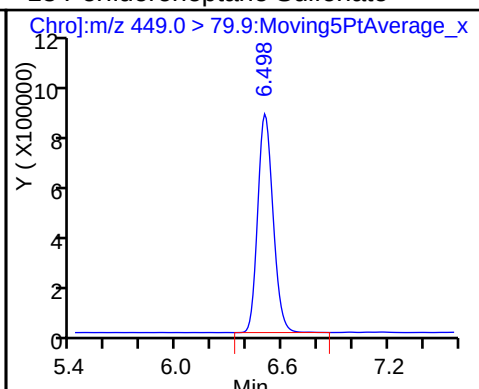
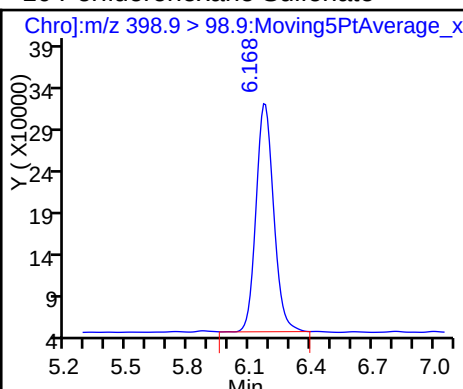
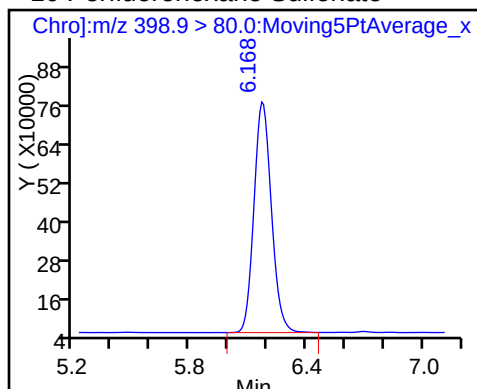
11 Perfluorohexanesulfonic acid



10 Perfluorohexane Sulfonate

10 Perfluorohexane Sulfonate

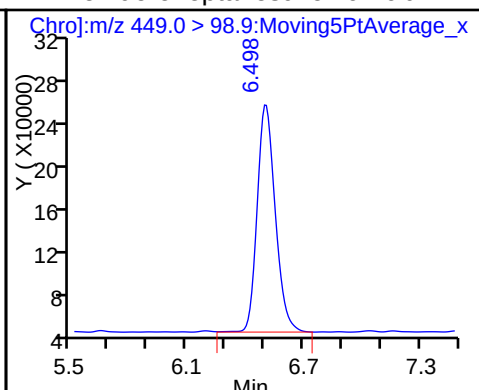
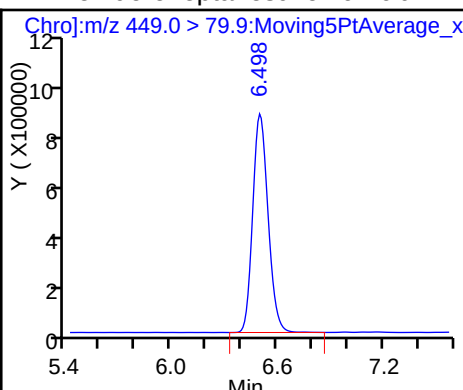
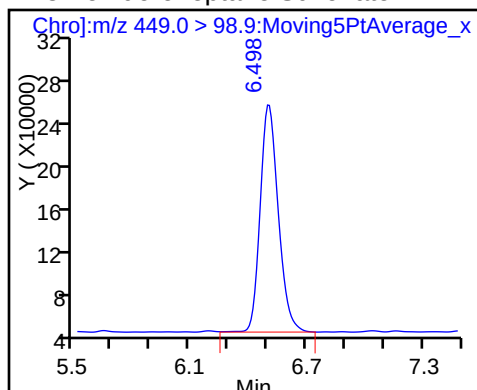
13 Perfluoroheptane Sulfonate



13 Perfluoroheptane Sulfonate

12 Perfluoroheptanesulfonic Acid

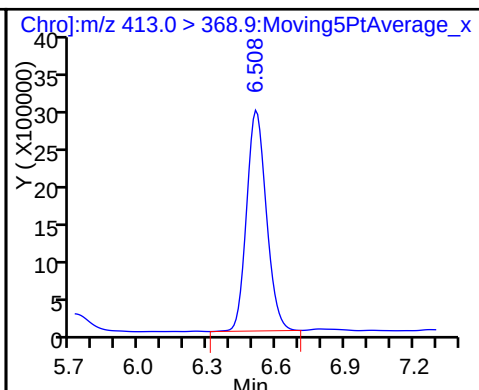
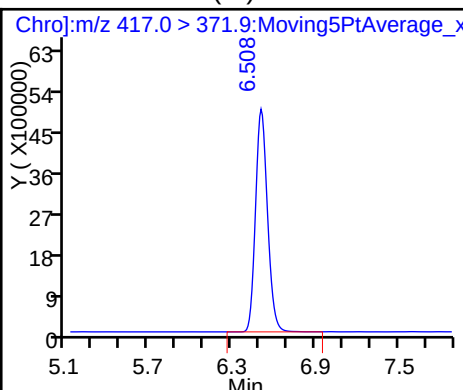
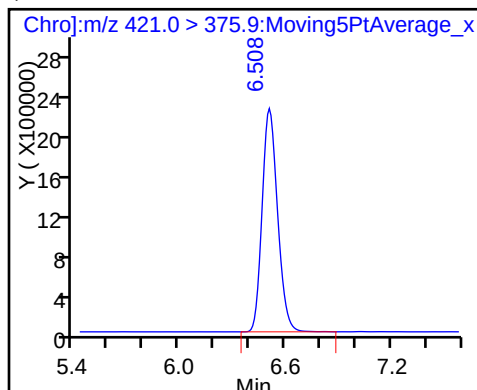
12 Perfluoroheptanesulfonic Acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

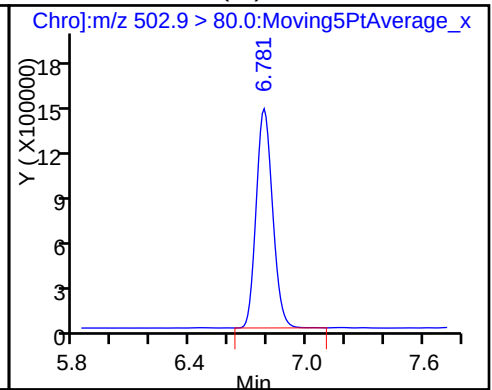
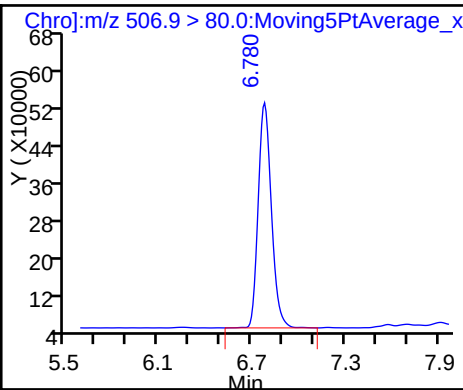
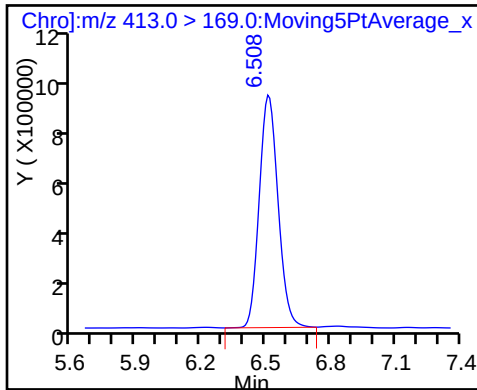
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

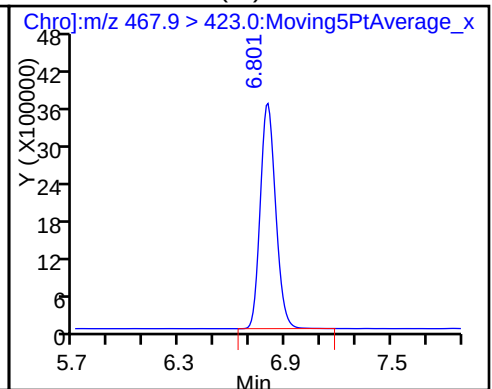
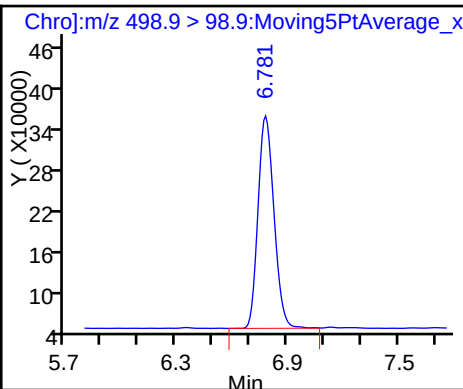
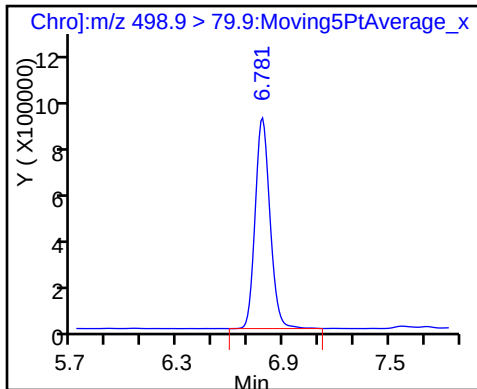
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

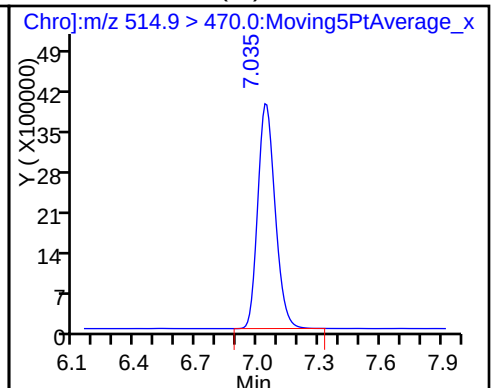
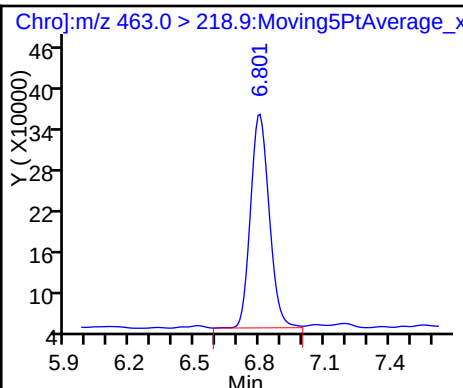
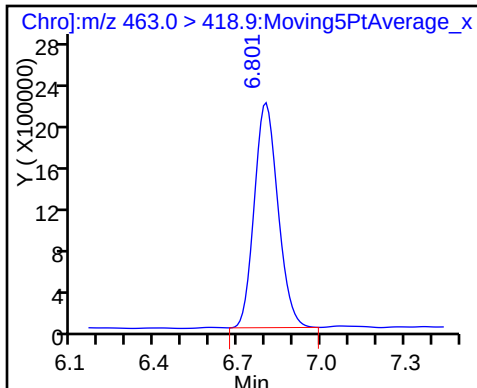
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

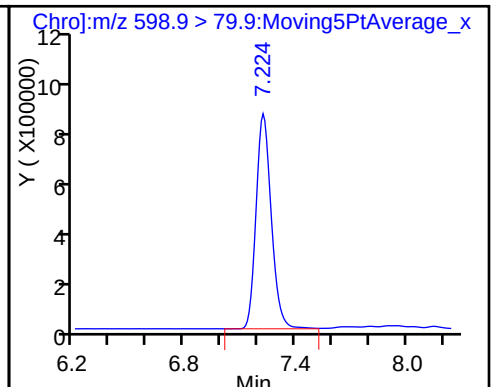
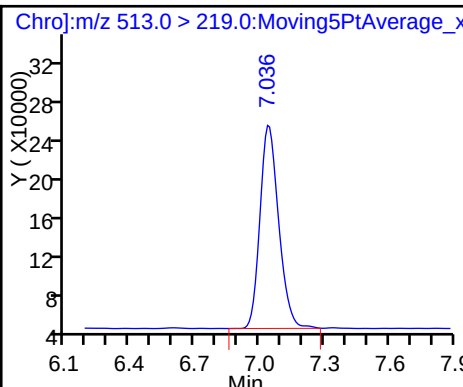
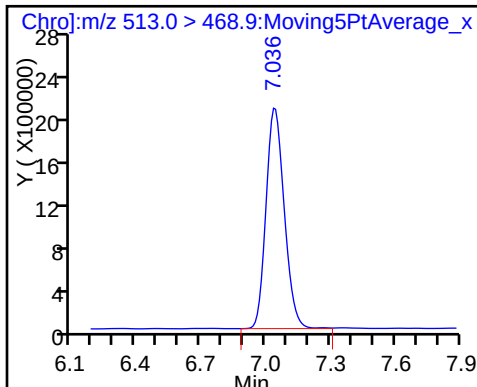
* 22 13C2 PFDA (IS)



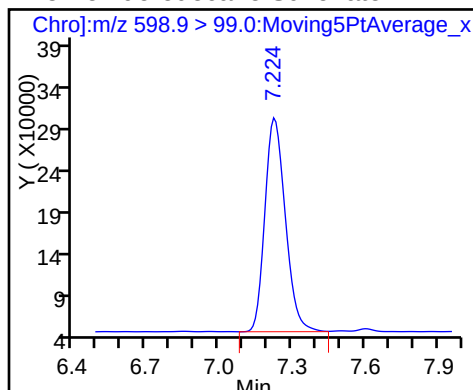
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

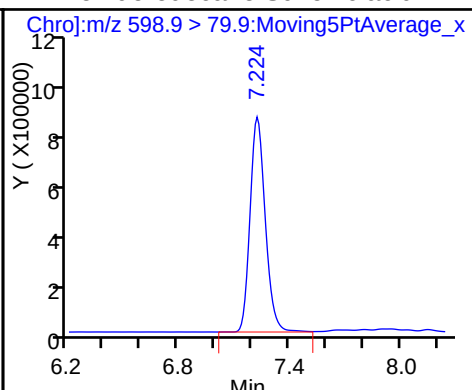
25 Perfluorodecane Sulfonate



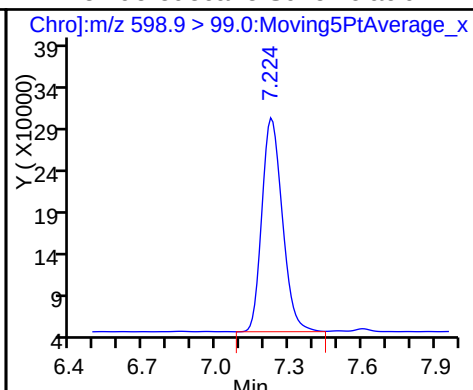
25 Perfluorodecane Sulfonate



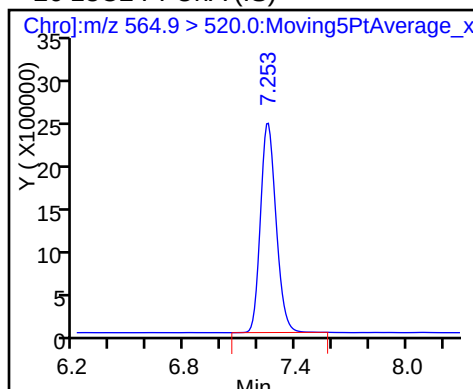
24 Perfluorodecane Sulfonic acid



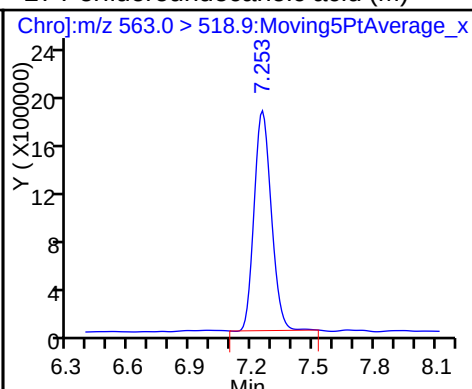
24 Perfluorodecane Sulfonic acid



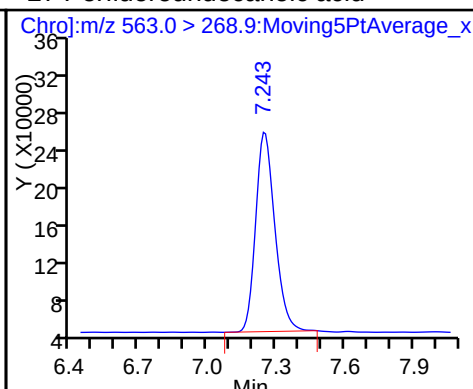
* 26 13C2 PFUnA (IS)



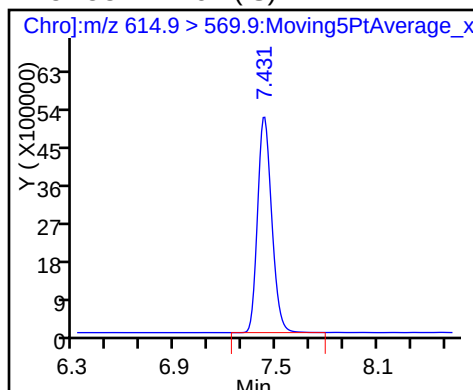
27 Perfluoroundecanoic acid (M)



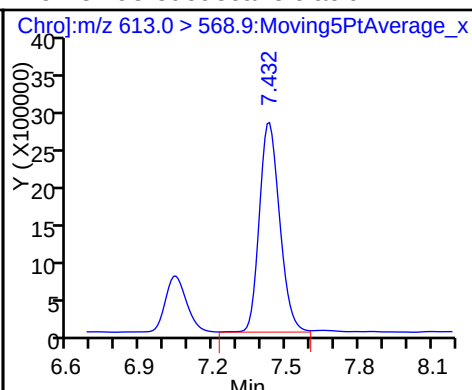
27 Perfluoroundecanoic acid



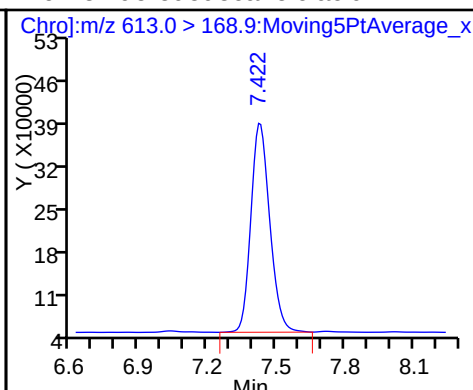
* 28 13C2 PFDaA (IS)



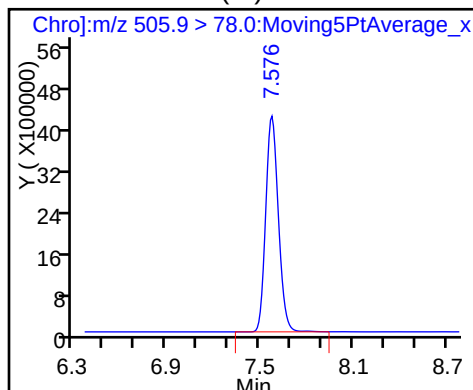
29 Perfluorododecanoic acid



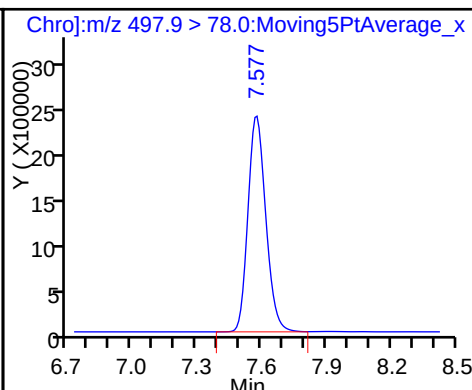
29 Perfluorododecanoic acid



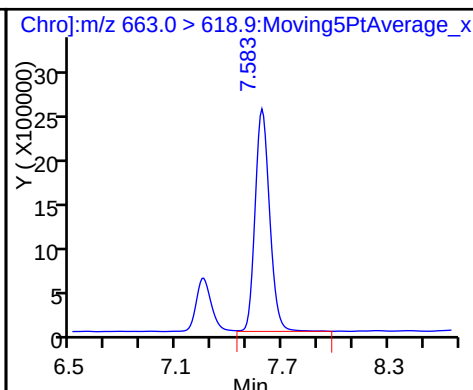
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

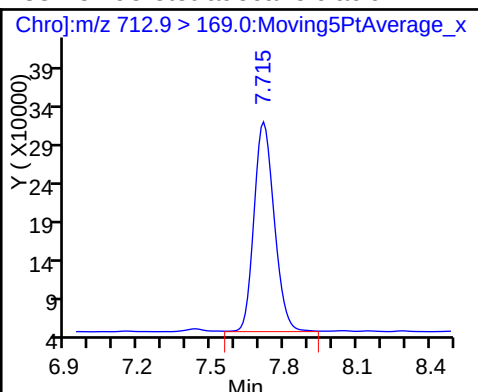
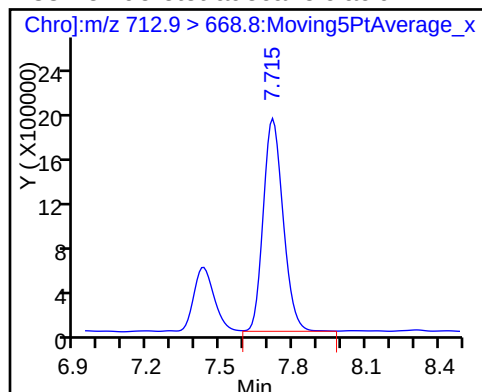


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



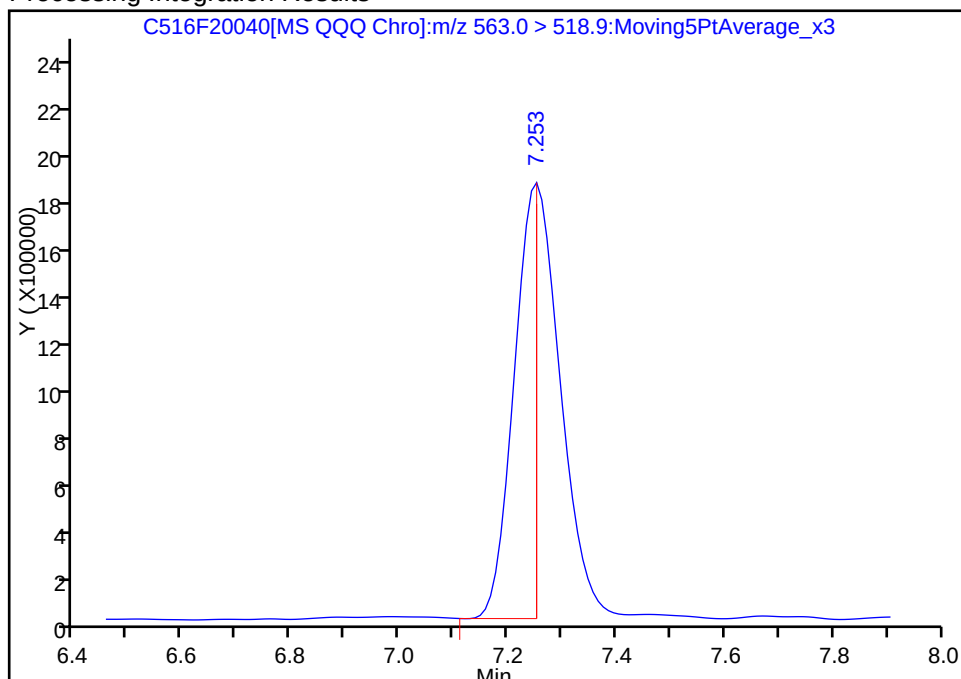
TestAmerica Denver

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Injection Date: 30-Jun-2016 15:18:29 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L5
Client ID:
Operator ID: ACM/HKF ALS Bottle#: 0 Worklist Smp#: 35
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

27 Perfluoroundecanoic acid, CAS: 2058-94-8

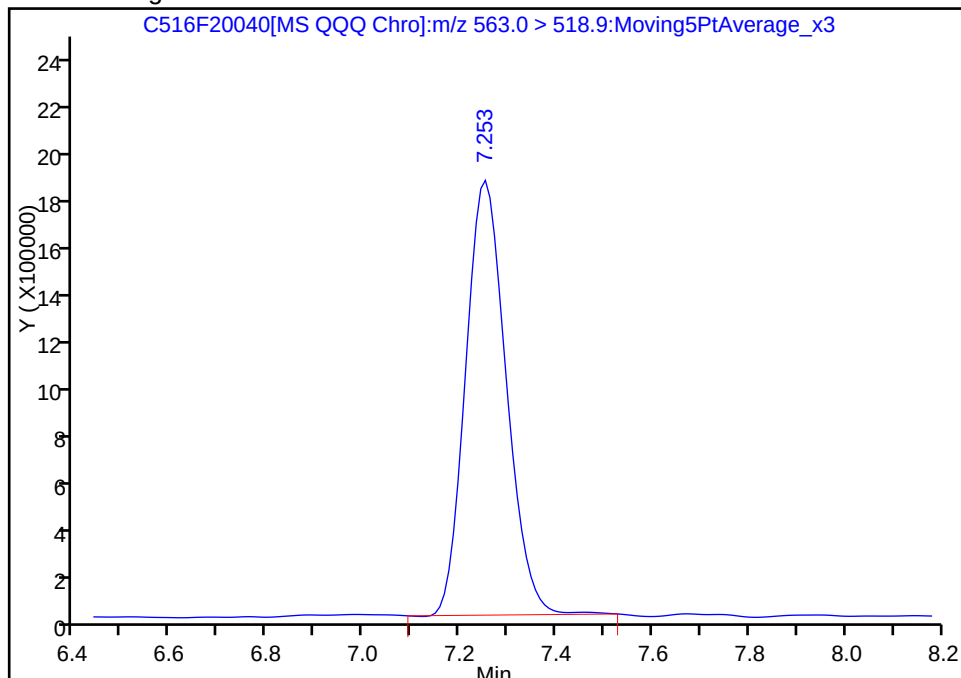
RT: 7.25
Area: 5083152
Amount: 2.439925
Amount Units: ug/L

Processing Integration Results



RT: 7.25
Area: 10645753
Amount: 5.168181
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 16:35:41
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Lab Sample ID: CCV 280-332053/39 Calibration Date: 06/30/2016 16:07

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F20044.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.011		9.42	10.0	-5.8	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.260		10.7	10.0	7.1	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.700		7.96	8.85	-10.0	30.0
Perfluorobutanesulfonic acid	Lin2		4.700		7.96	8.85	-10.0	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9459		10.0	10.0	0.0	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8599		9.88	10.0	-1.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.048		9.89	9.45	4.6	30.0
Perfluorohexanesulfonic acid	Lin2		4.048		9.89	9.45	4.6	30.0
Perfluoroheptane Sulfonate	Lin2		1.131		8.88	9.52	-6.7	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.131		8.88	9.52	-6.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.085		10.4	10.0	4.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.078		8.78	9.55	-8.0	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.077		9.60	10.0	-4.0	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9696		9.62	10.0	-3.8	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.129		8.81	9.65	-8.7	30.0
Perfluorodecane Sulfonic acid	Lin2		1.129		8.81	9.65	-8.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.475		10.4	10.0	4.1	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.026		9.99	10.0	-0.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.077		9.92	10.0	-0.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8833		9.49	10.0	-5.1	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6972		11.8	10.0	18.0	30.0
13C8 PFOA	Lin2		0.8454		10.5	10.0	4.6	30.0
13C8 PFOS	Lin2		0.6516		10.2	9.56	6.6	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20044.d
 Lims ID: CCV PFC L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 30-Jun-2016 16:07:40 ALS Bottle#: 0 Worklist Smp#: 39
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L6, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:40:19 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 16:38:08

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.096 4.096 0.0 27716624 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.096 4.096 0.0 1.000 28012083 9.42

3 Perfluoropentanoic acid

263.0 > 218.9 5.147 5.147 0.0 0.898 23178385 10.7

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.270 5.270 0.0 0.854 9814337 7.96

298.9 > 98.9 5.270 5.270 0.0 0.854 3009342 3.26(1.80-3.35)

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.270 5.270 0.0 0.854 9814337 7.96

298.9 > 98.9 5.270 5.270 0.0 0.854 3009342 3.26(2.57-2.57)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.733 5.733 0.0 18397605 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.733 5.733 0.0 1.000 17402571 10.0

313.0 > 118.6 5.733 5.733 0.0 1.000 452709 38.44(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.159 6.159 0.0 0.946 25304042 9.88

363.0 > 168.9 6.159 6.159 0.0 0.946 6972375 3.63(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.168 6.168 0.0 2232031 9.46

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.168 6.168 0.0 1.000 9026490 9.89

398.9 > 98.9 6.168 6.168 0.0 1.000 3173703 2.84(1.85-1.85)

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.168 6.168 0.0 1.000 9026490 9.89

398.9 > 98.9 6.168 6.168 0.0 1.000 3173703 2.84(1.30-2.41)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.958	9648695	8.88			
449.0 > 98.9	6.498	6.498	0.0	0.958	2940575		3.28(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.958	9648695	8.88			
449.0 > 98.9	6.498	6.498	0.0	0.958	2940575		3.28(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.508	6.508	0.0	1.000	24877691	10.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.508	6.508	0.0		29427440	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.508	6.508	0.0	1.000	31918888	10.4			
413.0 > 169.0	6.508	6.508	0.0	1.000	9680548		3.30(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.780	6.780	0.0	1.000	5583934	10.2			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.781	6.781	0.0		8569708	9.56			M
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.781	6.781	0.0	1.000	9232697	8.78			M
498.9 > 98.9	6.781	6.781	0.0	1.000	3506210		2.63(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.801	6.801	0.0		20948081	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.801	6.801	0.0	1.000	22567975	9.60			
463.0 > 218.9	6.801	6.801	0.0	1.000	3537234		6.38(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.045	7.045	0.0		23876173	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.045	7.045	0.0	1.000	23150781	9.62			
513.0 > 219.0	7.045	7.045	0.0	1.000	2090335		11.08(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.233	7.233	0.0	1.067	9767390	8.81			
598.9 > 99.0	7.233	7.233	0.0	1.067	3091687		3.16(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.233	7.233	0.0	1.067	9767390	8.81			
598.9 > 99.0	7.233	7.233	0.0	1.067	3091687		3.16(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.253	7.253	0.0		13639793	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.253	7.253	0.0	1.000	20119721	10.4			R
563.0 > 268.9	7.262	7.253	0.009	1.001	2584228		7.79(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.431	7.431	0.0		29657438	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.432	7.432	0.0	1.000	30441562	9.99			
613.0 > 168.9	7.432	7.432	0.0	1.000	3812700		7.98(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.576	7.576	0.0		24384961	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.577	7.577	0.0	1.000	26273515	9.92			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.592	7.592	0.0	1.022	26195680	9.49			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.724	7.724	0.0	1.039	20676761	11.8			
712.9 > 169.0	7.715	7.724	-0.009	1.038	3070694		6.73(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-LCS_00078	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20044.d

Injection Date: 30-Jun-2016 16:07:40

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 39

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

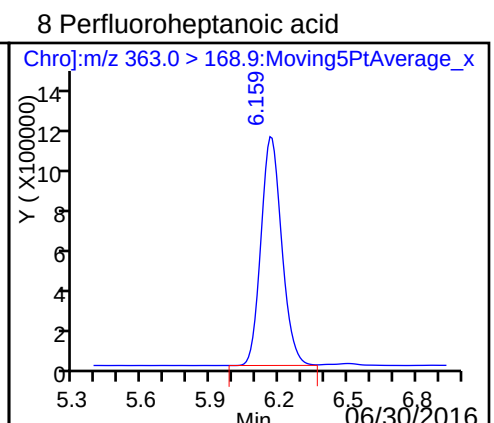
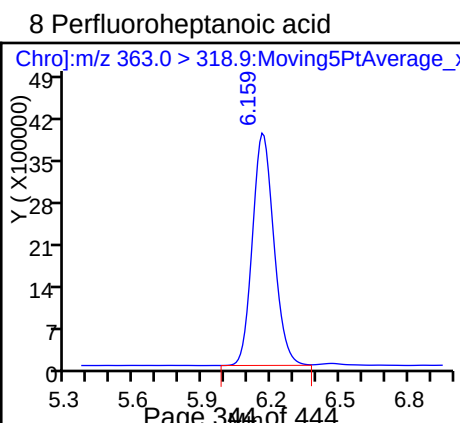
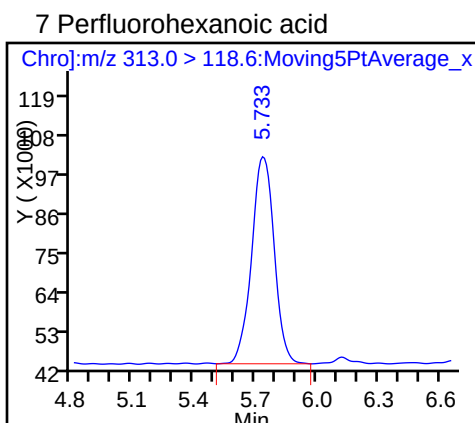
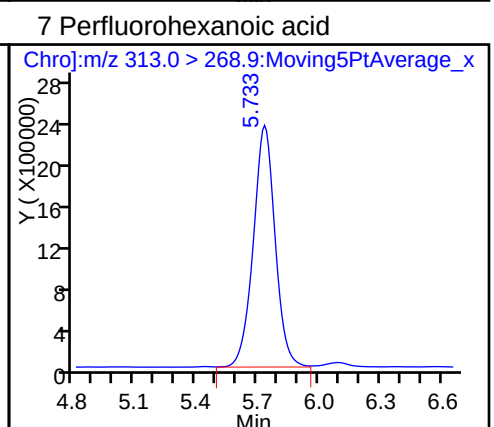
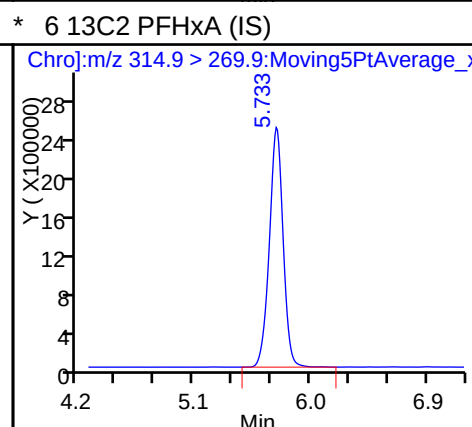
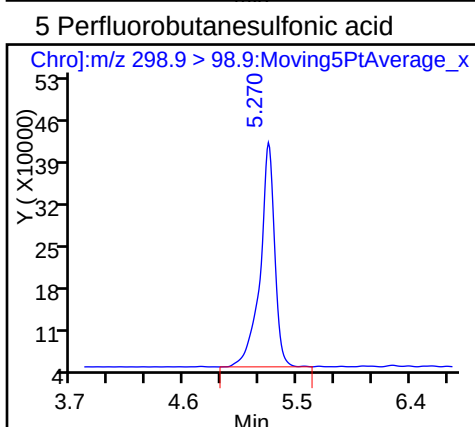
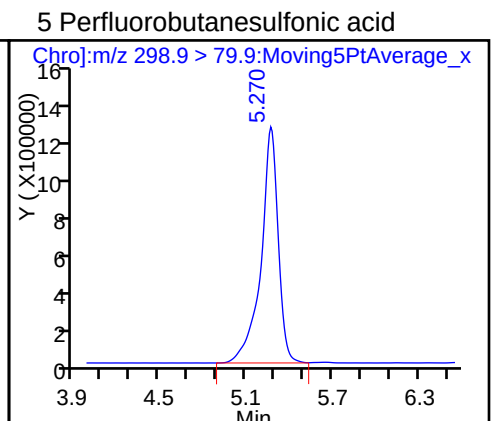
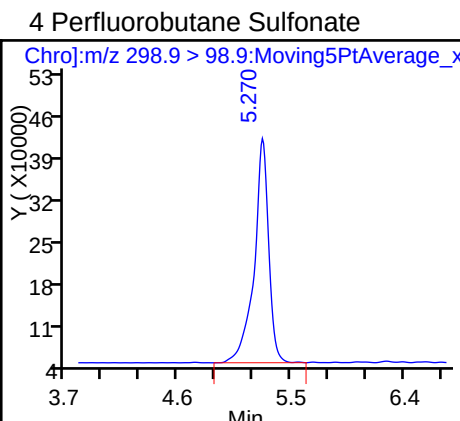
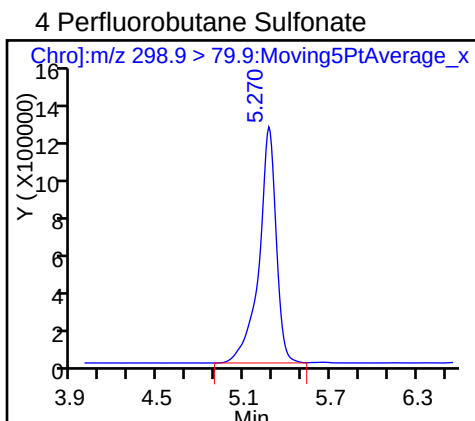
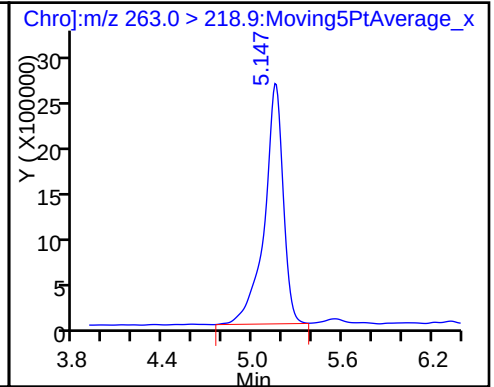
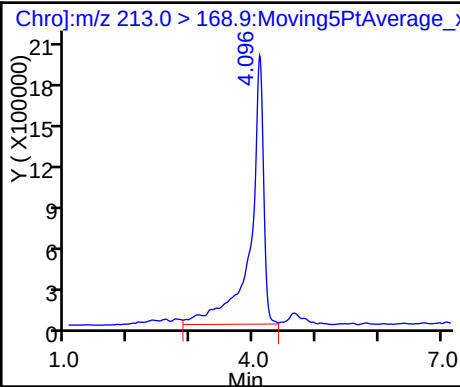
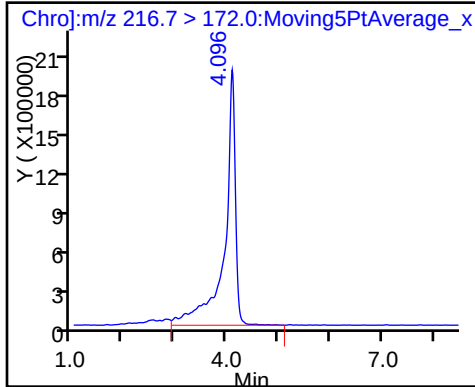
Method: 8321_PFC

Limit Group: LC - PFC

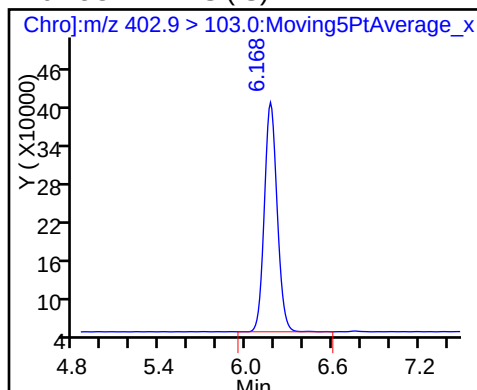
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

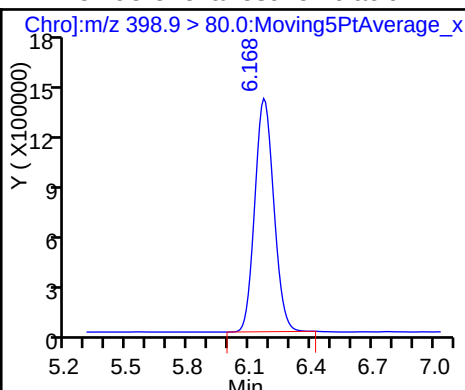
3 Perfluoropentanoic acid



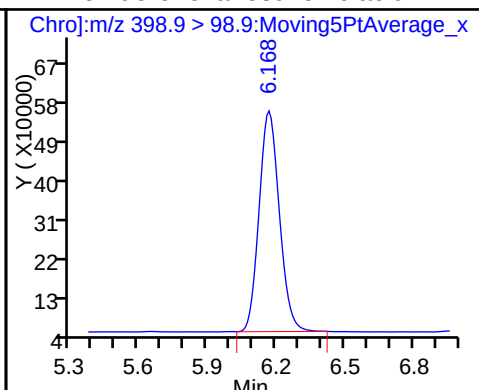
* 9 18O2 PFHxS (IS)



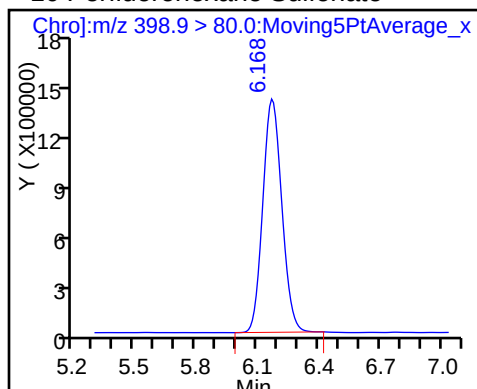
11 Perfluorohexanesulfonic acid



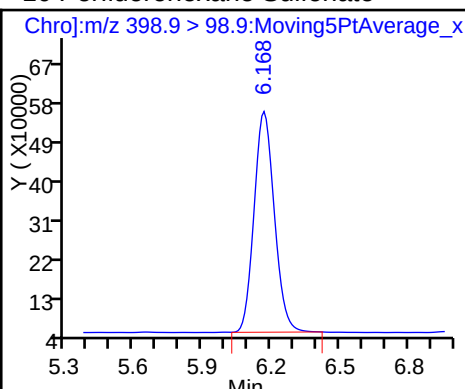
11 Perfluorohexanesulfonic acid



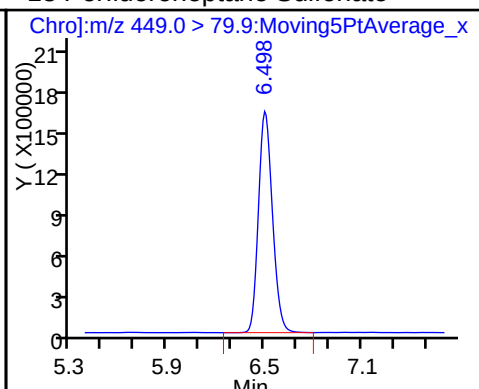
10 Perfluorohexane Sulfonate



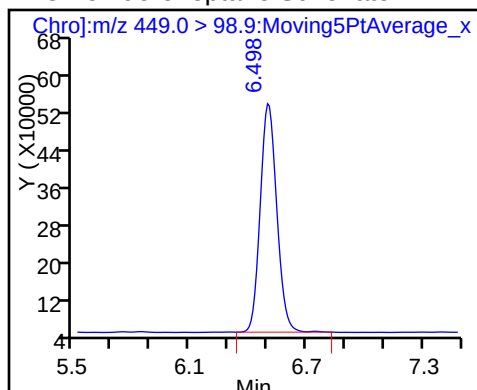
10 Perfluorohexane Sulfonate



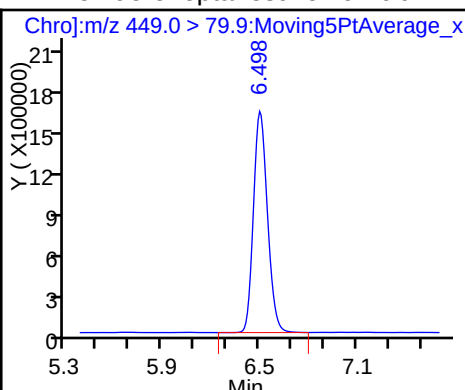
13 Perfluoroheptane Sulfonate



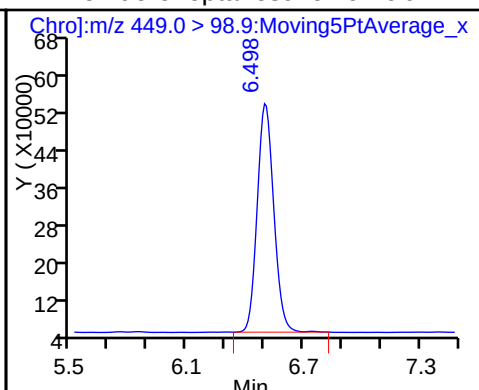
13 Perfluoroheptane Sulfonate



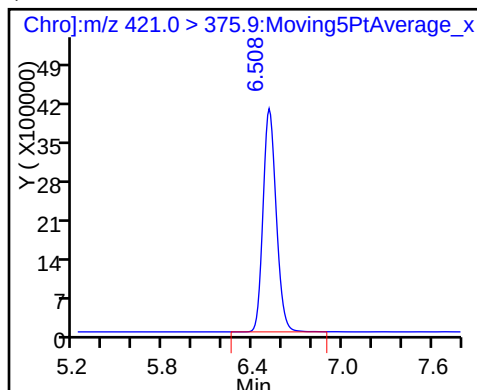
12 Perfluoroheptanesulfonic Acid



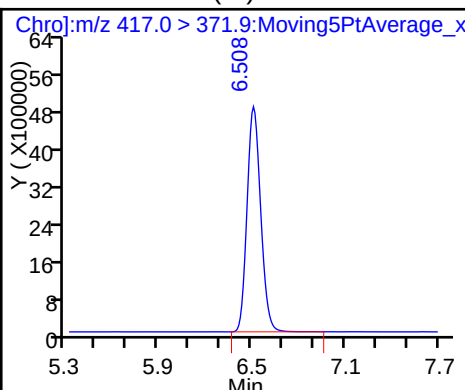
12 Perfluoroheptanesulfonic Acid



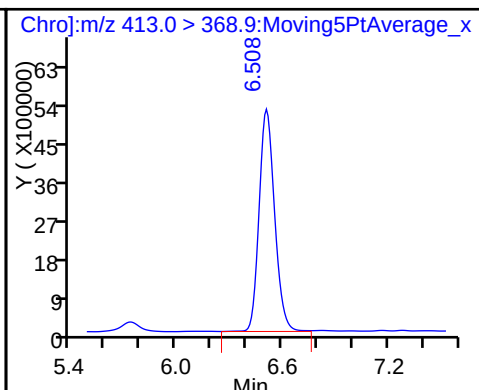
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



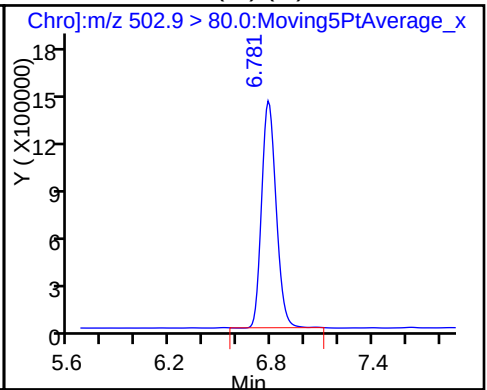
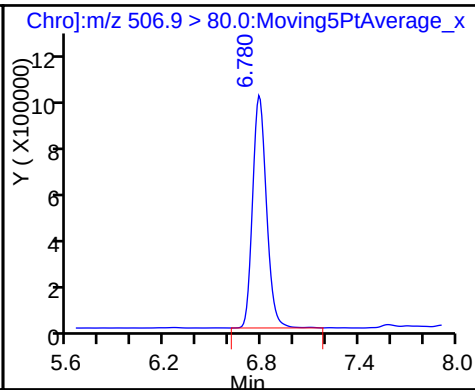
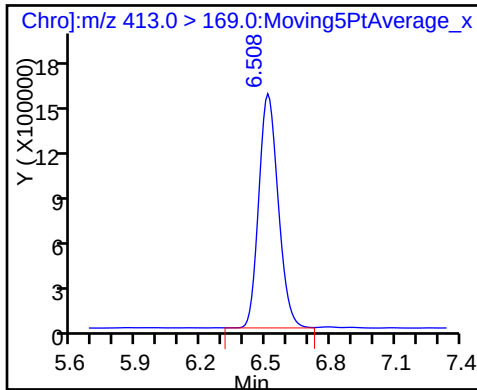
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

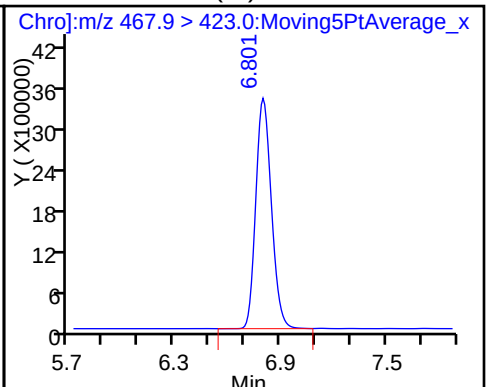
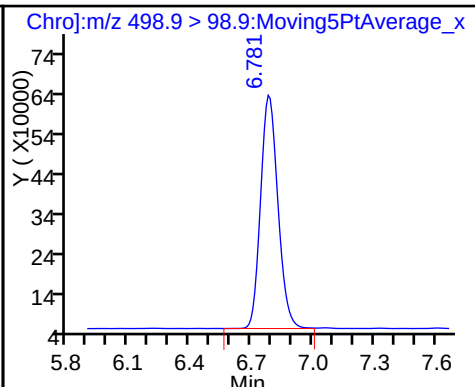
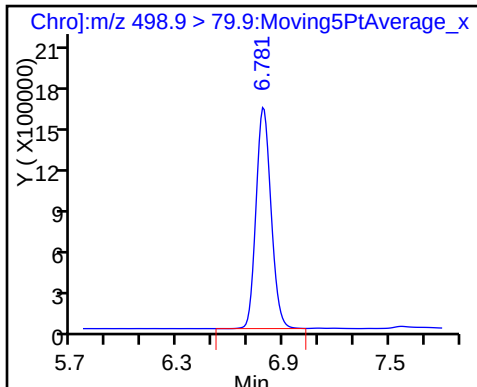
* 17 13C4 PFOS (IS) (M)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

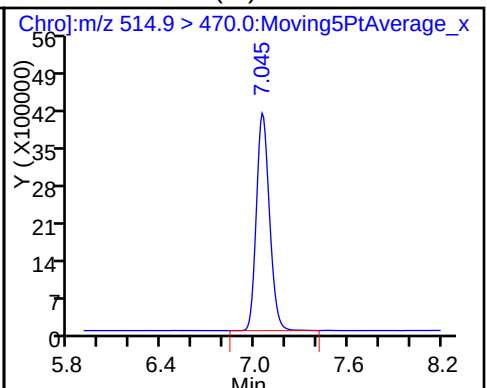
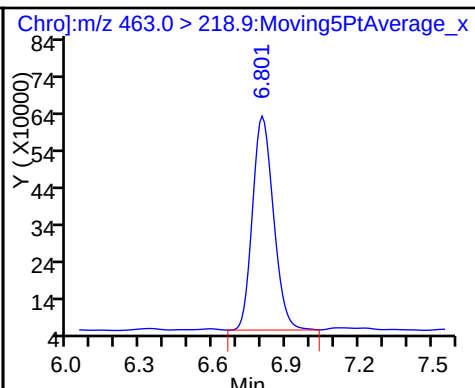
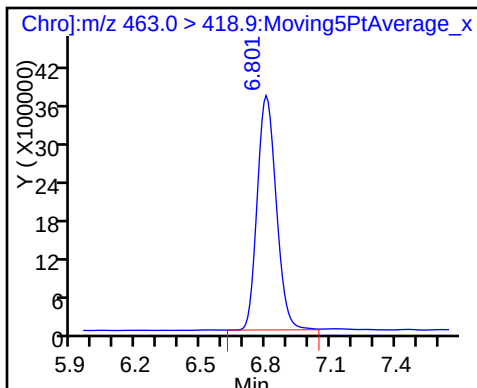
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

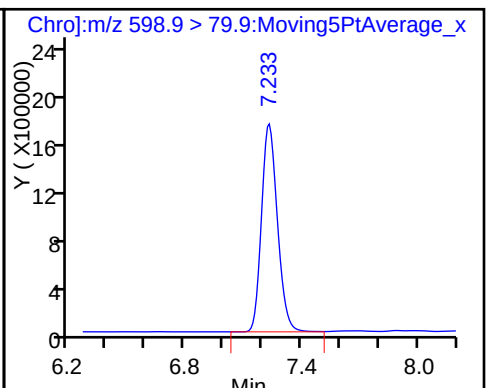
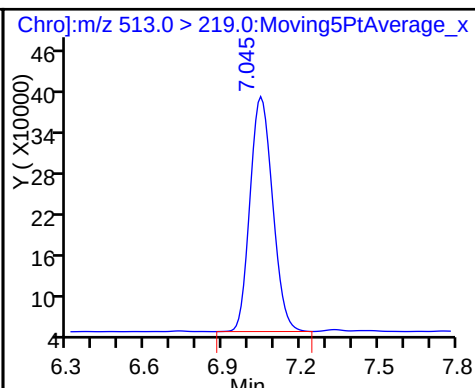
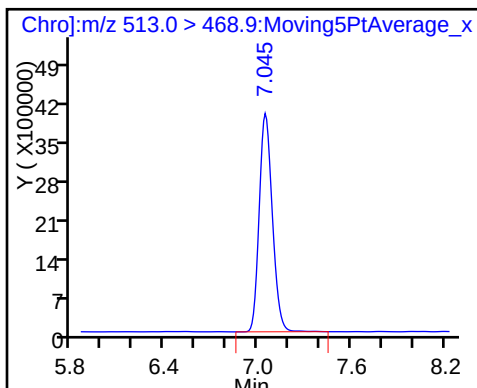
* 22 13C2 PFDA (IS)



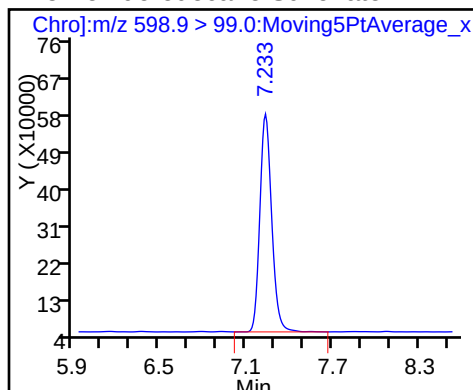
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

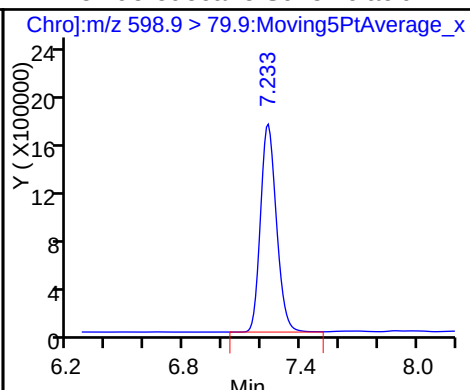
25 Perfluorodecane Sulfonate



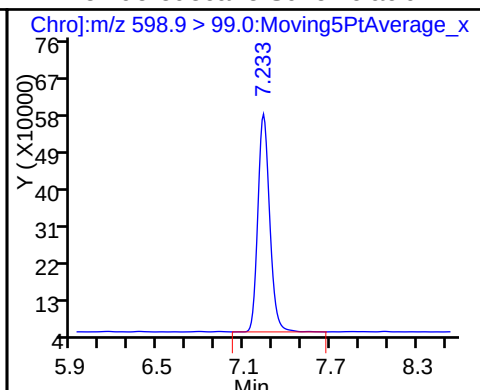
25 Perfluorodecane Sulfonate



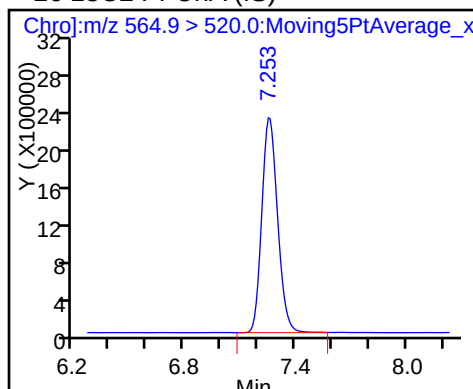
24 Perfluorodecane Sulfonic acid



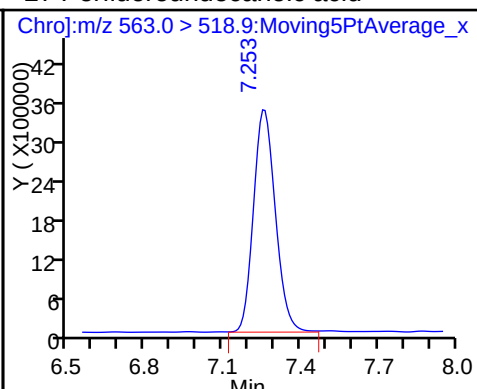
24 Perfluorodecane Sulfonic acid



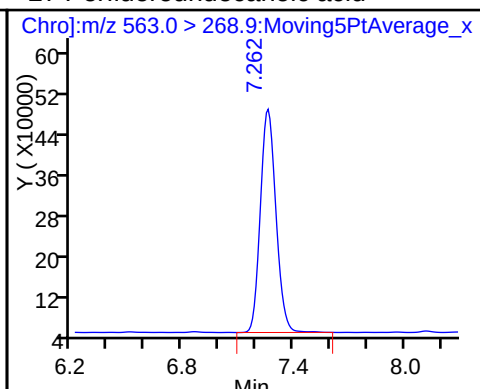
* 26 13C2 PFUnA (IS)



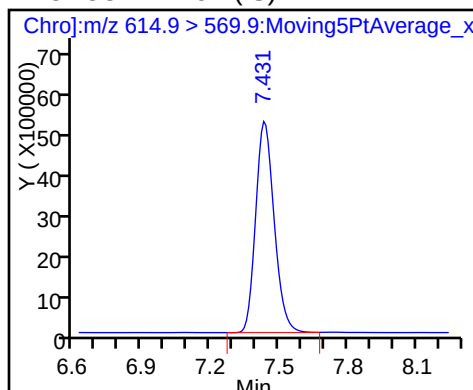
27 Perfluoroundecanoic acid



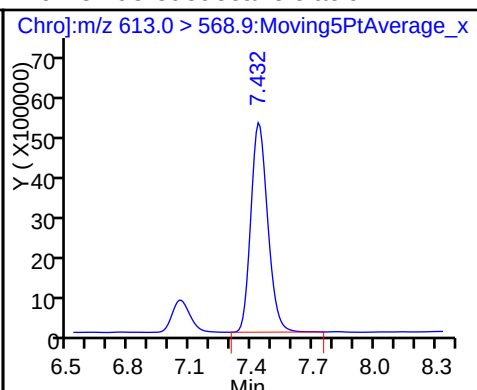
27 Perfluoroundecanoic acid



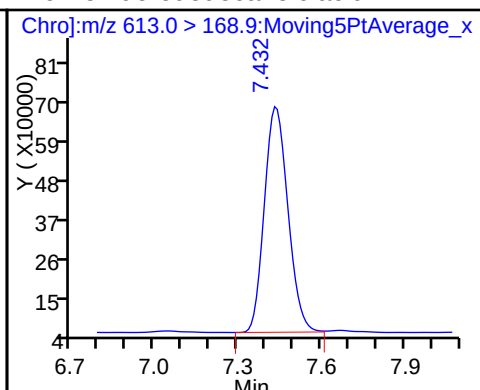
* 28 13C2 PFDaA (IS)



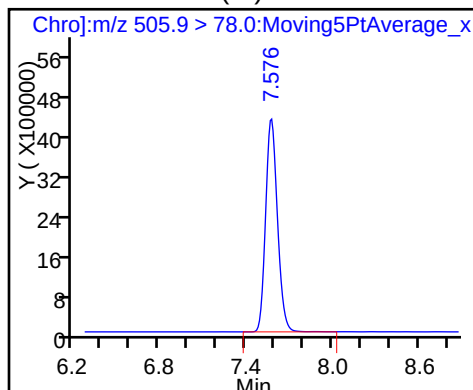
29 Perfluorododecanoic acid



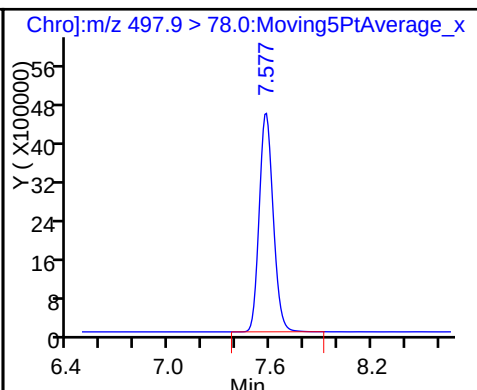
29 Perfluorododecanoic acid



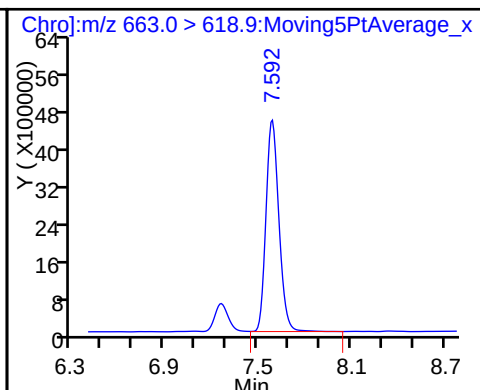
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

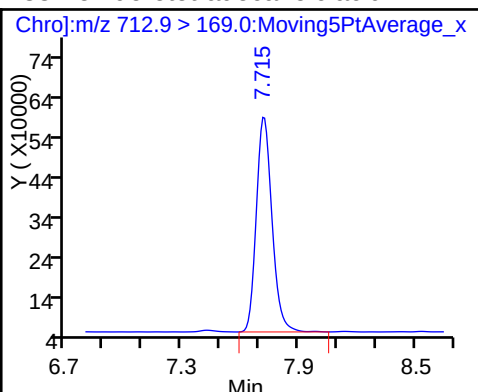
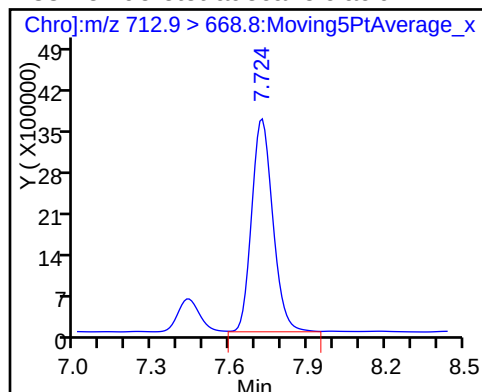


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



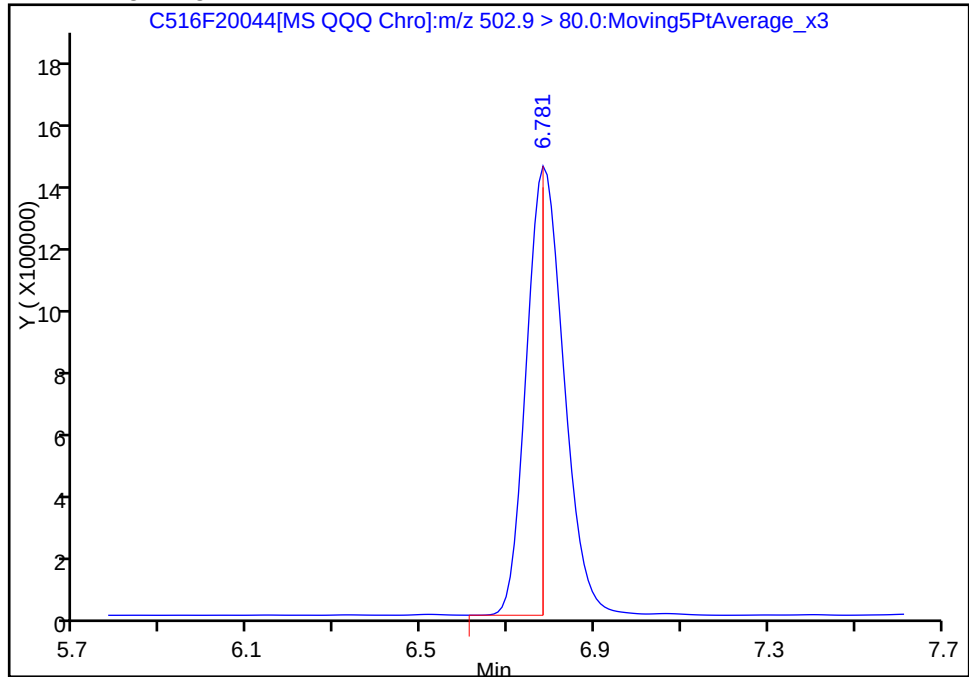
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20044.d
Injection Date: 30-Jun-2016 16:07:40 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L6
Client ID:
Operator ID: ACM/HKF ALS Bottle#: 0 Worklist Smp#: 39
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 17 13C4 PFOS (IS), CAS: STL01002

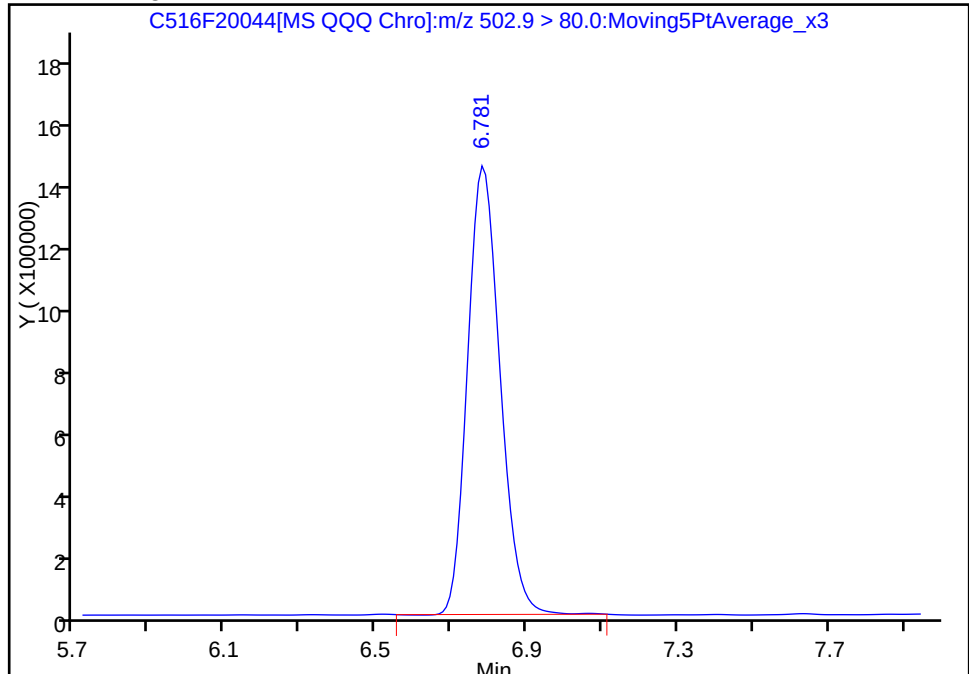
RT: 6.78
Area: 3768360
Amount: 9.560000
Amount Units: ug/L

Processing Integration Results



RT: 6.78
Area: 8569708
Amount: 9.560000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 16:38:08
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 280-331820/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20009.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>06/30/2016 08:57</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	105		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20009.d
 Lims ID: MB 280-331820/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Jun-2016 08:57:11 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: mb 280-331820/1-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:11:28

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.058 4.153 -0.095 34913445 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 ND

3 Perfluoropentanoic acid

263.0 > 218.9 5.213 ND

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.327 ND

298.9 > 98.9 5.327

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.327 ND

298.9 > 98.9 5.327

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.752 5.800 -0.048 21948304 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.762 5.800 -0.038 1.002 166352 0.0585

313.0 > 118.6 5.733 5.800 -0.067 0.997 17170 9.69(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.235 ND

363.0 > 168.9 6.235

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.196 6.234 -0.038 2626851 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.234 ND

398.9 > 98.9 6.234

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.234 ND

398.9 > 98.9 6.234

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
\$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.584	-0.048	1.000	28668369	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.584	-0.047		33961593	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.584				ND			
413.0 > 169.0		6.584							
\$ 18 13C8 PFOS									
506.9 > 80.0	6.809	6.847	-0.038	1.000	6322205	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.809	6.847	-0.038		9803713	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.847				ND			
498.9 > 98.9		6.847							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.829	6.867	-0.038		27507557	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.877				ND			
463.0 > 218.9		6.877							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.073	7.121	-0.048		29608942	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.111				ND			
513.0 > 219.0		7.111							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.281	7.328	-0.047		17997247	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.319				ND			
563.0 > 268.9		7.319							
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.460	7.507	-0.047		30124484	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.498				ND			
613.0 > 168.9		7.498							
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.586	-0.019		1031042	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.577	7.587	-0.010	1.001	12231	0.0999			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.658				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.791				ND			
712.9 > 169.0		7.791							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20009.d

Injection Date: 30-Jun-2016 08:57:11

Instrument ID: LC_LCMS5

Lims ID: MB 280-331820/1-A

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

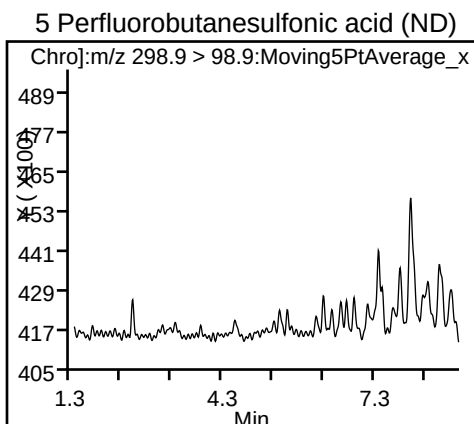
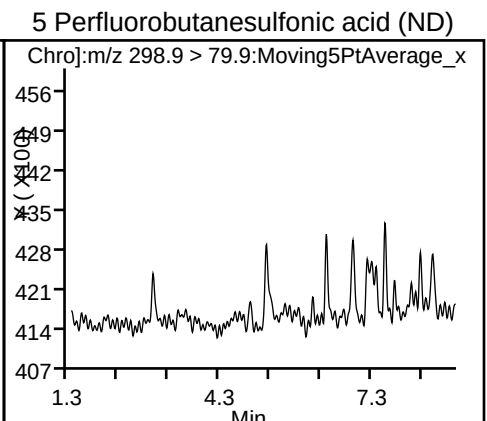
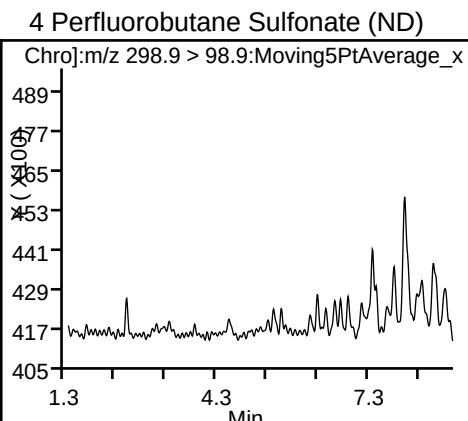
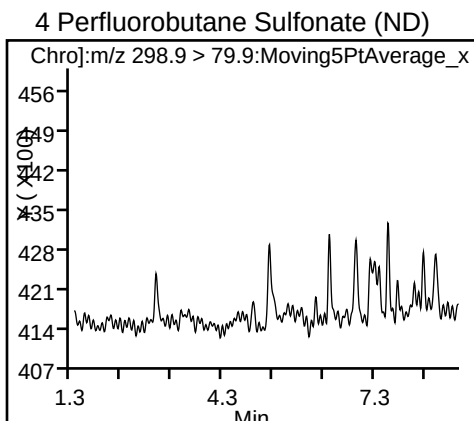
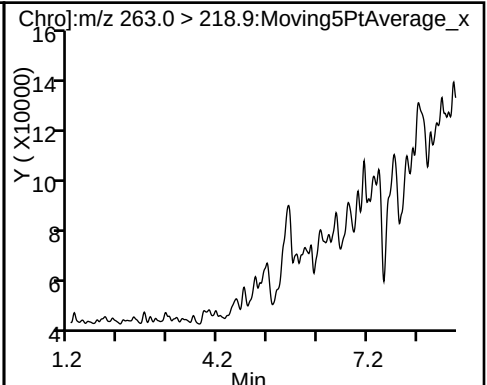
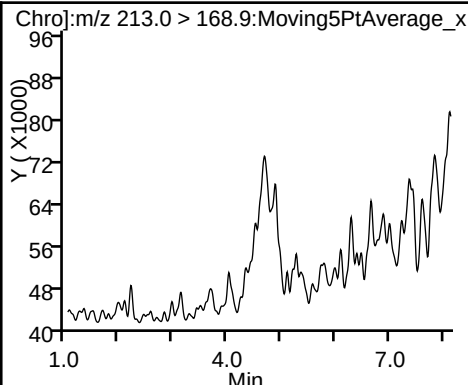
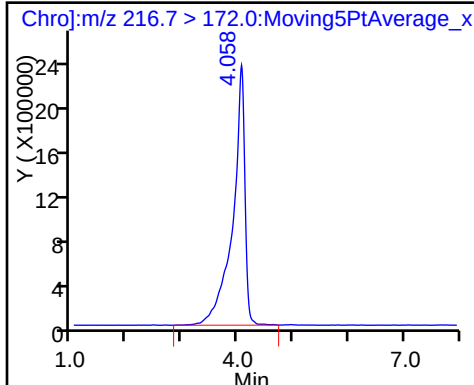
Method: 8321_PFC

Limit Group: LC - PFC

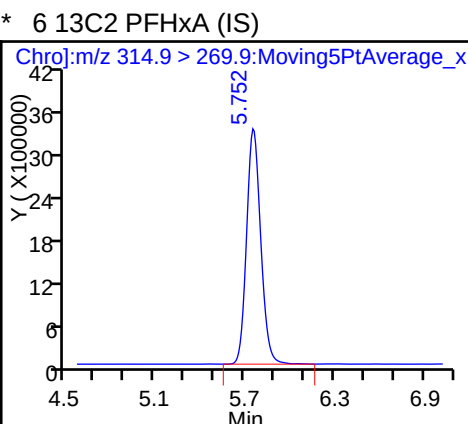
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (ND)

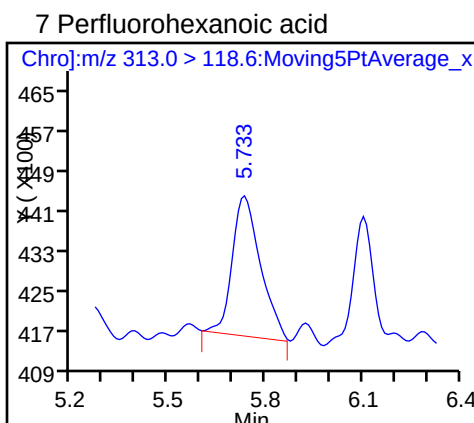
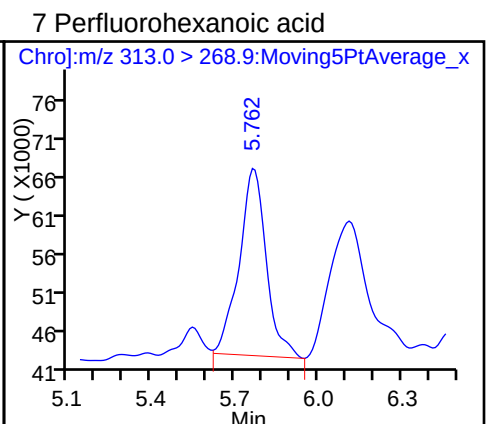
3 Perfluoropentanoic acid (ND)



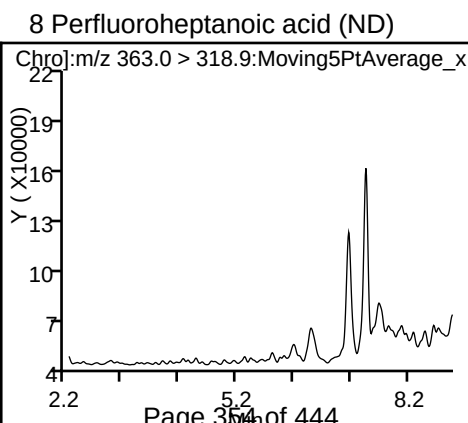
* 6 13C2 PFHxA (IS)



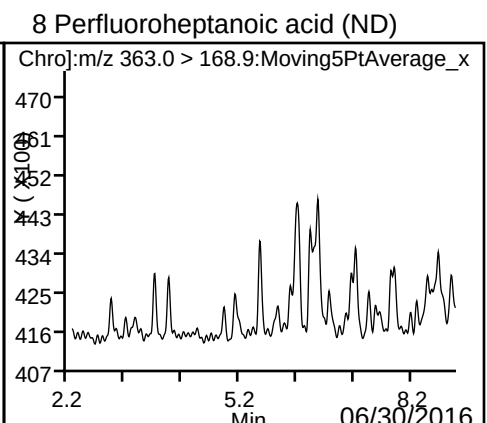
7 Perfluorohexanoic acid



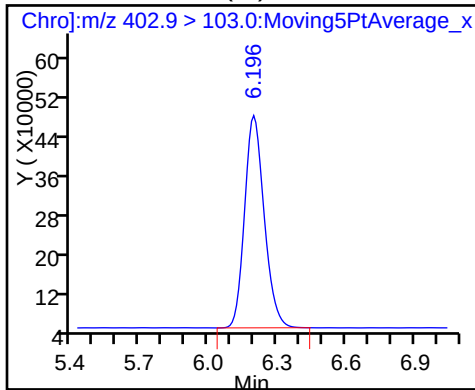
8 Perfluoroheptanoic acid (ND)



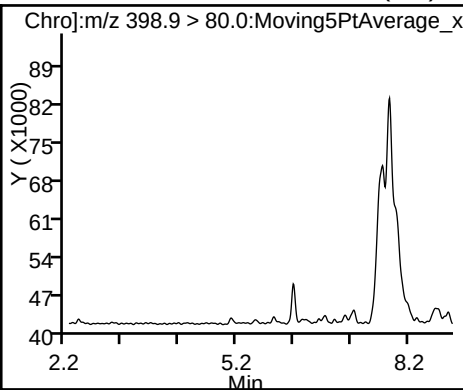
8 Perfluoroheptanoic acid (ND)



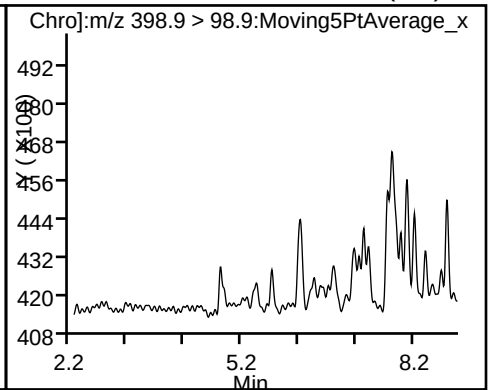
* 9 18O2 PFHxS (IS)



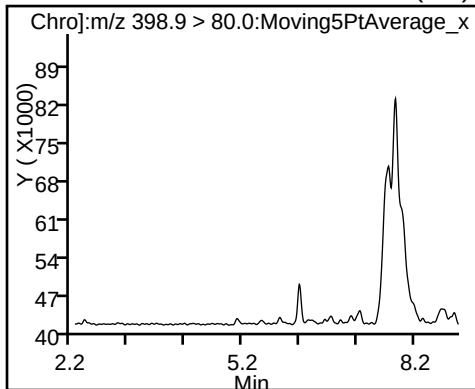
10 Perfluorohexane Sulfonate (ND)



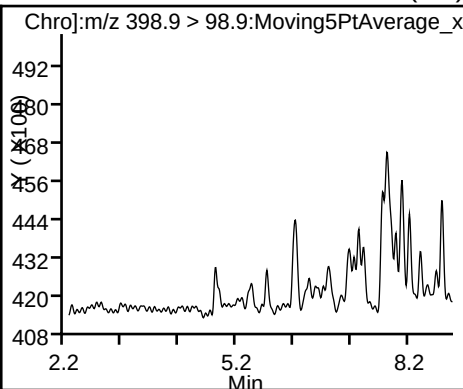
10 Perfluorohexane Sulfonate (ND)



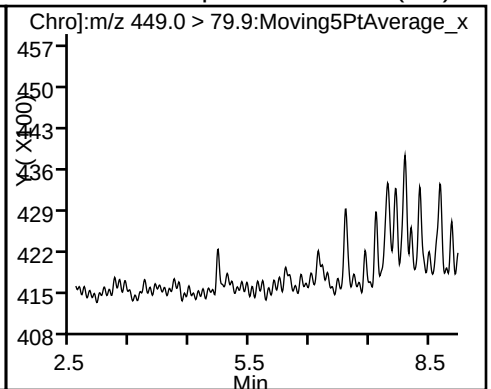
11 Perfluorohexanesulfonic acid (ND)



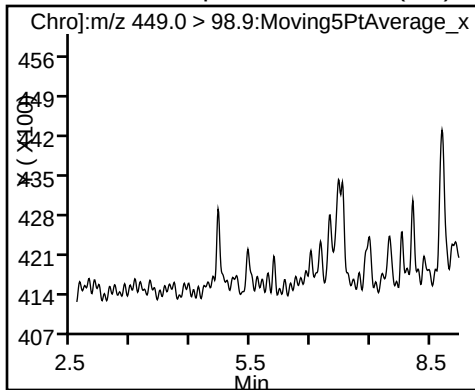
11 Perfluorohexanesulfonic acid (ND)



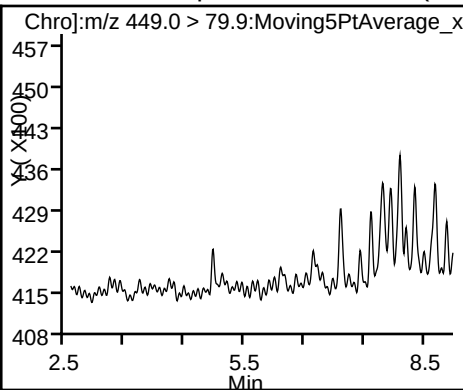
13 Perfluoroheptane Sulfonate (ND)



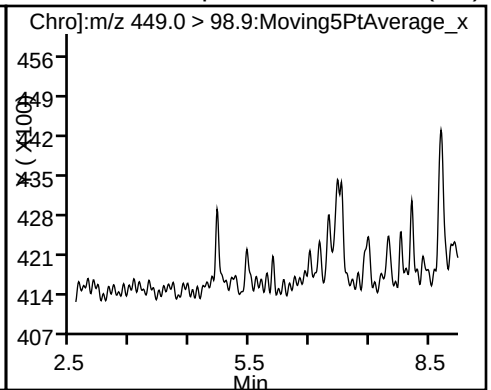
13 Perfluoroheptane Sulfonate (ND)



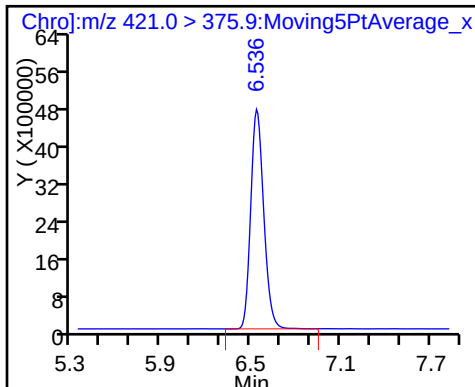
12 Perfluoroheptanesulfonic Acid (ND)



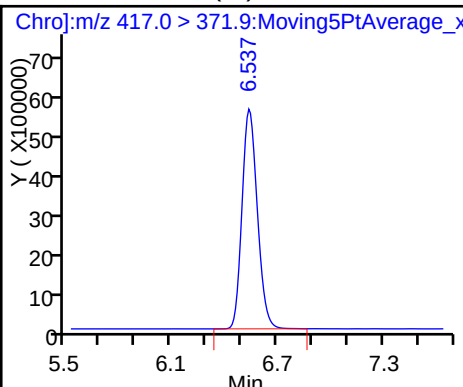
12 Perfluoroheptanesulfonic Acid (ND)



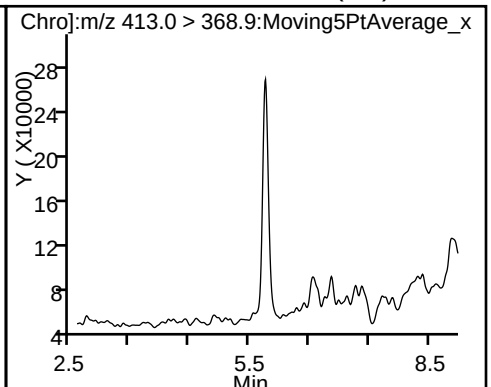
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



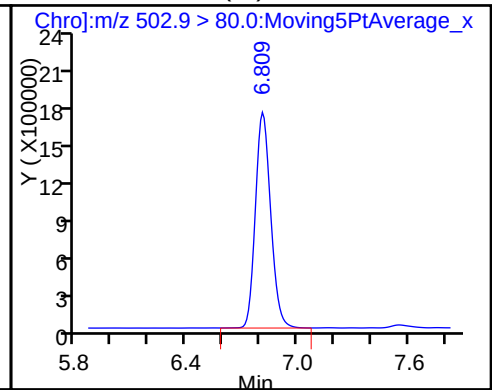
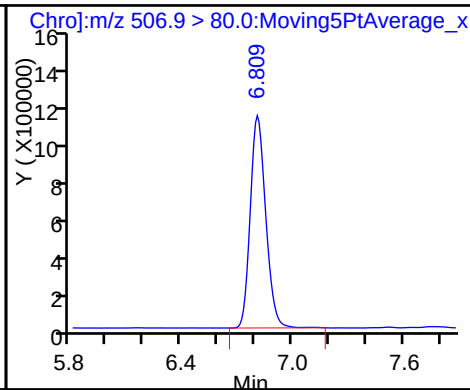
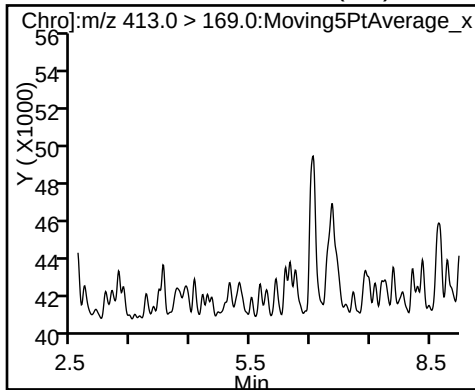
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

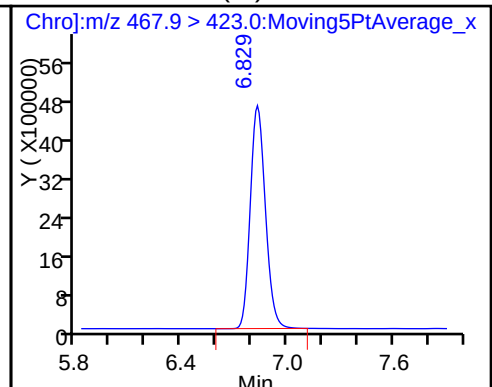
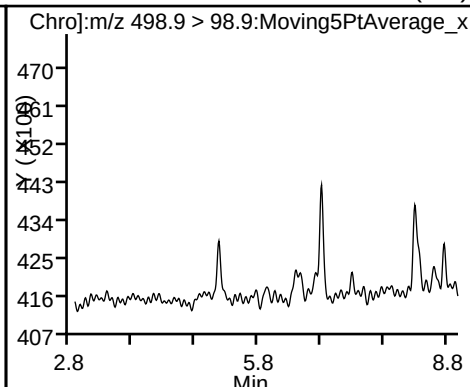
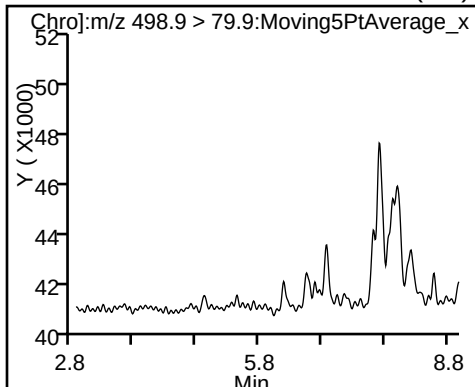
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

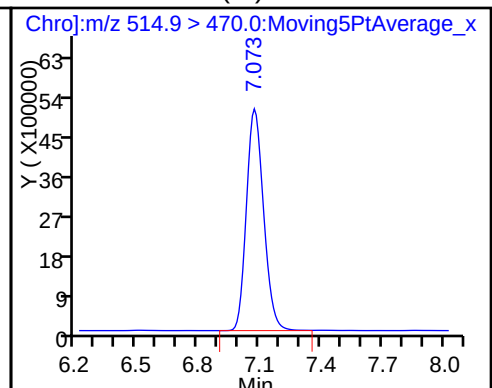
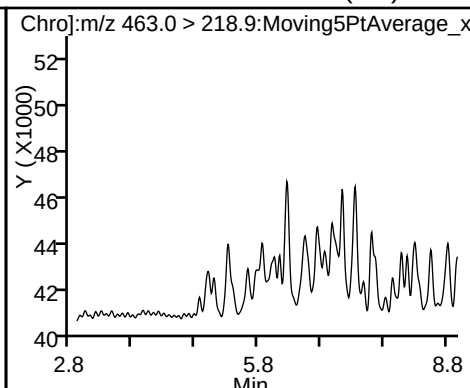
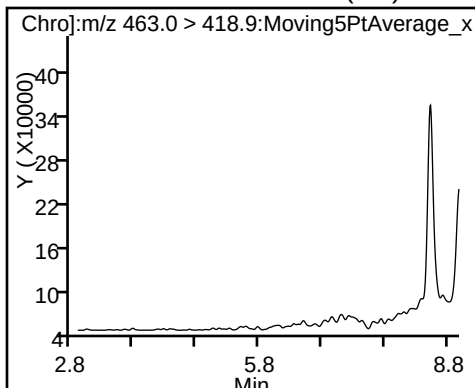
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

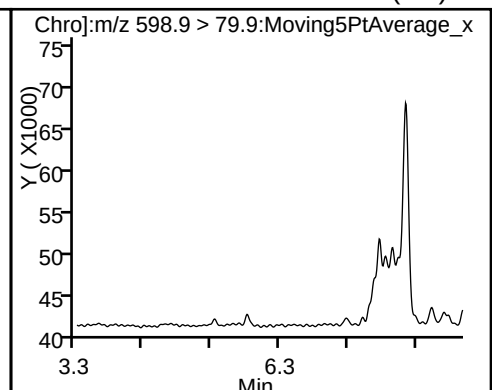
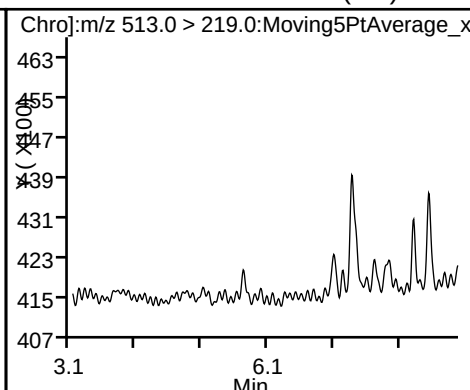
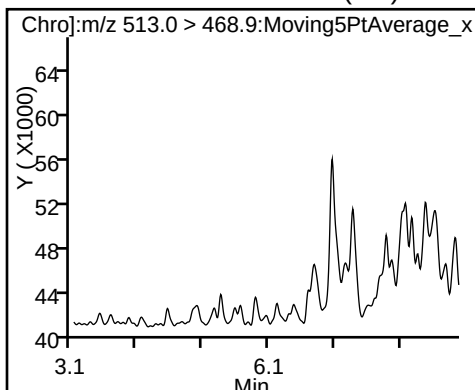
* 22 13C2 PFDA (IS)



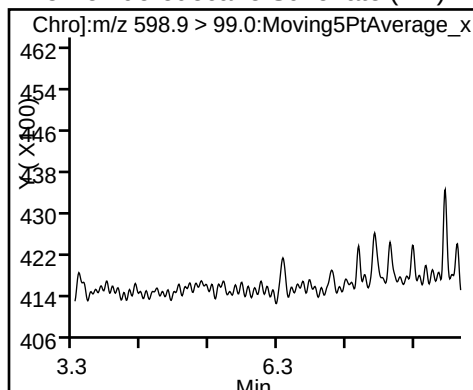
23 Perfluorodecanoic acid (ND)

23 Perfluorodecanoic acid (ND)

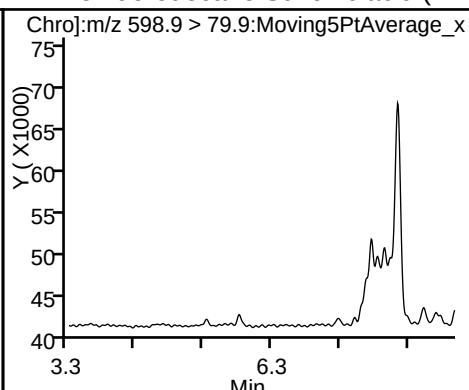
25 Perfluorodecane Sulfonate (ND)



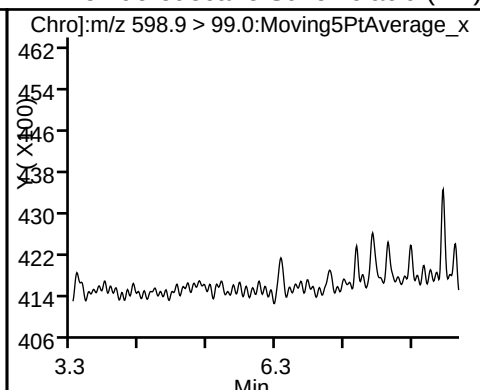
25 Perfluorodecane Sulfonate (ND)



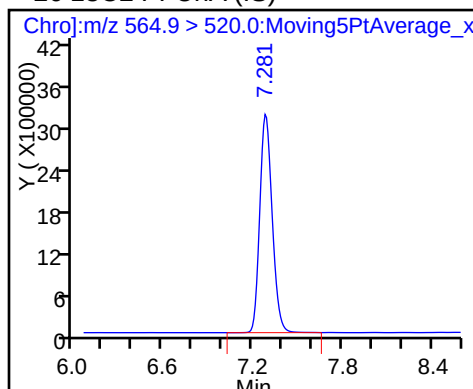
24 Perfluorodecane Sulfonic acid (ND)



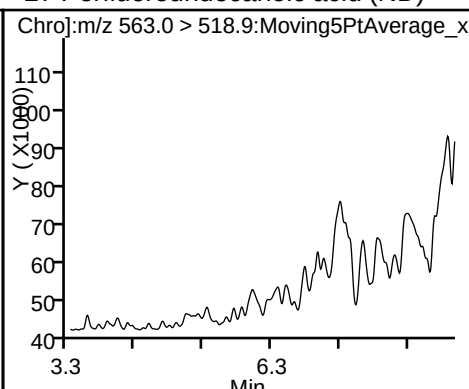
24 Perfluorodecane Sulfonic acid (ND)



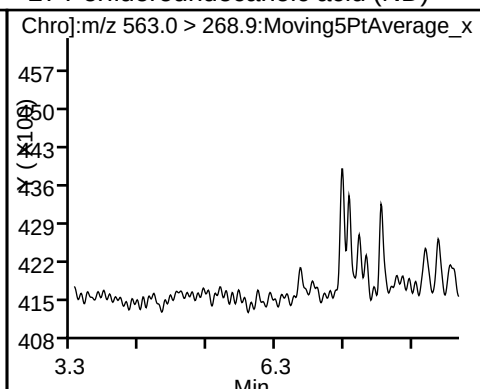
* 26 13C2 PFUnA (IS)



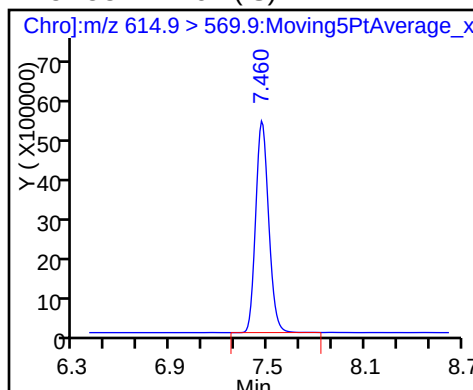
27 Perfluoroundecanoic acid (ND)



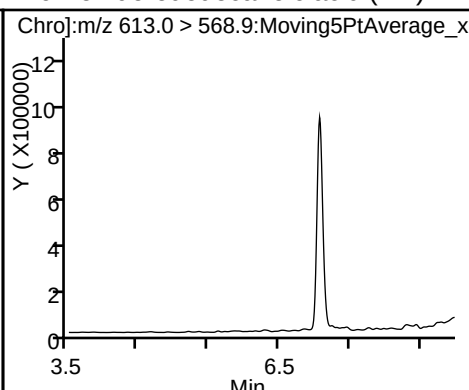
27 Perfluoroundecanoic acid (ND)



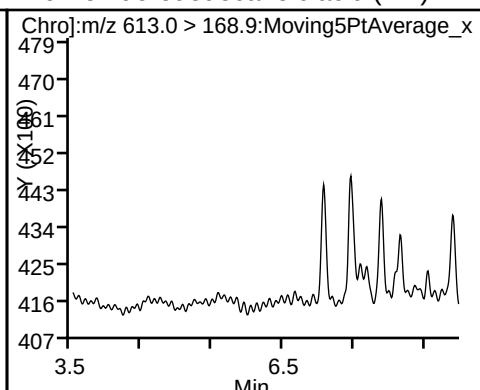
* 28 13C2 PFDaA (IS)



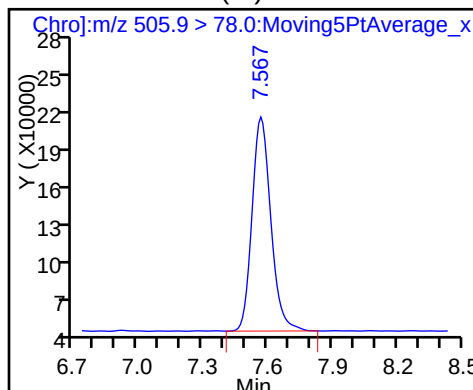
29 Perfluorododecanoic acid (ND)



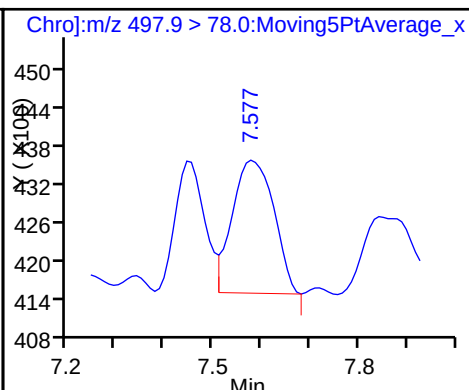
29 Perfluorododecanoic acid (ND)



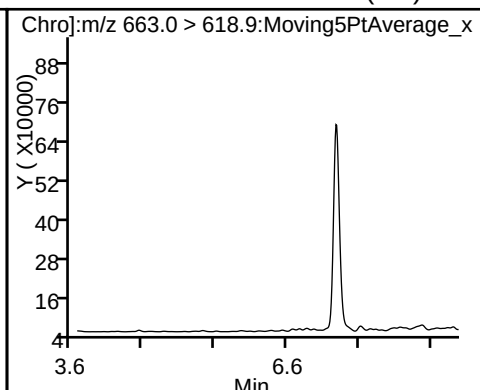
* 31 13C8 FOSA (IS)



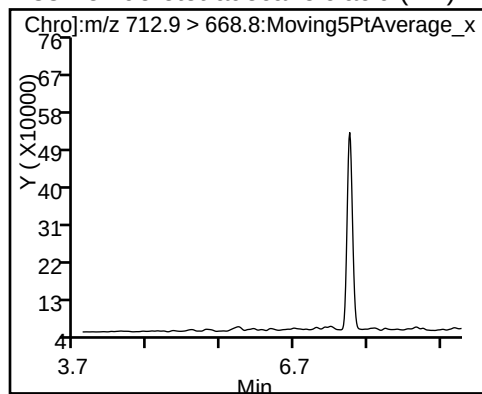
32 Perfluorooctane Sulfonamide



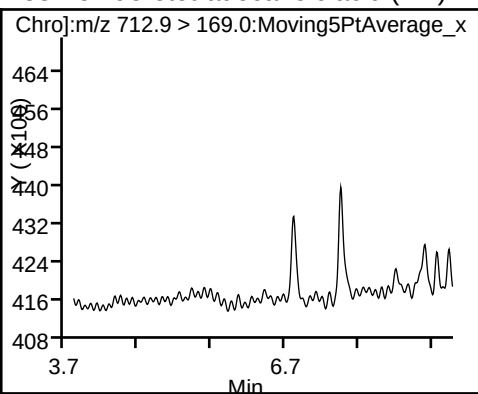
30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 280-331826/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20024.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>06/30/2016 12:01</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	101		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20024.d
 Lims ID: MB 280-331826/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 30-Jun-2016 12:01:41 ALS Bottle#: 0 Worklist Smp#: 19
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: mb 280-331826/1-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 17:15:53 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK033

First Level Reviewer: meyer

Date: 30-Jun-2016 13:08:26

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.954 4.153 -0.199 32221875 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 ND

3 Perfluoropentanoic acid

263.0 > 218.9 5.213 ND

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.327 ND

298.9 > 98.9 5.327

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.327 ND

298.9 > 98.9 5.327

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.695 5.800 -0.105 21227528 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.800 ND

313.0 > 118.6 5.800

8 Perfluoroheptanoic acid

363.0 > 318.9 6.235 ND

363.0 > 168.9 6.235

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.139 6.234 -0.095 2586906 9.46

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.234 ND

398.9 > 98.9 6.234

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.234 ND

398.9 > 98.9 6.234

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.564				ND			
449.0 > 98.9		6.564							
\$ 14 13C8 PFOA									
421.0 > 375.9	6.480	6.584	-0.104	1.000	27028849	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.480	6.584	-0.104		32680273	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.584				ND			
413.0 > 169.0		6.584							
\$ 18 13C8 PFOS									
506.9 > 80.0	6.752	6.847	-0.095	1.000	5725213	9.69			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.752	6.847	-0.095		9238004	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.847				ND			
498.9 > 98.9		6.847							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.867	-0.095		25998218	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.877				ND			
463.0 > 218.9		6.877							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.121	-0.105		26486459	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.111				ND			
513.0 > 219.0		7.111							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.299				ND			
598.9 > 99.0		7.299							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.224	7.328	-0.104		15617980	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.319				ND			
563.0 > 268.9		7.319							
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.403	7.507	-0.104		26705630	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.498				ND			
613.0 > 168.9		7.498							
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.586	-0.048		939483	10.0			S

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20024.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0		7.587				ND			
30 Perfluorotridecanoic acid									
663.0 > 618.9		7.658				ND			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.791				ND			
712.9 > 169.0		7.791							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20024.d

Injection Date: 30-Jun-2016 12:01:41

Instrument ID: LC_LCMS5

Lims ID: MB 280-331826/1-A

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 19

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

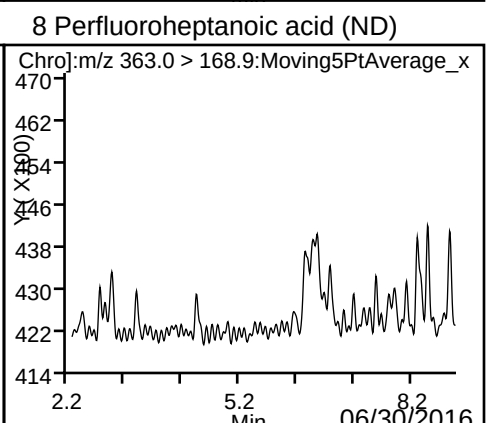
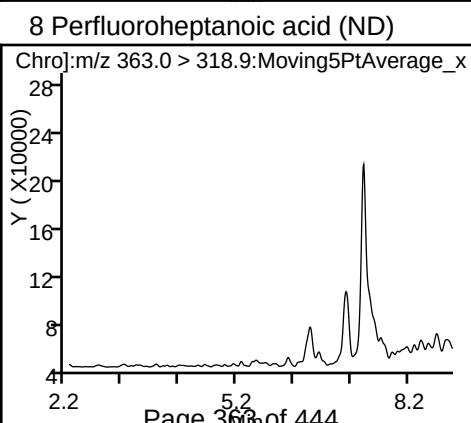
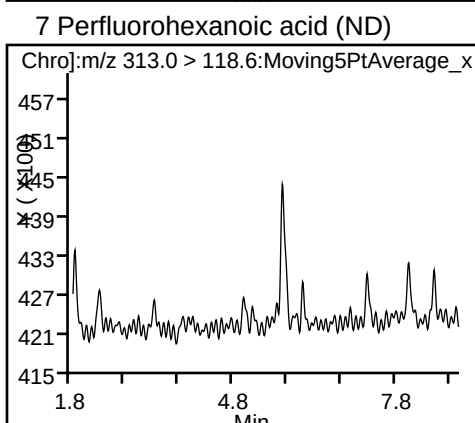
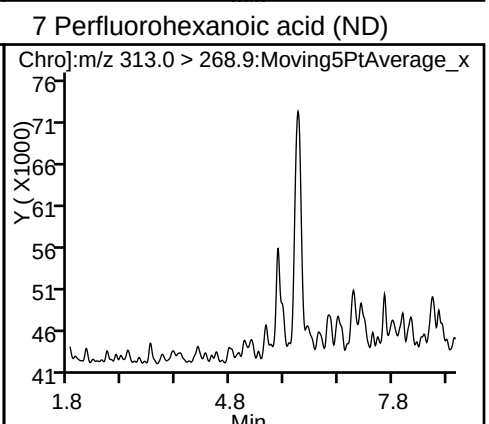
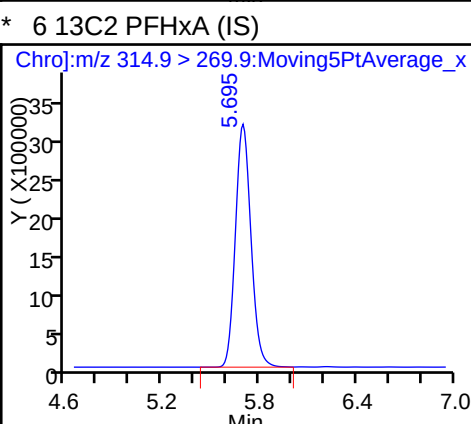
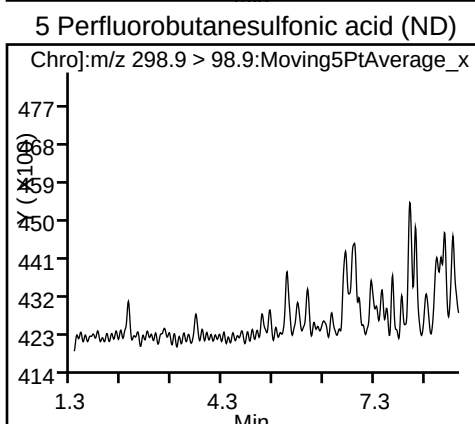
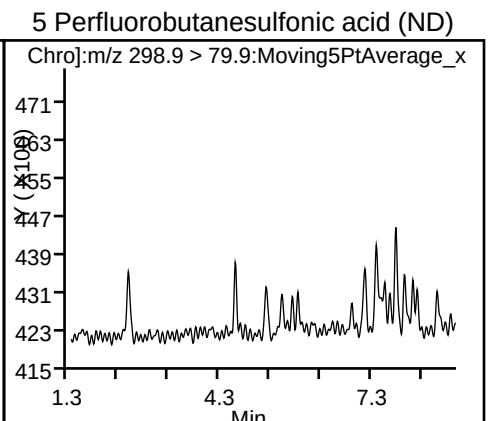
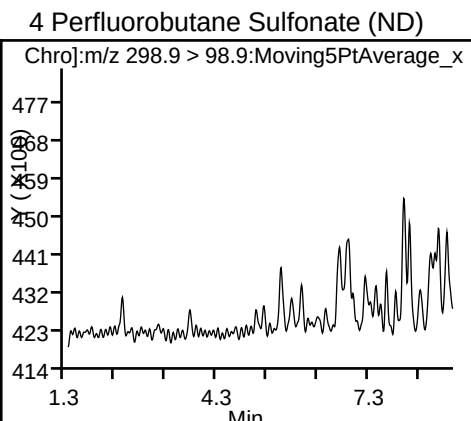
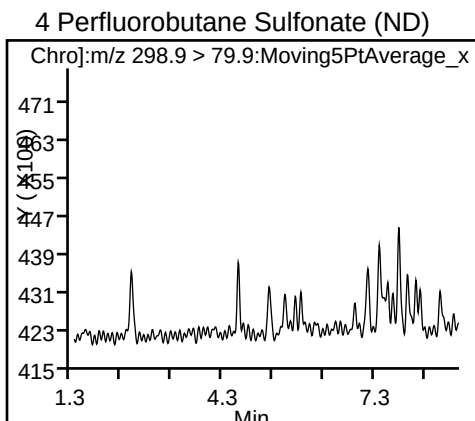
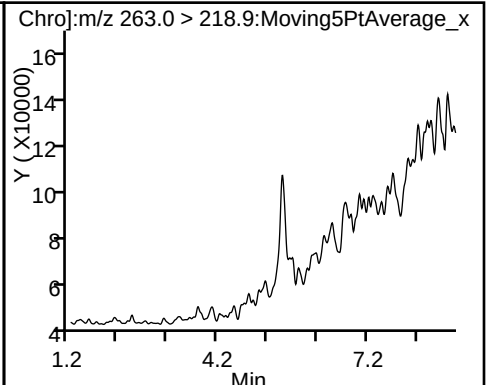
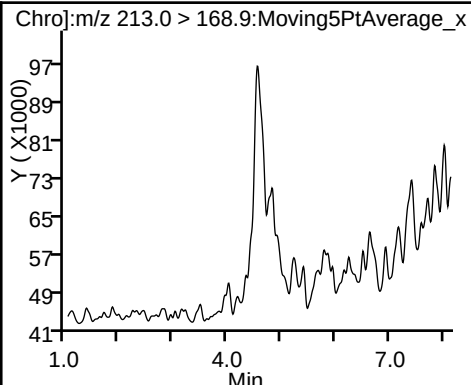
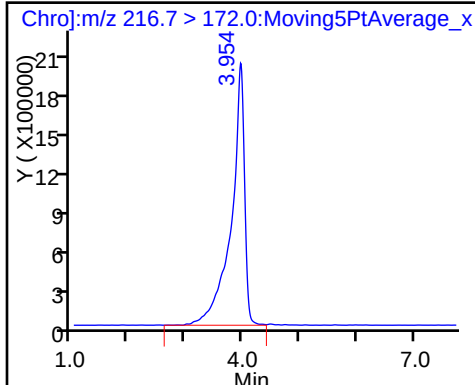
Method: 8321_PFC

Limit Group: LC - PFC

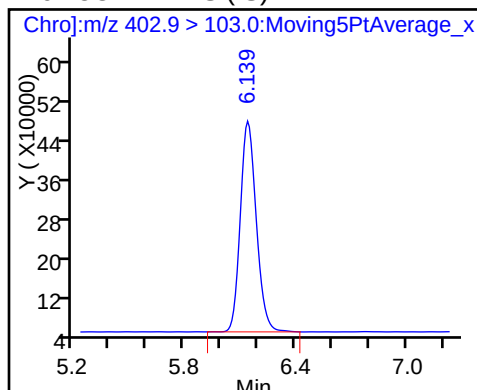
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (ND)

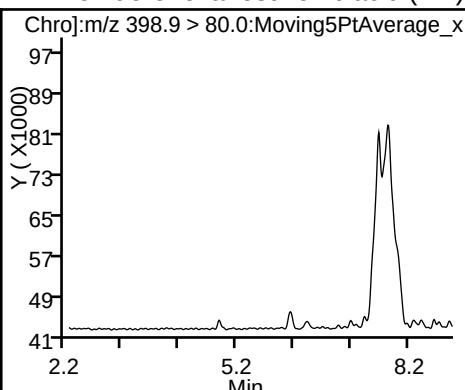
3 Perfluoropentanoic acid (ND)



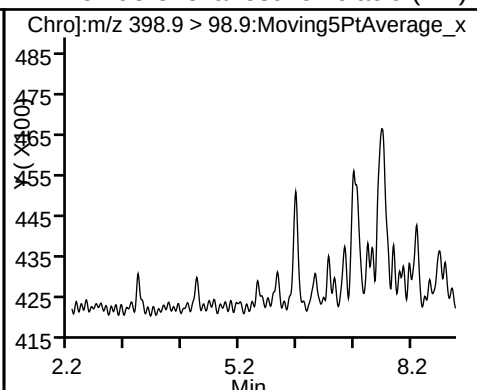
* 9 18O2 PFHxS (IS)



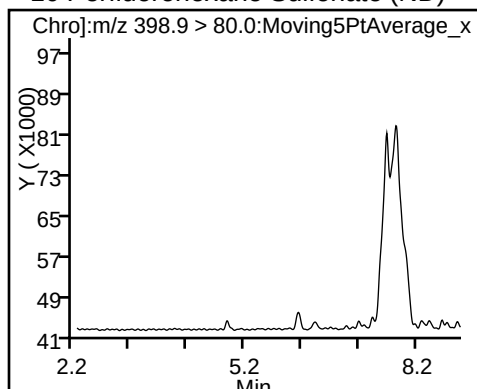
11 Perfluorohexanesulfonic acid (ND)



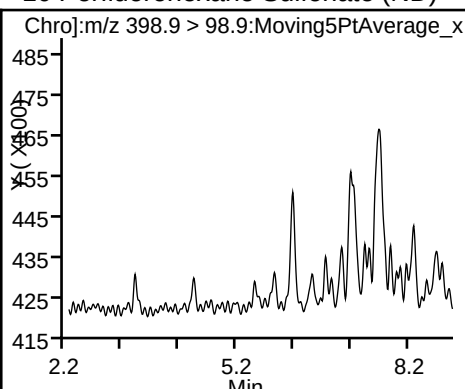
11 Perfluorohexanesulfonic acid (ND)



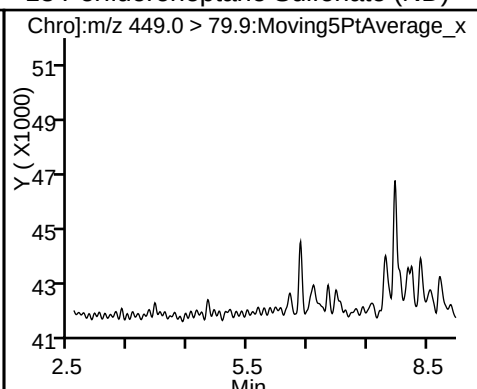
10 Perfluorohexane Sulfonate (ND)



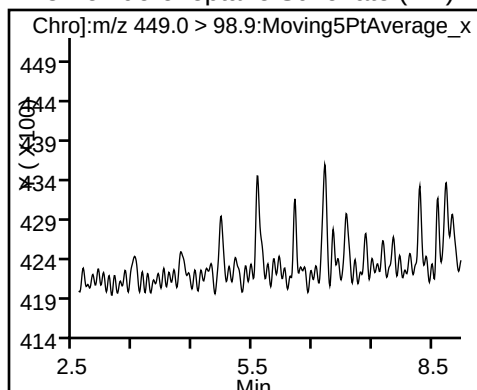
10 Perfluorohexane Sulfonate (ND)



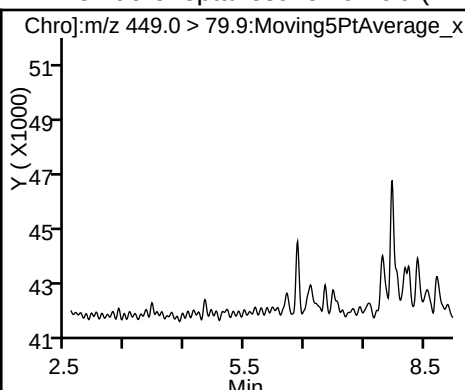
13 Perfluoroheptane Sulfonate (ND)



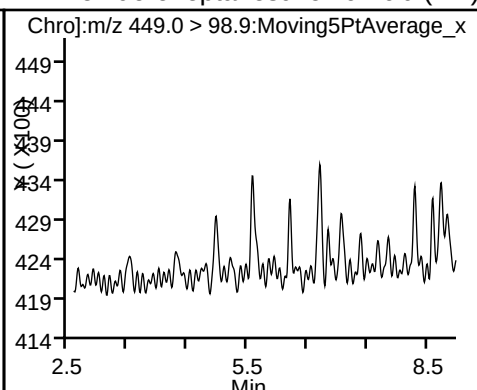
13 Perfluoroheptane Sulfonate (ND)



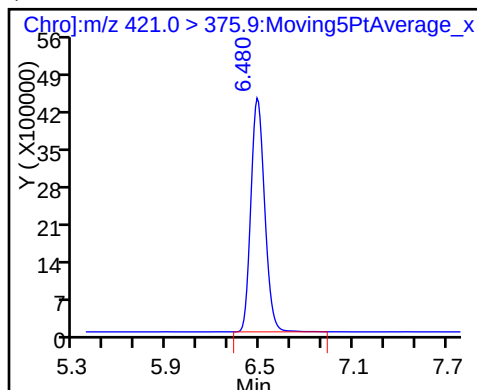
12 Perfluoroheptanesulfonic Acid (ND)



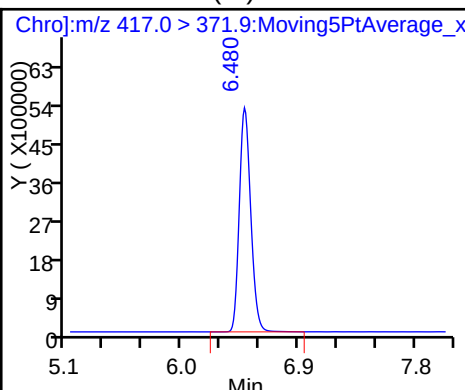
12 Perfluoroheptanesulfonic Acid (ND)



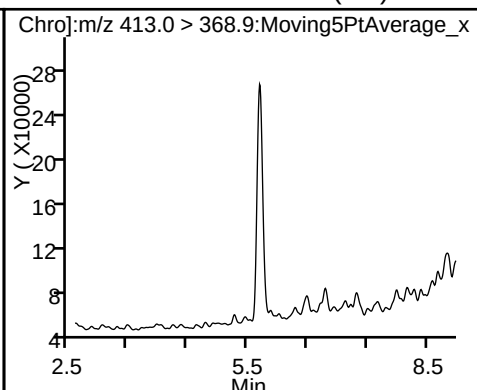
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



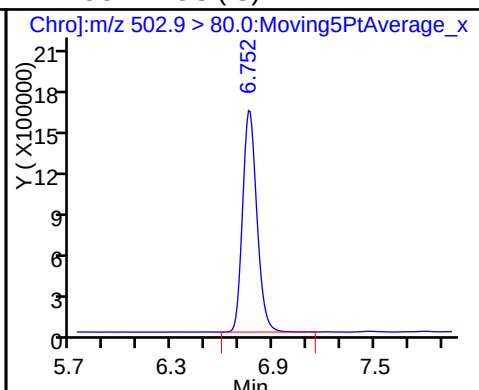
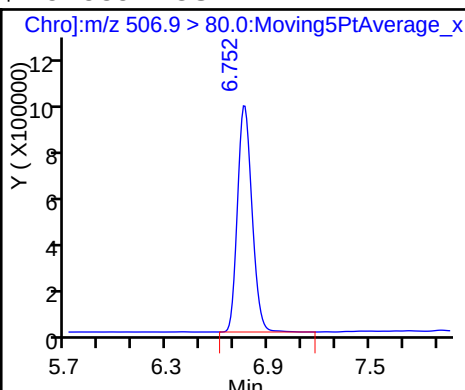
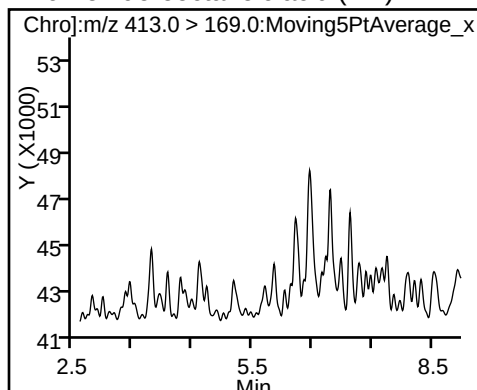
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

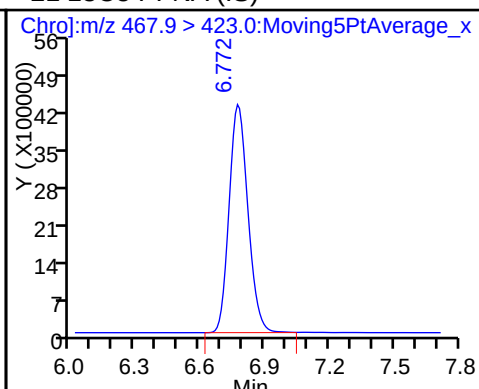
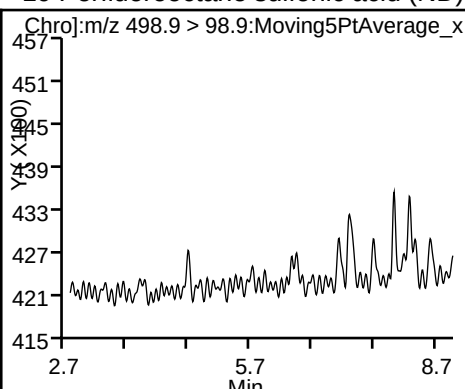
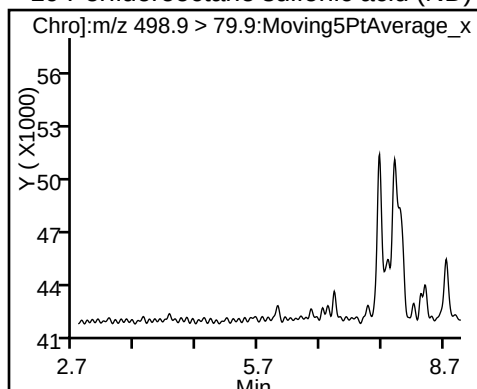
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

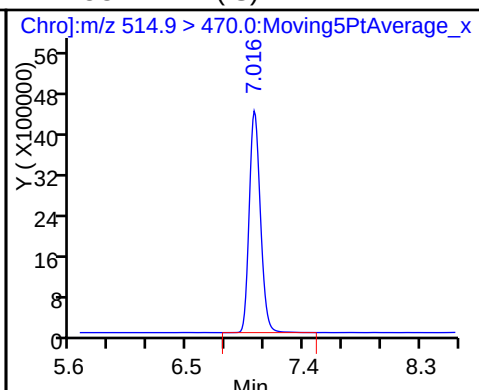
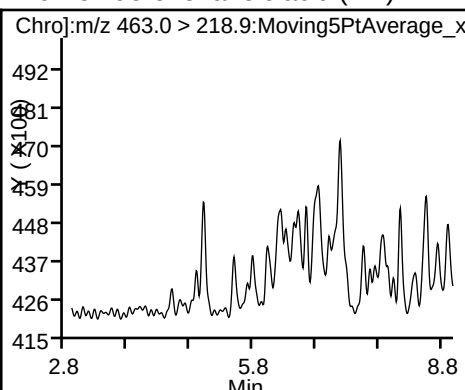
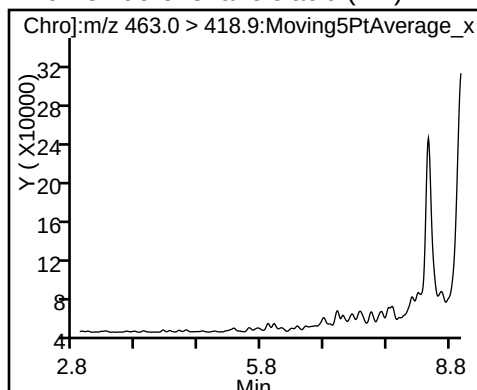
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

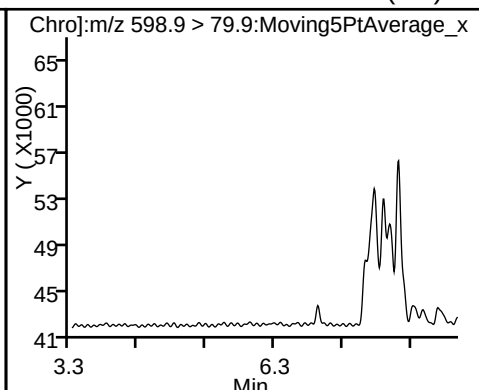
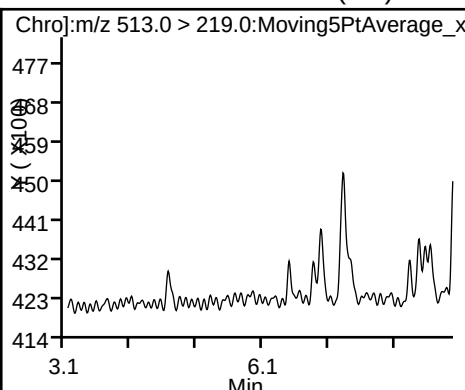
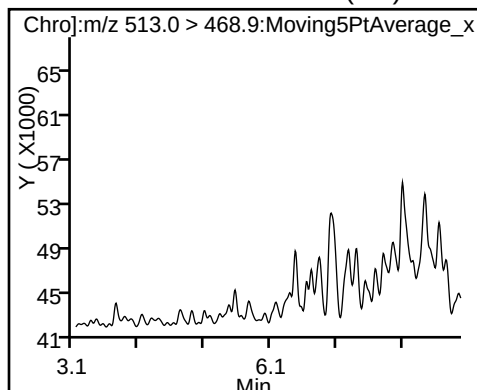
* 22 13C2 PFDA (IS)



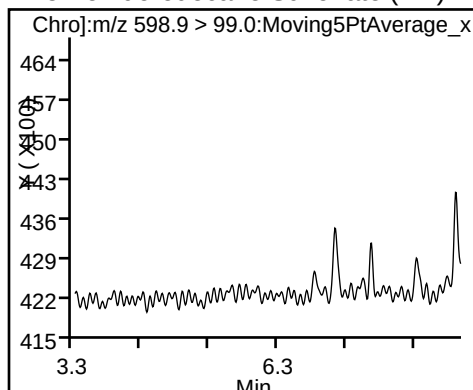
23 Perfluorodecanoic acid (ND)

23 Perfluorodecanoic acid (ND)

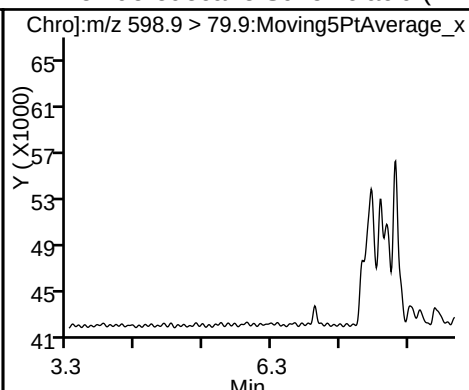
25 Perfluorodecane Sulfonate (ND)



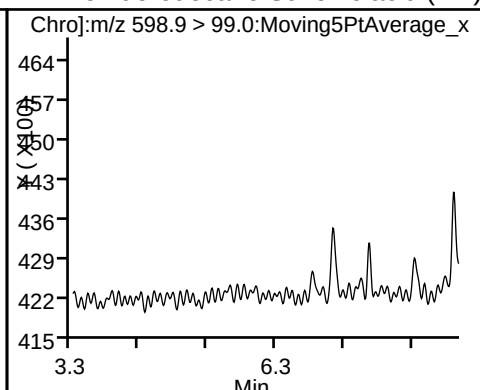
25 Perfluorodecane Sulfonate (ND)



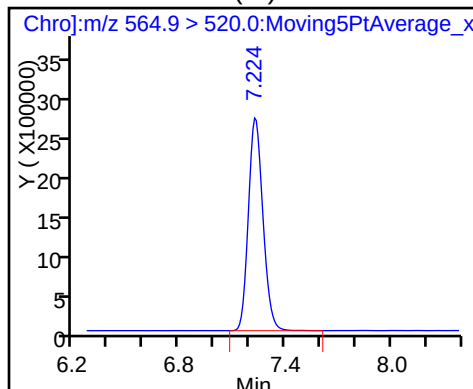
24 Perfluorodecane Sulfonic acid (ND)



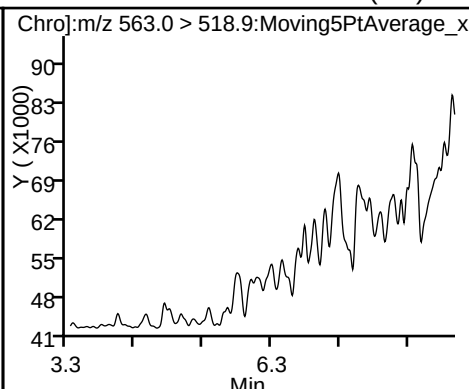
24 Perfluorodecane Sulfonic acid (ND)



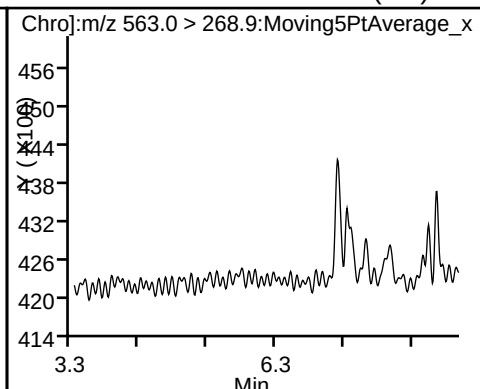
* 26 13C2 PFUnA (IS)



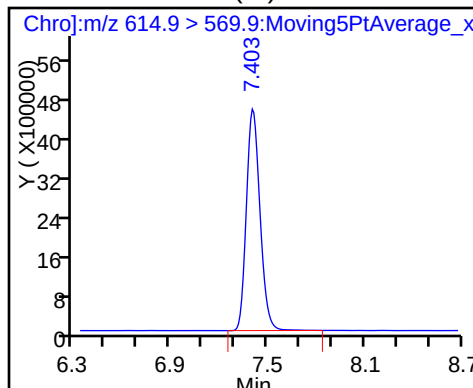
27 Perfluoroundecanoic acid (ND)



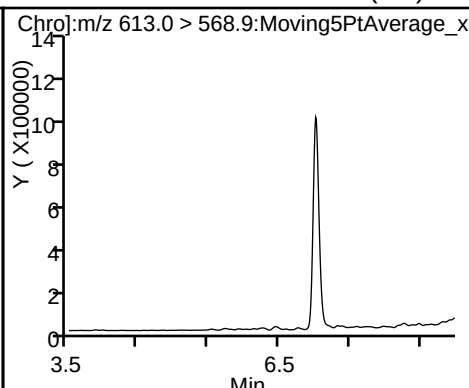
27 Perfluoroundecanoic acid (ND)



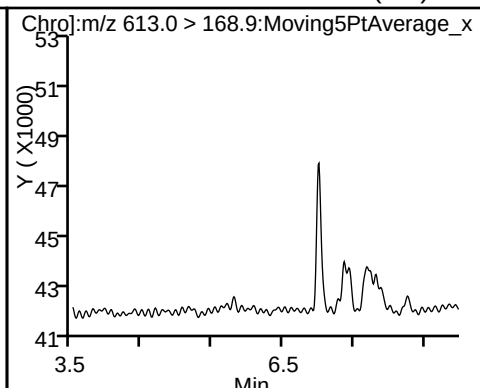
* 28 13C2 PFDaA (IS)



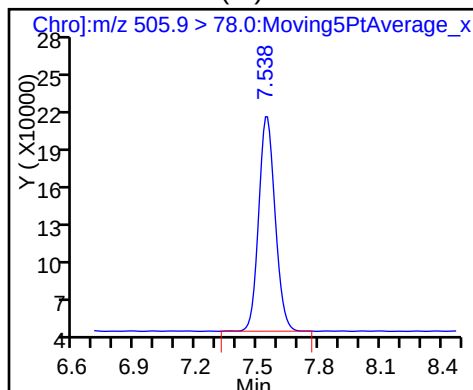
29 Perfluorododecanoic acid (ND)



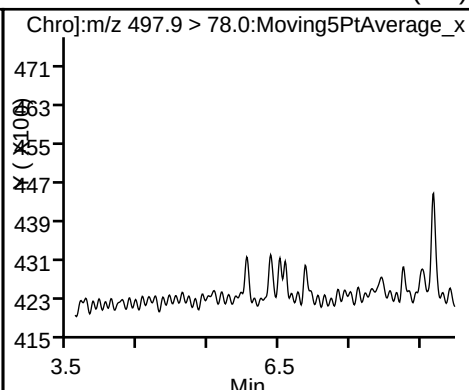
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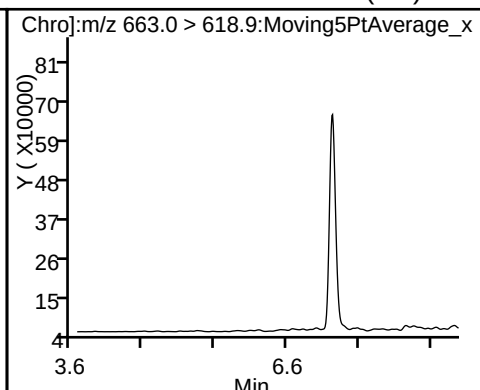
* 31 13C8 FOSA (IS)



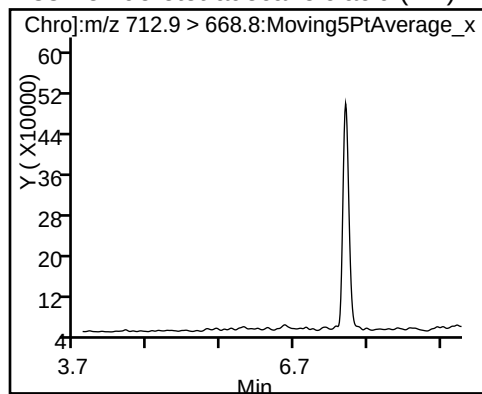
32 Perfluorooctane Sulfonamide (ND)



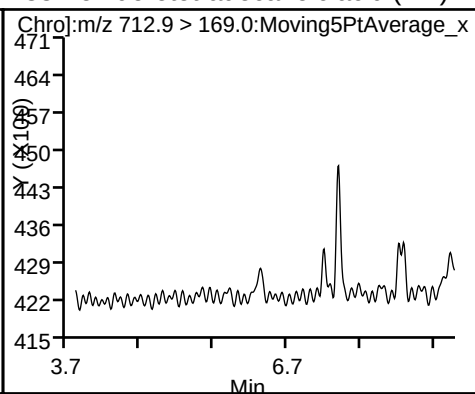
30 Perfluorotridecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 280-331820/2-A
 Matrix: Water Lab File ID: PC516F20010.d
 Analysis Method: DV-LC-0012 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 06/29/2016 11:23
 Sample wt/vol: 250 (mL) Date Analyzed: 06/30/2016 09:09
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 25 (uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 332053 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.139		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.200		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.175		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.176		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.167		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.187		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	102		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20010.d
 Lims ID: LCS 280-331820/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 30-Jun-2016 09:09:29 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 280-331820/2-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyera

Date: 30-Jun-2016 12:11:47

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.039	4.153	-0.114		32111228	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.039	4.162	-0.123	1.000	29202067	8.48			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.213	-0.066	0.896	23364052	9.46			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.270	5.327	-0.057	0.853	9381513	6.95			R
298.9 > 98.9	5.270	5.327	-0.057	0.853	2737846		3.43(1.80-3.35)		R
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.270	5.327	-0.057	0.853	9381513	6.95			
298.9 > 98.9	5.270	5.327	-0.057	0.853	2737846		3.43(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.743	5.800	-0.057		20996533	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.743	5.800	-0.057	1.000	18266634	9.20			
313.0 > 118.6	5.733	5.800	-0.067	0.998	534297		34.19(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.169	6.235	-0.066	0.946	26098904	9.99			
363.0 > 168.9	6.169	6.235	-0.066	0.946	6343537		4.11(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.177	6.234	-0.057		2445576	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.178	6.234	-0.056	1.000	8775011	8.76			R
398.9 > 98.9	6.178	6.234	-0.056	1.000	2888225		3.04(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.178	6.234	-0.056	1.000	8775011	8.76			
398.9 > 98.9	6.178	6.234	-0.056	1.000	2888225		3.04(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.508	6.564	-0.056	0.958	9114900	7.88			
449.0 > 98.9	6.508	6.564	-0.056	0.958	2898929		3.14(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.508	6.564	-0.056	0.958	9114900	7.88			
449.0 > 98.9	6.508	6.564	-0.056	0.958	2898929		3.14(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.517	6.584	-0.067	1.000	25498955	10.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.518	6.584	-0.066		30038302	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.518	6.584	-0.066	1.000	29307502	9.36			
413.0 > 169.0	6.518	6.584	-0.066	1.000	9586447		3.06(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.790	6.847	-0.057	1.000	5695699	9.76			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.790	6.847	-0.057		9124100	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.790	6.847	-0.057	1.000	9350844	8.35			R
498.9 > 98.9	6.790	6.847	-0.057	1.000	3449104		2.71(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.810	6.867	-0.057		24685346	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.810	6.877	-0.066	1.000	24328768	8.78			
463.0 > 218.9	6.810	6.877	-0.066	1.000	3495009		6.96(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.054	7.121	-0.067		27377661	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.054	7.111	-0.057	1.000	24937189	9.04			R
513.0 > 219.0	7.054	7.111	-0.057	1.000	2615842		9.53(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.233	7.299	-0.066	1.065	6965874	5.89			
598.9 > 99.0	7.233	7.299	-0.066	1.065	2133169		3.27(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.233	7.299	-0.066	1.065	6965874	5.89			
598.9 > 99.0	7.233	7.299	-0.066	1.065	2133169		3.27(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.262	7.328	-0.066		14707370	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.262	7.319	-0.057	1.000	18800411	9.01			R
563.0 > 268.9	7.262	7.319	-0.057	1.000	2279758		8.25(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.441	7.507	-0.066		21126815	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.441	7.498	-0.057	1.000	20026128	9.22			
613.0 > 168.9	7.441	7.498	-0.057	1.000	2455978		8.15(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.586	-0.038		612360	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.549	7.587	-0.038	1.000	472074	7.10			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.592	7.658	-0.066	1.020	14563072	7.39			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.724	7.791	-0.067	1.038	10830052	8.67			
712.9 > 169.0	7.724	7.791	-0.067	1.038	1827234		5.93(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20010.d

Injection Date: 30-Jun-2016 09:09:29

Instrument ID: LC_LCMS5

Lims ID: LCS 280-331820/2-A

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

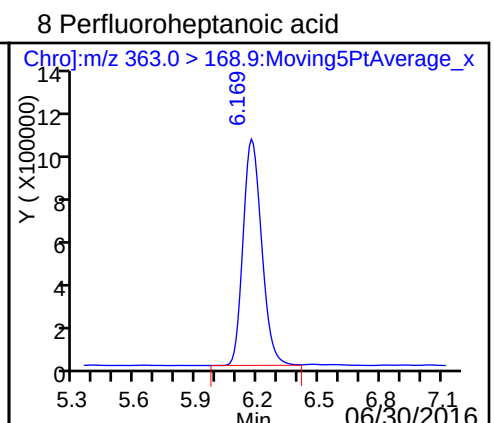
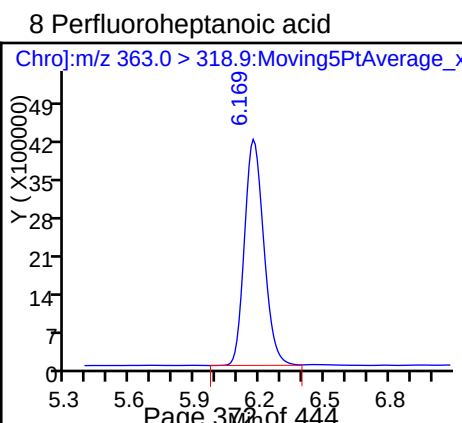
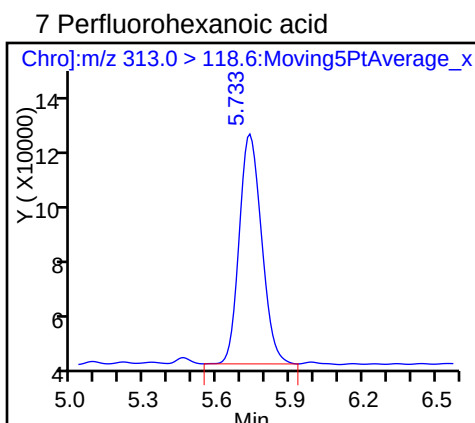
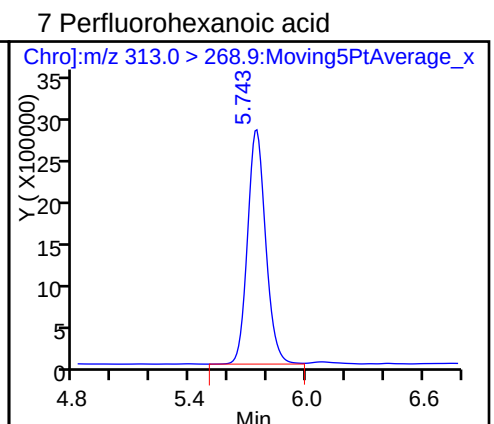
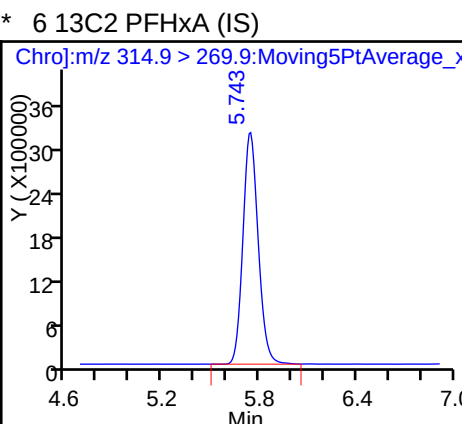
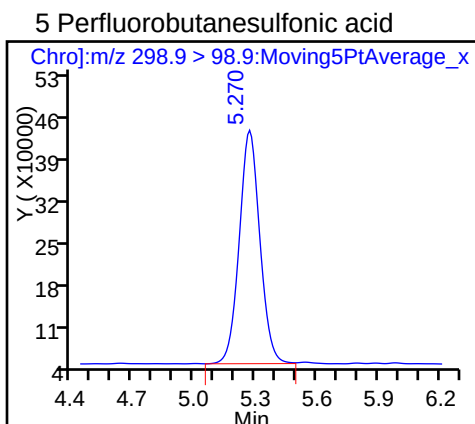
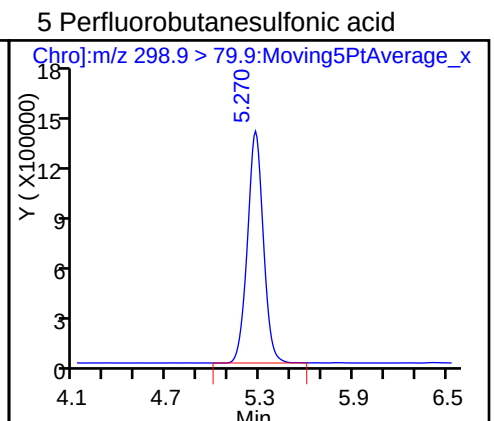
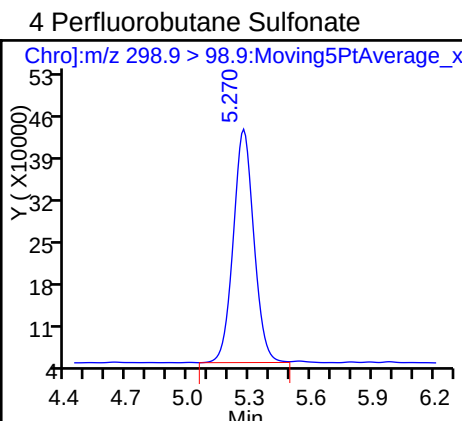
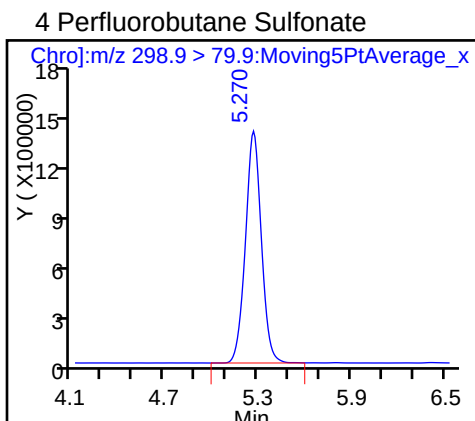
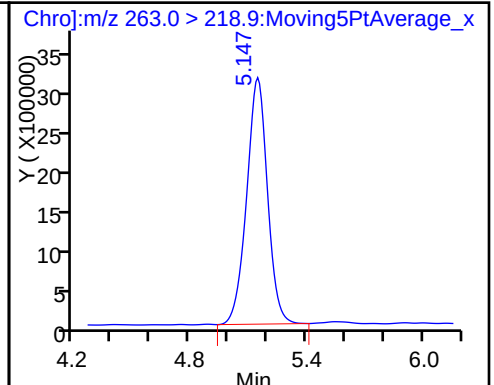
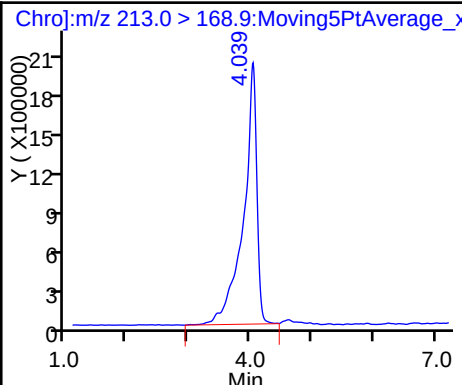
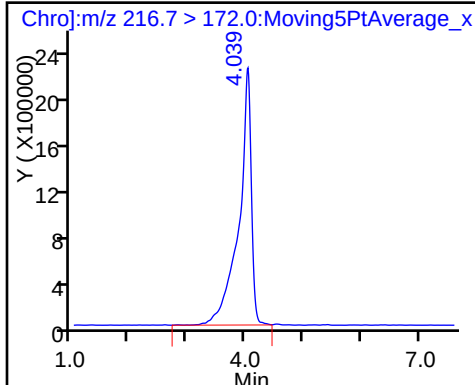
Method: 8321_PFC

Limit Group: LC - PFC

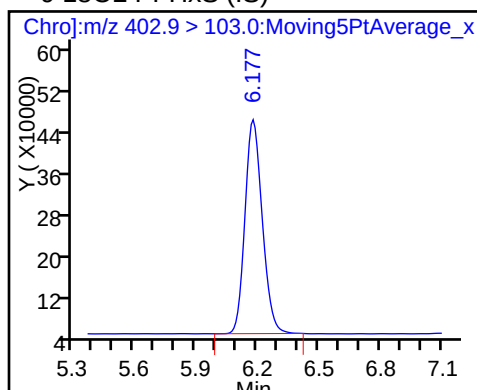
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

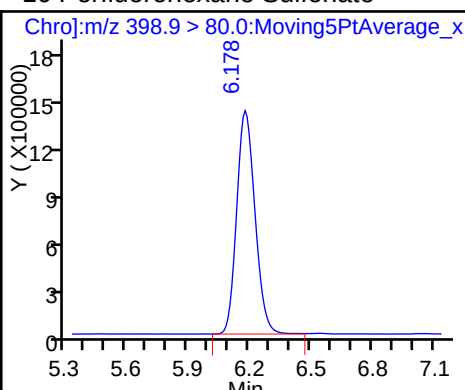
3 Perfluoropentanoic acid



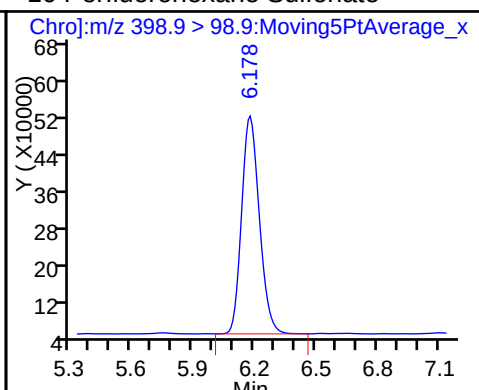
* 9 18O2 PFHxS (IS)



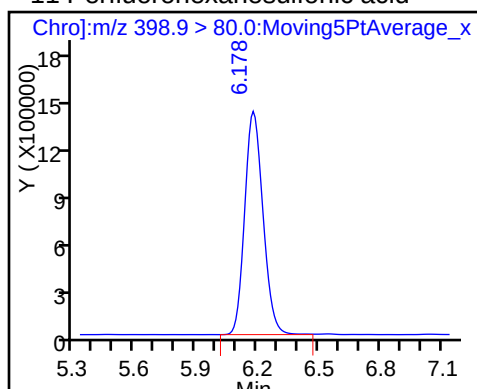
10 Perfluorohexane Sulfonate



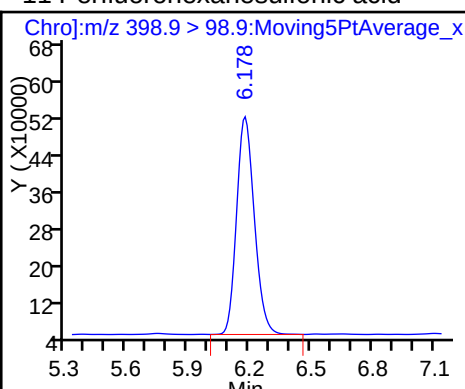
10 Perfluorohexane Sulfonate



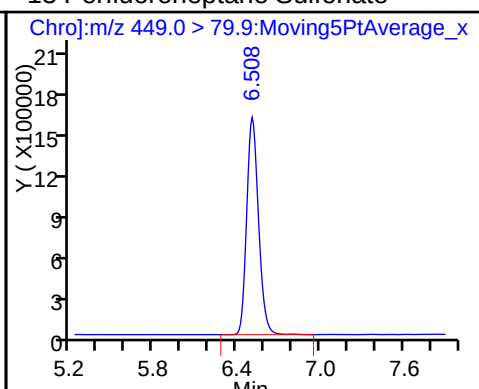
11 Perfluorohexanesulfonic acid



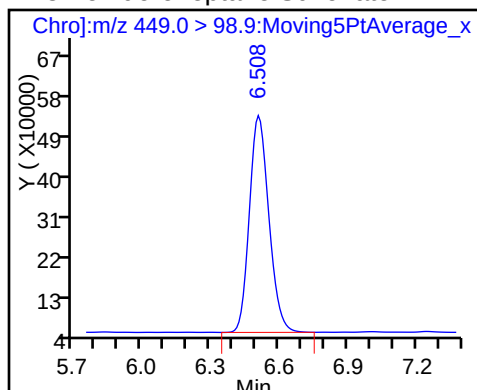
11 Perfluorohexanesulfonic acid



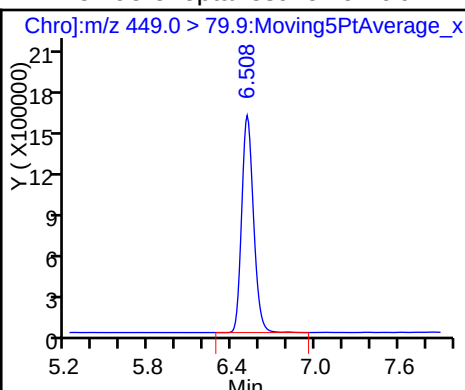
13 Perfluoroheptane Sulfonate



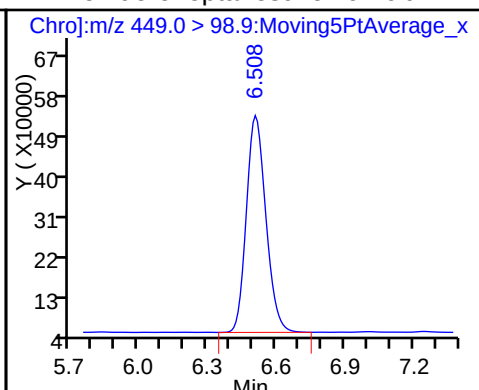
13 Perfluoroheptane Sulfonate



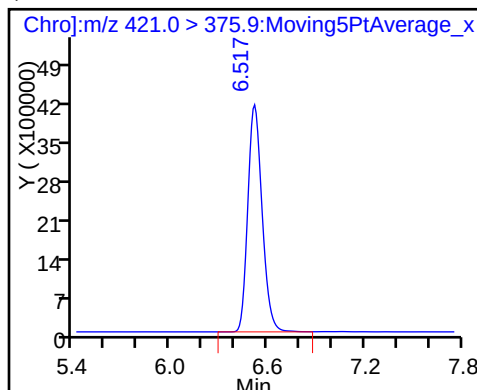
12 Perfluoroheptanesulfonic Acid



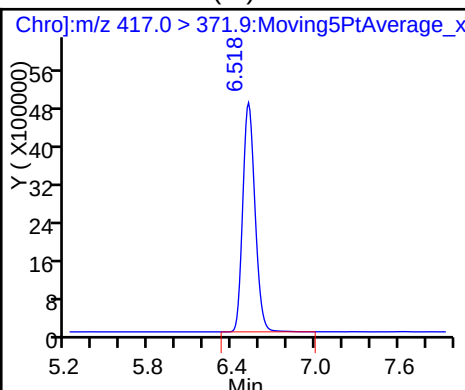
12 Perfluoroheptanesulfonic Acid



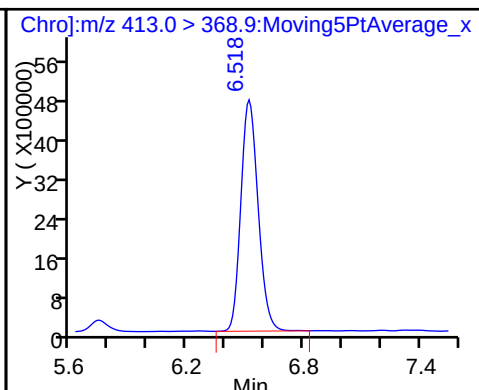
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



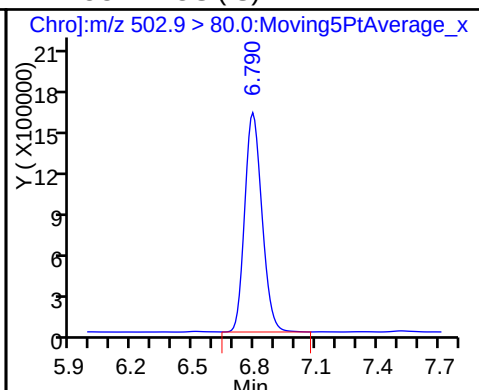
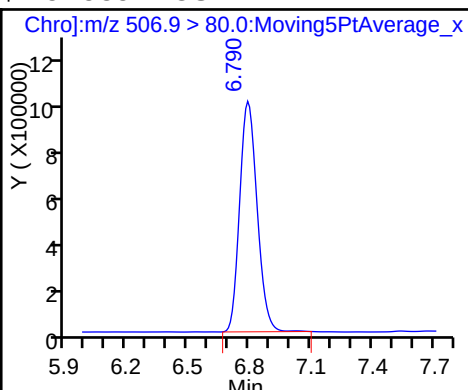
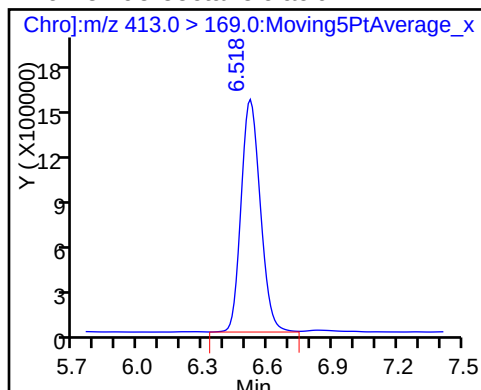
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

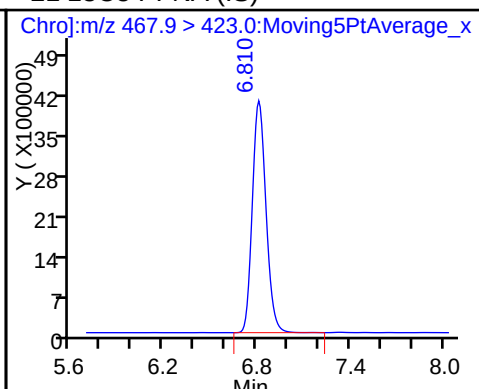
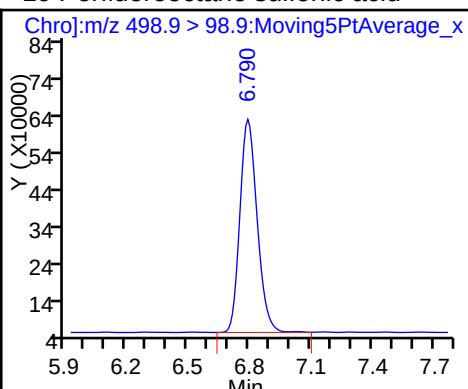
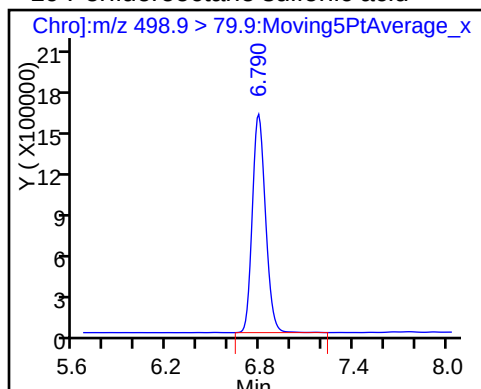
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

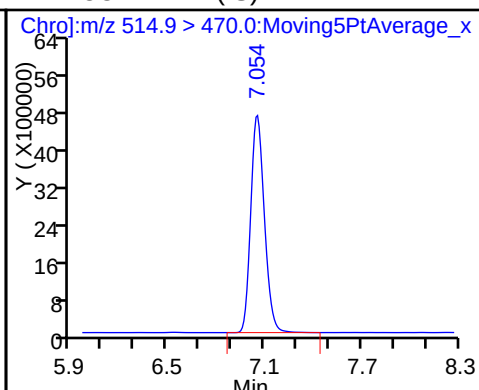
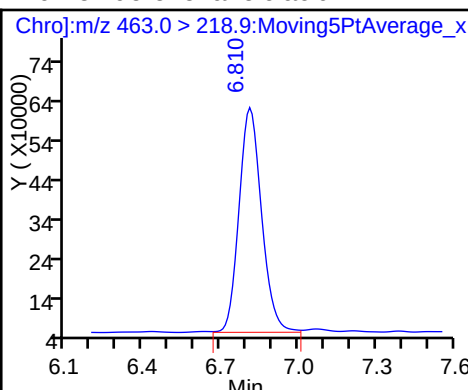
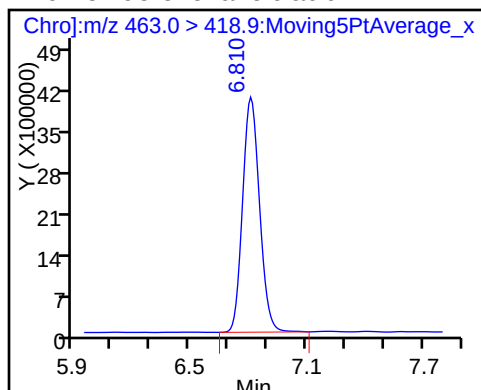
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

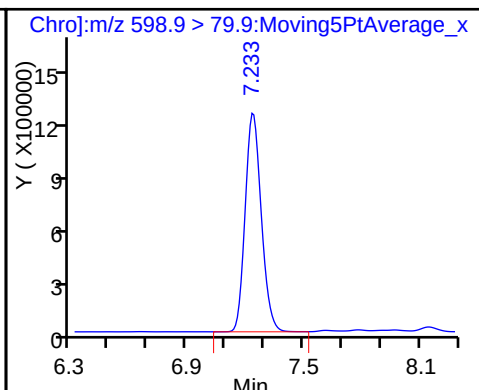
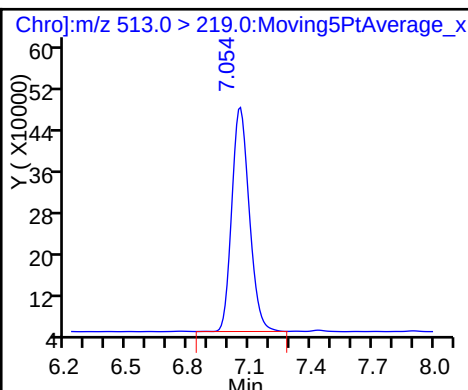
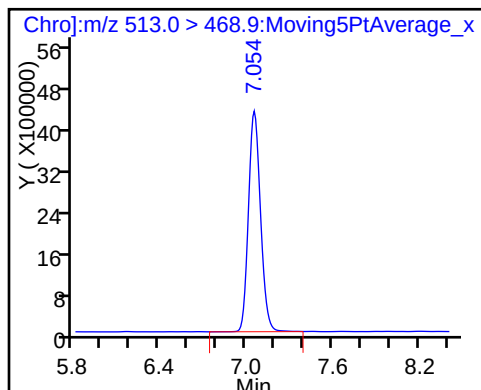
* 22 13C2 PFDA (IS)



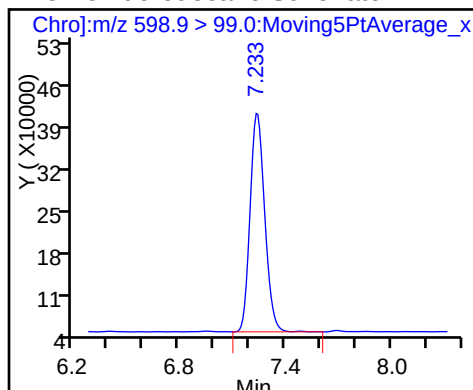
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

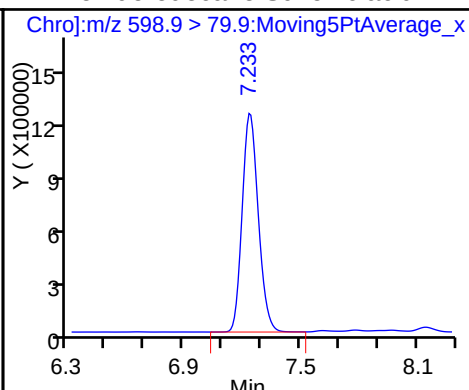
25 Perfluorodecane Sulfonate



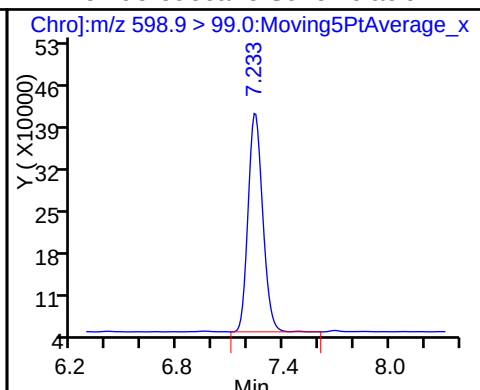
25 Perfluorodecane Sulfonate



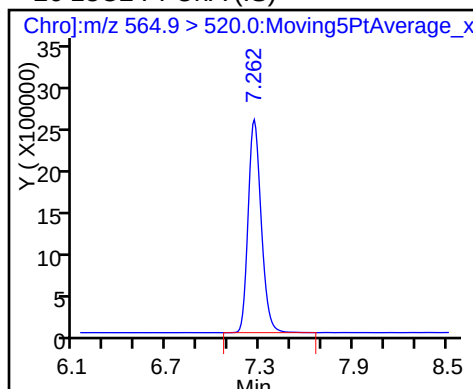
24 Perfluorodecane Sulfonic acid



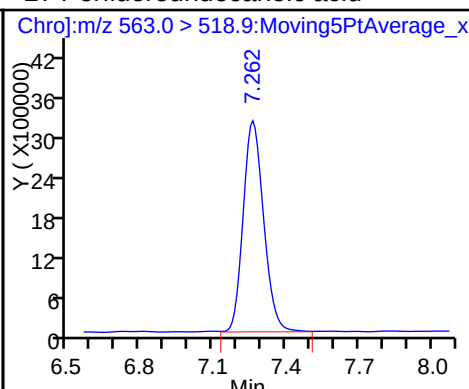
24 Perfluorodecane Sulfonic acid



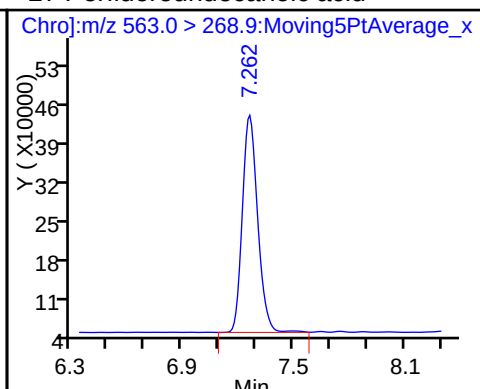
* 26 13C2 PFUnA (IS)



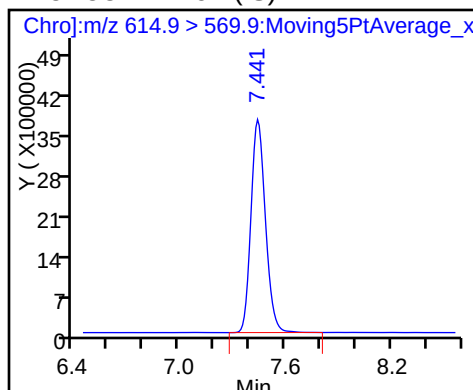
27 Perfluoroundecanoic acid



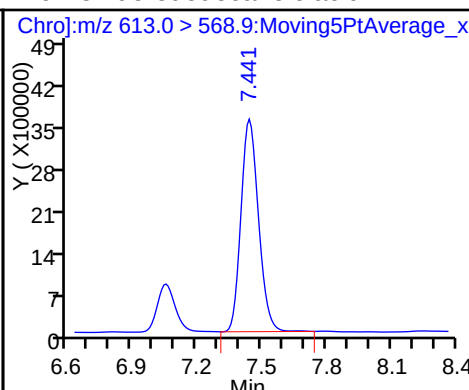
27 Perfluoroundecanoic acid



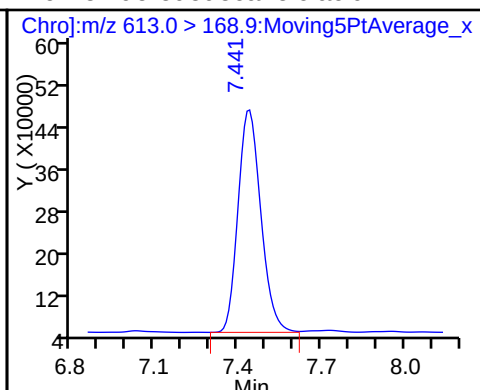
* 28 13C2 PFDaA (IS)



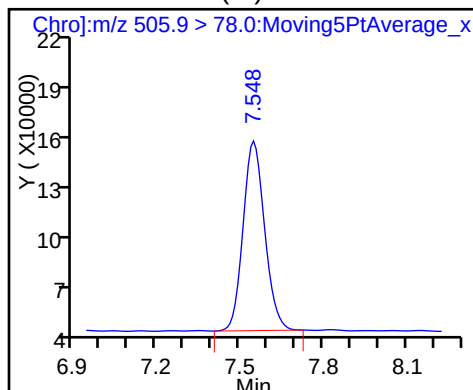
29 Perfluorododecanoic acid



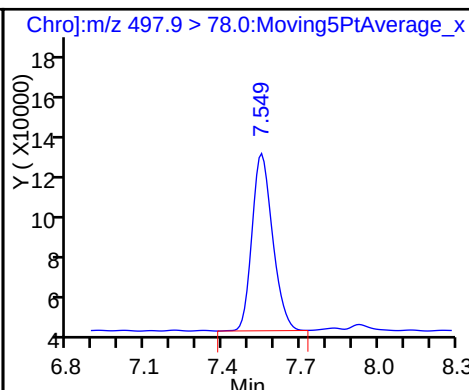
29 Perfluorododecanoic acid



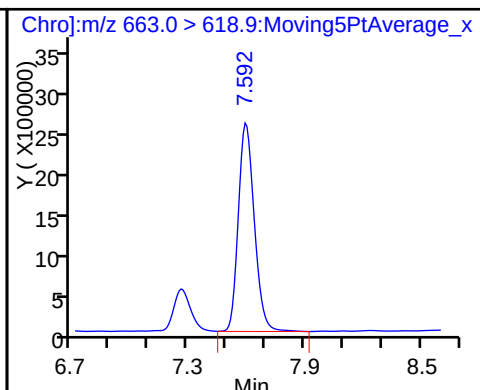
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

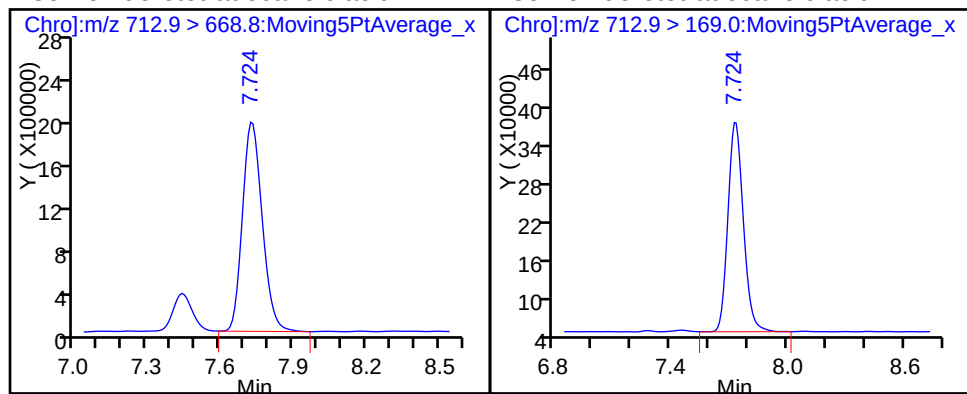


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 280-331826/2-A
 Matrix: Water Lab File ID: PC516F20025.d
 Analysis Method: DV-LC-0012 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 06/29/2016 11:23
 Sample wt/vol: 250 (mL) Date Analyzed: 06/30/2016 12:14
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 25 (uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 332053 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.157		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.196		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.179		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.188		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.163		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.183		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20025.d
 Lims ID: LCS 280-331826/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 30-Jun-2016 12:14:00 ALS Bottle#: 0 Worklist Smp#: 20
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: lcs 280-331826/2-a, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:39:07 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 13:08:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.020	-0.028		31469543	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	4.020	-0.028	1.000	29598873	8.77			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.109	0.0	0.896	23857771	9.77			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.232	0.009	0.852	10086575	7.84			
298.9 > 98.9	5.241	5.232	0.009	0.852	3054888		3.30(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.232	0.009	0.852	10086575	7.84			
298.9 > 98.9	5.241	5.232	0.009	0.852	3054888		3.30(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.705	0.0		20760927	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.714	-0.009	1.000	17713248	9.02			
313.0 > 118.6	5.705	5.714	-0.009	1.000	490485		36.11(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.158	-0.009		2330207	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.159	-0.010	1.000	8525153	8.94			
398.9 > 98.9	6.149	6.159	-0.010	1.000	3030312		2.81(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.159	-0.010	1.000	8525153	8.94			R
398.9 > 98.9	6.149	6.159	-0.010	1.000	3030312		2.81(1.30-2.41)		R
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.150	-0.010	0.946	26183896	9.80			
363.0 > 168.9	6.140	6.150	-0.010	0.946	6777121		3.86(3.35-6.23)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.489	6.489	0.0	0.960	9367794	8.09			
449.0 > 98.9	6.479	6.489	-0.010	0.958	2973646		3.15(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.489	6.489	0.0	0.960	9367794	8.09			
449.0 > 98.9	6.479	6.489	-0.010	0.958	2973646		3.15(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.498	-0.009	1.000	25320402	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.499	-0.010		30701565	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.499	-0.010	1.000	29336750	9.17			
413.0 > 169.0	6.489	6.499	-0.010	1.000	9372942		3.13(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.771	-0.010	1.000	5570623	9.53			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.771	-0.009		9137129	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.771	-0.009	1.000	9154585	8.16			R
498.9 > 98.9	6.762	6.771	-0.009	1.000	3350641		2.73(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.791	-0.009		22565677	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.791	-0.009	1.000	23786635	9.39			
463.0 > 218.9	6.782	6.791	-0.009	1.000	3517624		6.76(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.036	7.036	0.0	1.001	23595872	9.08			R
513.0 > 219.0	7.026	7.036	-0.010	1.000	2268409		10.40(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.035	-0.009		25773124	10.0			
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.224	-0.010	1.067	8679477	7.33			
598.9 > 99.0	7.214	7.224	-0.010	1.067	2407043		3.61(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.224	-0.010	1.067	8679477	7.33			
598.9 > 99.0	7.214	7.224	-0.010	1.067	2407043		3.61(2.84-2.84)		
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.243	0.0	1.000	19325281	8.61			R
563.0 > 268.9	7.243	7.243	0.0	1.000	2561071		7.55(3.47-6.45)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.243	0.0		15815023	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.422	7.422	0.0	1.000	25303496	8.95			
613.0 > 168.9	7.422	7.422	0.0	1.000	3235995		7.82(5.96-11.06)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.422	0.0		27500515	10.0			
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.557	0.010		975346	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.558	0.0	0.999	975810	9.21			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.573	0.0	1.020	19283819	7.52			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.705	0.0	1.038	13890422	8.55			
712.9 > 169.0	7.705	7.705	0.0	1.038	2184300		6.36(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20025.d

Injection Date: 30-Jun-2016 12:14:00

Instrument ID: LC_LCMS5

Lims ID: LCS 280-331826/2-A

Client ID:

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 20

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

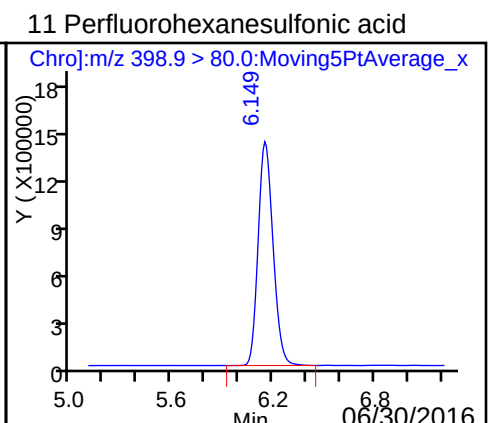
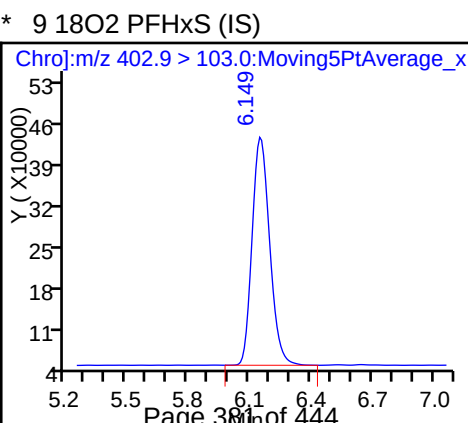
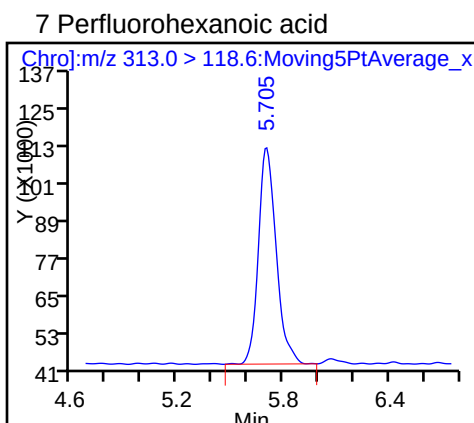
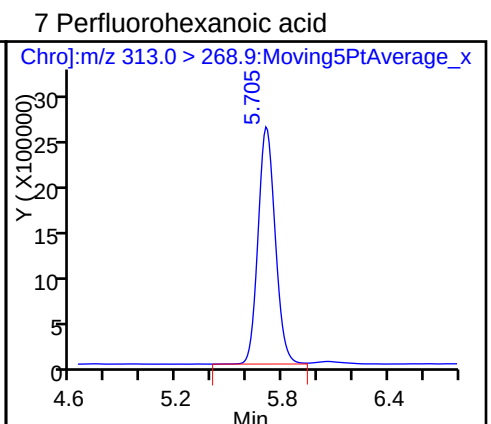
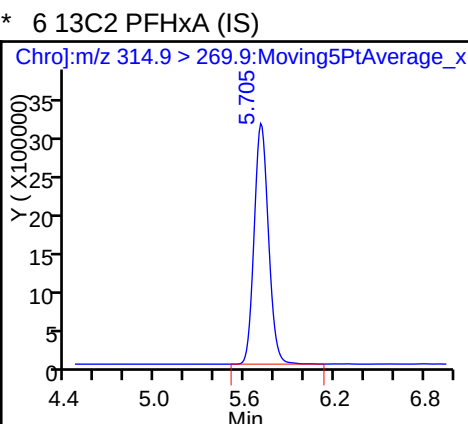
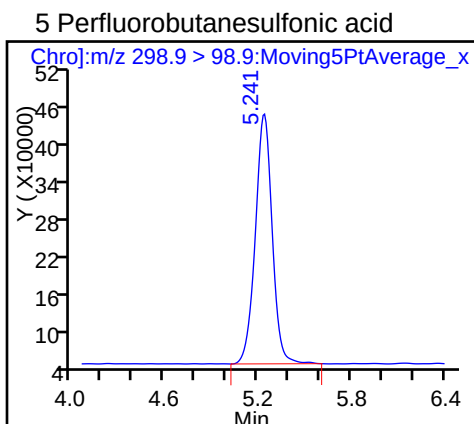
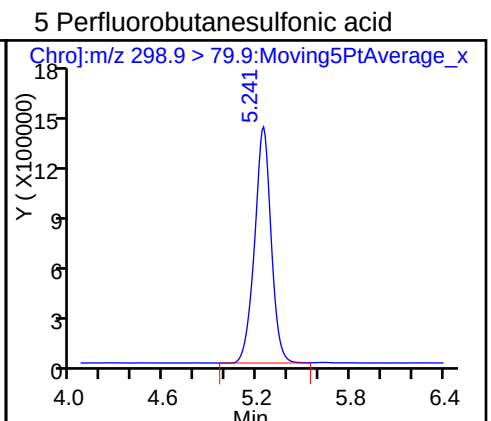
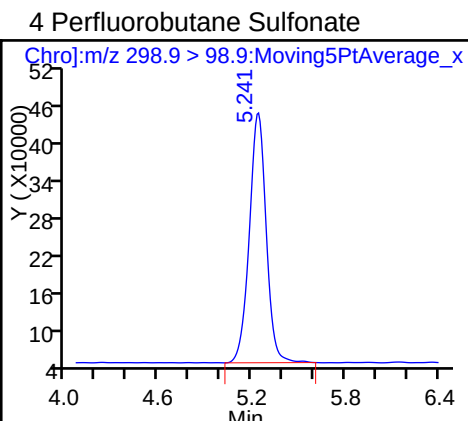
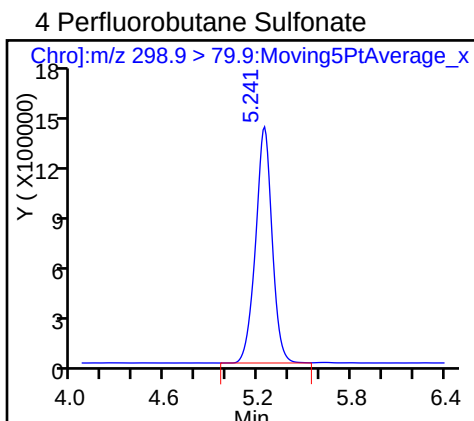
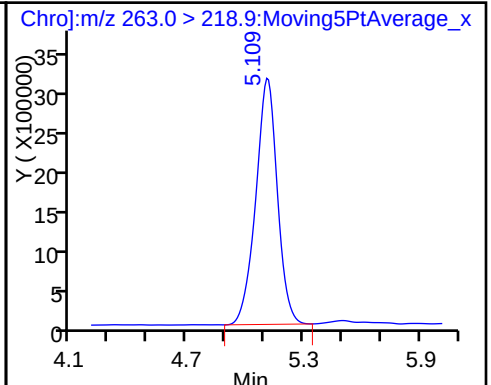
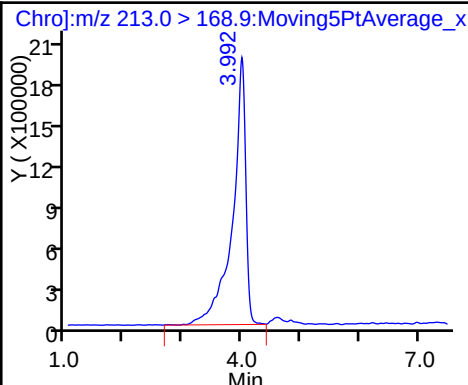
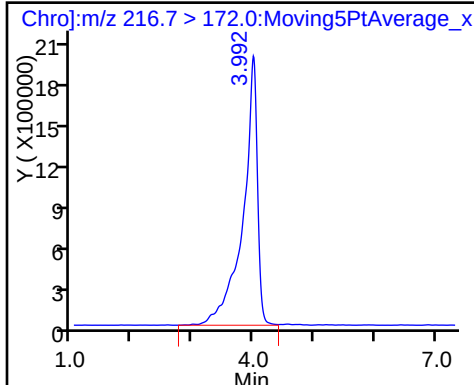
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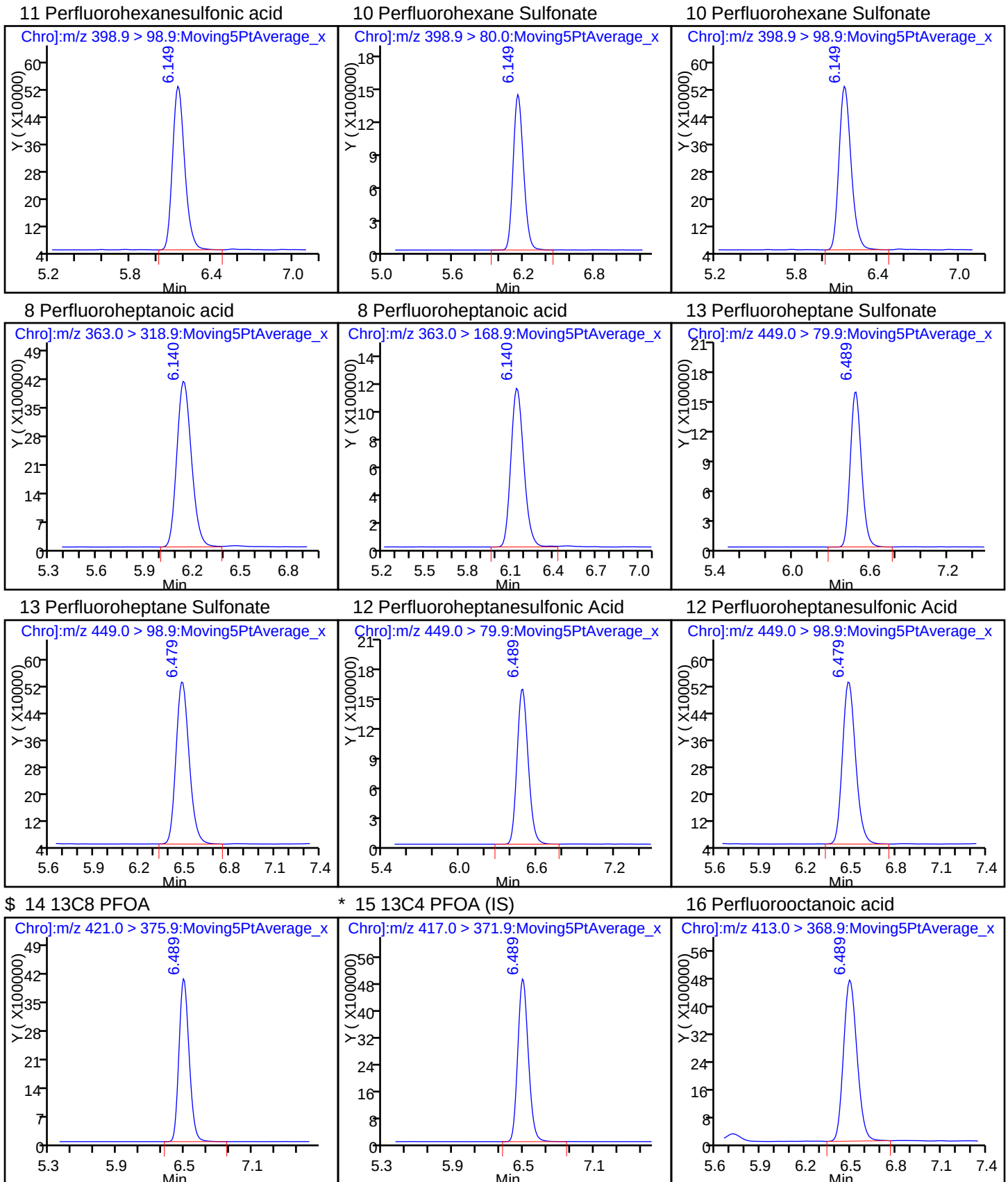
Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

3 Perfluoropentanoic acid

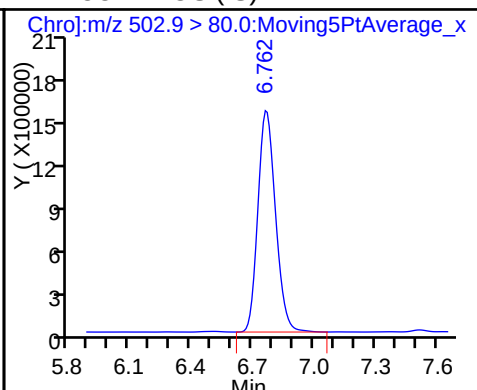
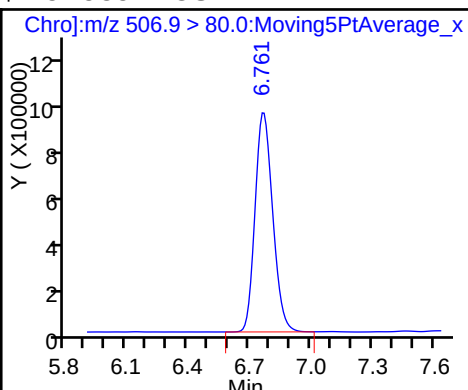
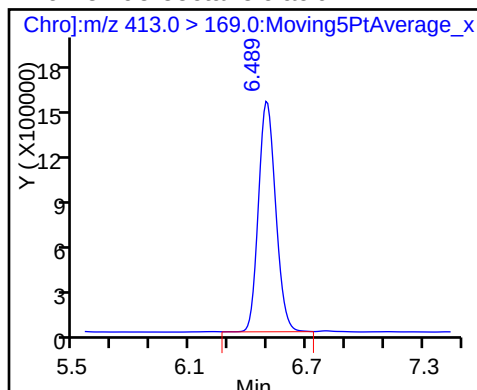




16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

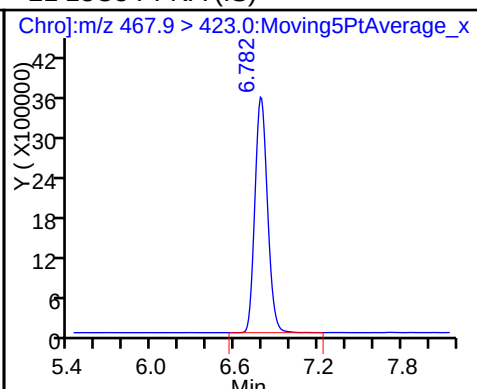
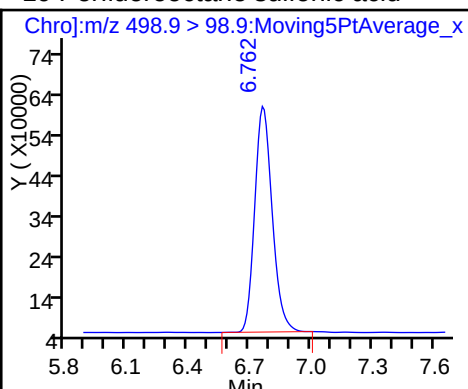
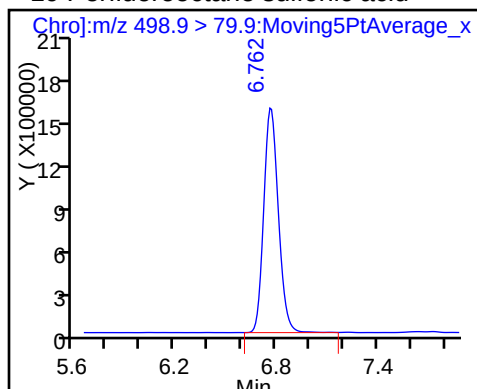
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

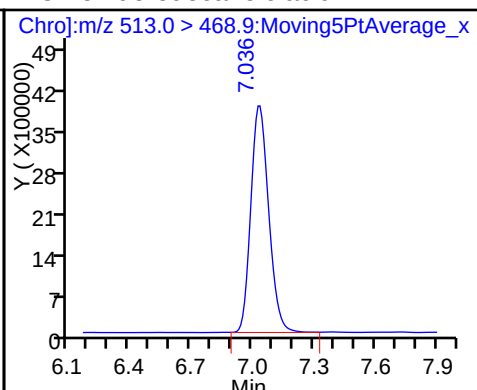
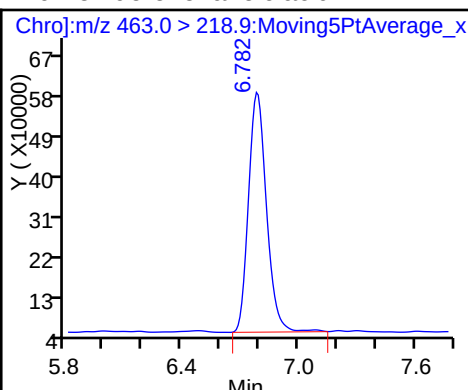
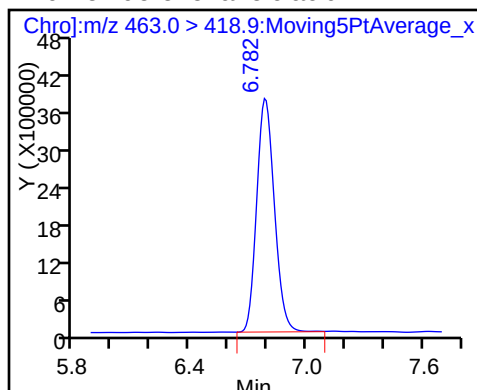
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

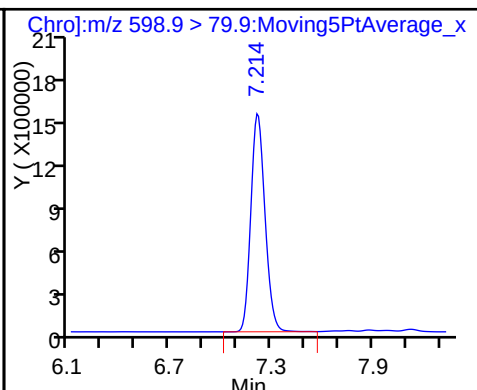
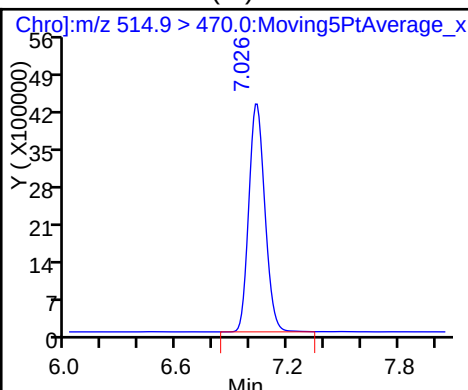
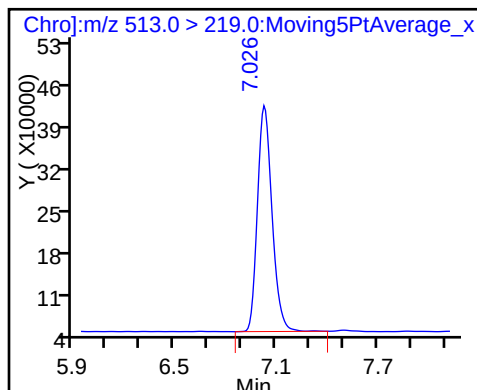
23 Perfluorodecanoic acid



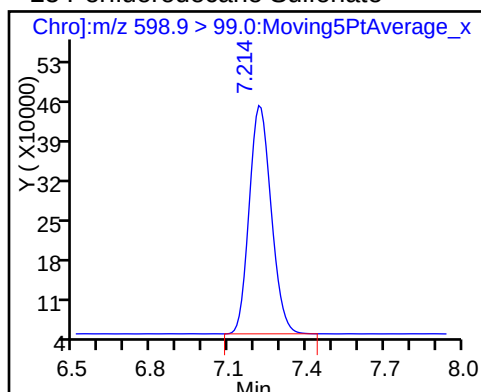
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

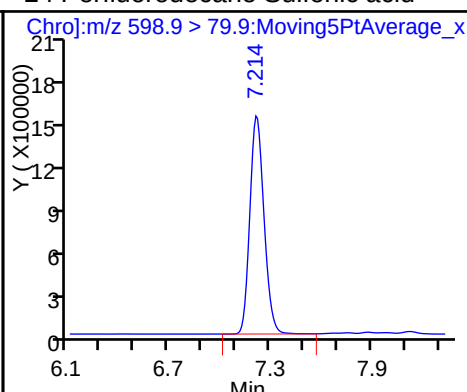
25 Perfluorodecane Sulfonate



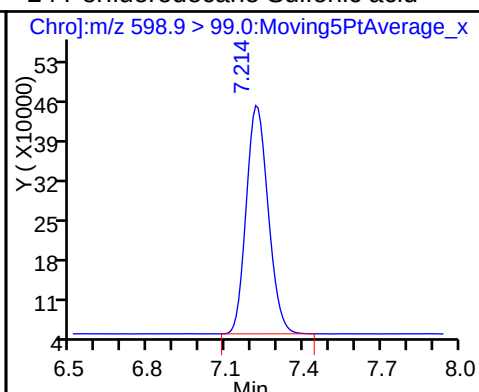
25 Perfluorodecane Sulfonate



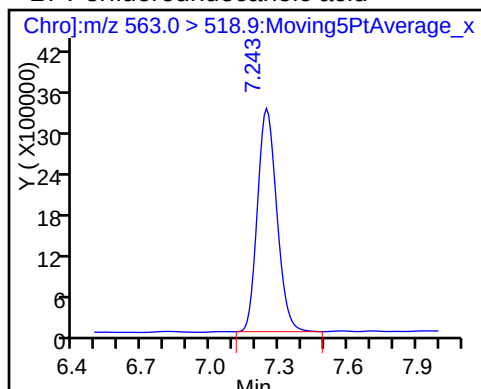
24 Perfluorodecane Sulfonic acid



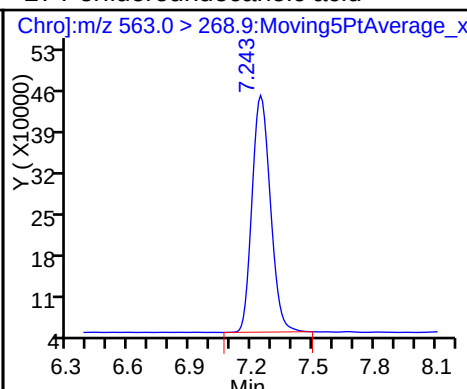
24 Perfluorodecane Sulfonic acid



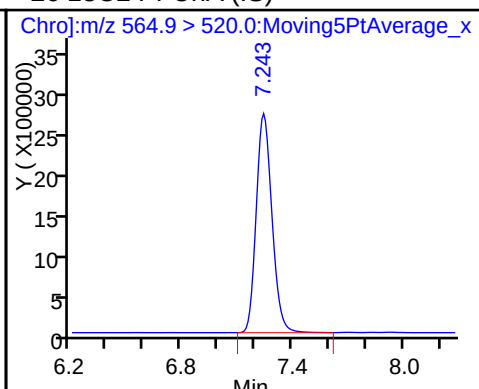
27 Perfluoroundecanoic acid



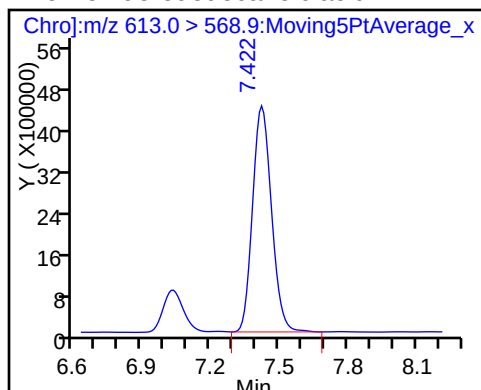
27 Perfluoroundecanoic acid



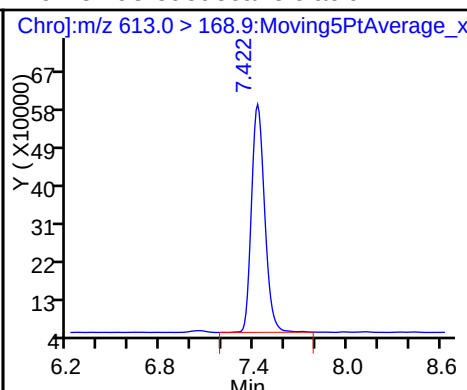
* 26 13C2 PFUnA (IS)



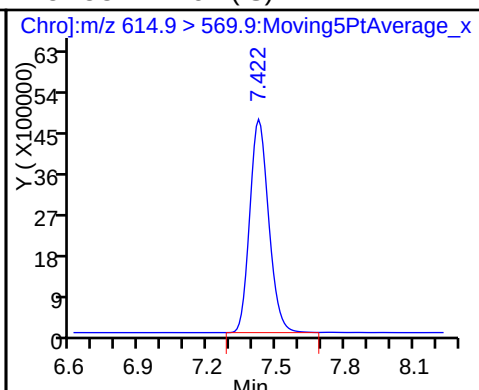
29 Perfluorododecanoic acid



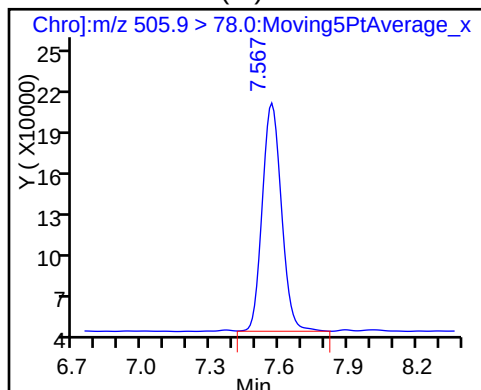
29 Perfluorododecanoic acid



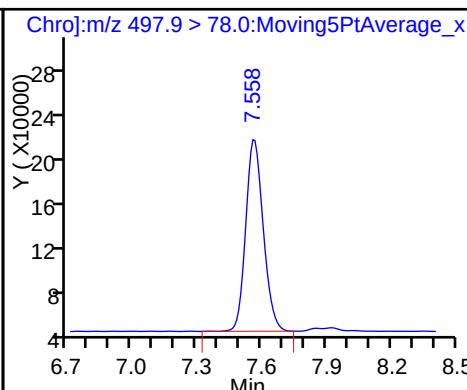
* 28 13C2 PFDa (IS)



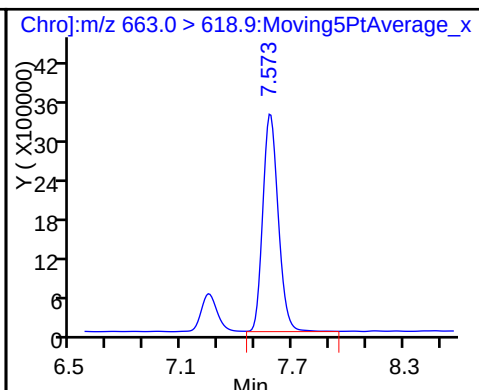
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

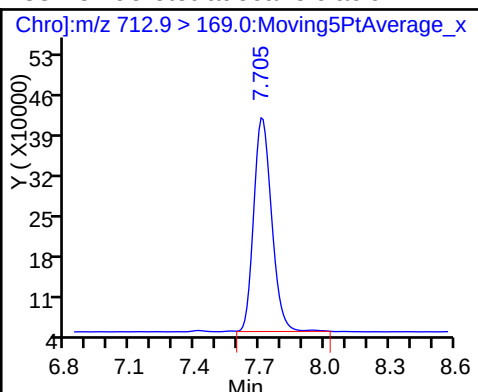
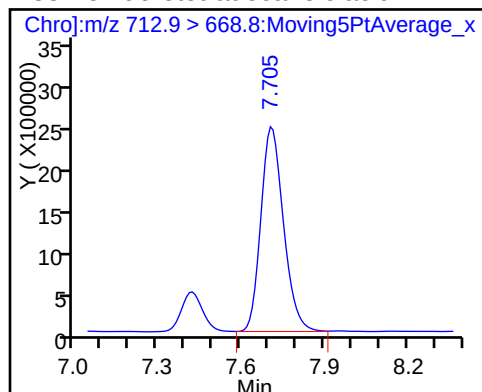


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: DLCK 280-328740/14
 Matrix: Water Lab File ID: PC516F06019.d
 Analysis Method: DV-LC-0012 Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 06/06/2016 17:05
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 25(uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 328740 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.419		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.433		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.446		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.439		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.456		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.459		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	106		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d
 Lims ID: DLCK L2
 Client ID:
 Sample Type: QC
 Inject. Date: 06-Jun-2016 17:05:17 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: DLCK L2, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:03:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.200	4.465	-0.265		20323348	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.850	4.465	-0.615	0.917	1113178	0.5139			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.299	5.336	-0.037	0.899	1426107	0.4894			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.431	5.440	-0.009	0.862	594584	0.4193			
298.9 > 98.9	5.431	5.440	-0.009	0.862	180646		3.29(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.431	5.440	-0.009	0.862	594584	0.4193			
298.9 > 98.9	5.431	5.440	-0.009	0.862	180646		3.29(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.894	5.885	0.009		23600887	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.894	5.885	0.009	1.000	1181623	0.5087			
313.0 > 118.6	5.894	5.885	0.009	1.000	34359		34.39(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.292	0.009	0.952	1398910	0.4329			
363.0 > 168.9	6.292	6.292	0.0	0.950	395878		3.53(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.300	0.0		2616206	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.301	6.291	0.010	1.000	564647	0.4464			R
398.9 > 98.9	6.301	6.291	0.010	1.000	164216		3.44(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.301	6.291	0.010	1.000	564647	0.4464			
398.9 > 98.9	6.301	6.291	0.010	1.000	164216		3.44(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									7
449.0 > 79.9	6.602	6.621	-0.019	0.960	542028	0.4617			7
449.0 > 98.9	6.612	6.621	-0.009	0.962	184723		2.93(0.00-0.00)		
LOD = 0.4950									
13 Perfluoroheptane Sulfonate									7
449.0 > 79.9	6.602	6.621	-0.019	0.960	542028	0.4617			7
449.0 > 98.9	6.612	6.621	-0.009	0.962	184723		2.93(0.00-0.00)		
LOD = 0.4950									
\$ 14 13C8 PFOA									
421.0 > 375.9	6.612	6.631	-0.019	0.999	1593505	0.5225			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.622	6.631	-0.009		34601296	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.622	6.632	-0.010	1.000	1900951	0.4594			R
413.0 > 169.0	6.613	6.632	-0.019	0.999	678793		2.80(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.875	6.894	-0.019	1.000	325922	0.5081			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.875	6.904	-0.029		9456457	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.876	6.895	-0.019	1.000	607496	0.4558			R
498.9 > 98.9	6.876	6.895	-0.019	1.000	150123		4.05(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.914	-0.019		27571989	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.895	6.924	-0.029	1.000	1486714	0.4391			R
463.0 > 218.9	6.905	6.924	-0.019	1.001	299965		4.96(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.158	-0.028		28251355	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.159	-0.029	1.000	1495646	0.4925			
513.0 > 219.0	7.121	7.159	-0.038	0.999	132217		11.31(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.337	-0.028	1.063	616888	0.4672			
598.9 > 99.0	7.318	7.337	-0.019	1.064	183519		3.36(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.337	-0.028	1.063	616888	0.4672			
598.9 > 99.0	7.318	7.337	-0.019	1.064	183519		3.36(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.366	-0.028		17474457	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.338	7.366	-0.028	1.000	1500233	0.5558			R
563.0 > 268.9	7.329	7.366	-0.038	0.999	174090		8.62(3.47-6.45)		
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.507	7.545	-0.038		35228011	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.545	-0.038	1.000	1831822	0.4508			
613.0 > 168.9	7.517	7.545	-0.028	1.001	218636		8.38(5.96-11.06)		

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.642	-0.037		27255655	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.643	-0.038	1.000	1552508	0.5157			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.696	-0.038	1.020	1763710	0.4613			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.829	-0.038	1.038	1138690	0.5403			
712.9 > 169.0	7.791	7.829	-0.038	1.038	261736		4.35(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

7 - Failed Limit of Detection

Reagents:

PFC_CAL_stock_00033

Amount Added: 25.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d

Injection Date: 06-Jun-2016 17:05:17

Instrument ID: LC_LCMS5

Lims ID: DLCK L2

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

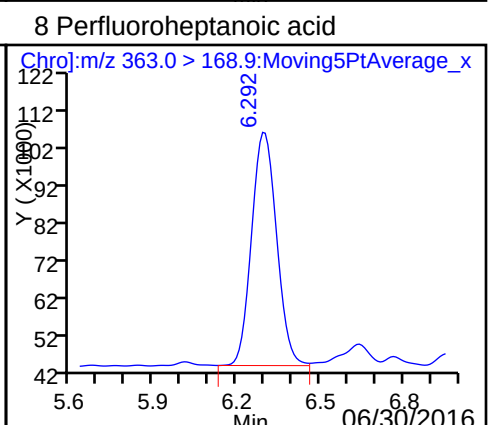
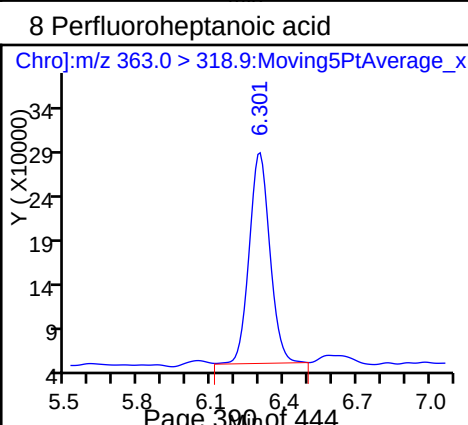
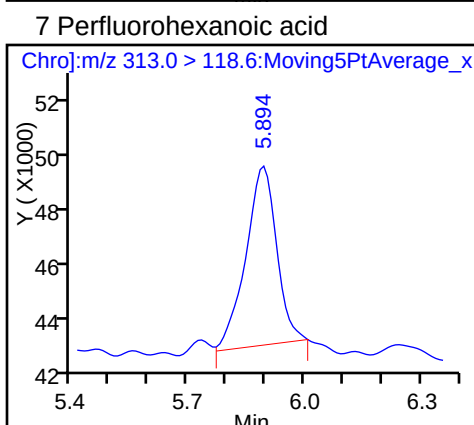
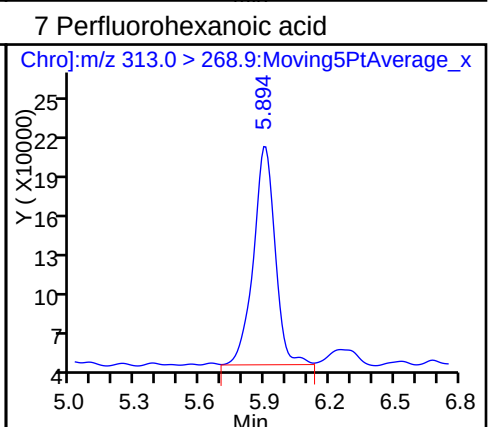
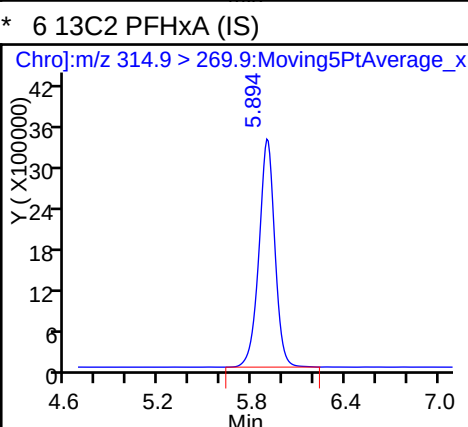
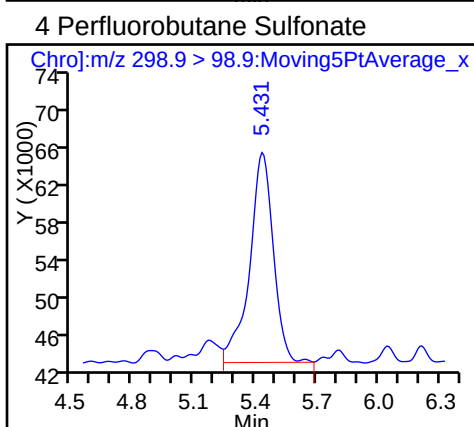
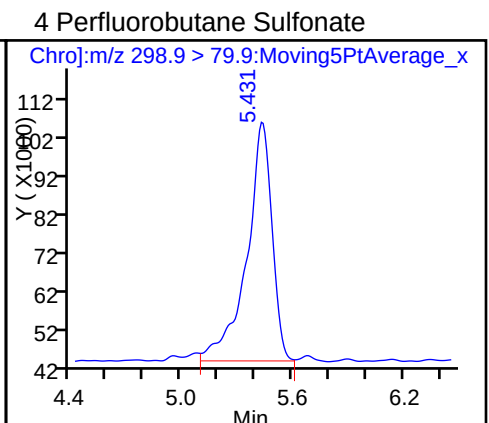
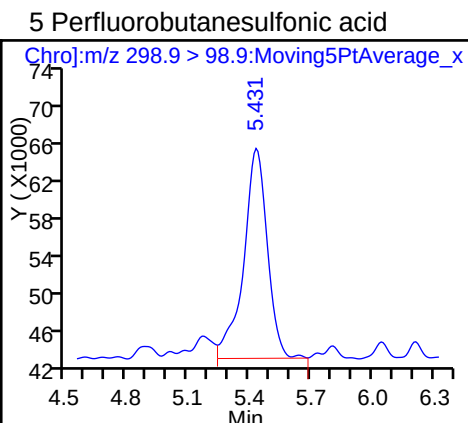
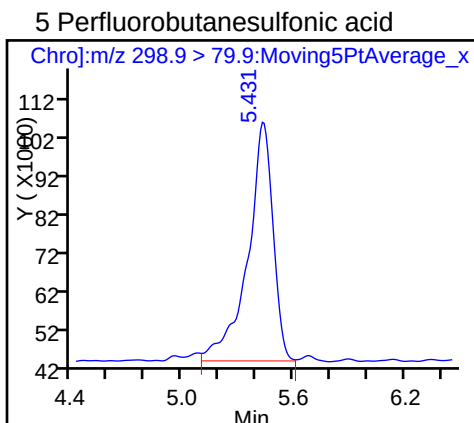
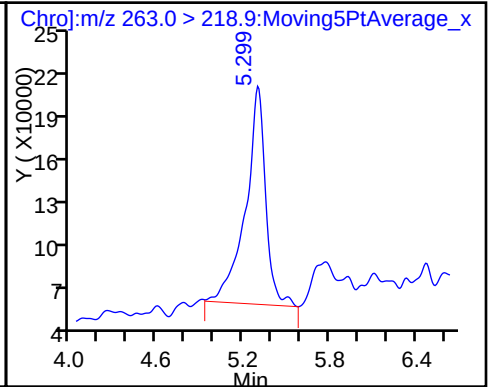
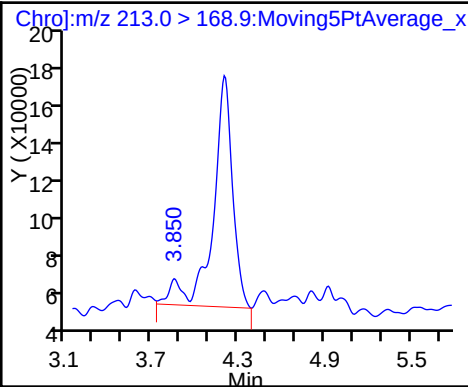
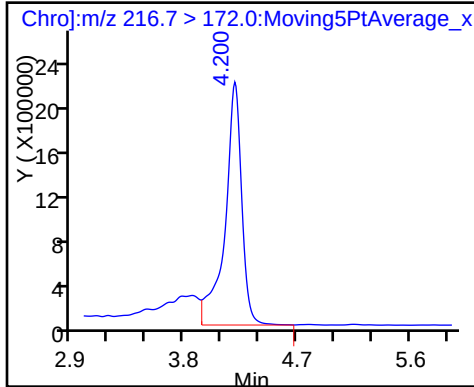
Method: 8321_PFC

Limit Group: LC - PFC

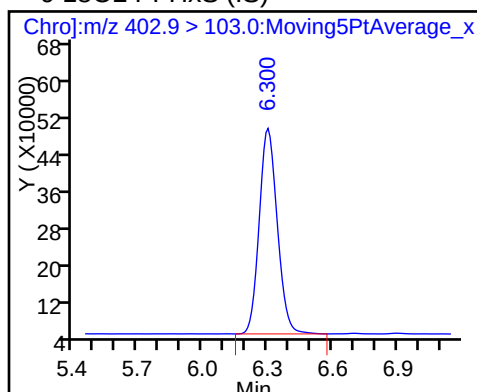
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

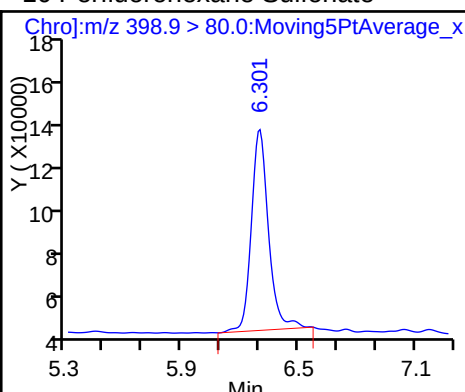
3 Perfluoropentanoic acid



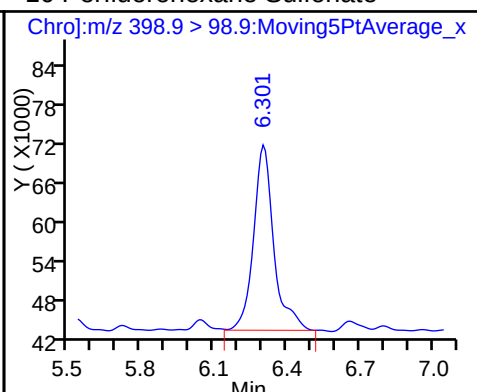
* 9 18O2 PFHxS (IS)



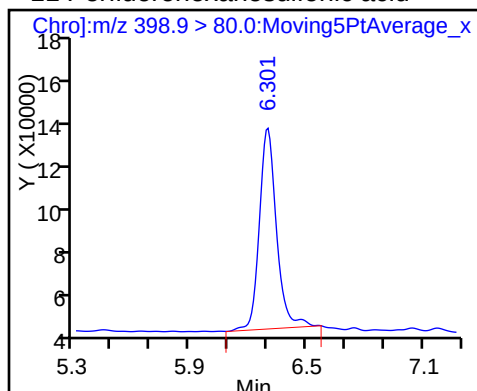
10 Perfluorohexane Sulfonate



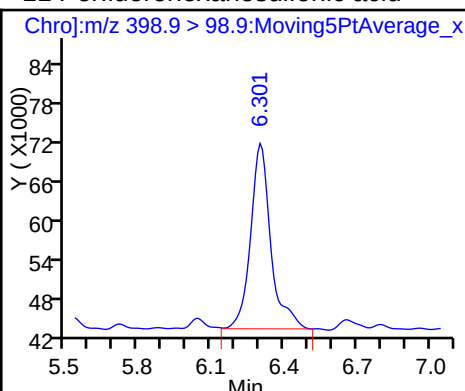
10 Perfluorohexane Sulfonate



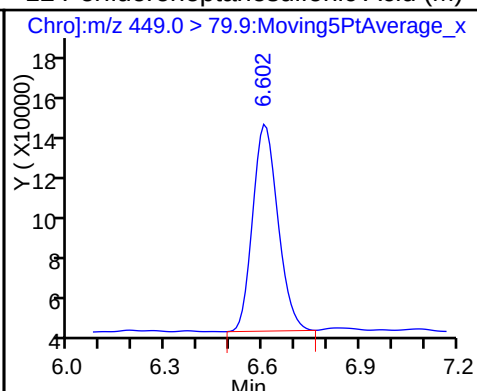
11 Perfluorohexanesulfonic acid



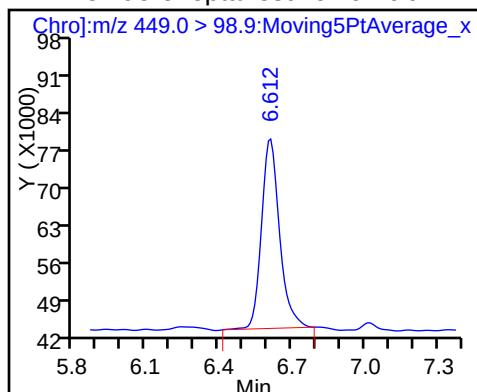
11 Perfluorohexanesulfonic acid



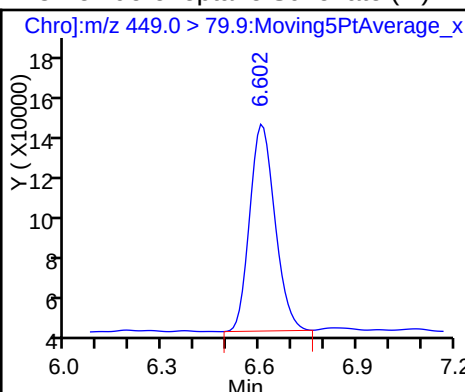
12 Perfluoroheptanesulfonic Acid (M)



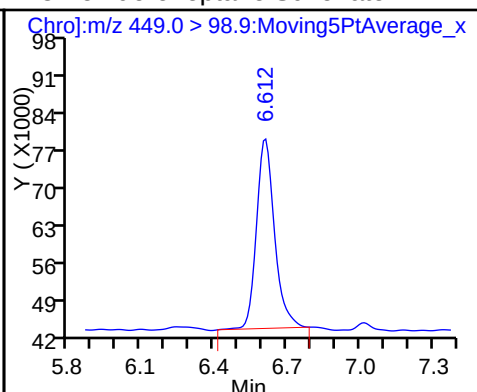
12 Perfluoroheptanesulfonic Acid



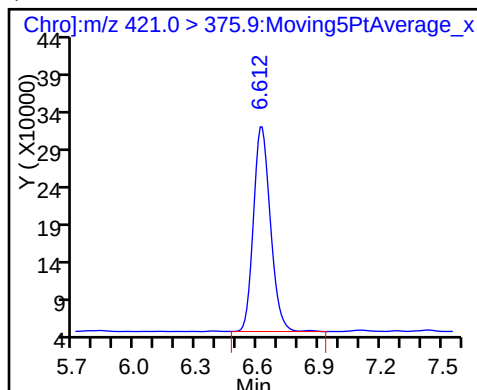
13 Perfluoroheptane Sulfonate (M)



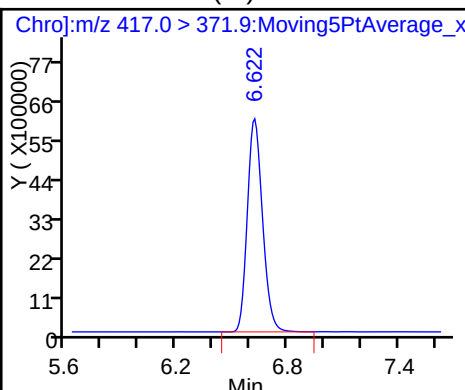
13 Perfluoroheptane Sulfonate



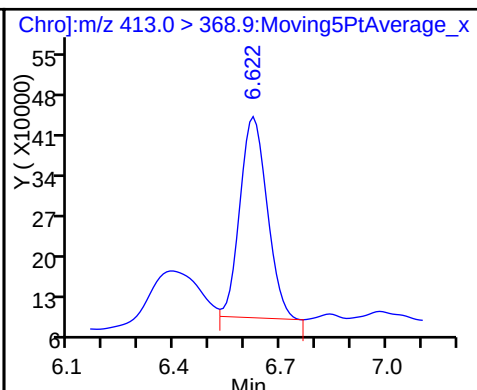
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



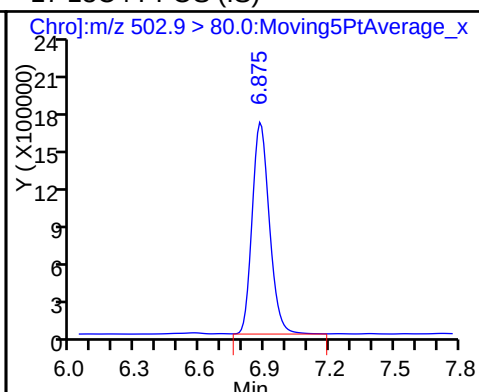
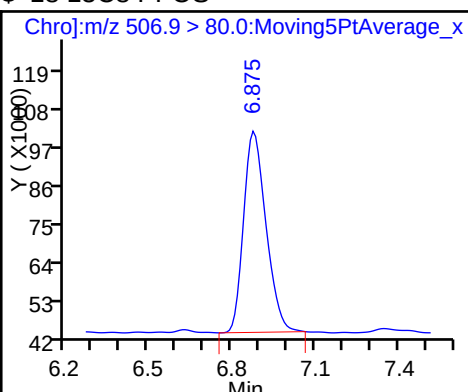
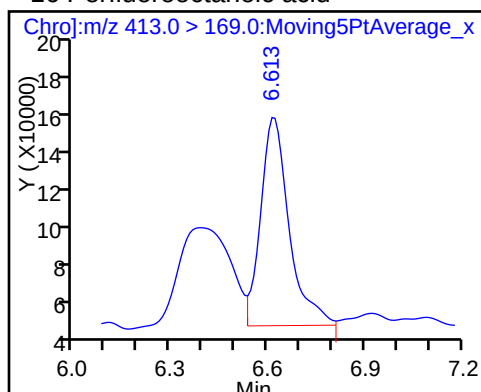
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

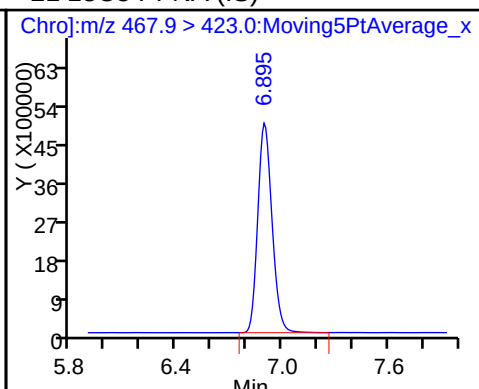
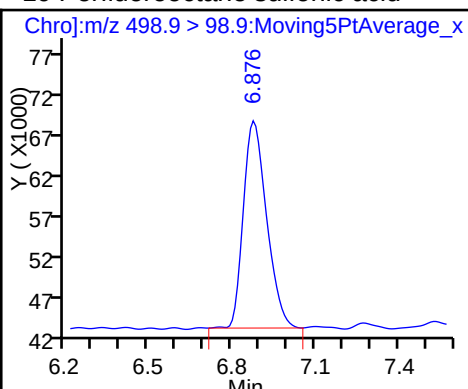
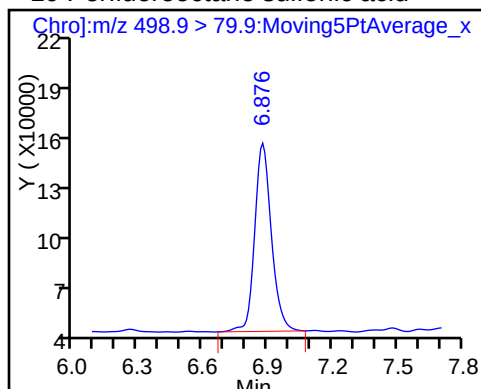
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

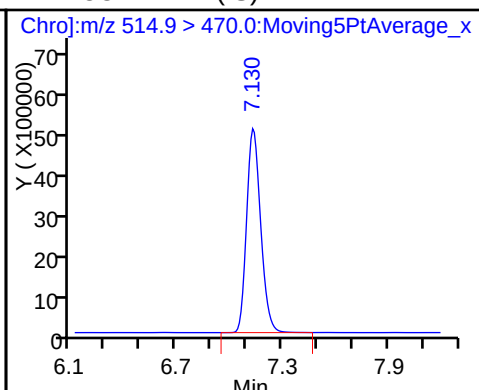
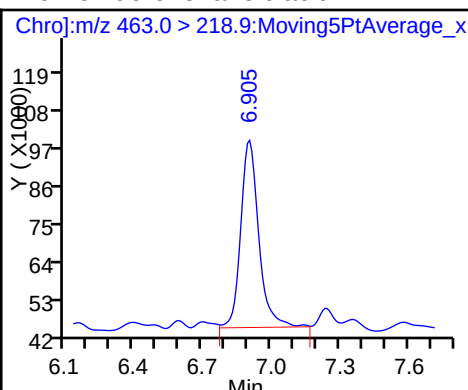
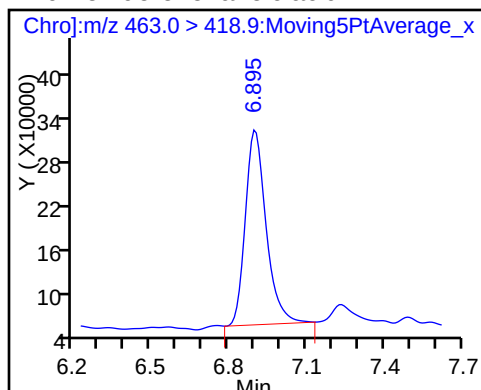
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

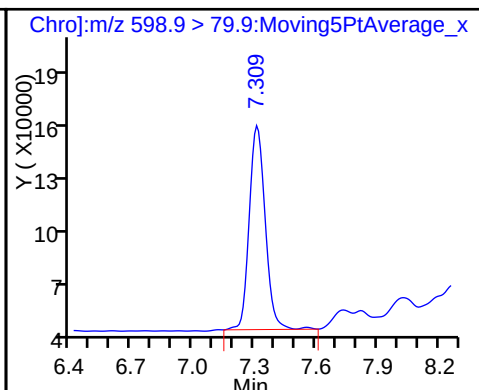
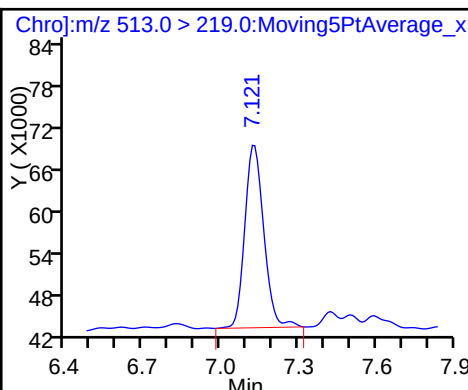
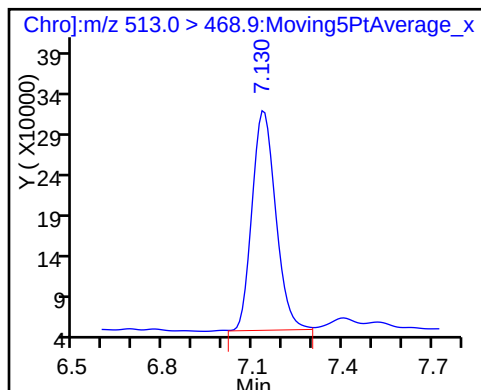
* 22 13C2 PFDA (IS)



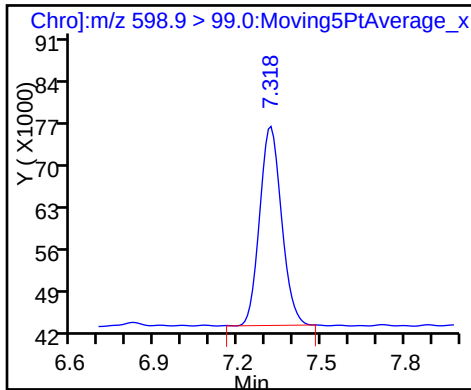
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

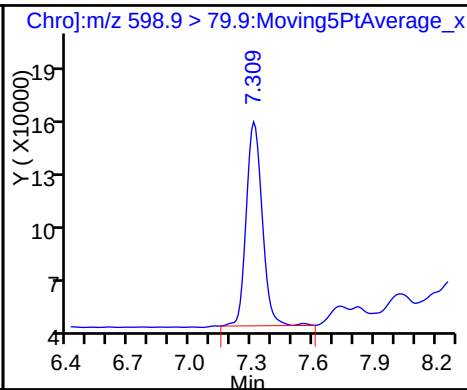
24 Perfluorodecane Sulfonic acid



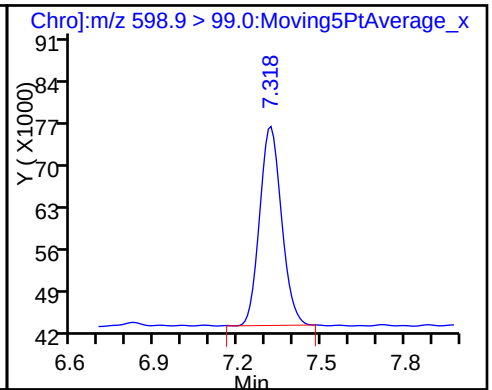
24 Perfluorodecane Sulfonic acid



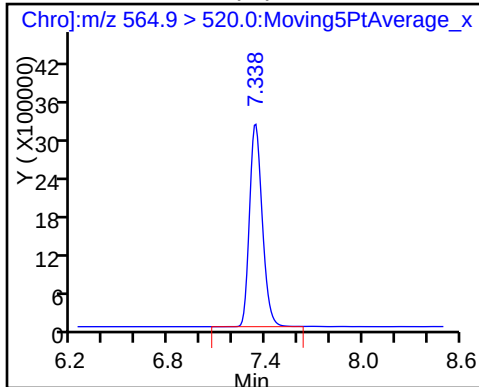
25 Perfluorodecane Sulfonate



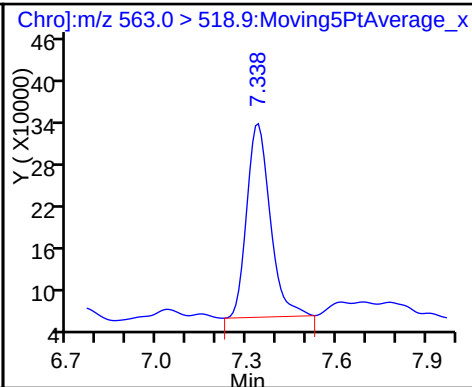
25 Perfluorodecane Sulfonate



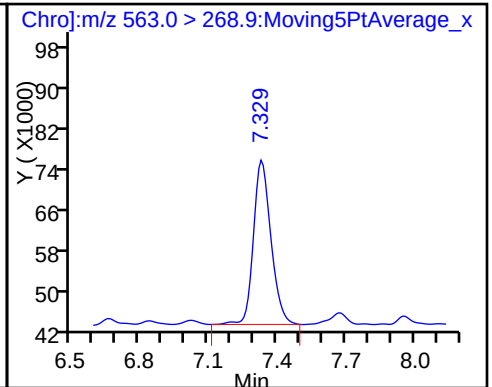
* 26 13C2 PFUnA (IS)



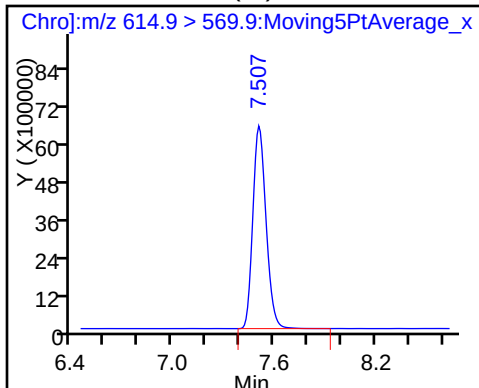
27 Perfluoroundecanoic acid



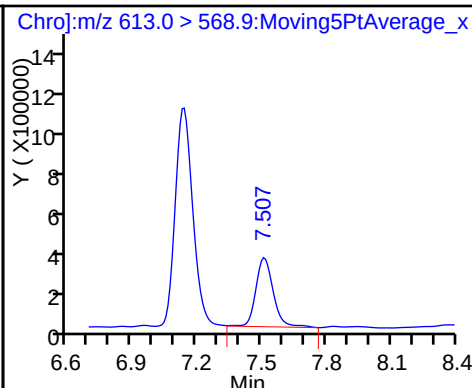
27 Perfluoroundecanoic acid



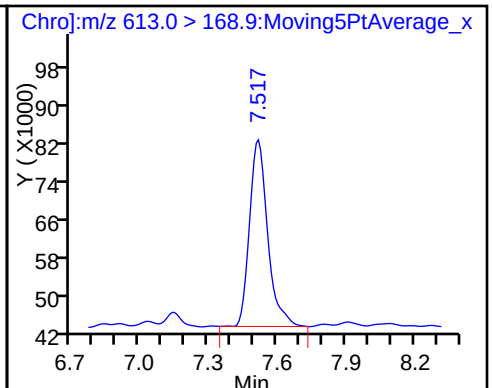
* 28 13C2 PFDaA (IS)



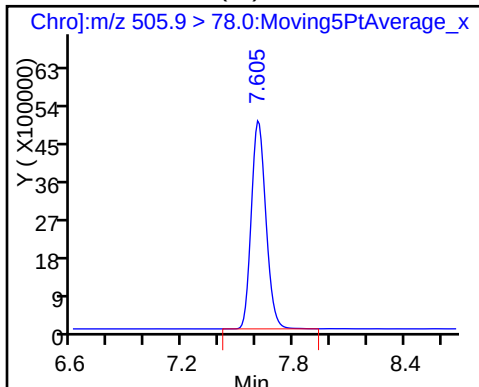
29 Perfluorododecanoic acid



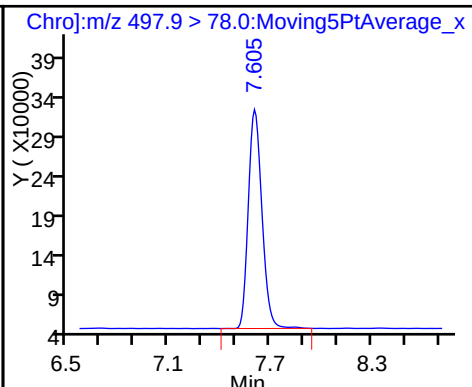
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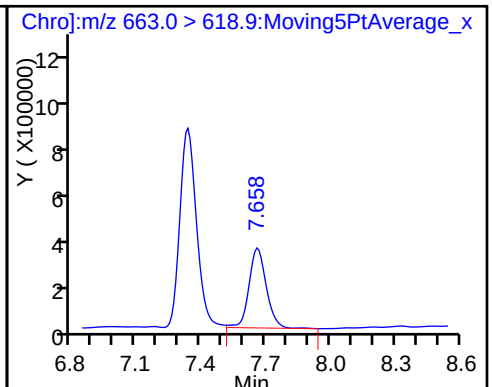
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

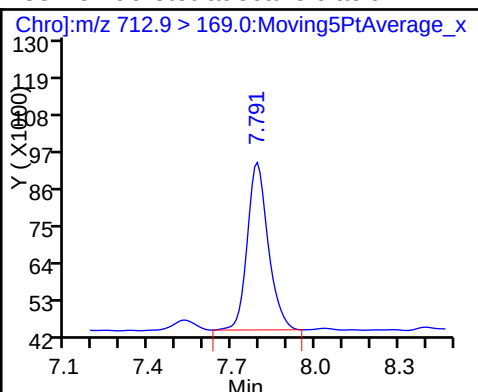
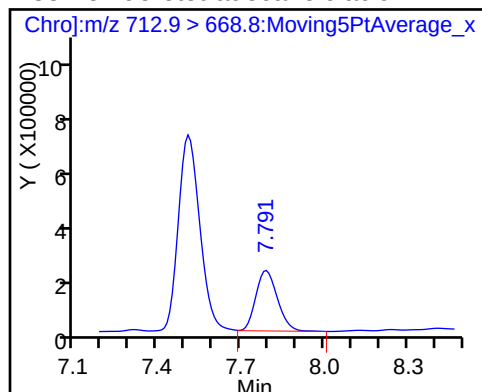


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#6 MS</u>	Lab Sample ID: <u>280-84914-3 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20014.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 10:18</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>247(mL)</u>	Date Analyzed: <u>06/30/2016 09:58</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.172		0.020	0.0083
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.282		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.273		0.030	0.0071
375-95-1	Perfluorononanoic acid (PFNA)	0.187		0.040	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.350		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.226		0.020	0.0099

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	101		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20014.d
 Lims ID: 280-84914-F-3-A MS
 Client ID: TE#6
 Sample Type: MS
 Inject. Date: 30-Jun-2016 09:58:43 ALS Bottle#: 0 Worklist Smp#: 9
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-f-3-a ms, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:13:45

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.153	-0.161		33078332	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	4.162	-0.170	1.000	77467285	21.8			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.109	5.213	-0.104	0.896	123433555	51.1			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.232	5.327	-0.095	0.851	12005834	8.51			
298.9 > 98.9	5.232	5.327	-0.095	0.851	3629015		3.31(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.232	5.327	-0.095	0.851	12005834	8.51			
298.9 > 98.9	5.232	5.327	-0.095	0.851	3629015		3.31(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.705	5.800	-0.095		20593414	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.800	-0.095	1.000	49178759	25.3			
313.0 > 118.6	5.705	5.800	-0.095	1.000	1418747		34.66(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.235	-0.085	0.948	36068623	13.9			
363.0 > 168.9	6.140	6.235	-0.095	0.946	9287980		3.88(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.234	-0.085		2554953	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.234	-0.085	1.000	14060267	13.5			R
398.9 > 98.9	6.149	6.234	-0.085	1.000	4461211		3.15(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.234	-0.085	1.000	14060267	13.5			
398.9 > 98.9	6.149	6.234	-0.085	1.000	4461211		3.15(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.564	-0.085	0.958	9439354	8.39			
449.0 > 98.9	6.479	6.564	-0.085	0.958	2792577		3.38(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.564	-0.085	0.958	9439354	8.39			
449.0 > 98.9	6.479	6.564	-0.085	0.958	2792577		3.38(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.584	-0.095	1.000	25437778	10.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.584	-0.095		29832280	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.584	-0.095	1.000	34723535	11.2			
413.0 > 169.0	6.489	6.584	-0.095	1.000	10928678		3.18(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.847	-0.086	1.000	5487329	9.66			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.847	-0.085		8878214	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.847	-0.085	1.000	18739662	17.3			R
498.9 > 98.9	6.762	6.847	-0.085	1.000	6442100		2.91(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.867	-0.085		23771250	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.877	-0.094	1.000	24633876	9.24			
463.0 > 218.9	6.782	6.877	-0.094	1.000	3255820		7.57(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.121	-0.095		25233066	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.026	7.111	-0.085	1.000	22502710	8.85			
513.0 > 219.0	7.026	7.111	-0.085	1.000	2090923		10.76(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.205	7.299	-0.094	1.066	5859729	5.08			
598.9 > 99.0	7.205	7.299	-0.094	1.066	1913244		3.06(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.205	7.299	-0.094	1.066	5859729	5.08			
598.9 > 99.0	7.205	7.299	-0.094	1.066	1913244		3.06(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.328	-0.094		12874996	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.234	7.319	-0.085	1.000	15830977	8.67			R
563.0 > 268.9	7.234	7.319	-0.085	1.000	2154971		7.35(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.507	-0.095		22384754	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.498	-0.085	1.000	19471468	8.46			
613.0 > 168.9	7.413	7.498	-0.085	1.000	2402081		8.11(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.586	-0.048		1037251	10.0			S

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20014.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.539	7.587	-0.048	1.000	925817	8.22			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.658	-0.085	1.022	15128046	7.24			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.791	-0.095	1.038	13719084	10.4			
712.9 > 169.0	7.696	7.791	-0.095	1.038	1934581		7.09(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20014.d

Injection Date: 30-Jun-2016 09:58:43

Instrument ID: LC_LCMS5

Lims ID: 280-84914-F-3-A MS

Client ID: TE#6

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

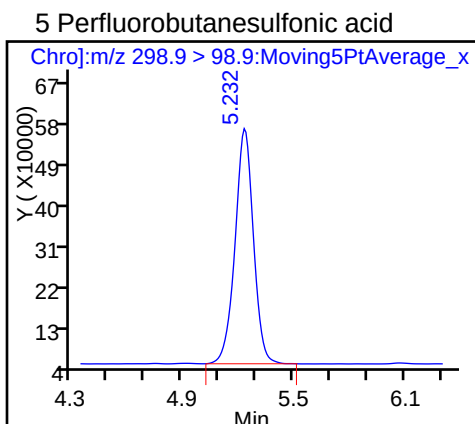
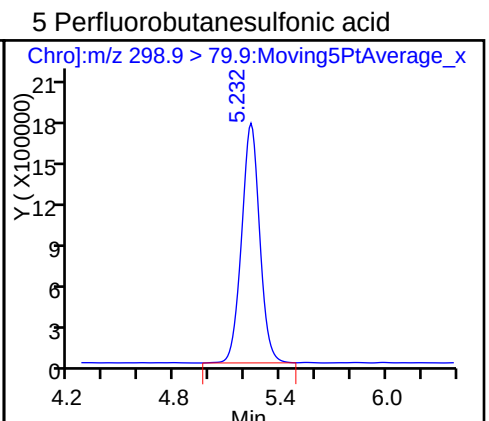
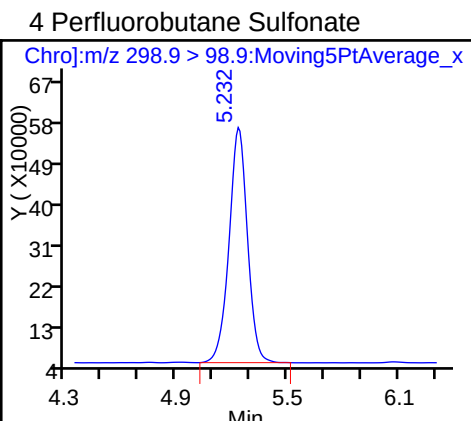
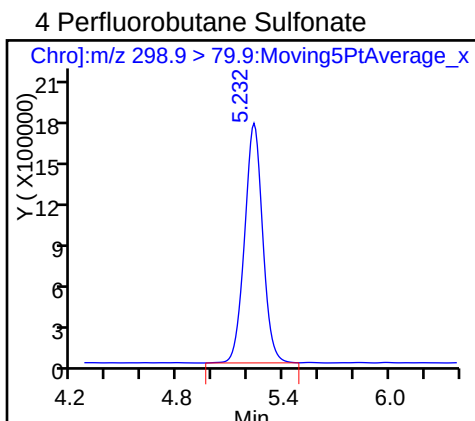
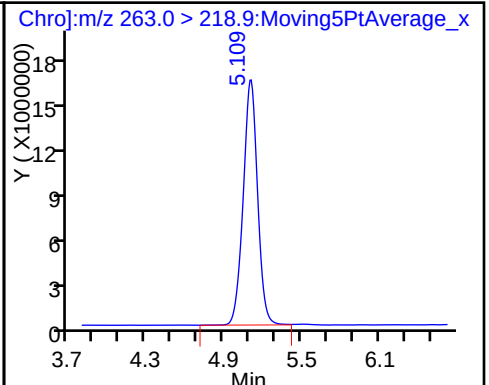
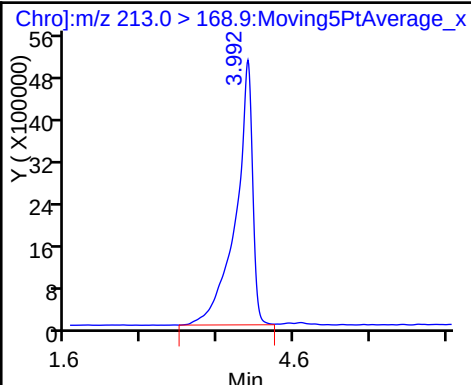
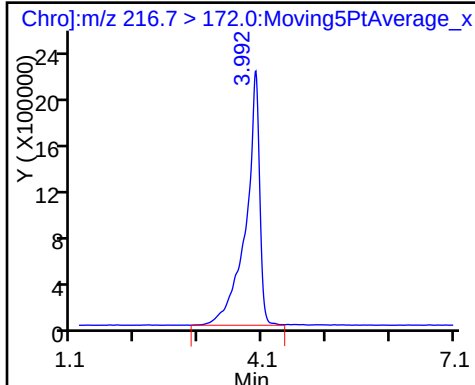
Method: 8321_PFC

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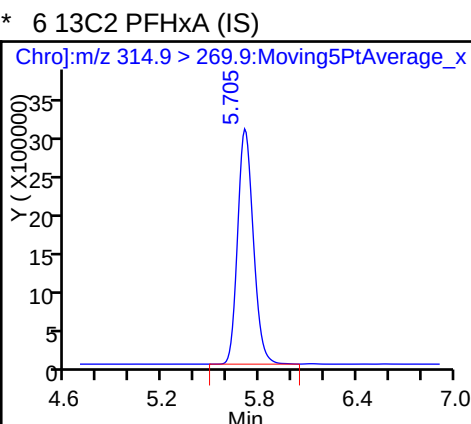
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

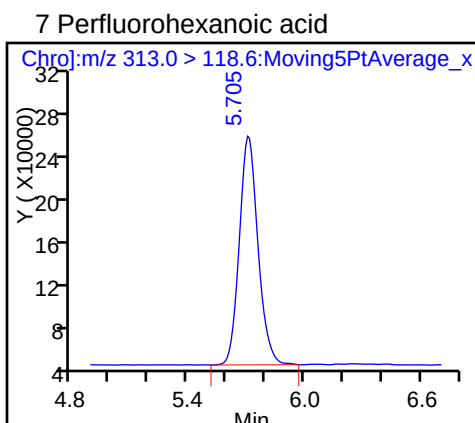
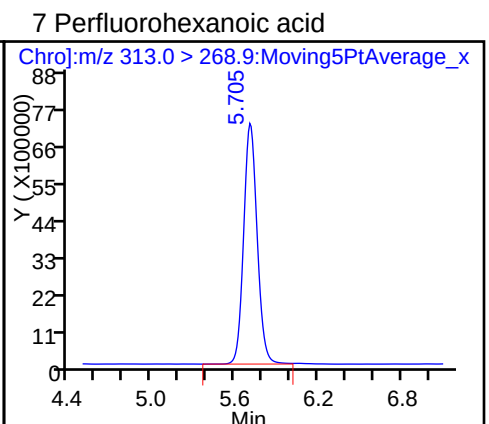
3 Perfluoropentanoic acid



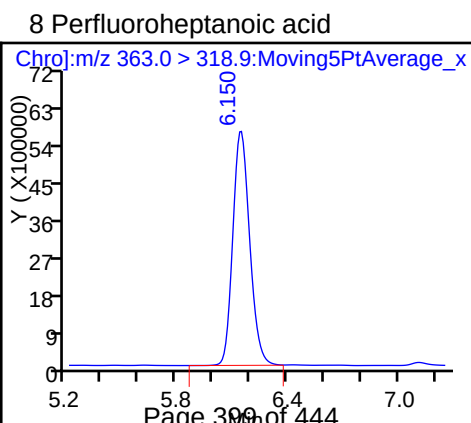
* 6 13C2 PFHxA (IS)



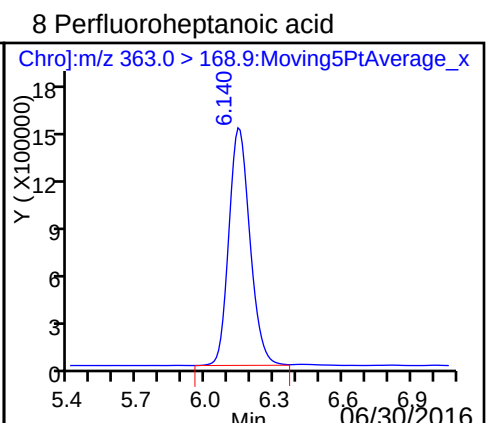
7 Perfluorohexanoic acid



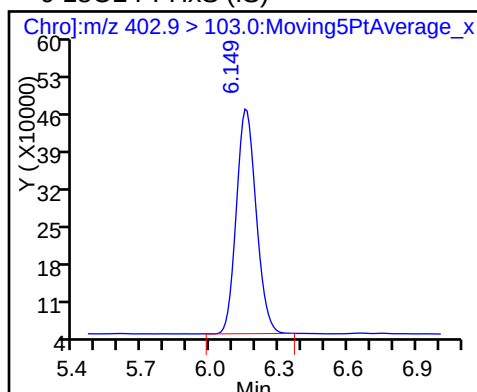
8 Perfluoroheptanoic acid



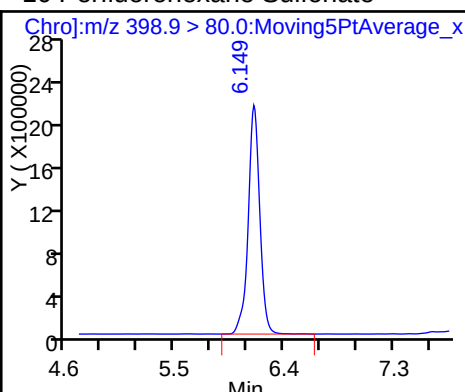
8 Perfluoroheptanoic acid



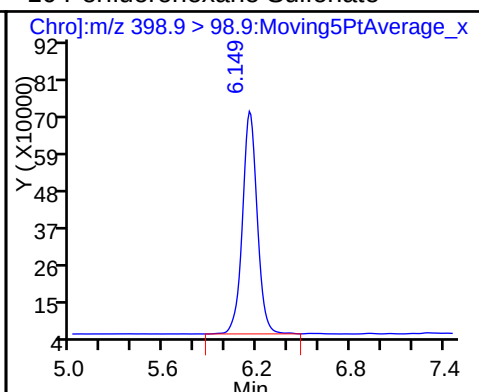
* 9 18O2 PFHxS (IS)



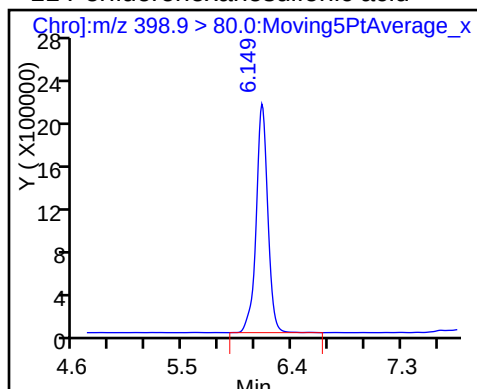
10 Perfluorohexane Sulfonate



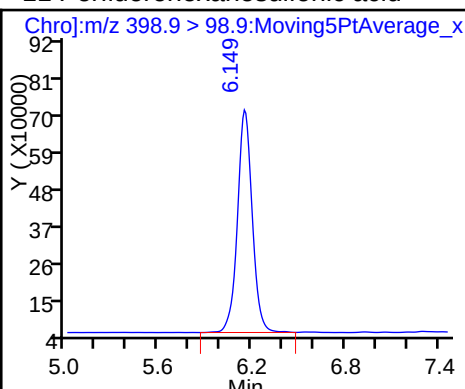
10 Perfluorohexane Sulfonate



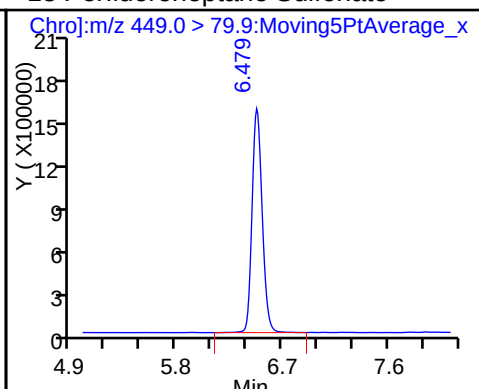
11 Perfluorohexanesulfonic acid



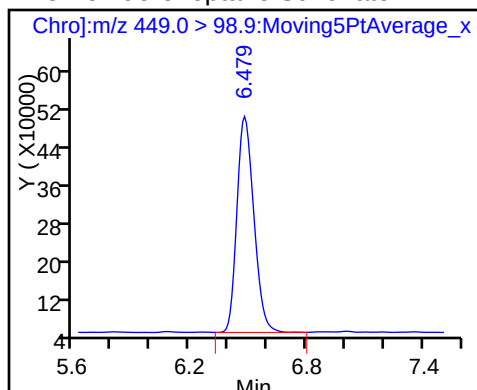
11 Perfluorohexanesulfonic acid



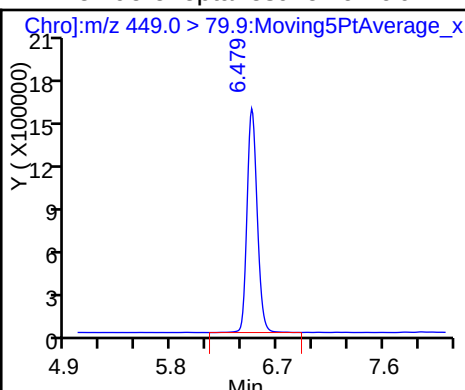
13 Perfluoroheptane Sulfonate



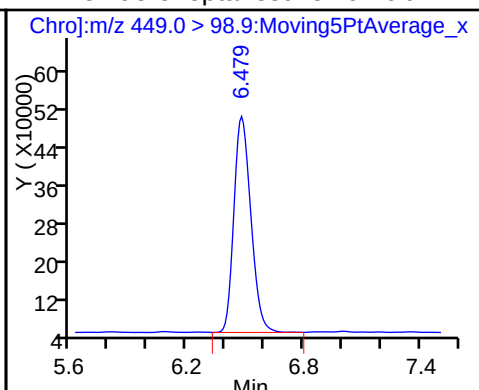
13 Perfluoroheptane Sulfonate



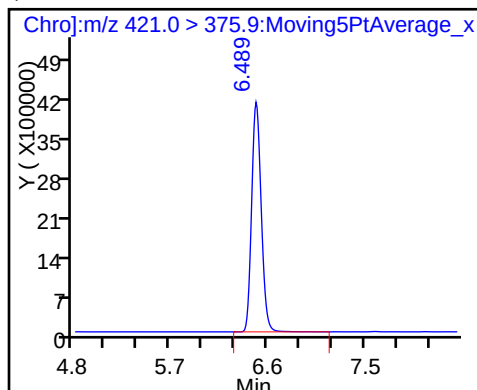
12 Perfluoroheptanesulfonic Acid



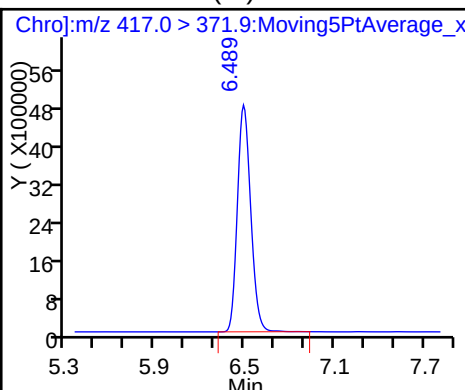
12 Perfluoroheptanesulfonic Acid



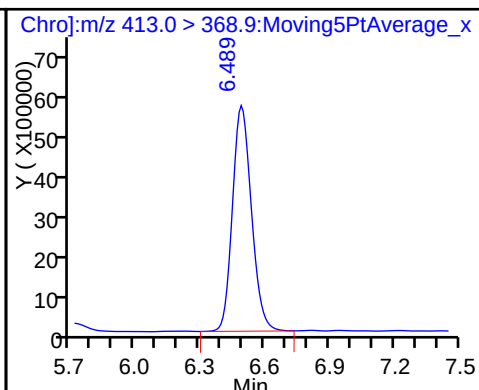
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



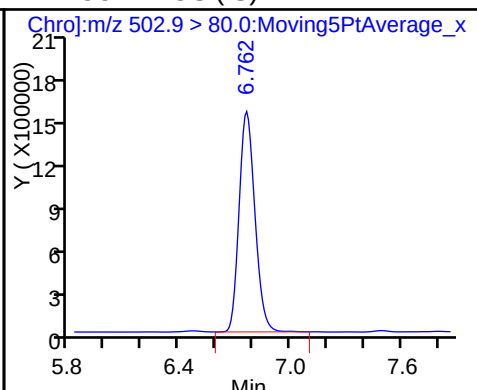
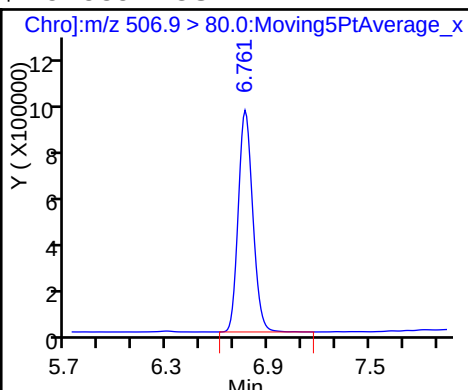
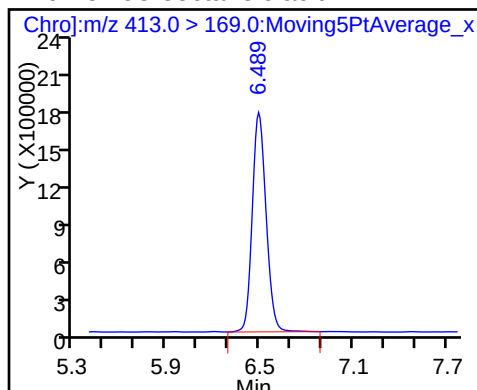
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

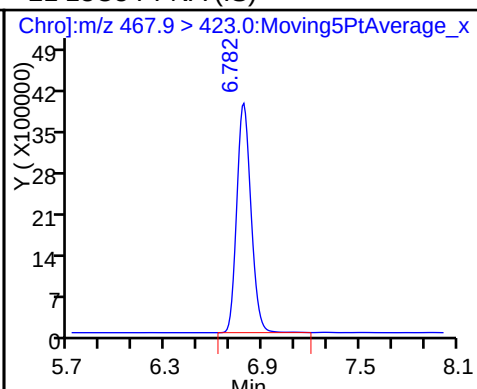
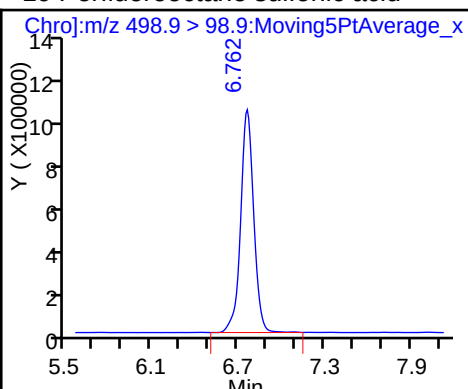
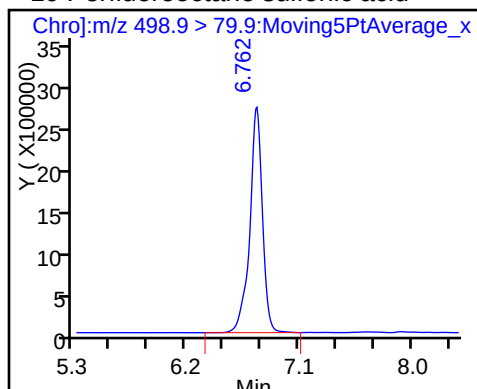
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

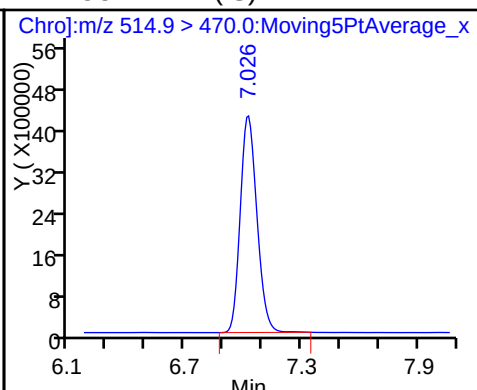
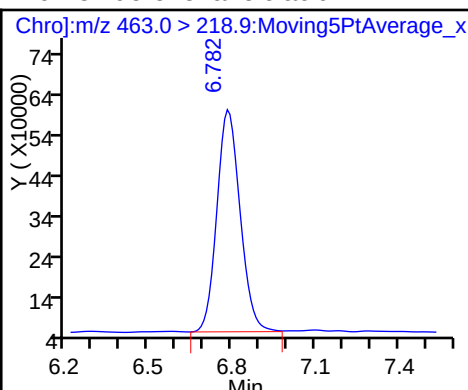
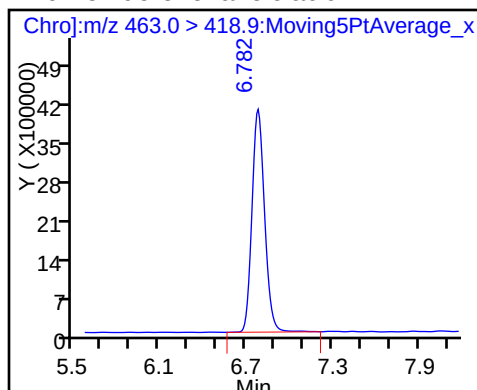
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

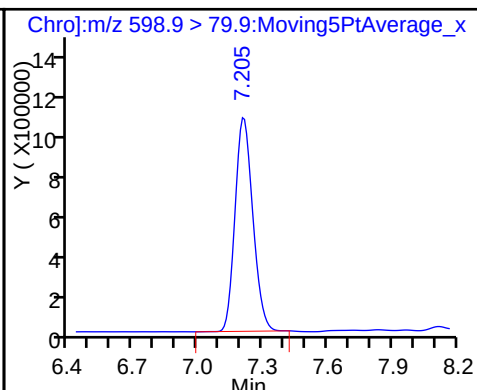
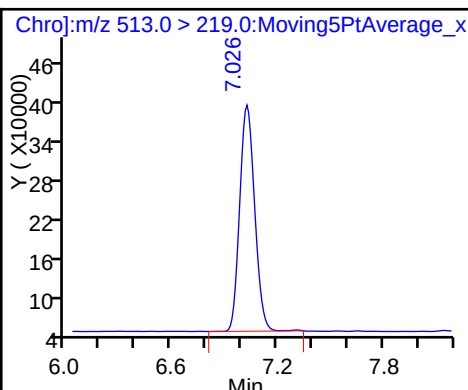
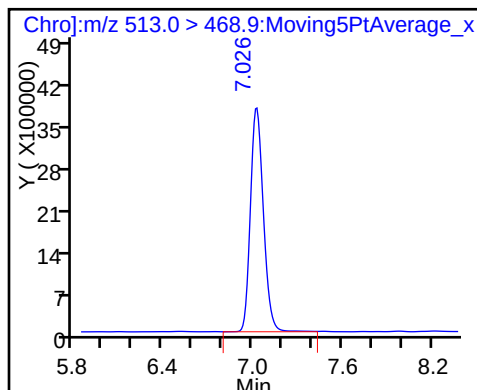
* 22 13C2 PFDA (IS)



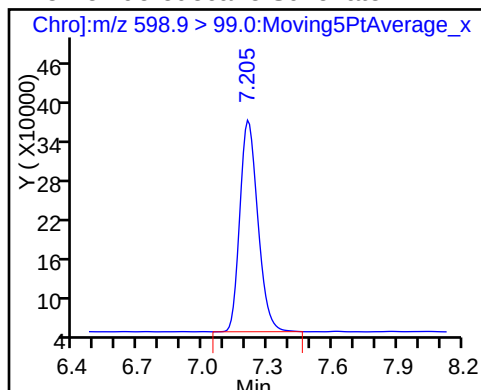
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

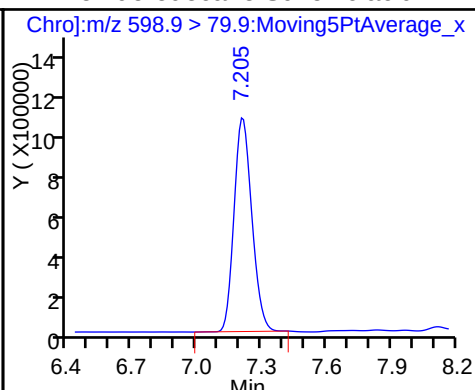
25 Perfluorodecane Sulfonate



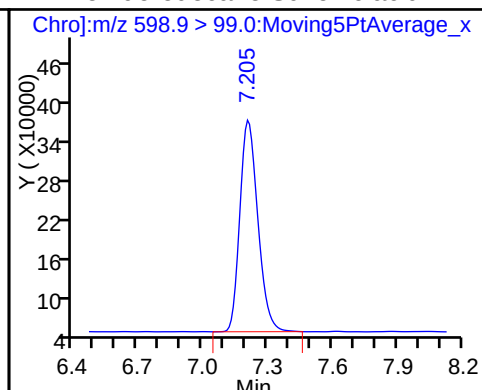
25 Perfluorodecane Sulfonate



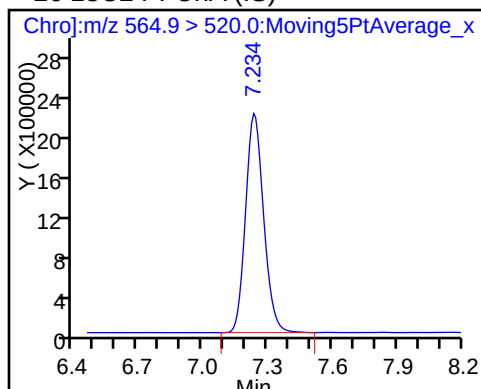
24 Perfluorodecane Sulfonic acid



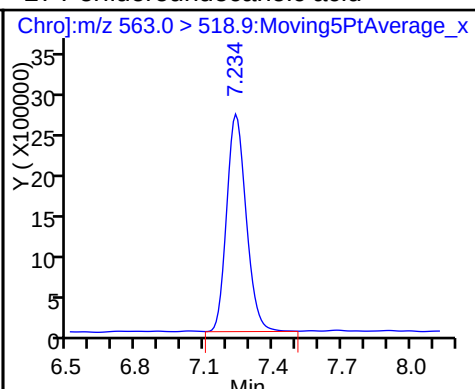
24 Perfluorodecane Sulfonic acid



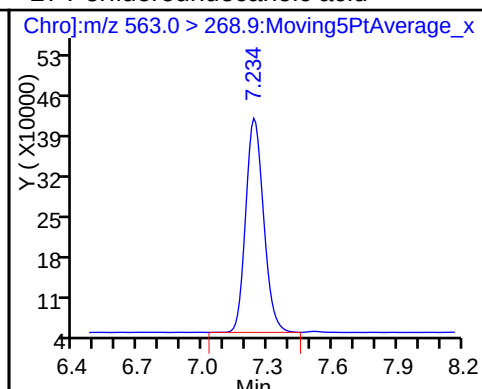
* 26 13C2 PFUnA (IS)



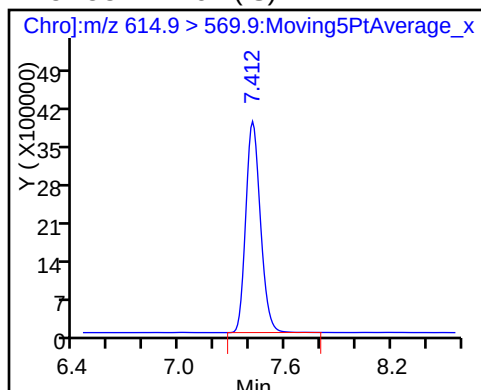
27 Perfluoroundecanoic acid



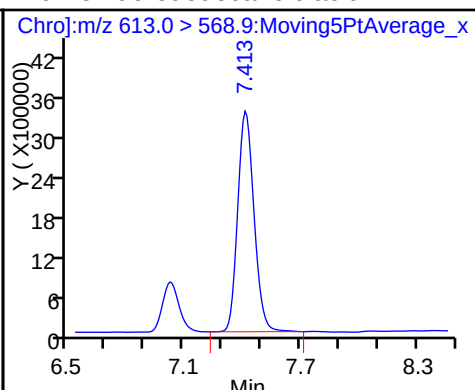
27 Perfluoroundecanoic acid



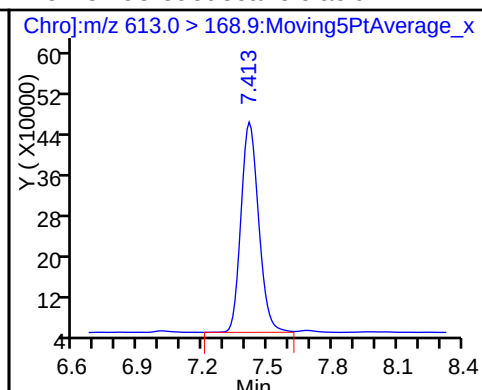
* 28 13C2 PFDaA (IS)



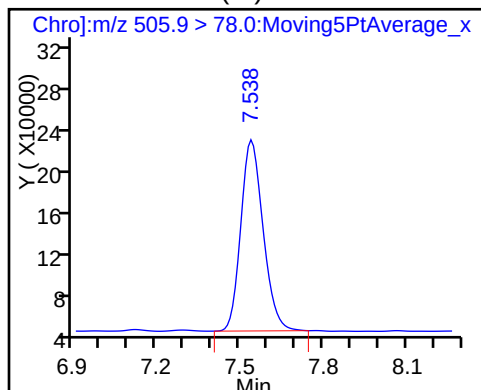
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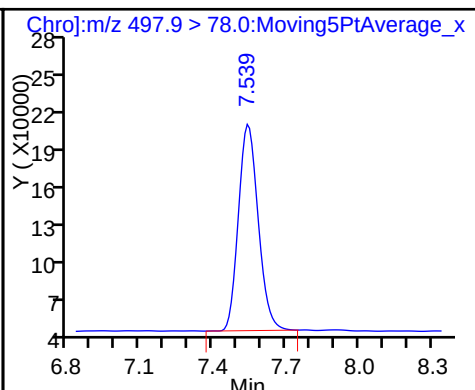
29 Perfluorododecanoic acid



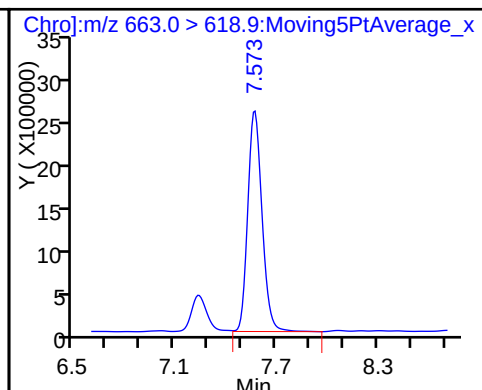
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

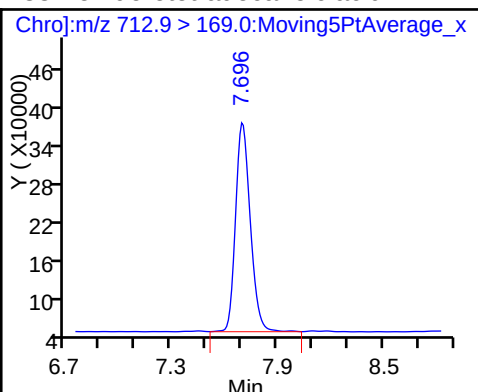
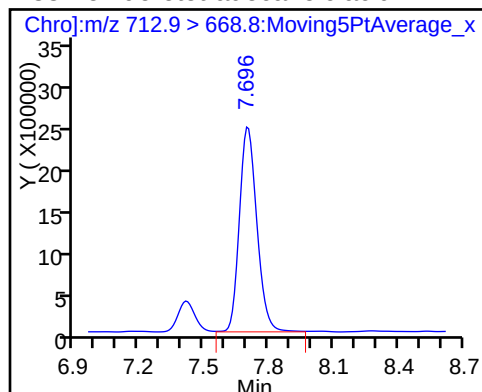


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-8 MS</u>	Lab Sample ID: <u>280-84914-15 MS</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20032b.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>256.5 (mL)</u>	Date Analyzed: <u>06/30/2016 13:40</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.133		0.019	0.0080
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.209		0.029	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.223		0.029	0.0068
375-95-1	Perfluorononanoic acid (PFNA)	0.179		0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.297		0.029	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.204		0.019	0.0095

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20032b.d
 Lims ID: 280-84914-E-15-A MS
 Client ID: C-8
 Sample Type: MS
 Inject. Date: 30-Jun-2016 13:40:04 ALS Bottle#: 0 Worklist Smp#: 27
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-e-15-a ms, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:47:51 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 15:38:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.096	-0.104		15924833	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	4.096	-0.104	1.000	17329317	10.1			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.147	-0.028	0.896	23838769	11.5			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.270	-0.029	0.852	8842386	6.83			
298.9 > 98.9	5.241	5.270	-0.029	0.852	2672807		3.31(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.270	-0.029	0.852	8842386	6.83			
298.9 > 98.9	5.241	5.270	-0.029	0.852	2672807		3.31(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.733	-0.019		17654611	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.733	-0.019	1.000	21099232	12.6			
313.0 > 118.6	5.714	5.733	-0.019	1.000	530453		39.78(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.159	-0.009	0.948	27278723	10.7			
363.0 > 168.9	6.140	6.159	-0.019	0.946	6928133		3.94(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.168	-0.019		2344898	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.168	-0.019	1.000	10964709	11.4			
398.9 > 98.9	6.149	6.168	-0.019	1.000	3514554		3.12(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.168	-0.019	1.000	10964709	11.4			R
398.9 > 98.9	6.149	6.168	-0.019	1.000	3514554		3.12(1.30-2.41)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.498	-0.019	0.958	8927355	8.92			
449.0 > 98.9	6.479	6.498	-0.019	0.958	2603608		3.43(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.498	-0.019	0.958	8927355	8.92			
449.0 > 98.9	6.479	6.498	-0.019	0.958	2603608		3.43(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.508	-0.019	1.000	24605093	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.508	-0.019		29273443	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.508	-0.019	1.000	31942148	10.5			
413.0 > 169.0	6.489	6.508	-0.019	1.000	9675311		3.30(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.780	-0.019	1.000	4832062	9.57			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.781	-0.019		7894453	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.781	-0.019	1.000	14725331	15.3			R
498.9 > 98.9	6.762	6.781	-0.019	1.000	4714895		3.12(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.801	-0.018		22450516	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.801	-0.019	1.000	23158986	9.19			
463.0 > 218.9	6.782	6.801	-0.019	1.000	3382459		6.85(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.045	-0.019		22761983	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.026	7.045	-0.019	1.000	21757623	9.49			
513.0 > 219.0	7.026	7.045	-0.019	1.000	1951175		11.15(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.233	-0.019	1.067	6066143	5.92			
598.9 > 99.0	7.214	7.233	-0.019	1.067	1844547		3.29(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.233	-0.019	1.067	6066143	5.92			
598.9 > 99.0	7.214	7.233	-0.019	1.067	1844547		3.29(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.253	-0.018		11423223	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.234	7.253	-0.019	1.000	15005479	9.26			R
563.0 > 268.9	7.234	7.253	-0.019	1.000	1949945		7.70(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.431	-0.019		20042512	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.432	-0.019	1.000	18078725	8.77			
613.0 > 168.9	7.413	7.432	-0.019	1.000	2245972		8.05(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.576	-0.019		2842335	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.577	-0.019	1.000	2566317	8.31			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.564	7.592	-0.028	1.020	13392877	7.16			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.724	-0.028	1.038	11409980	9.63			
712.9 > 169.0	7.696	7.724	-0.028	1.038	1779654		6.41(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20032b.d

Injection Date: 30-Jun-2016 13:40:04

Instrument ID: LC_LCMS5

Lims ID: 280-84914-E-15-A MS

Client ID: C-8

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 27

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

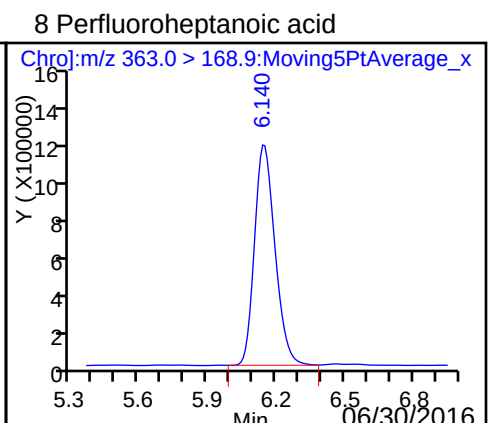
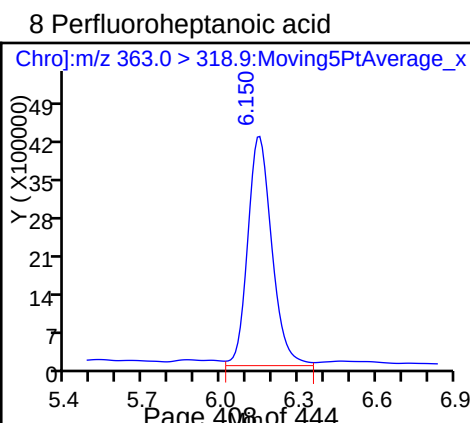
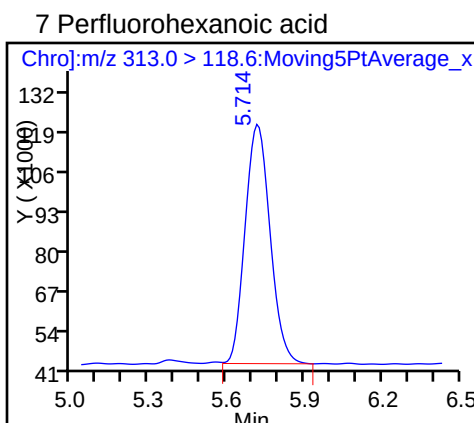
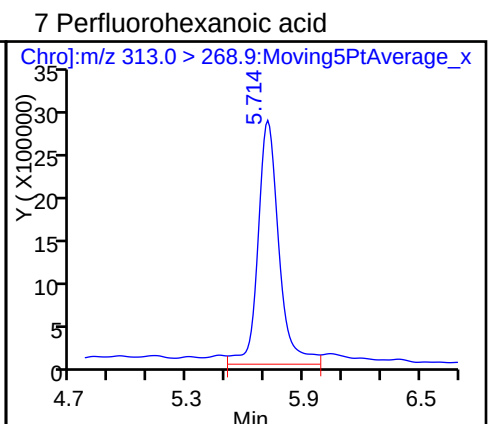
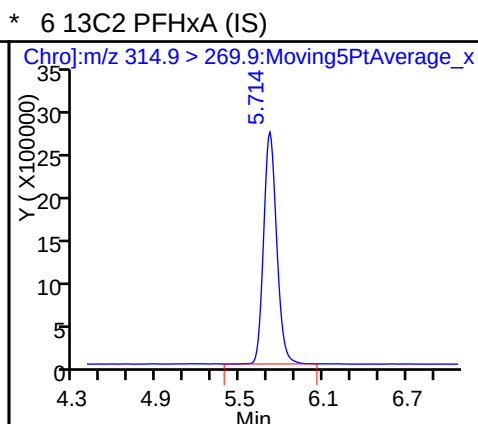
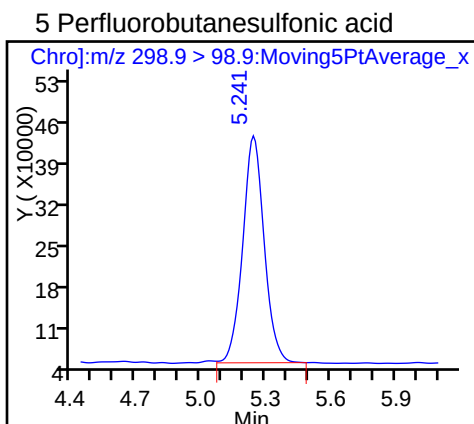
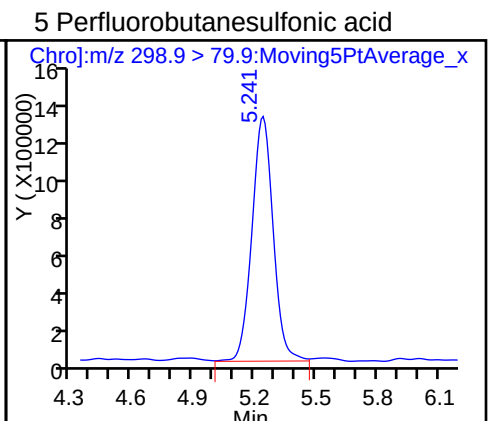
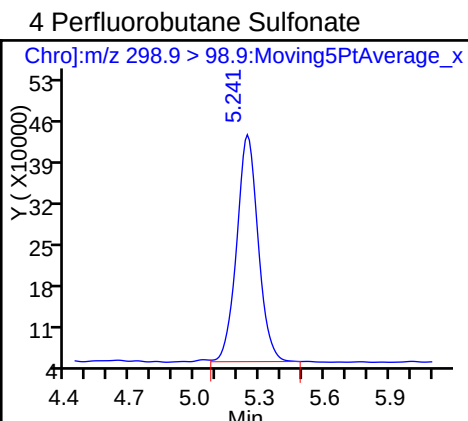
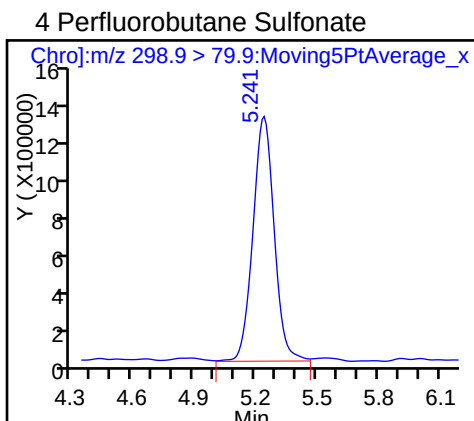
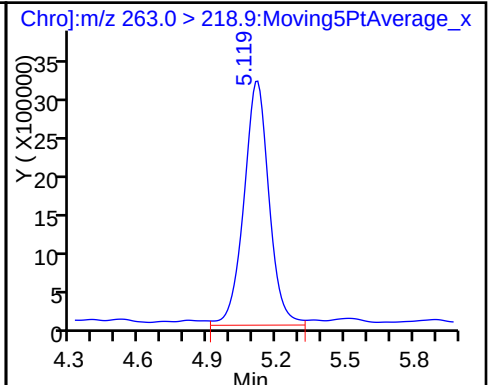
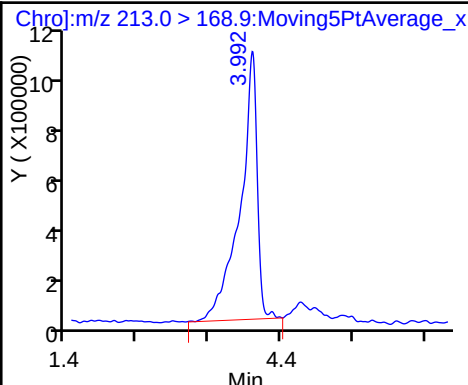
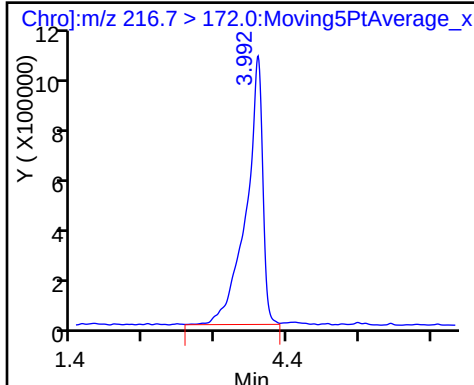
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

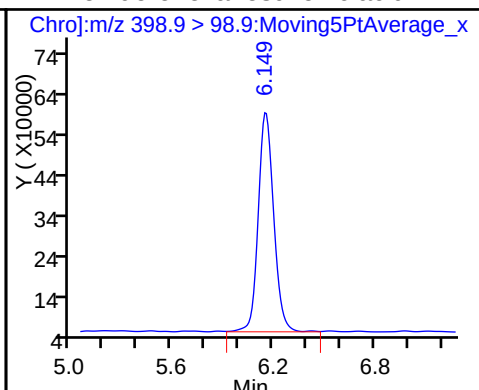
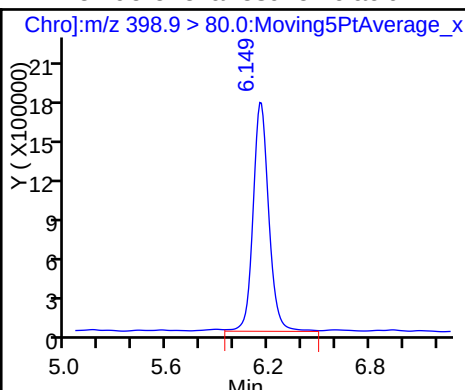
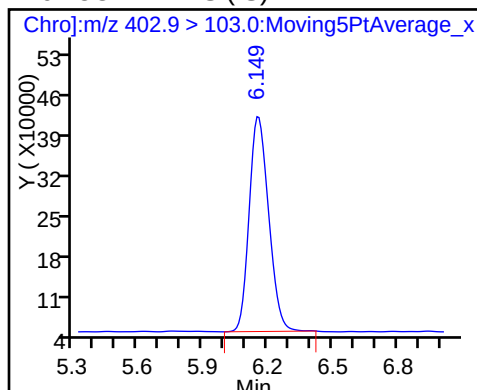
3 Perfluoropentanoic acid



* 9 18O2 PFHxS (IS)

11 Perfluorohexanesulfonic acid

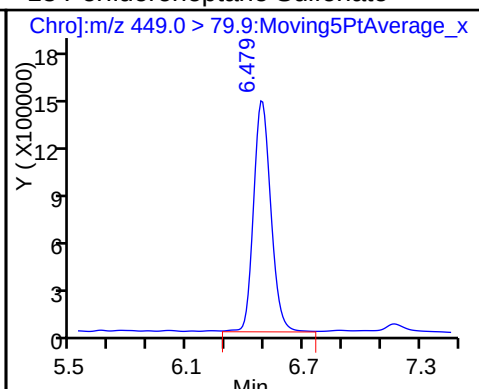
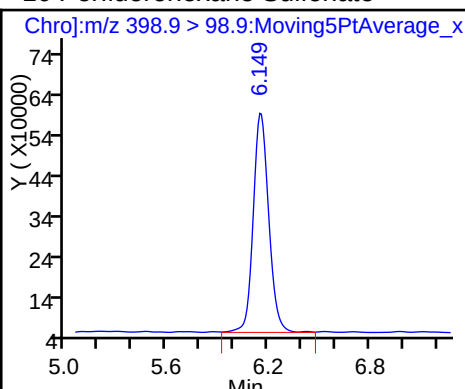
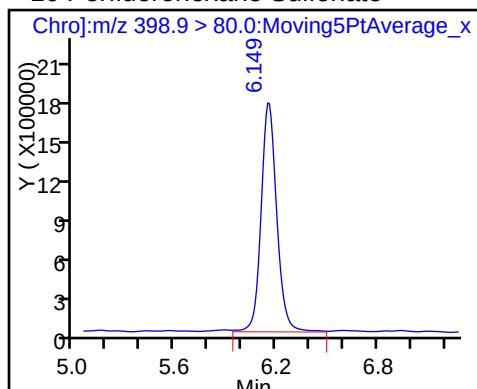
11 Perfluorohexanesulfonic acid



10 Perfluorohexane Sulfonate

10 Perfluorohexane Sulfonate

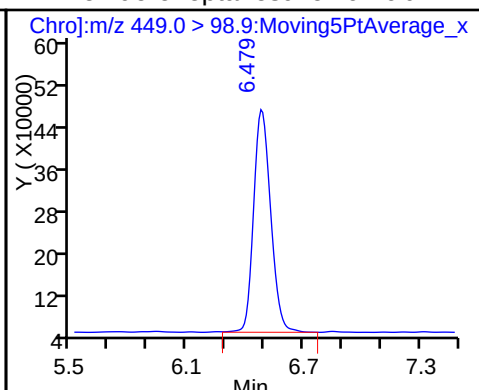
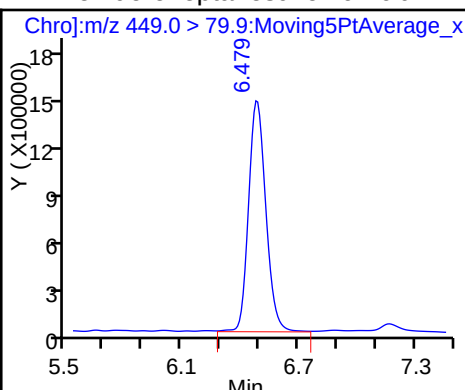
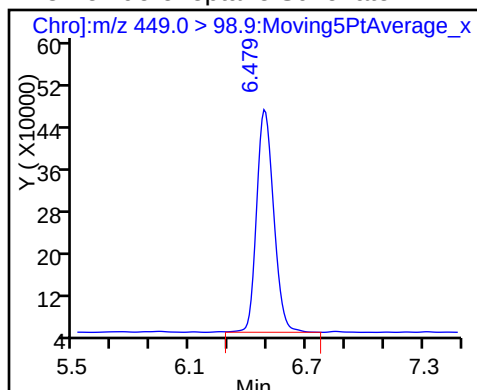
13 Perfluoroheptane Sulfonate



13 Perfluoroheptane Sulfonate

12 Perfluoroheptanesulfonic Acid

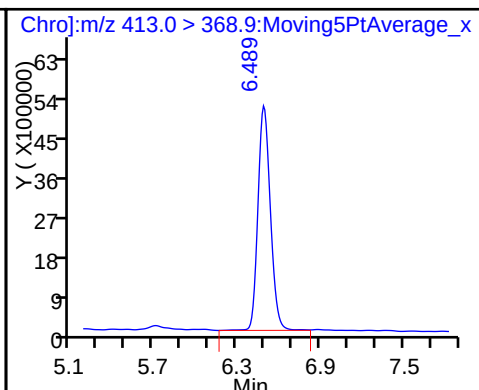
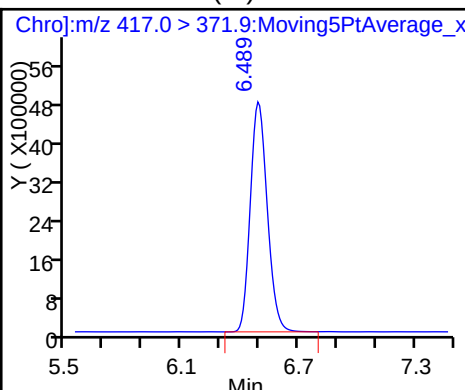
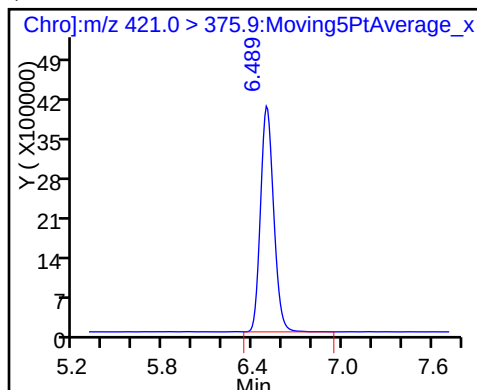
12 Perfluoroheptanesulfonic Acid



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

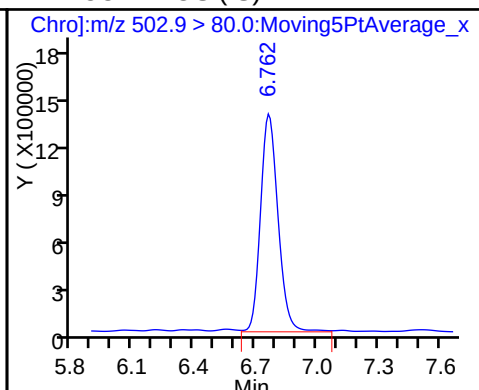
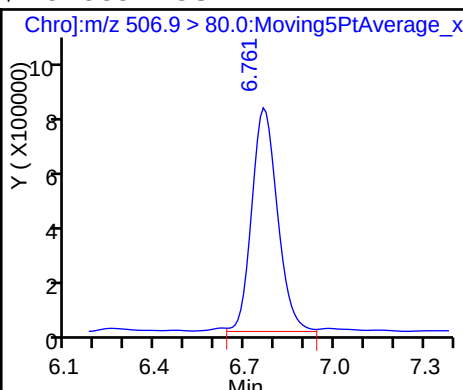
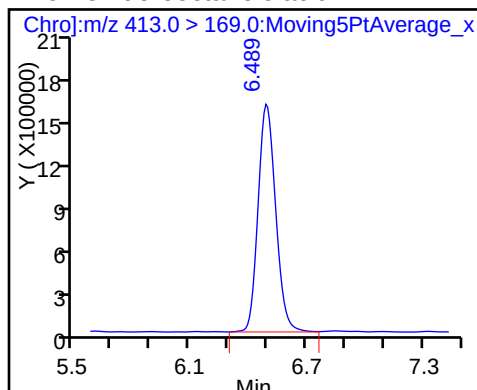
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

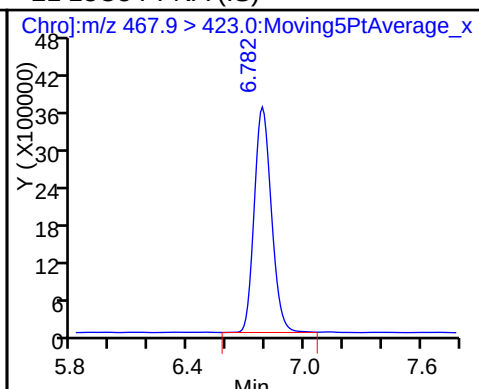
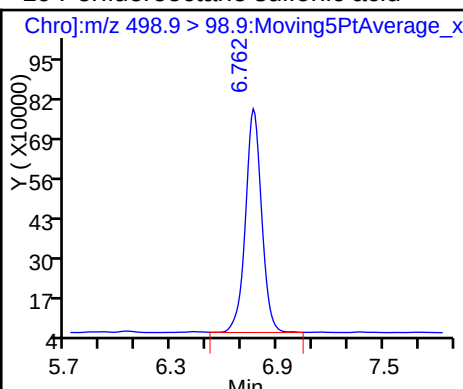
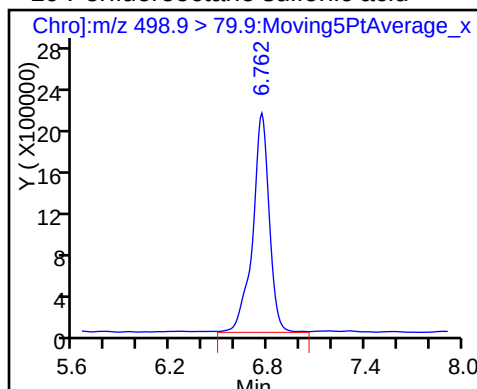
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

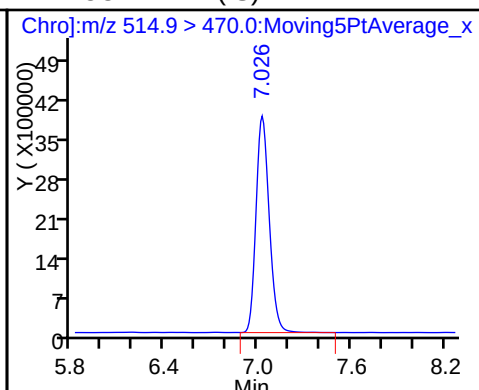
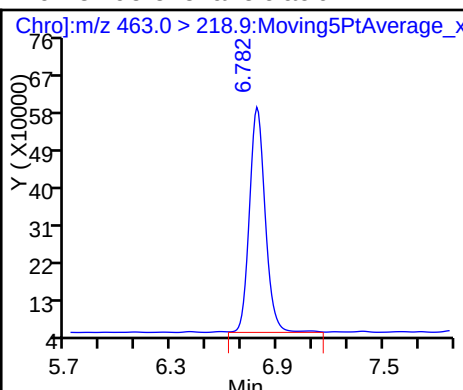
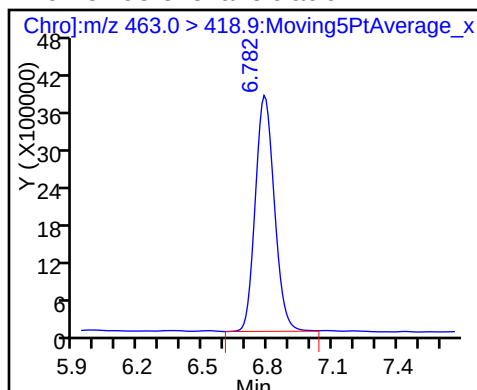
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

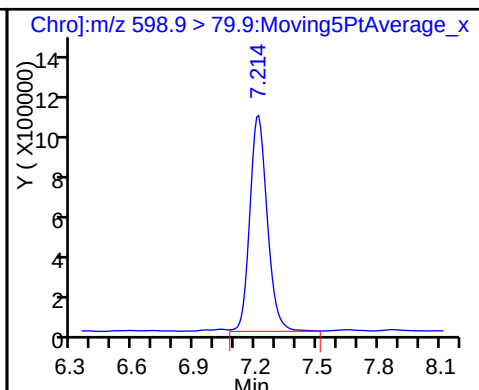
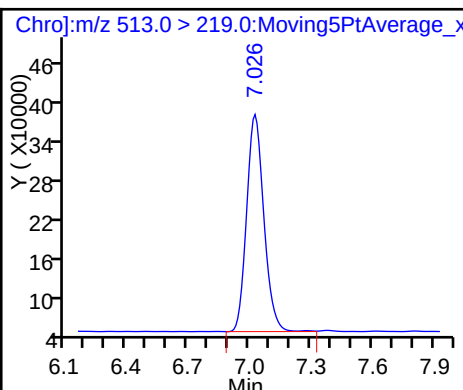
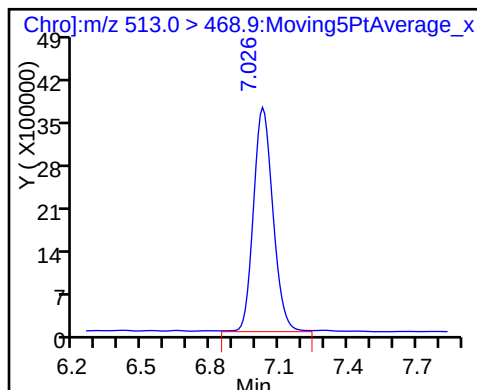
* 22 13C2 PFDA (IS)



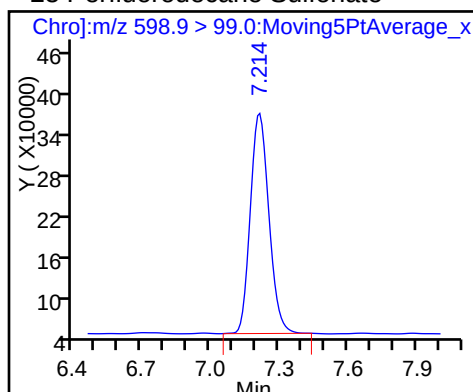
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

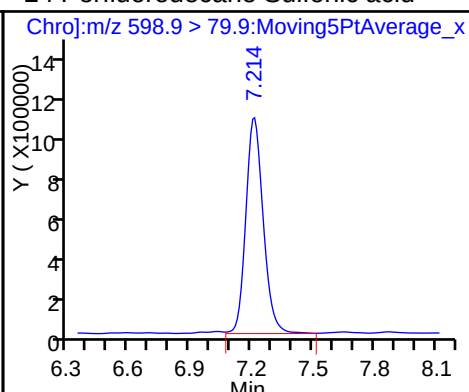
25 Perfluorodecane Sulfonate



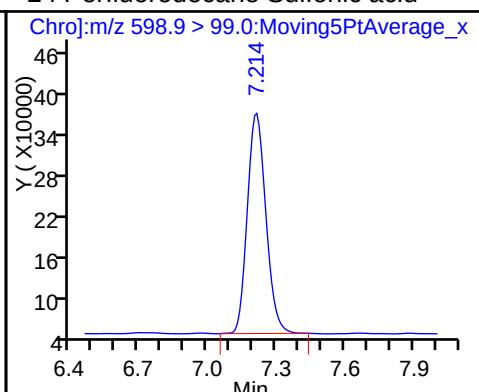
25 Perfluorodecane Sulfonate



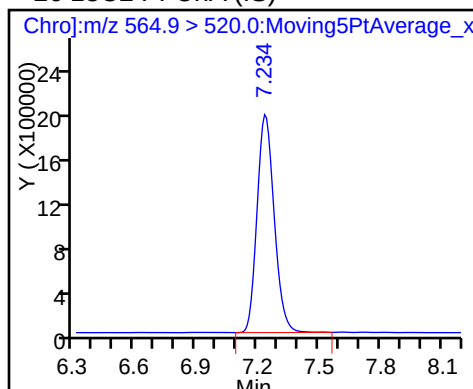
24 Perfluorodecane Sulfonic acid



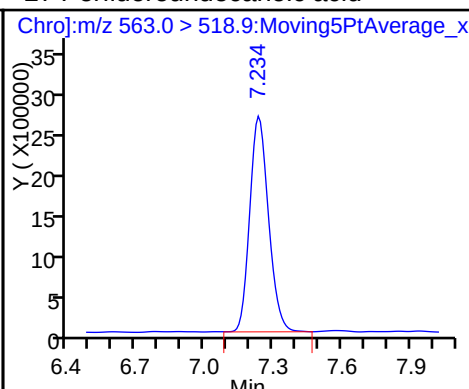
24 Perfluorodecane Sulfonic acid



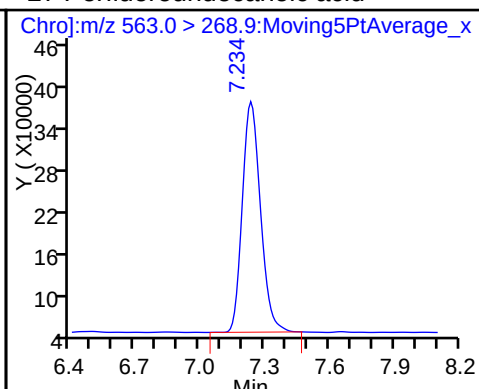
* 26 13C2 PFUnA (IS)



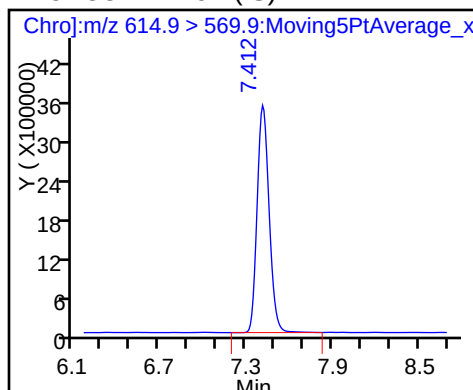
27 Perfluoroundecanoic acid



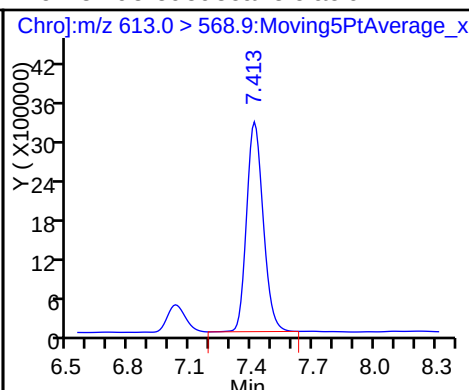
27 Perfluoroundecanoic acid



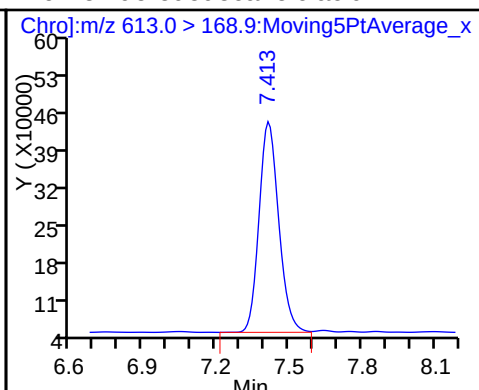
* 28 13C2 PFDaA (IS)



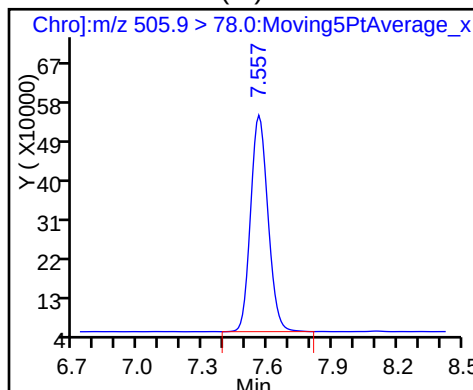
29 Perfluorododecanoic acid



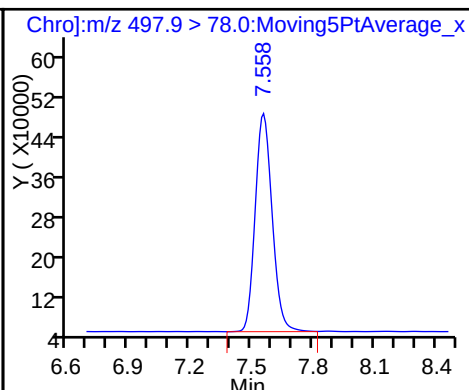
29 Perfluorododecanoic acid



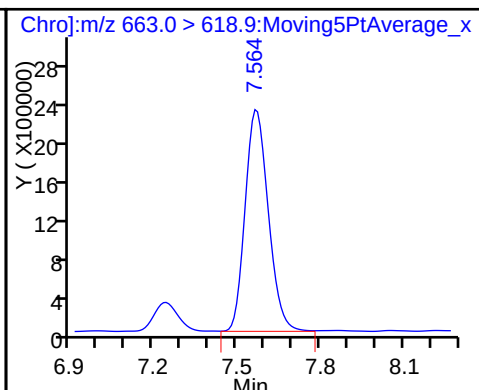
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

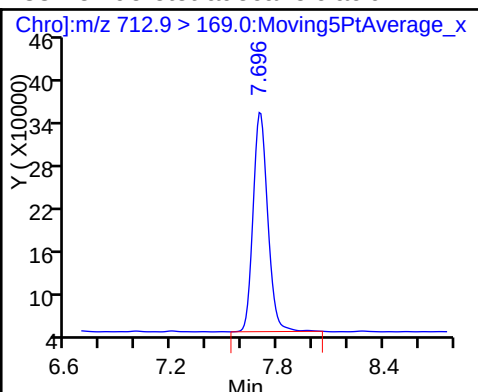
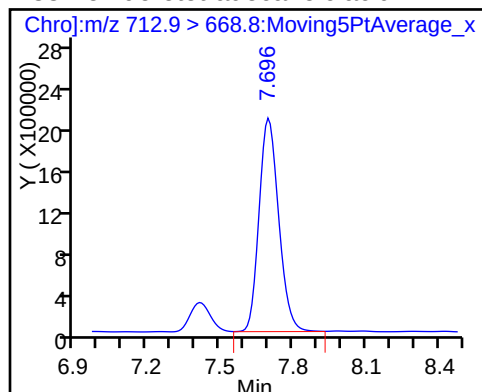


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#6 MSD</u>	Lab Sample ID: <u>280-84914-3 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20015.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/23/2016 10:18</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>266(mL)</u>	Date Analyzed: <u>06/30/2016 10:11</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.169		0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.253		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.242		0.028	0.0066
375-95-1	Perfluorononanoic acid (PFNA)	0.168		0.038	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.319		0.028	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.205		0.019	0.0092

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	104		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20015.d
 Lims ID: 280-84914-E-3-A MSD
 Client ID: TE#6
 Sample Type: MSD
 Inject. Date: 30-Jun-2016 10:11:00 ALS Bottle#: 0 Worklist Smp#: 10
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-e-3-a msd, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:38:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 12:14:22

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.153	-0.161		32239820	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.001	4.162	-0.161	1.002	81043517	23.4			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.213	-0.094	0.896	127683495	54.6			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.327	-0.086	0.852	12841006	8.99			R
298.9 > 98.9	5.241	5.327	-0.086	0.852	3811714		3.37(1.80-3.35)		R
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.327	-0.086	0.852	12841006	8.99			
298.9 > 98.9	5.241	5.327	-0.086	0.852	3811714		3.37(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.800	-0.086		19912148	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.800	-0.095	0.998	51440590	27.4			
313.0 > 118.6	5.714	5.800	-0.086	1.000	1348748		38.14(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.235	-0.095	0.946	34788874	13.5			
363.0 > 168.9	6.140	6.235	-0.095	0.946	9169340		3.79(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.234	-0.085		2587112	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.234	-0.085	1.000	13594429	12.9			R
398.9 > 98.9	6.149	6.234	-0.085	1.000	4306870		3.16(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.234	-0.085	1.000	13594429	12.9			
398.9 > 98.9	6.149	6.234	-0.085	1.000	4306870		3.16(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.564	-0.085	0.958	8960100	8.16			
449.0 > 98.9	6.479	6.564	-0.085	0.958	2927978		3.06(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.564	-0.085	0.958	8960100	8.16			
449.0 > 98.9	6.479	6.564	-0.085	0.958	2927978		3.06(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.584	-0.095	1.000	24499085	10.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.584	-0.095		29726297	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.584	-0.095	1.000	33680148	10.9			
413.0 > 169.0	6.489	6.584	-0.095	1.000	10276402		3.28(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.847	-0.086	1.000	5481665	9.90			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.847	-0.085		8661414	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.752	6.847	-0.095	0.999	17949271	17.0			R
498.9 > 98.9	6.752	6.847	-0.095	0.999	6212370		2.89(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.772	6.867	-0.095		23241409	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.772	6.877	-0.104	1.000	23243623	8.91			
463.0 > 218.9	6.782	6.877	-0.094	1.001	3400159		6.84(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.016	7.121	-0.105		24004740	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.017	7.111	-0.094	1.000	21800410	9.01			
513.0 > 219.0	7.017	7.111	-0.094	1.000	2044707		10.66(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.205	7.299	-0.094	1.066	5874292	5.22			
598.9 > 99.0	7.205	7.299	-0.094	1.066	1928685		3.05(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.205	7.299	-0.094	1.066	5874292	5.22			
598.9 > 99.0	7.205	7.299	-0.094	1.066	1928685		3.05(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.328	-0.094		12634551	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.234	7.319	-0.085	1.000	15480739	8.64			R
563.0 > 268.9	7.234	7.319	-0.085	1.000	1812435		8.54(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.507	-0.095		20809602	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.498	-0.085	1.000	19207480	8.98			
613.0 > 168.9	7.403	7.498	-0.095	0.999	2444406		7.86(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.538	7.586	-0.048		1345324	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									M
497.9 > 78.0	7.539	7.587	-0.048	1.000	1275597	8.73			M
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.564	7.658	-0.094	1.020	15330211	7.90			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.791	-0.095	1.038	13974129	11.4			
712.9 > 169.0	7.696	7.791	-0.095	1.038	2220186		6.29(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20015.d

Injection Date: 30-Jun-2016 10:11:00

Instrument ID: LC_LCMS5

Lims ID: 280-84914-E-3-A MSD

Client ID: TE#6

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

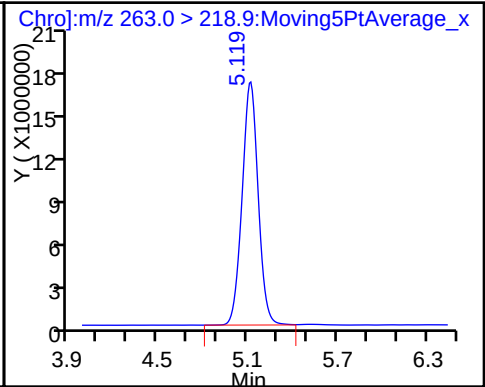
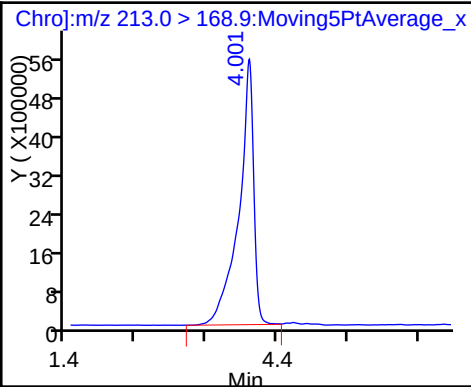
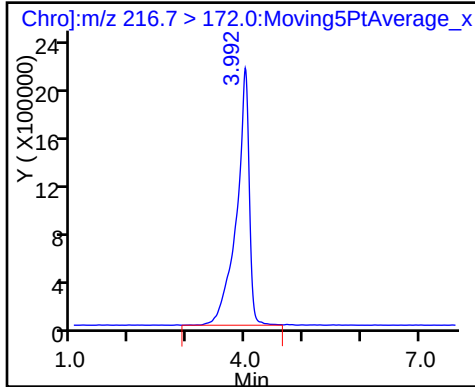
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

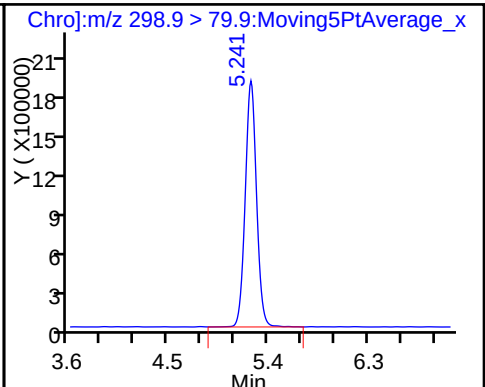
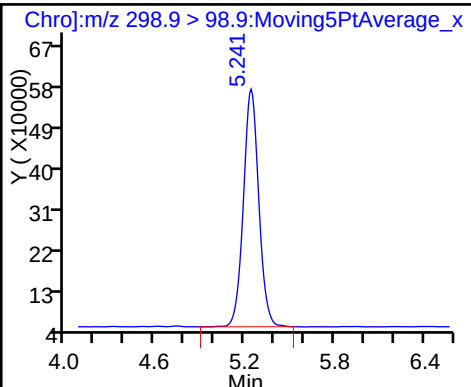
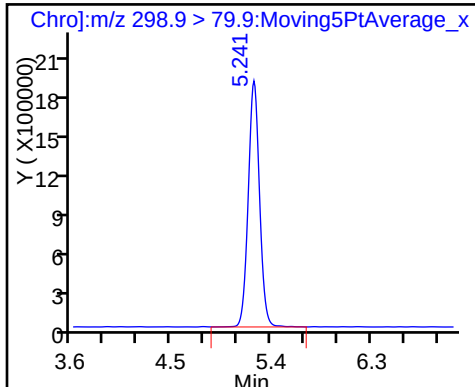
3 Perfluoropentanoic acid



4 Perfluorobutane Sulfonate

4 Perfluorobutane Sulfonate

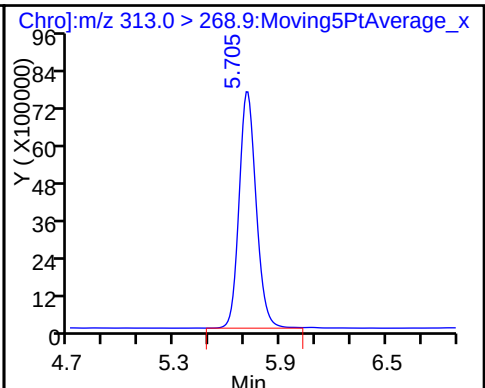
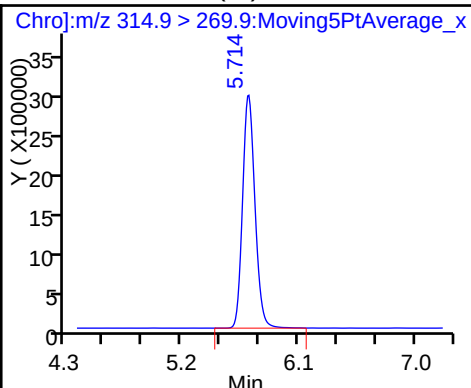
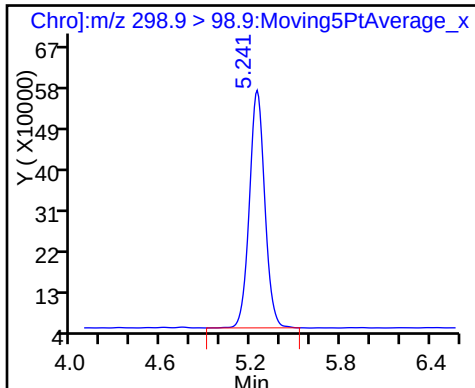
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

* 6 13C2 PFHxA (IS)

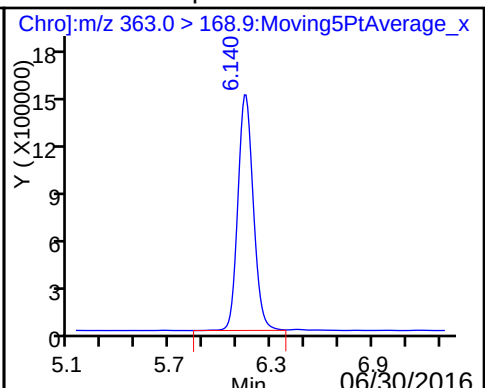
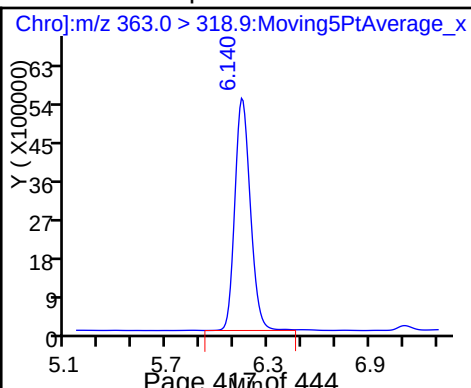
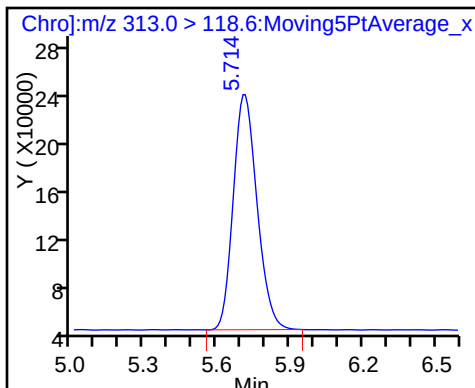
7 Perfluorohexanoic acid



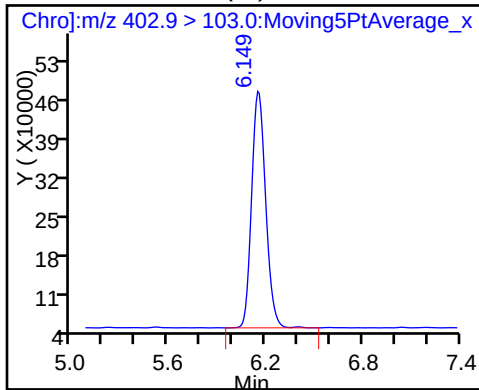
7 Perfluorohexanoic acid

8 Perfluoroheptanoic acid

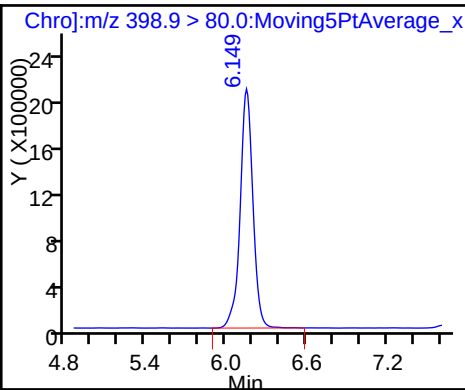
8 Perfluoroheptanoic acid



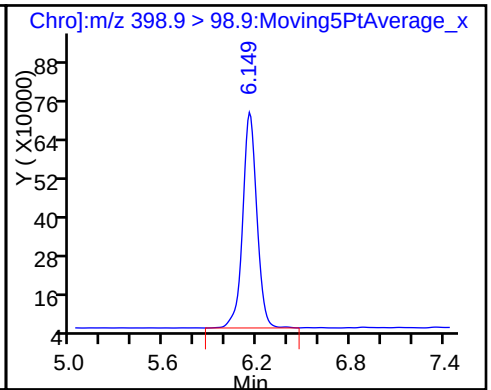
* 9 18O2 PFHxS (IS)



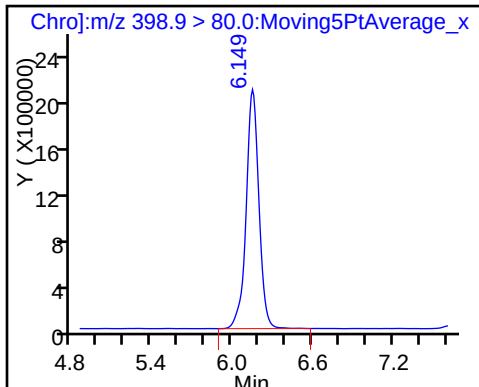
10 Perfluorohexane Sulfonate



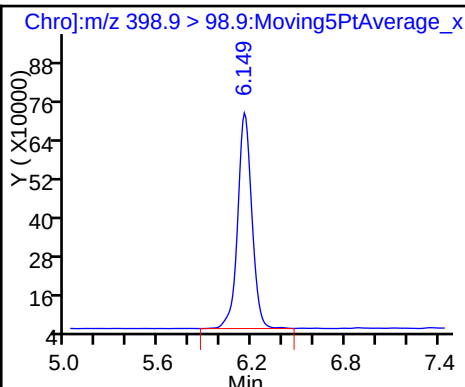
10 Perfluorohexane Sulfonate



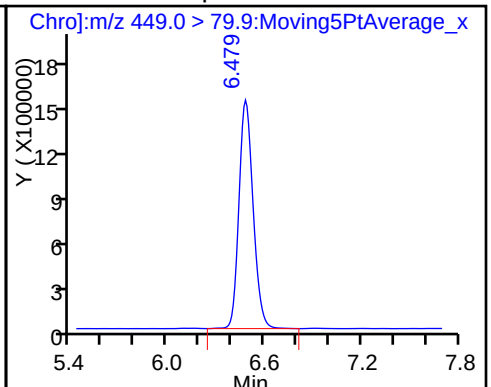
11 Perfluorohexanesulfonic acid



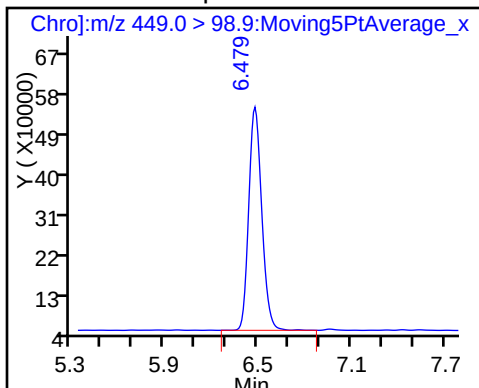
11 Perfluorohexanesulfonic acid



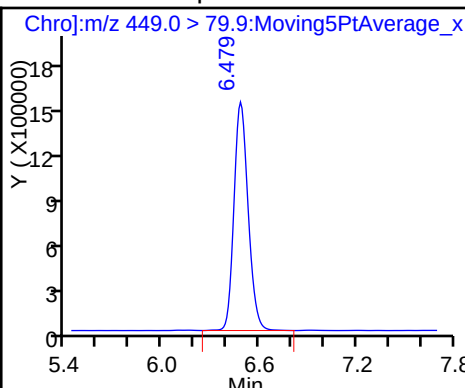
13 Perfluoroheptane Sulfonate



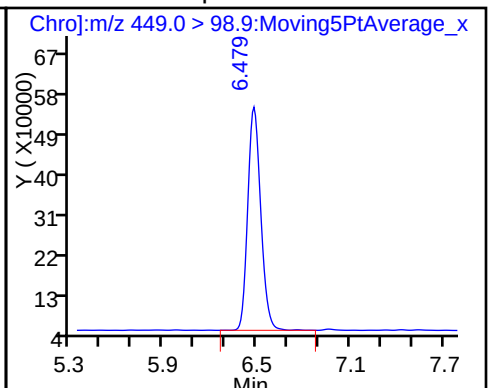
13 Perfluoroheptane Sulfonate



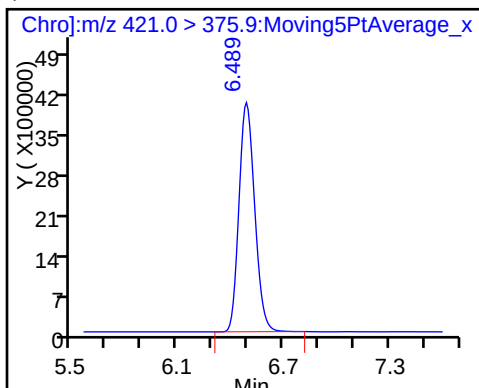
12 Perfluoroheptanesulfonic Acid



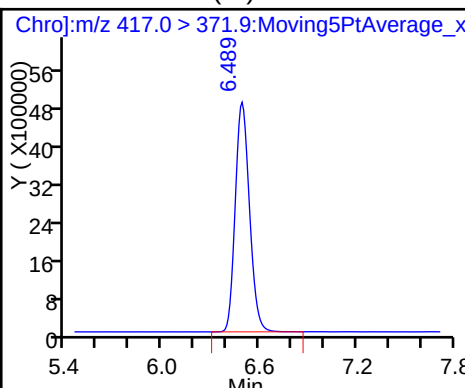
12 Perfluoroheptanesulfonic Acid



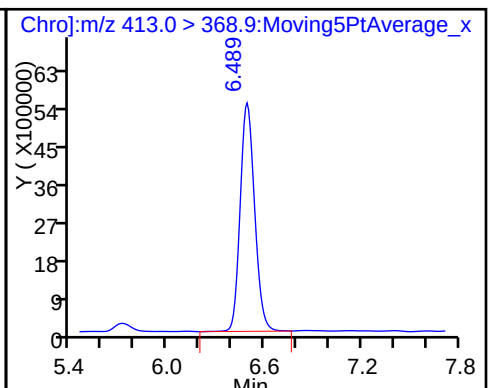
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



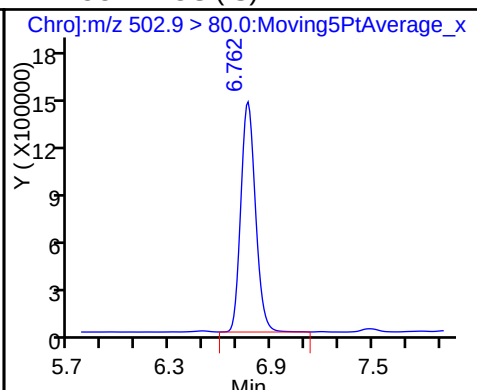
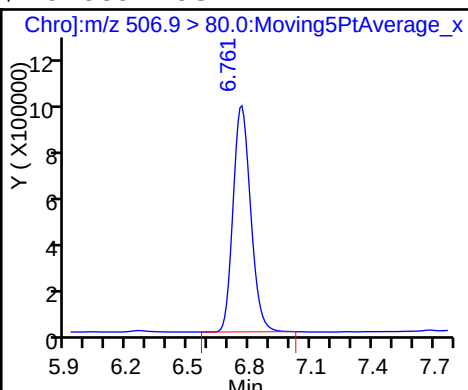
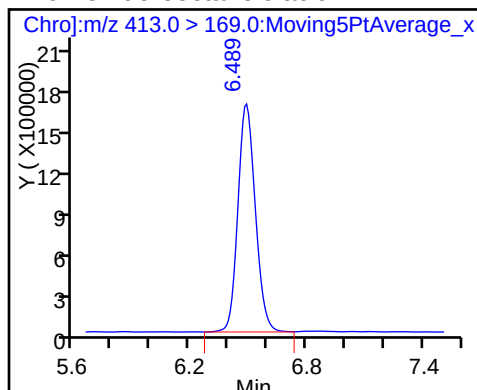
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

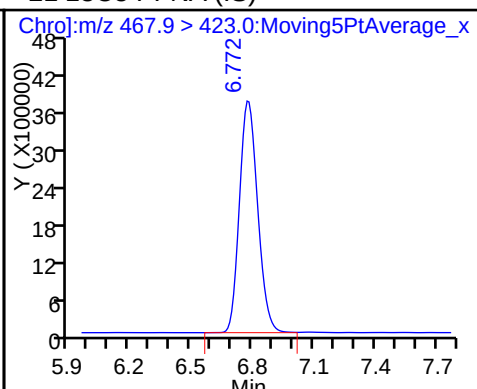
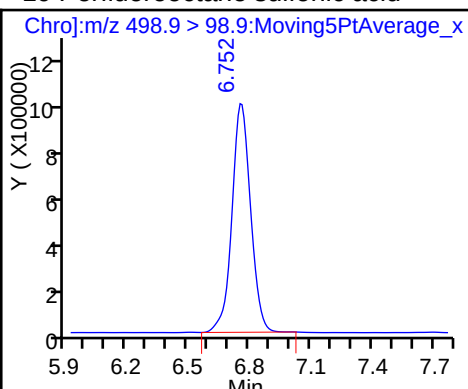
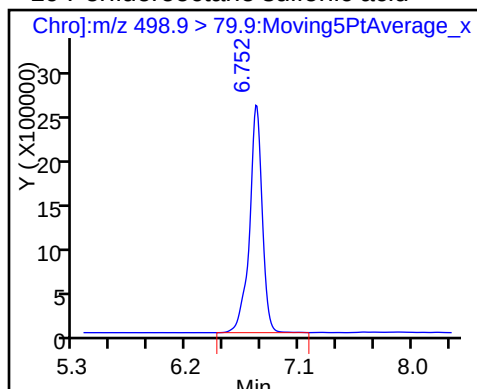
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

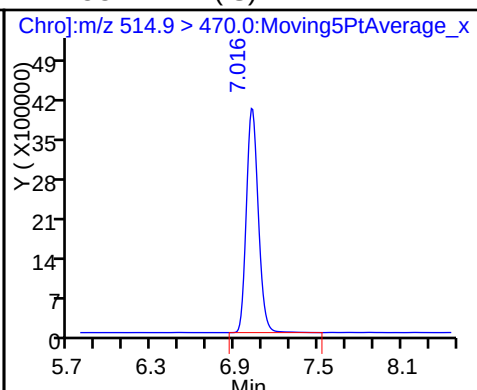
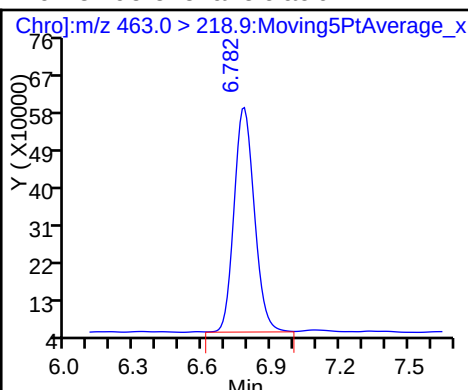
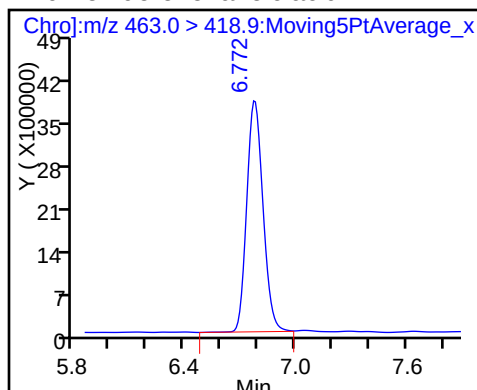
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

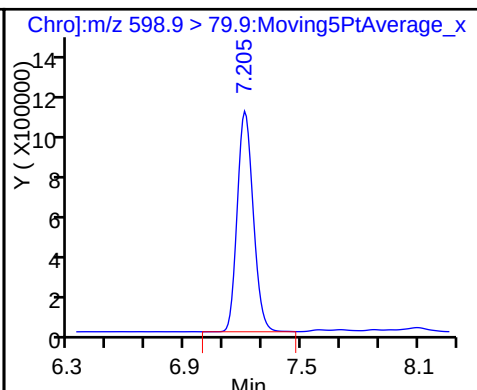
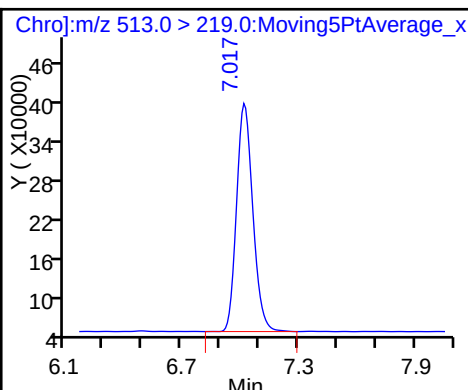
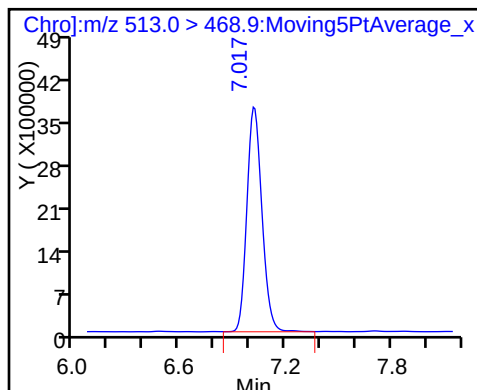
* 22 13C2 PFDA (IS)



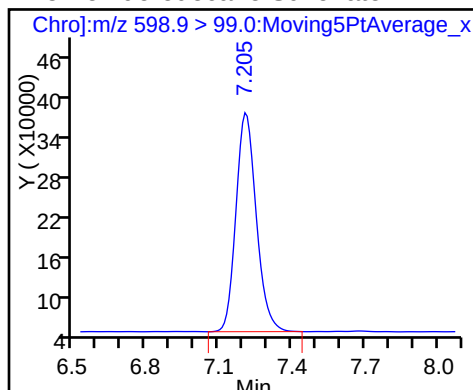
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

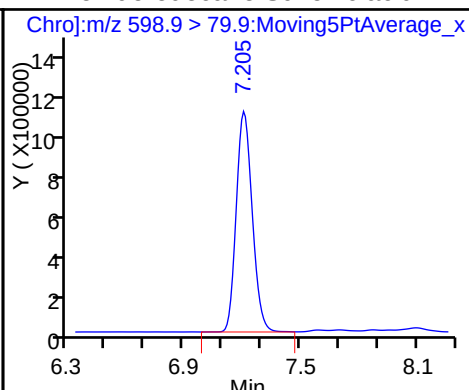
25 Perfluorodecane Sulfonate



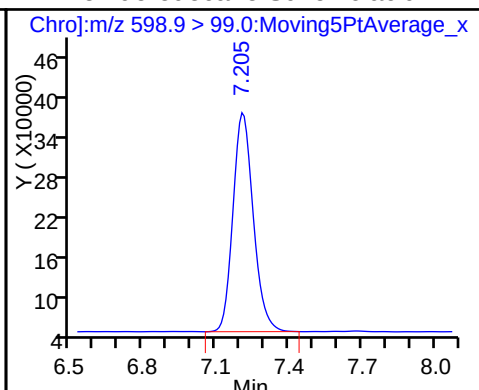
25 Perfluorodecane Sulfonate



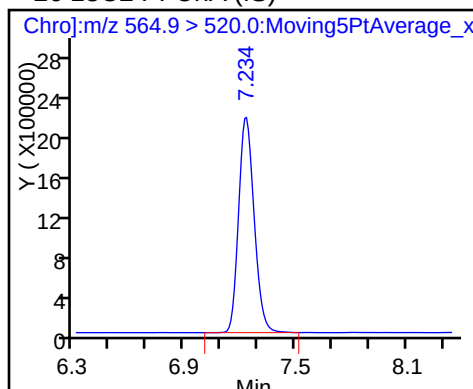
24 Perfluorodecane Sulfonic acid



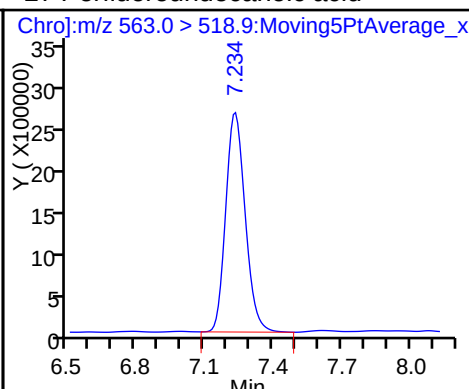
24 Perfluorodecane Sulfonic acid



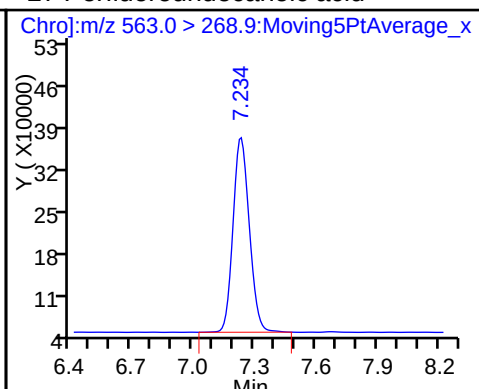
* 26 13C2 PFUnA (IS)



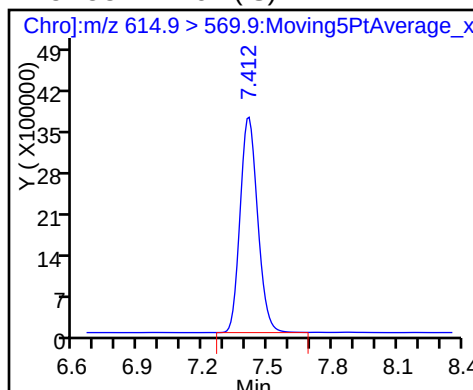
27 Perfluoroundecanoic acid



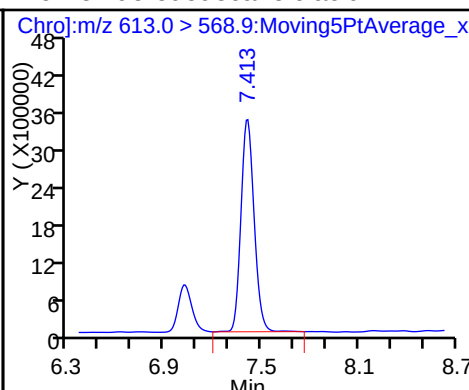
27 Perfluoroundecanoic acid



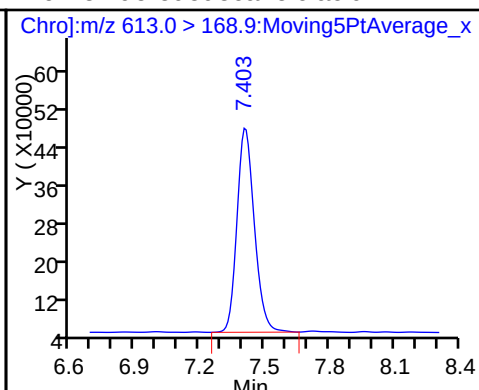
* 28 13C2 PFDaA (IS)



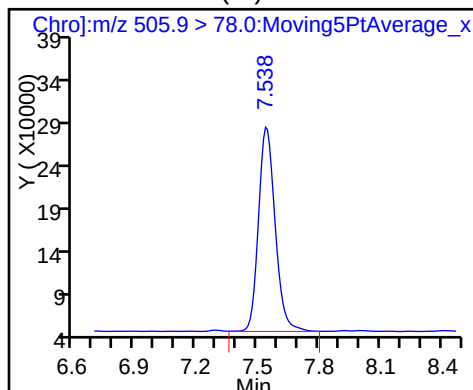
29 Perfluorododecanoic acid



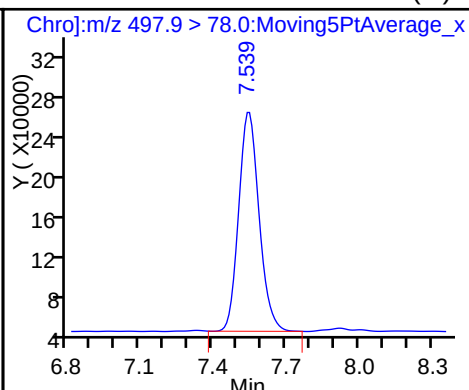
29 Perfluorododecanoic acid



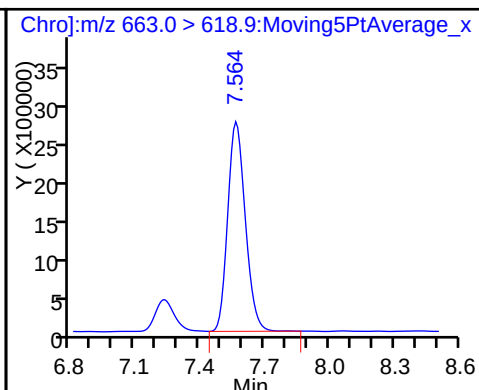
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide (M)

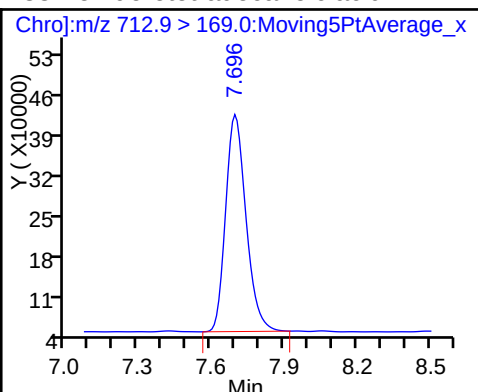
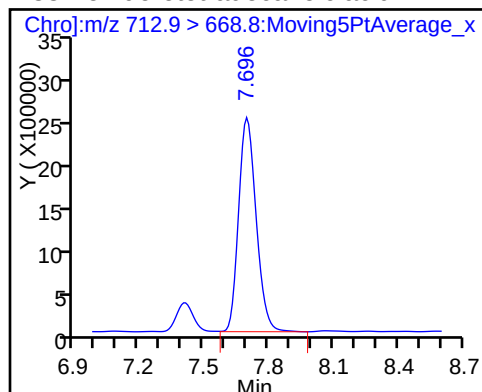


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-84914-1</u>
SDG No.: _____	
Client Sample ID: <u>C-8 MSD</u>	Lab Sample ID: <u>280-84914-15 MSD</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516F20033.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/22/2016 12:20</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>06/29/2016 11:23</u>
Sample wt/vol: <u>268.1 (mL)</u>	Date Analyzed: <u>06/30/2016 13:52</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332053</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.138		0.019	0.0077
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.202		0.028	0.012
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.214		0.028	0.0065
375-95-1	Perfluorononanoic acid (PFNA)	0.176		0.037	0.016
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.393		0.028	0.012
335-67-1	Perfluorooctanoic acid (PFOA)	0.203		0.019	0.0091

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	120		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20033.d
 Lims ID: 280-84914-C-15-A MSD
 Client ID: C-8
 Sample Type: MSD
 Inject. Date: 30-Jun-2016 13:52:23 ALS Bottle#: 0 Worklist Smp#: 28
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-84914-c-15-a msd, Sample
 Operator ID: ACM/HKF Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 30-Jun-2016 16:47:51 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK029

First Level Reviewer: meyer

Date: 30-Jun-2016 16:47:50

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	3.992	4.096	-0.104		14759333	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.992	4.096	-0.104	1.000	16651233	10.5			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.147	-0.028	0.896	24174790	11.6			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.270	-0.029	0.851	9448633	7.40			R
298.9 > 98.9	5.241	5.270	-0.029	0.851	2774788		3.41(1.80-3.35)		R
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.270	-0.029	0.851	9448633	7.40			
298.9 > 98.9	5.241	5.270	-0.029	0.851	2774788		3.41(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.733	-0.019		17792592	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.714	5.733	-0.019	1.000	21073158	12.5			
313.0 > 118.6	5.724	5.733	-0.009	1.002	450219		46.81(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.150	6.159	-0.009	0.946	27693527	10.8			
363.0 > 168.9	6.150	6.159	-0.009	0.946	6670640		4.15(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.168	-0.010		2312978	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.168	-0.009	1.000	10831409	11.5			
398.9 > 98.9	6.159	6.168	-0.009	1.000	3658546		2.96(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.159	6.168	-0.009	1.000	10831409	11.5			R
398.9 > 98.9	6.159	6.168	-0.009	1.000	3658546		2.96(1.30-2.41)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.489	6.498	-0.009	0.958	9291241	10.3			
449.0 > 98.9	6.489	6.498	-0.009	0.958	2745301		3.38(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.489	6.498	-0.009	0.958	9291241	10.3			
449.0 > 98.9	6.489	6.498	-0.009	0.958	2745301		3.38(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.508	-0.010	1.000	24174232	10.2			M
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.508	-0.009		29439007	10.0			M
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.508	-0.009	1.000	33279470	10.9			
413.0 > 169.0	6.499	6.508	-0.009	1.000	9810488		3.39(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.780	-0.009	1.000	5216230	11.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.781	-0.010		7101549	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.781	-0.010	1.000	18287379	21.1			R
498.9 > 98.9	6.771	6.781	-0.010	1.000	6058913		3.02(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.801	-0.009		23288796	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.801	-0.010	1.000	24678506	9.44			
463.0 > 218.9	6.782	6.801	-0.019	0.999	3603552		6.85(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.045	-0.019		24245148	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.026	7.045	-0.019	1.000	21989601	9.00			R
513.0 > 219.0	7.026	7.045	-0.019	1.000	2213597		9.93(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.233	-0.019	1.065	5723683	6.22			
598.9 > 99.0	7.214	7.233	-0.019	1.065	1900086		3.01(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.233	-0.019	1.065	5723683	6.22			
598.9 > 99.0	7.214	7.233	-0.019	1.065	1900086		3.01(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.253	-0.009		12651500	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.253	-0.010	1.000	16064942	8.95			R
563.0 > 268.9	7.243	7.253	-0.010	1.000	1858101		8.65(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.431	-0.009		21325062	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.432	-0.019	0.999	19322762	8.81			
613.0 > 168.9	7.413	7.432	-0.019	0.999	2464145		7.84(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.576	-0.019		1861088	10.0			S

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.577	-0.019	1.000	1861401	9.21			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.592	-0.019	1.020	13911655	6.99			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.724	-0.019	1.038	11979974	9.51			
712.9 > 169.0	7.705	7.724	-0.019	1.038	1858590		6.45(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

Review Flags

M - Manually Integrated

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20033.d

Injection Date: 30-Jun-2016 13:52:23

Instrument ID: LC_LCMS5

Lims ID: 280-84914-C-15-A MSD

Client ID: C-8

Operator ID: ACM/HKF

ALS Bottle#: 0

Worklist Smp#: 28

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

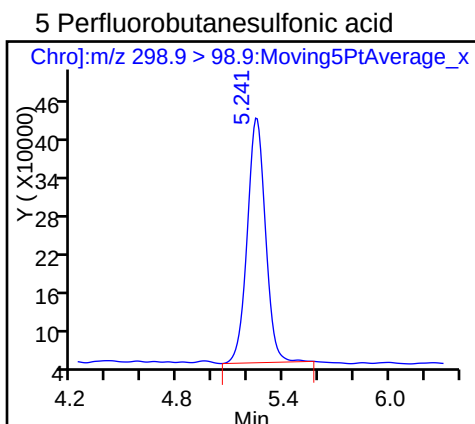
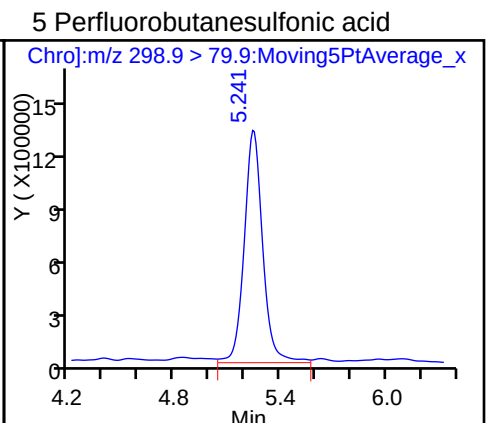
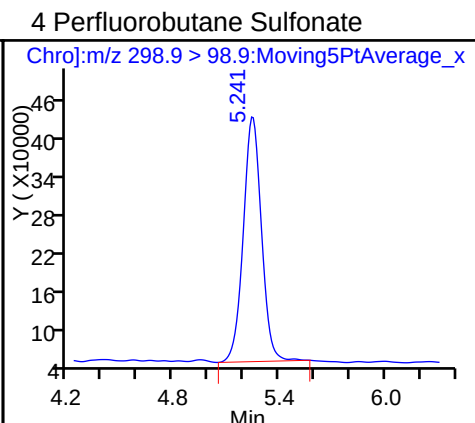
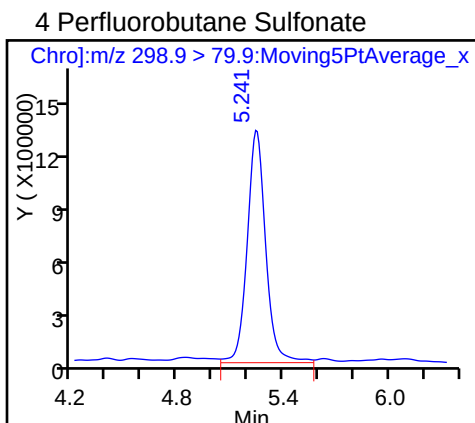
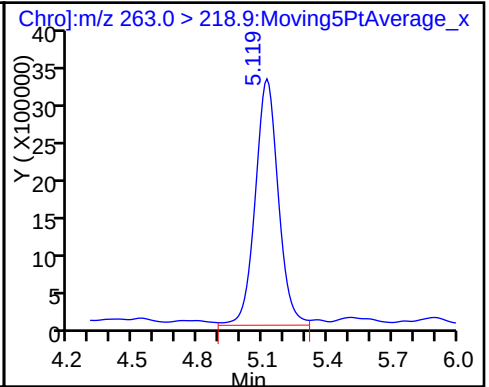
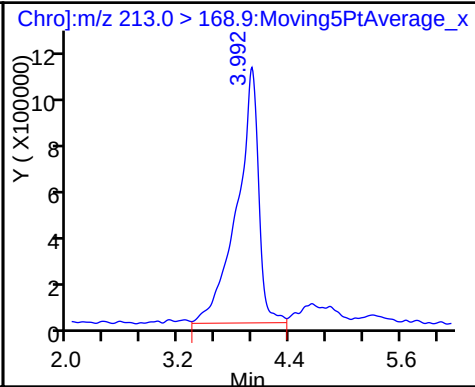
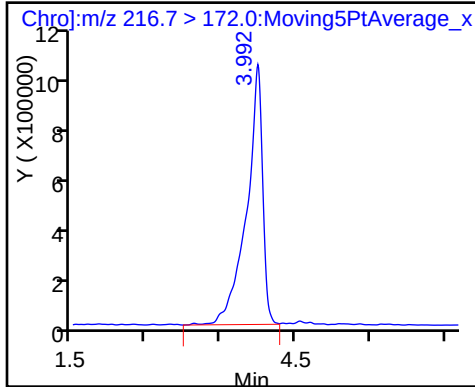
Method: 8321_PFC

Limit Group: LC - PFC

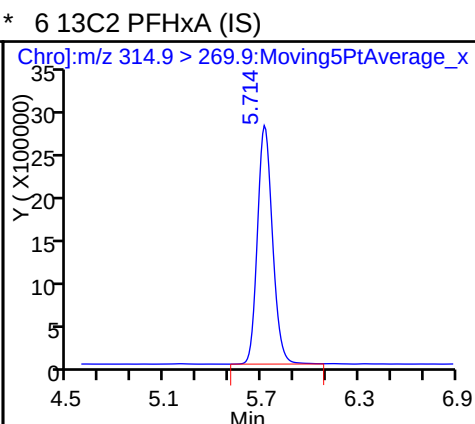
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

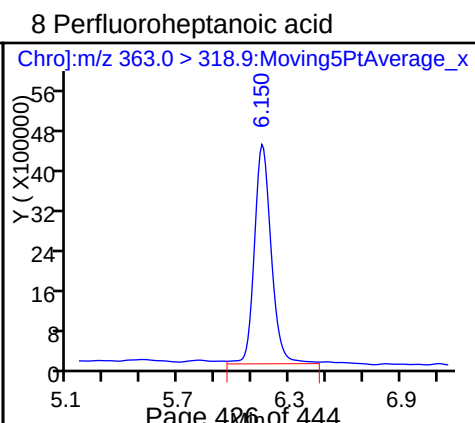
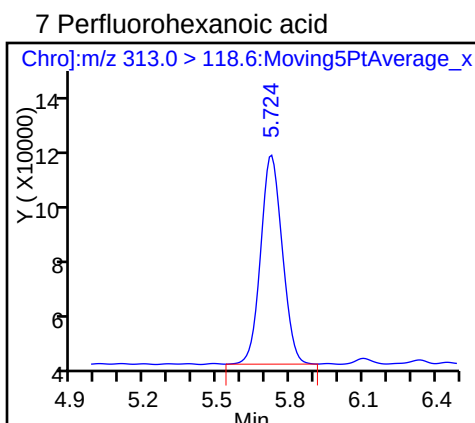
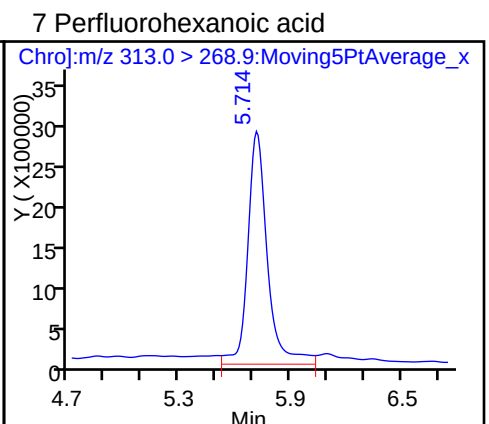
3 Perfluoropentanoic acid



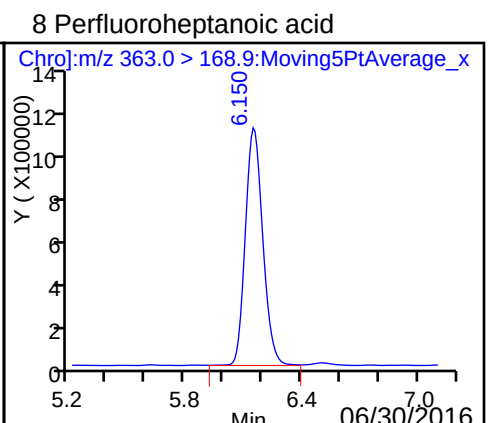
* 6 13C2 PFHxA (IS)



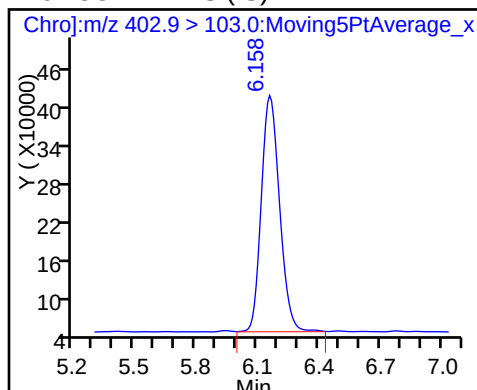
7 Perfluorohexanoic acid



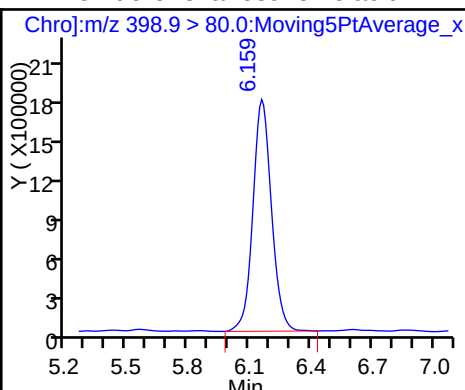
8 Perfluoroheptanoic acid



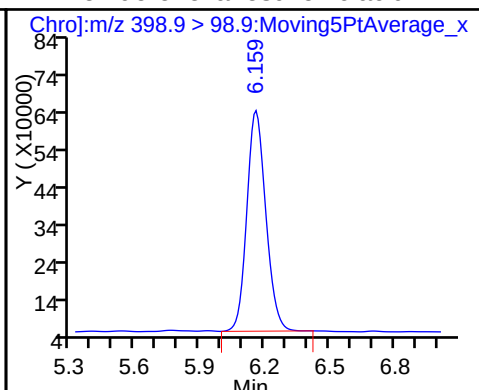
* 9 18O2 PFHxS (IS)



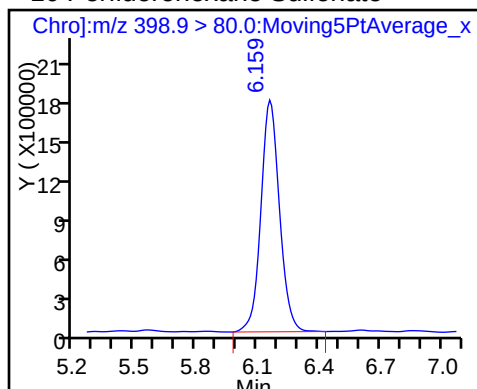
11 Perfluorohexanesulfonic acid



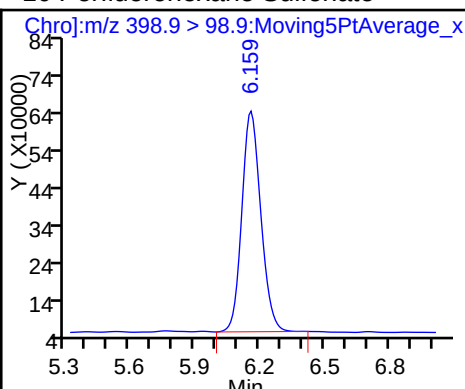
11 Perfluorohexanesulfonic acid



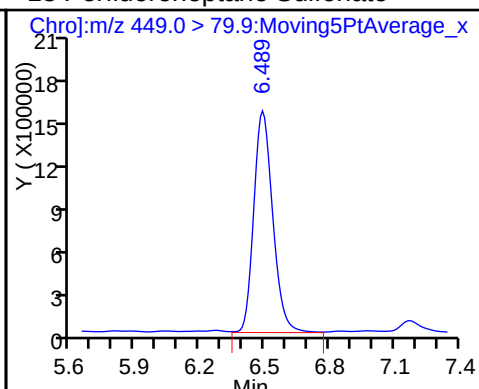
10 Perfluorohexane Sulfonate



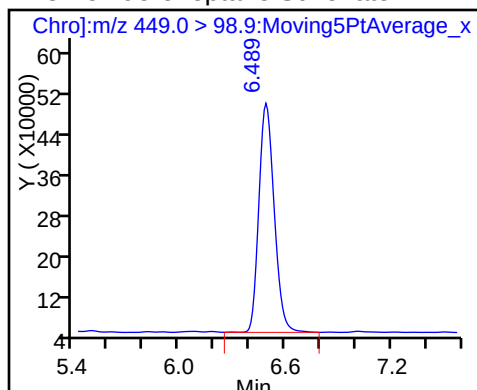
10 Perfluorohexane Sulfonate



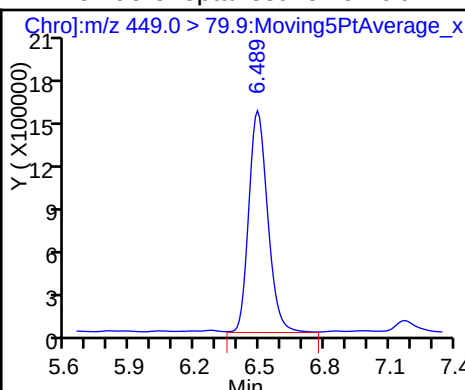
13 Perfluoroheptane Sulfonate



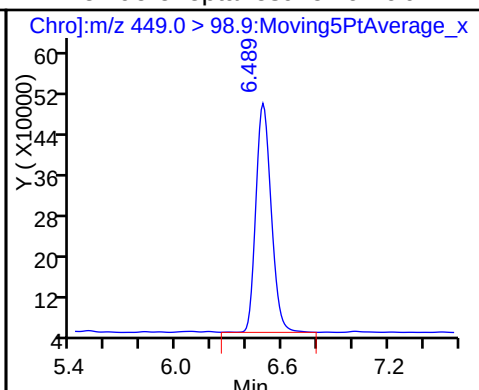
13 Perfluoroheptane Sulfonate



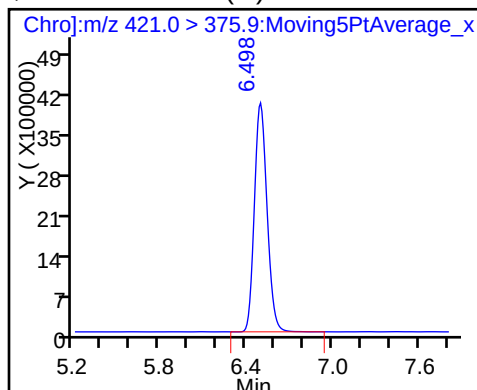
12 Perfluoroheptanesulfonic Acid



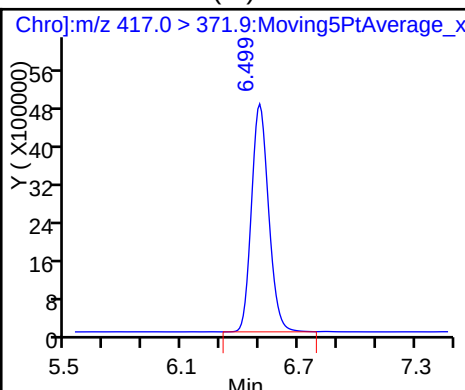
12 Perfluoroheptanesulfonic Acid



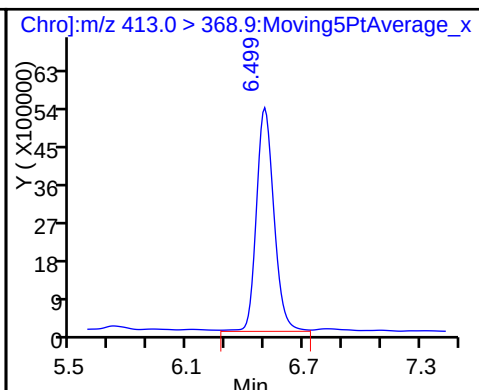
\$ 14 13C8 PFOA (M)



* 15 13C4 PFOA (IS)



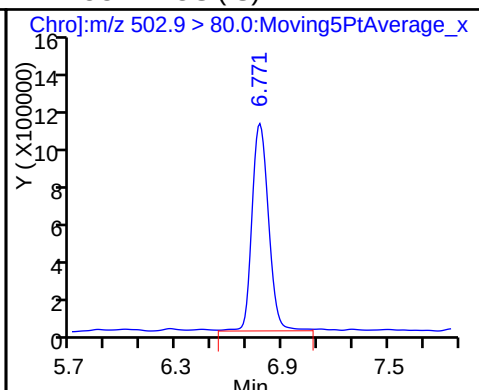
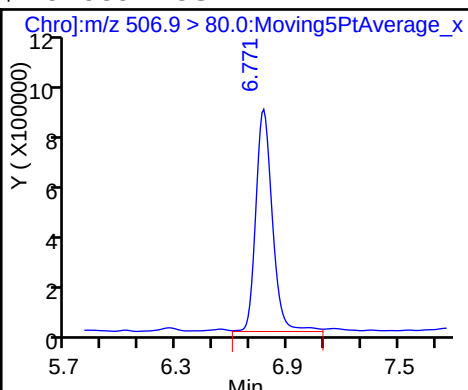
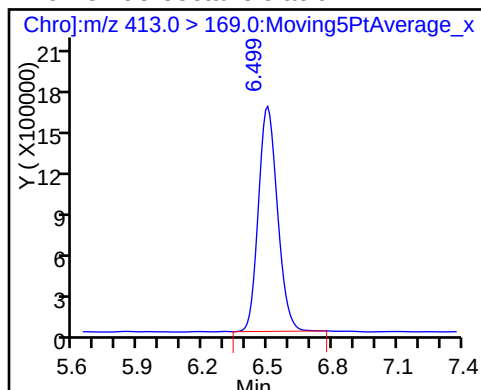
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

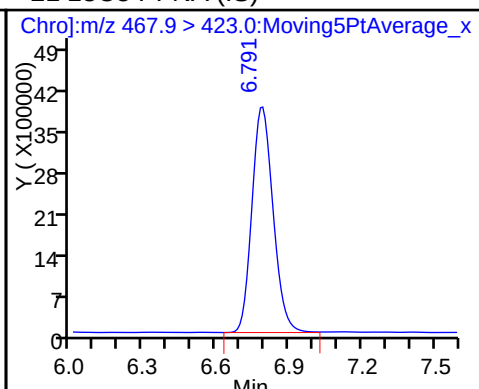
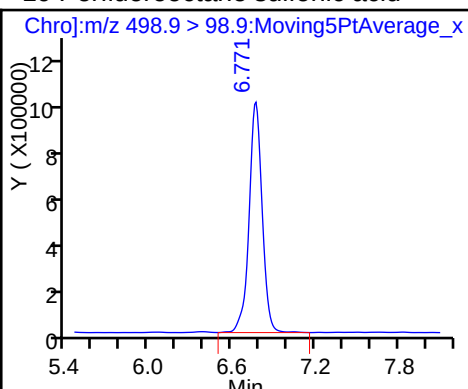
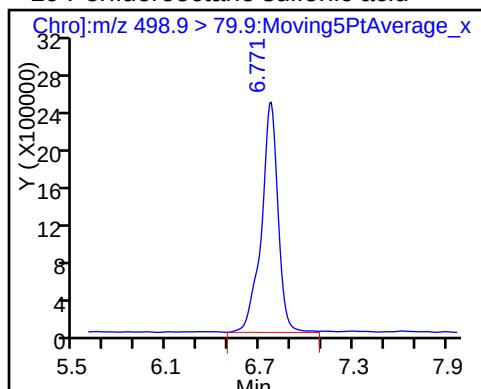
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

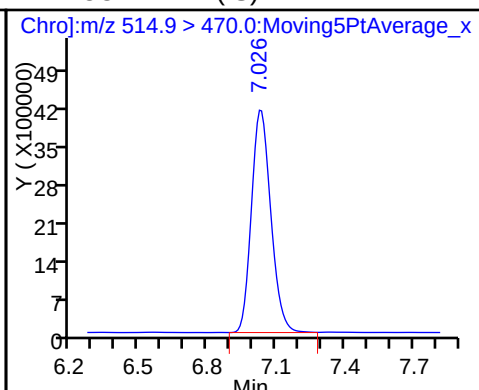
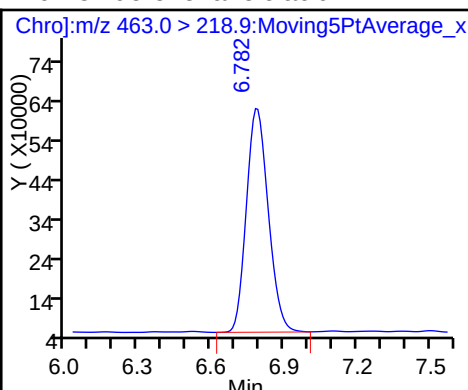
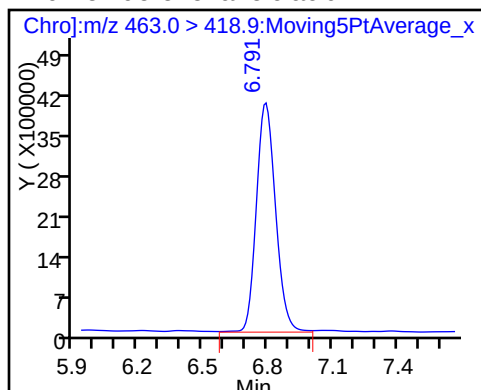
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

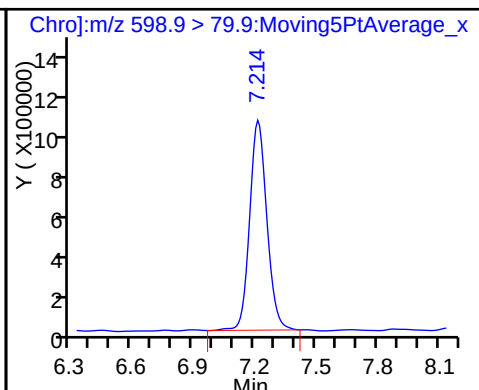
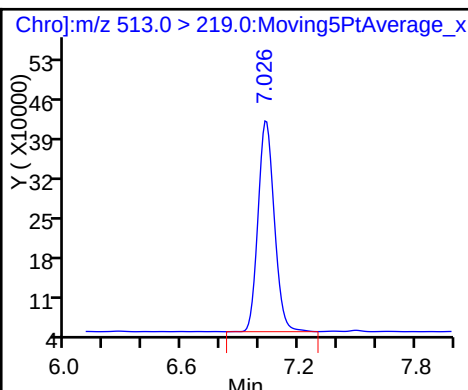
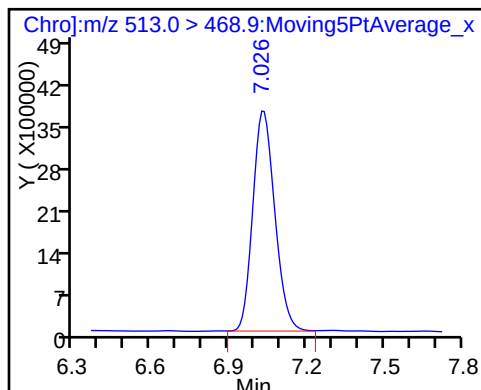
* 22 13C2 PFDA (IS)



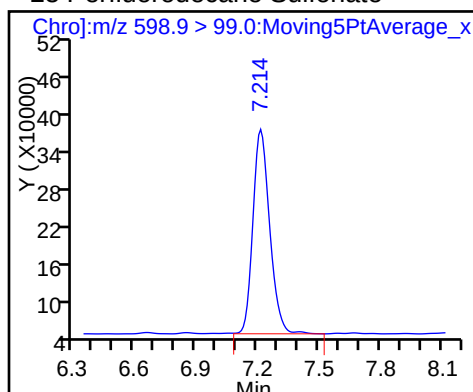
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

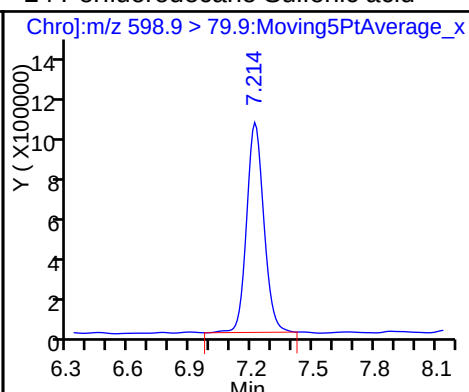
25 Perfluorodecane Sulfonate



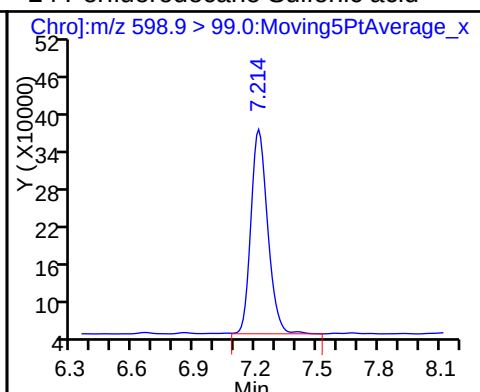
25 Perfluorodecane Sulfonate



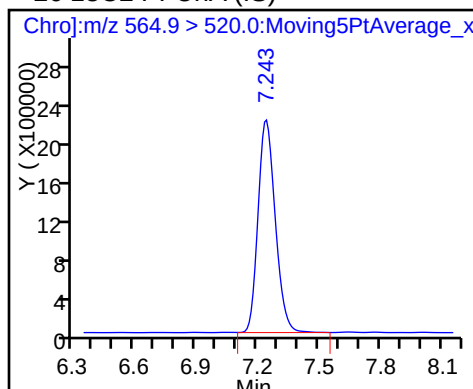
24 Perfluorodecane Sulfonic acid



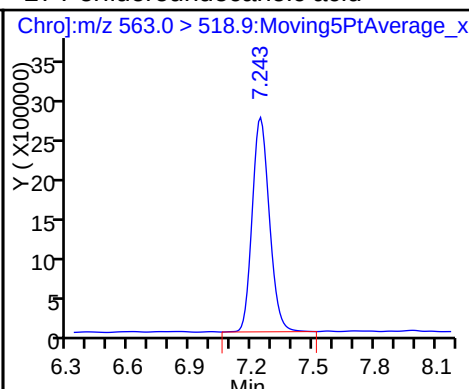
24 Perfluorodecane Sulfonic acid



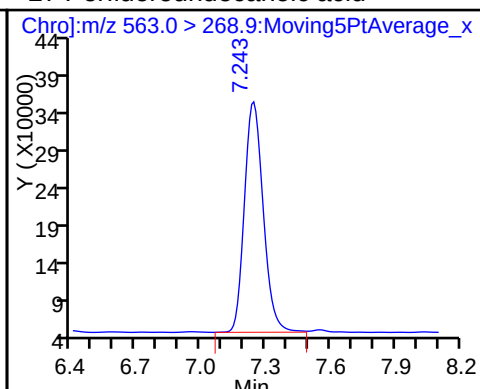
* 26 13C2 PFUnA (IS)



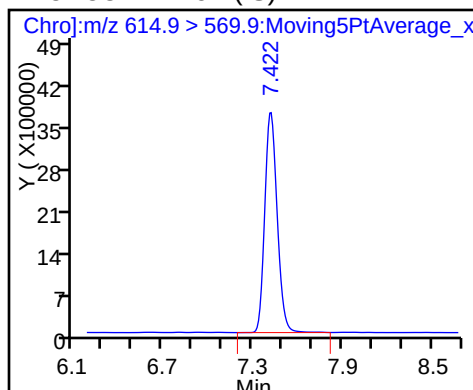
27 Perfluoroundecanoic acid



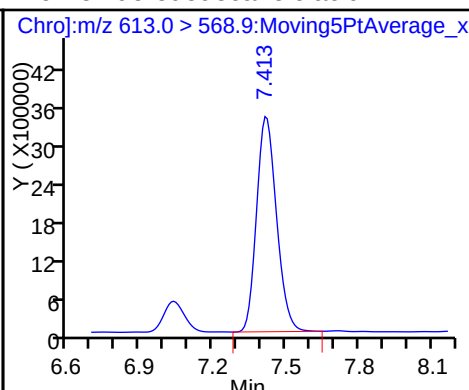
27 Perfluoroundecanoic acid



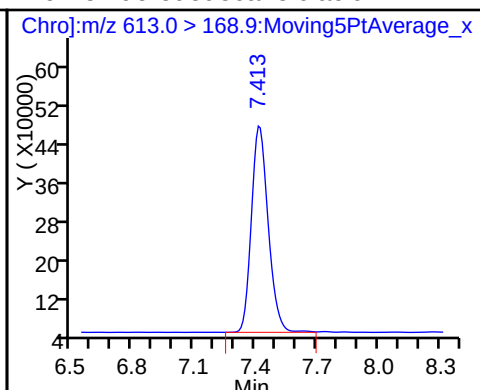
* 28 13C2 PFDaA (IS)



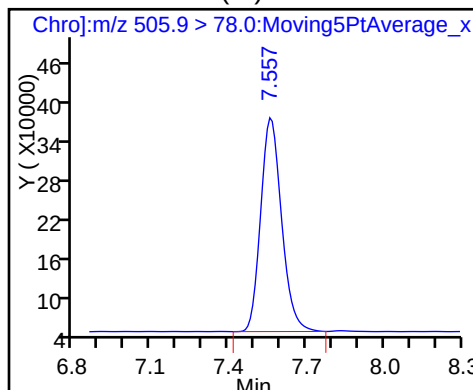
29 Perfluorododecanoic acid



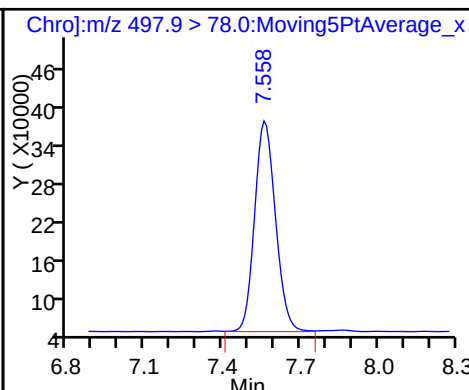
29 Perfluorododecanoic acid



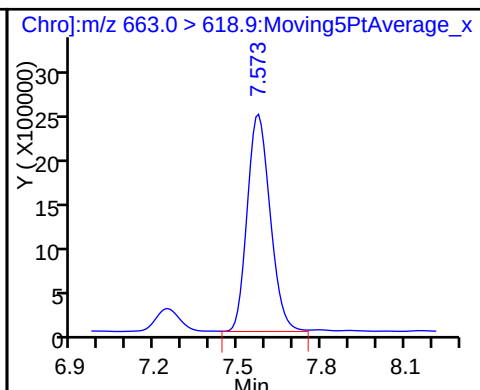
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

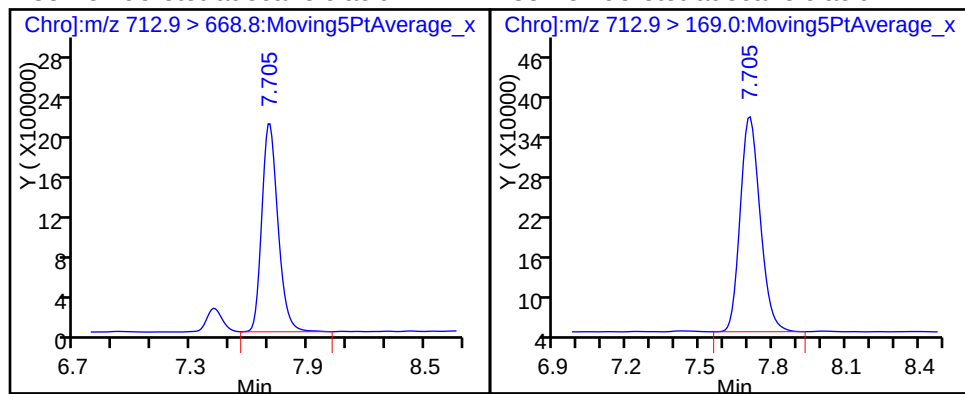


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



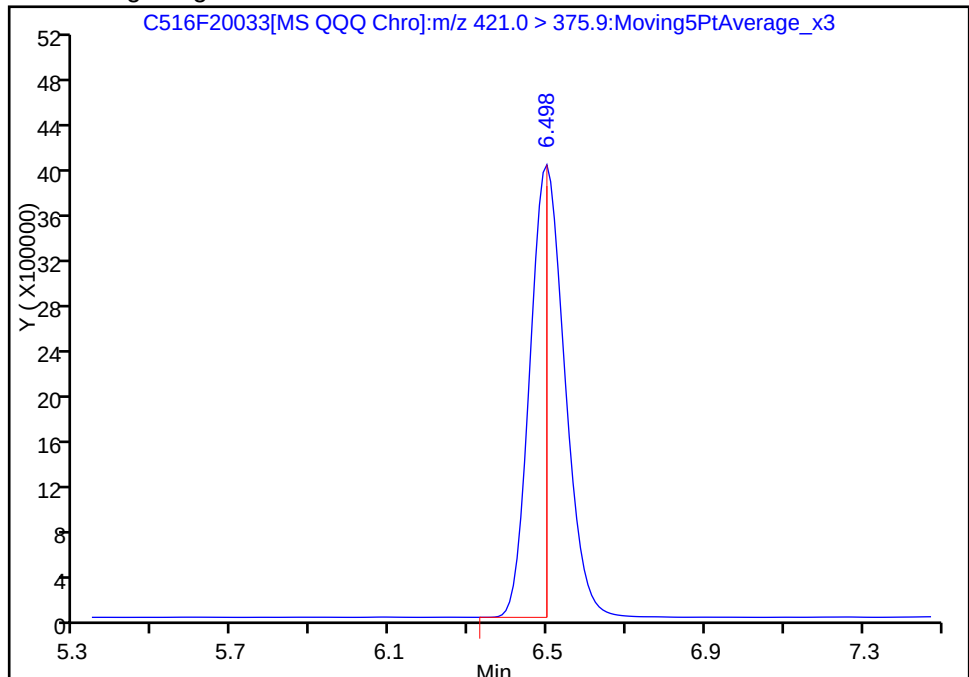
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160630-48436.b\PC516F20033.d		
Injection Date:	30-Jun-2016 13:52:23	Instrument ID:	LC_LCMS5
Lims ID:	280-84914-C-15-A MSD		
Client ID:	C-8		
Operator ID:	ACM/HKF	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector	MS QQQ
		Worklist Smp#:	28

\$ 14 13C8 PFOA, CAS: STL01052

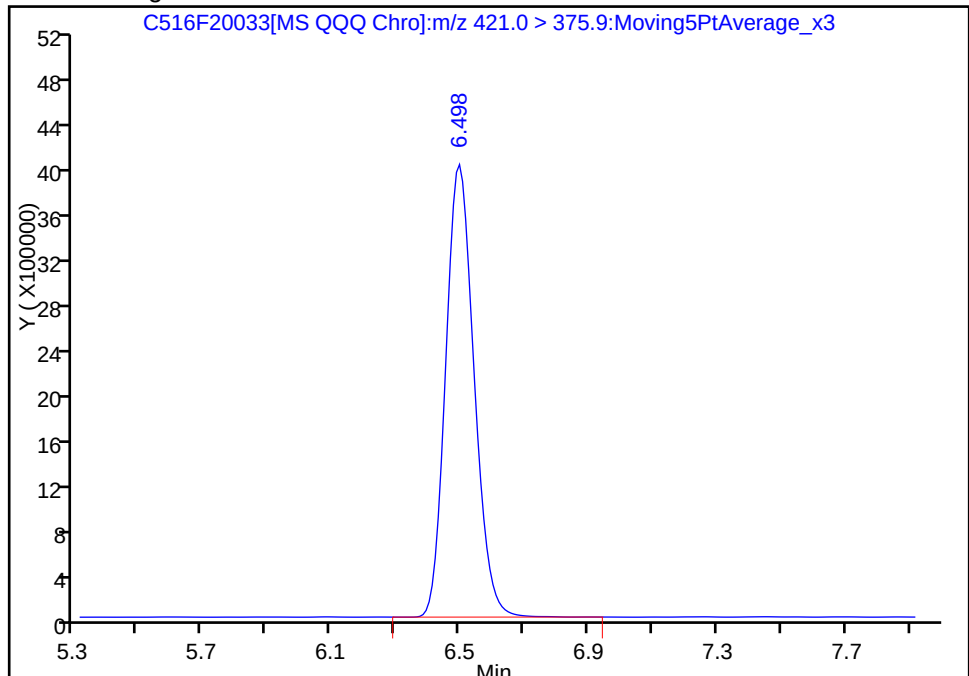
RT: 6.50
Area: 11482170
Amount: 4.797921
Amount Units: ug/L

Processing Integration Results



RT: 6.50
Area: 24174232
Amount: 10.156544
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 30-Jun-2016 16:47:50
Audit Action: Manually Integrated
Audit Reason: Baseline

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica DenverJob No.: 280-84914-1

SDG No.: _____

Instrument ID: LC_LCMS5Start Date: 06/06/2016 14:49Analysis Batch Number: 328740End Date: 06/06/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-328740/3 IC		06/06/2016 14:49	1	PC516F06008.d	Gemini-NX
STD0005 280-328740/4 IC		06/06/2016 15:02	1	PC516F06009.d	Gemini-NX
STD0010 280-328740/5 IC		06/06/2016 15:14	1	PC516F06010.d	Gemini-NX
STD0020 280-328740/6 ICISAV		06/06/2016 15:26	1	PC516F06011.d	Gemini-NX
STD0050 280-328740/7 IC		06/06/2016 15:39	1	PC516F06012.d	Gemini-NX
STD0100 280-328740/8 IC		06/06/2016 15:51	1	PC516F06013.d	Gemini-NX
STD0200 280-328740/9 IC		06/06/2016 16:03	1	PC516F06014.d	Gemini-NX
STD0500 280-328740/10 IC		06/06/2016 16:16	1	PC516F06015.d	Gemini-NX
STD1250 280-328740/11 IC		06/06/2016 16:28	1	PC516F06016.d	Gemini-NX
ICB 280-328740/12		06/06/2016 16:40	1	PC516F06017.d	Gemini-NX
ICV 280-328740/13		06/06/2016 16:53	1	PC516F06018.d	Gemini-NX
DLCK 280-328740/14		06/06/2016 17:05	1	PC516F06019.d	Gemini-NX
ZZZZZ		06/06/2016 17:17	1		Gemini-NX
ZZZZZ		06/06/2016 17:29	1		Gemini-NX
ZZZZZ		06/06/2016 17:42	1		Gemini-NX
ZZZZZ		06/06/2016 17:54	1		Gemini-NX
ZZZZZ		06/06/2016 18:06	1		Gemini-NX
ZZZZZ		06/06/2016 18:19	1		Gemini-NX
ZZZZZ		06/06/2016 18:31	1		Gemini-NX
ZZZZZ		06/06/2016 18:43	1		Gemini-NX
ZZZZZ		06/06/2016 18:56	1		Gemini-NX
ZZZZZ		06/06/2016 19:08	1		Gemini-NX
CCV 280-328740/25		06/06/2016 19:20	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica DenverJob No.: 280-84914-1

SDG No.: _____

Instrument ID: LC_LCMS5Start Date: 06/30/2016 08:44Analysis Batch Number: 332053End Date: 06/30/2016 16:07

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-332053/3		06/30/2016 08:44	1	PC516F20008.d	Gemini-NX
MB 280-331820/1-A		06/30/2016 08:57	1	PC516F20009.d	Gemini-NX
LCS 280-331820/2-A		06/30/2016 09:09	1	PC516F20010.d	Gemini-NX
280-84914-1		06/30/2016 09:21	1	PC516F20011.d	Gemini-NX
280-84914-2		06/30/2016 09:34	1	PC516F20012.d	Gemini-NX
280-84914-3		06/30/2016 09:46	1	PC516F20013.d	Gemini-NX
280-84914-3 MS		06/30/2016 09:58	1	PC516F20014.d	Gemini-NX
280-84914-3 MSD		06/30/2016 10:11	1	PC516F20015.d	Gemini-NX
280-84914-4		06/30/2016 10:23	1	PC516F20016.d	Gemini-NX
280-84914-5		06/30/2016 10:35	1	PC516F20017.d	Gemini-NX
280-84914-6		06/30/2016 10:47	1	PC516F20018.d	Gemini-NX
CCV 280-332053/14		06/30/2016 11:00	1	PC516F20019.d	Gemini-NX
280-84914-7		06/30/2016 11:12	1	PC516F20020.d	Gemini-NX
280-84914-8		06/30/2016 11:24	1	PC516F20021.d	Gemini-NX
280-84914-9		06/30/2016 11:37	1	PC516F20022.d	Gemini-NX
280-84914-10		06/30/2016 11:49	1	PC516F20023.d	Gemini-NX
MB 280-331826/1-A		06/30/2016 12:01	1	PC516F20024.d	Gemini-NX
LCS 280-331826/2-A		06/30/2016 12:14	1	PC516F20025.d	Gemini-NX
280-84914-11		06/30/2016 12:26	1	PC516F20026.d	Gemini-NX
280-84914-12		06/30/2016 12:38	1	PC516F20027.d	Gemini-NX
280-84914-13		06/30/2016 12:50	1	PC516F20028.d	Gemini-NX
280-84914-14		06/30/2016 13:03	1	PC516F20029.d	Gemini-NX
CCV 280-332053/25		06/30/2016 13:15	1	PC516F20030.d	Gemini-NX
280-84914-15		06/30/2016 13:27	1	PC516F20031.d	Gemini-NX
280-84914-15 MS		06/30/2016 13:40	1	PC516F20032b.d	Gemini-NX
280-84914-15 MSD		06/30/2016 13:52	1	PC516F20033.d	Gemini-NX
280-84914-16		06/30/2016 14:04	1	PC516F20034.d	Gemini-NX
280-84914-17		06/30/2016 14:17	1	PC516F20035.d	Gemini-NX
280-84914-18		06/30/2016 14:29	1	PC516F20036.d	Gemini-NX
280-84914-19		06/30/2016 14:41	1	PC516F20037.d	Gemini-NX
280-84914-20		06/30/2016 14:53	1	PC516F20038.d	Gemini-NX
280-84914-21		06/30/2016 15:06	1	PC516F20039.d	Gemini-NX
CCV 280-332053/35		06/30/2016 15:18	1	PC516F20040.d	Gemini-NX
280-84914-1 DL		06/30/2016 15:30	5	PC516F20041.d	Gemini-NX
280-84914-5 DL		06/30/2016 15:43	2	PC516F20042.d	Gemini-NX
280-84914-16 DL		06/30/2016 15:55	5	PC516F20043.d	Gemini-NX
CCV 280-332053/39		06/30/2016 16:07	1	PC516F20044.d	Gemini-NX

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Batch Number: 331820 Batch Start Date: 06/29/16 11:23 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 06/29/16 14:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00081	PFC_Surr&IS 00023
MB 280-331820/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-331820/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-84914-B-1	CBDUP	3535, DV-LC-0012	T	307.2 g	28.1 g	279.1 mL	5 mL		0.1 mL
280-84914-A-2	17KMH-1	3535, DV-LC-0012	T	273.3 g	27.2 g	246.1 mL	5 mL		0.1 mL
280-84914-D-3	TE#6	3535, DV-LC-0012	T	292.4 g	27.2 g	265.2 mL	5 mL		0.1 mL
280-84914-F-3 MS	TE#6	3535, DV-LC-0012	T	275.2 g	28.2 g	247 mL	5 mL	0.1 mL	0.1 mL
280-84914-E-3 MSD	TE#6	3535, DV-LC-0012	T	294.0 g	28.0 g	266 mL	5 mL	0.1 mL	0.1 mL
280-84914-B-4	TE#2	3535, DV-LC-0012	T	304.1 g	27.5 g	276.6 mL	5 mL		0.1 mL
280-84914-B-5	TE#1	3535, DV-LC-0012	T	290.4 g	27.1 g	263.3 mL	5 mL		0.1 mL
280-84914-B-6	TE#4	3535, DV-LC-0012	T	275.0 g	27.1 g	247.9 mL	5 mL		0.1 mL
280-84914-B-7	TE DUP	3535, DV-LC-0012	T	273.9 g	27.9 g	246 mL	5 mL		0.1 mL
280-84914-A-8	TE#3	3535, DV-LC-0012	T	304.6 g	27.6 g	277 mL	5 mL		0.1 mL
280-84914-A-9	FB-2	3535, DV-LC-0012	T	286.7 g	27.2 g	259.5 mL	5 mL		0.1 mL
280-84914-B-10	WB-2	3535, DV-LC-0012	T	285.5 g	27.4 g	258.1 mL	5 mL		0.1 mL

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Batch Number: 331820 Batch Start Date: 06/29/16 11:23 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 06/29/16 14:35

Batch Notes	
Acid ID	2% Formic Aci_00092
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: JK S/S: YJC (Trainee: YJC)
First End time	6.29.16 1315
H2O ID	HPLC_Water_00639
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10% NH4OH_00071
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	6.29.16 1145

Basis	Basis Description
T	Total/NA

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Batch Number: 331826 Batch Start Date: 06/29/16 11:23 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 06/29/16 14:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00081	PFC_Surr&IS 00023
MB 280-331826/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-331826/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-84914-A-11	FB-1	3535, DV-LC-0012	T	292.1 g	27.1 g	265 mL	5 mL		0.1 mL
280-84914-A-12	WB-1	3535, DV-LC-0012	T	290.8 g	26.8 g	264 mL	5 mL		0.1 mL
280-84914-B-13	CB-2	3535, DV-LC-0012	T			259.0 mL	5 mL		0.1 mL
280-84914-A-14	CB-15	3535, DV-LC-0012	T			252.7 mL	5 mL		0.1 mL
280-84914-F-15	C-8	3535, DV-LC-0012	T	292.2 g	28.4 g	263.8 mL	5 mL		0.1 mL
280-84914-E-15 MS	C-8	3535, DV-LC-0012	T	284.5 g	28.0 g	256.5 mL	5 mL	0.1 mL	0.1 mL
280-84914-C-15 MSD	C-8	3535, DV-LC-0012	T	295.1 g	27.0 g	268.1 mL	5 mL	0.1 mL	0.1 mL
280-84914-B-16	C-4	3535, DV-LC-0012	T	304.9 g	27.0 g	277.9 mL	5 mL		0.1 mL
280-84914-B-17	CB-1A	3535, DV-LC-0012	T			259.5 mL	5 mL		0.1 mL
280-84914-B-18	CB#5	3535, DV-LC-0012	T	292.3 g	27.4 g	264.9 mL	5 mL		0.1 mL
280-84914-B-19	CB#2	3535, DV-LC-0012	T			257.4 mL	5 mL		0.1 mL
280-84914-A-20	#4	3535, DV-LC-0012	T			258.2 mL	5 mL		0.1 mL
280-84914-A-21	C-48	3535, DV-LC-0012	T			256.9 mL	5 mL		0.1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 280-331826/1		3535, DV-LC-0012							
LCS 280-331826/2		3535, DV-LC-0012							
280-84914-A-11	FB-1	3535, DV-LC-0012	T						
280-84914-A-12	WB-1	3535, DV-LC-0012	T						

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.

DV-LC-0012

Page 1 of 3

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Batch Number: 331826 Batch Start Date: 06/29/16 11:23 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 06/29/16 14:35

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
280-84914-B-13	CB-2	3535, DV-LC-0012	T	decant					
280-84914-A-14	CB-15	3535, DV-LC-0012	T	decant					
280-84914-F-15	C-8	3535, DV-LC-0012	T						
280-84914-E-15 MS	C-8	3535, DV-LC-0012	T						
280-84914-C-15 MSD	C-8	3535, DV-LC-0012	T						
280-84914-B-16	C-4	3535, DV-LC-0012	T						
280-84914-B-17	CB-1A	3535, DV-LC-0012	T	decant					
280-84914-B-18	CB#5	3535, DV-LC-0012	T						
280-84914-B-19	CB#2	3535, DV-LC-0012	T	decant					
280-84914-A-20	#4	3535, DV-LC-0012	T	decant					
280-84914-A-21	C-48	3535, DV-LC-0012	T	decant					

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-84914-1

SDG No.: _____

Batch Number: 331826 Batch Start Date: 06/29/16 11:23 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 06/29/16 14:35

Batch Notes	
Acid ID	2% Formic Aci_00092
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: JK S/S: YJC (Trainee: YJC)
First End time	6.29.16 1315
H2O ID	HPLC_Water_00639
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10% NH4OH_00071
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	6.29.16 1145

Basis	Basis Description
T	Total/NA

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.

Shipping and Receiving Documents

TestAmerica

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

THE LEADER IN ENVIRONMENTAL TESTING

Client Information Client Contact: Ms. Melissa LaMacchia Company: HDR Inc Address: 1 International Blvd, 10th Floor City: Mahwah State, Zip: NJ, 07495 Phone: 845-735-8300(Tel) Email: Melissa.LaMacchia@hdrinc.com Project Name: Stewart International Airport (PFAS) Site: ANG		Sample Information Sampler: John Alevi, Scott Engert Lab PM: Nanyar, Sapna Phone: 914-588-2580 E-Mail: sapna.nanyar@testamericainc.com		COQ No: 320-11782-2662.1 Page: Page 1 of 11 Job #:		Carrier Tracking No(s): Analysis Requested:	
Due Date Requested: TAT Requested (days): 15 PO #: Purchase Order not required WO #: Project #: 32008244 SSOW#:		Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix (H=Water, S=Solid, O=Organic, A=Air)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Special Instructions/Note: Total Number of Containers:	
Sample Identification CBDUP 17KMH-1 TE#6 TE#2 TE#1 TE#4 TE#3 FB-2 WB-2		Sample Date Sample Time Sample Type (C=Comp, G=Grab) Matrix (H=Water, S=Solid, O=Organic, A=Air)		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:		Special Instructions/Note: Total Number of Containers:	
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify) NYSDEL GAB		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ☐ Months		Special Instructions/QC Requirements:		Method of Shipment:	
Empty Kit Relinquished by:		Date/Time: 6/23/16 1641		Received by: AS		Date/Time: 0945	
Relinquished by:		Date/Time:		Received by:		Date/Time:	
Relinquished by:		Date/Time:		Received by:		Date/Time:	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 3.3105-010-24 June 16 Transfer		Company: TRC	

880 Riverside Parkway
West Sacramento, CA 95605
Phone (916) 373-5600 Fax (916) 372-1059

Chain of Custody Record

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Client Information					
Carrier Tracking No(s) 320-11782-2662.3					
Page 3 of 11					
Job #:					
Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO ₄ F - MeOH G - Anchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO ₂ P - Na ₂ O ₄ S Q - Na ₂ SO ₃ R - Na ₂ SO ₃ S - H ₂ SO ₄ T - TSP Dodecalhydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)					
Analysis Requested					
Total Number of containers					
Special Instructions/Note:					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months					
Special Instructions/QC Requirements:					
Method of Shipment:					
Received by:  Date/Time: 0945 24 June 16 Company: TAD					
Received by: _____ Date/Time: _____ Company: _____					
Received by: _____ Date/Time: _____ Company: _____					
Cooler Temperature(s) °C and Other Remarks: 5.8 10.5 24.0 24.0 24.0 24.0					

Chain of Custody Record

Client Information Client Contact: Ms. Melissa LaMacchia Company: HDR Inc Address: 1 International Blvd, 10th Floor City: Mahwah State, Zip: NJ, 07495 Phone: 845-735-8300(Tel) Email: Melissa.LaMacchia@hdrinc.com Project Name: Stewart International Airport (PFAS) Siter: ANG		Due Date Requested: TAT Requested (days): 15 PO #: Purchase Order not required WO #: Project #: 32008244 SSOW#		Sampler: John Allevi, Jr. i Scott Engert Lab PM: Nayyar, Sapna Phone: 914-538-2530 E-Mail: sapna.nayyar@testamericainc.com		Carrier Tracking No(s): 320-11782-2662.1 Page: 1 of 11 Job #:	
Analysis Requested				Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:			
Sample Identification				Special Instructions/Note:			
Sample ID CBOUP 17KMH-1 TE#6 TE#2 TE#1 TE#4 TE DUP TE#3 FB-2 WB-2	Sample Date 6/22/16 6/23/16 10/18 11/15 12/25 13/35 11/12 14/40 1505 1520	Sample Time 0900 0900 1018 1115 1225 1335 1112 1440 1505 1520	Sample Type (C=Comp, G=grab) G G G G G G G C C	Matrix (Water, Soil, Sediment, Tissue, Air) Water Water Water Water Water Water Water Water Water Water	Field Filtered Sample (Yes or No) PFC, JDA - PFAS, UCMR List Total Number of Containers 280-84914 Chain of Custody		
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months			
Deliverable Requested: I, II, III, IV, Other (specify) NYSDEL GTSB				Special Instructions/QC Requirements:			
Empty Kit Relinquished by:				Method of Shipment:			
Relinquished by:				Date/Time: 6/23/16 1645			
Relinquished by:				Date/Time: 06/23/16 1645			
Relinquished by:				Date/Time:			
Relinquished by:				Date/Time:			
Custody Seals Intact Δ Yes Δ No				Custody Seal No.:			

Chain of Custody Record

Client Information Client Contact: Ms. Melissa LaMacchia Company: HDR Inc		Sampler: John Plouffe & Scott Engert Phone: 916-588-9880 E-Mail: sapna.nayyar@testamericainc.com		Lab PM: Navayyar, Sapna Carrier Tracking No(s): 320-11782-2662.3		Page: 3 of 11 Job #:	
Address: 1 International Blvd, 10th Floor City: Mahwah State: NJ Zip: 07495 Phone: 845-735-3300(Tel) Email: Melissa.LaMacchia@hdrinc.com Project Name: Stewart International Airport (PFAS) Site: ANG		Due Date Requested: TAT Requested (days): 15 PO #: Purchase Order not required WO #: Project #: 32008244 SSOW#:		Analysis Requested		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Ascorbic Acid H - Ice I - DI Water J - EDTA K - EDA L - Other (specify) M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Sample Identification		Field Filtered Sample (Yes or No)		Perform MS/MS (Yes or No)		Total Number of Containers	
Sample ID FB-1 WB-1 CB-2 CB-15 C-8 C-4 CB-1A CB-#5 CB-#2 #4 C-48		Sample Date 6/22/16 1110 1115 1155 1220 1250 1315 1345 1400 1450 1508		Sample Time 1050 1110 1115 1155 1220 1250 1315 1345 1400 1450 1508		Matrix (W=Water, S=Solid, O=Organic, A=Air) Water Water Water Water Water Water Water Water Water Water Water	
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological		Deliverable Requested: I, II, III, IV, Other (specify) NYSDOL C-48		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For Months		Special Instructions/Note:	
Empty Kit Relinquished by:		Date/Time: 6/23/16 1645		Company: HDR		Method of Shipment:	
Relinquished by:		Date/Time:		Company:		Date/Time: 0945	
Relinquished by:		Date/Time:		Company:		Date/Time:	
Relinquished by:		Date/Time:		Company:		Date/Time:	
Custody Seals Intact:		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 5.8, 10.5, 20.0, 24.5, 16.0 Transfer Box		Company:	

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-84914-1

Login Number: 84914

List Source: TestAmerica Denver

List Number: 1

Creator: White, Denise E

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

ANALYTICAL REPORT

Job Number: 280-85017-1

Job Description: Stewart International Airport (PFAS)

For:

HDR Inc

1 International Blvd, 10th Floor

Mahwah, NJ 07495

Attention: Ms. Melissa LaMacchia



Approved for release.
Sapna Nayyar
Project Manager I
7/25/2016 4:55 PM

Sapna Nayyar, Project Manager I
777 New Durham Road, Edison, NJ, 08817
sapna.nayyar@testamericainc.com
07/25/2016

Job Number: 280-85017-1

Job Description: Stewart International Airport (PFAS)

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



Approved for release.
Sapna Nayyar
Project Manager I
7/25/2016 4:55 PM

Sapna Nayyar

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CASE NARRATIVE

Client: HDR Inc

Project: Stewart International Airport (PFAS)

Report Number: 280-85017-1

This case narrative is in the form of an exception report, where only the anomalies related to this report, method specific performance and/or QA/QC issues are discussed. If there are no issues to report, this narrative will include a statement that documents that there are no relevant data issues.

It should be noted that samples with elevated Reporting Limits (RLs) as a result of a dilution may not be able to satisfy customer reporting limits in some cases. Such increases in the RLs are unavoidable but acceptable consequence of sample dilution that enables quantification of target analytes or interferences which exceed the calibration range of the instrument.

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.

RECEIPT

The samples were received on 06/29/2016; the samples arrived in good condition, properly preserved and on ice. The temperature of the coolers at receipt was 0.3 C.

Method(s) DV-LC-0012: Internal standard responses were outside of acceptance limits for the following sample: TE#5 (280-85017-2). The sample(s) shows evidence of matrix interference. preparation batch 280-332167 and analytical batch 280-335022

Note: All samples which require thermal preservation are considered acceptable if the arrival temperature is within 2C of the required temperature or method specified range. For samples with a specified temperature of 4C, samples with a temperature ranging from just above freezing temperature of water to 6C shall be acceptable. Samples that are hand delivered immediately following collection may not meet these criteria, however they will be deemed acceptable according to NELAC standards, if there is evidence that the chilling process has begun, such as arrival on ice, etc.

PERFLUORINATED HYDROCARBONS (PFC)

Samples FB-3 (280-85017-1), TE#5 (280-85017-2) and ANGOF-001 (280-85017-3) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with DV-LC-0012. The samples were prepared on 07/01/2016 and analyzed on 07/25/2016.

Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with Batch: 332298, Prep Method: 3535, Analytical Method: PFC_FOSA.

The following samples: TE#5 (280-85017-2) and ANGOF-001 (280-85017-3) was decanted prior to preparation and as a result, the original sample container could not be solvent rinsed. Batch: 332298, Prep Method: 3535, Analytical Method: PFC_FOSA.

No difficulties were encountered during the PFC analysis.

All quality control parameters were within the acceptance limits.

Sample Summary

Client: HDR Inc

TestAmerica Job ID: 280-85017-1

Project/Site: Stewart International Airport (PFAS)

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-85017-1	FB-3	Water	06/28/16 10:55	06/29/16 09:55
280-85017-2	TE#5	Water	06/28/16 12:04	06/29/16 09:55
280-85017-3	ANGOF-001	Water	06/28/16 12:45	06/29/16 09:55

Detection Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Client Sample ID: FB-3

Lab Sample ID: 280-85017-1

No Detections.

Client Sample ID: TE#5

Lab Sample ID: 280-85017-2

No Detections.

Client Sample ID: ANGOF-001

Lab Sample ID: 280-85017-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexane Sulfonate (PFHxS)	0.0096	J	0.030	0.0069	ug/L		1		DV-LC-0012	Total/NA
Perfluorooctanesulfonic acid (PFOS)	0.014	J	0.030	0.013	ug/L		1		DV-LC-0012	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Method Summary

Client: HDR Inc

TestAmerica Job ID: 280-85017-1

Project/Site: Stewart International Airport (PFAS)

Method	Method Description	Protocol	Laboratory
DV-LC-0012	Perfluorinated Hydrocarbons	TAL-DEN	TAL DEN

Protocol References:

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Client Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Client Sample ID: FB-3

Date Collected: 06/28/16 10:55

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-1

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.031	0.013	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.031	0.0071	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.031	0.014	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Perfluorooctanoic acid (PFOA)	0.010	U	0.020	0.010	ug/L	—	07/01/16 11:30	07/25/16 12:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	101		60 - 155				07/01/16 11:30	07/25/16 12:21	1
13C8 PFOS	100		45 - 130				07/01/16 11:30	07/25/16 12:21	1

Client Sample ID: TE#5

Date Collected: 06/28/16 12:04

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-2

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.016	U	0.038	0.016	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Perfluoroheptanoic acid (PFHpA)	0.025	U	0.057	0.025	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Perfluorohexane Sulfonate (PFHxS)	0.013	U	0.057	0.013	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Perfluorononanoic acid (PFNA)	0.033	U	0.077	0.033	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Perfluorooctanesulfonic acid (PFOS)	0.025	U	0.057	0.025	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Perfluorooctanoic acid (PFOA)	0.019	U	0.038	0.019	ug/L	—	07/01/16 11:30	07/25/16 12:33	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	102		60 - 155				07/01/16 11:30	07/25/16 12:33	1
13C8 PFOS	101		45 - 130				07/01/16 11:30	07/25/16 12:33	1

Client Sample ID: ANGOF-001

Date Collected: 06/28/16 12:45

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-3

Matrix: Water

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0081	U	0.020	0.0081	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Perfluorohexane Sulfonate (PFHxS)	0.0096	J	0.030	0.0069	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Perfluorooctanesulfonic acid (PFOS)	0.014	J	0.030	0.013	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Perfluorooctanoic acid (PFOA)	0.0097	U	0.020	0.0097	ug/L	—	07/01/16 11:30	07/25/16 12:45	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155				07/01/16 11:30	07/25/16 12:45	1
13C8 PFOS	101		45 - 130				07/01/16 11:30	07/25/16 12:45	1

Surrogate Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)	
Lab Sample ID	Client Sample ID	3C8 PFO/ (60-155)	3C8 PFO: (45-130)
280-85017-1	FB-3	101	100
280-85017-2	TE#5	102	101
280-85017-3	ANGOF-001	103	101
DLCK 280-328740/14	Lab Control Sample	105	106
LCS 280-332167/2-A	Lab Control Sample	99	104
LCSD 280-332167/3-A	Lab Control Sample Dup	104	102
MB 280-332167/1-A	Method Blank	99	95

Surrogate Legend

13C8 PFOA = 13C8 PFOA

13C8 PFOS = 13C8 PFOS

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Lab Sample ID: DLCK 280-328740/14

Matrix: Water

Analysis Batch: 328740

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.443	0.419		ug/L		95	70 - 130
Perfluoroheptanoic acid (PFHpA)	0.500	0.433		ug/L		87	70 - 130
Perfluorohexane Sulfonate (PFHxS)	0.473	0.446		ug/L		94	70 - 130
Perfluorononanoic acid (PFNA)	0.500	0.439		ug/L		88	70 - 130
Perfluorooctanesulfonic acid (PFOS)	0.478	0.456		ug/L		95	70 - 130
Perfluorooctanoic acid (PFOA)	0.500	0.459		ug/L		92	70 - 130

Surrogate	DLCK %Recovery	DLCK Qualifier	Limits
13C8 PFOA	105		60 - 155
13C8 PFOS	106		45 - 130

Lab Sample ID: MB 280-332167/1-A

Matrix: Water

Analysis Batch: 332595

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 332167

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082	ug/L		07/01/16 11:30	07/05/16 20:42	1
Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013	ug/L		07/01/16 11:30	07/05/16 20:42	1
Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070	ug/L		07/01/16 11:30	07/05/16 20:42	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		07/01/16 11:30	07/05/16 20:42	1
Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013	ug/L		07/01/16 11:30	07/05/16 20:42	1
Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098	ug/L		07/01/16 11:30	07/05/16 20:42	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	99		60 - 155	07/01/16 11:30	07/05/16 20:42	1
13C8 PFOS	95		45 - 130	07/01/16 11:30	07/05/16 20:42	1

Lab Sample ID: LCS 280-332167/2-A

Matrix: Water

Analysis Batch: 332595

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 332167

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutane Sulfonate (PFBS)	0.177	0.132		ug/L		75	70 - 134
Perfluoroheptanoic acid (PFHpA)	0.200	0.181		ug/L		91	70 - 135
Perfluorohexane Sulfonate (PFHxS)	0.189	0.173		ug/L		91	70 - 132
Perfluorononanoic acid (PFNA)	0.200	0.176		ug/L		88	69 - 143
Perfluorooctanesulfonic acid (PFOS)	0.191	0.155		ug/L		81	70 - 130
Perfluorooctanoic acid (PFOA)	0.200	0.183		ug/L		92	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
13C8 PFOA	99		60 - 155
13C8 PFOS	104		45 - 130

TestAmerica Denver

QC Sample Results

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons (Continued)

Lab Sample ID: LCSD 280-332167/3-A

Matrix: Water

Analysis Batch: 332595

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 332167

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutane Sulfonate (PFBS)	0.177	0.137		ug/L		77	70 - 134	3	30
Perfluoroheptanoic acid (PFHpA)	0.200	0.196		ug/L		98	70 - 135	8	30
Perfluorohexane Sulfonate (PFHxS)	0.189	0.188		ug/L		99	70 - 132	8	30
Perfluorononanoic acid (PFNA)	0.200	0.180		ug/L		90	69 - 143	2	30
Perfluorooctanesulfonic acid (PFOS)	0.191	0.171		ug/L		89	70 - 130	10	20
Perfluorooctanoic acid (PFOA)	0.200	0.190		ug/L		95	70 - 130	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
13C8 PFOA	104		60 - 155
13C8 PFOS	102		45 - 130

Definitions/Glossary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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)

QC Association Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

LCMS

Analysis Batch: 328740

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-328740/14	Lab Control Sample	Total/NA	Water	DV-LC-0012	

Prep Batch: 332167

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-85017-1	FB-3	Total/NA	Water	3535	
280-85017-2	TE#5	Total/NA	Water	3535	
280-85017-3	ANGOF-001	Total/NA	Water	3535	
MB 280-332167/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-332167/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-332167/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 332595

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 280-332167/1-A	Method Blank	Total/NA	Water	DV-LC-0012	332167
LCS 280-332167/2-A	Lab Control Sample	Total/NA	Water	DV-LC-0012	332167
LCSD 280-332167/3-A	Lab Control Sample Dup	Total/NA	Water	DV-LC-0012	332167

Analysis Batch: 335022

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-85017-1	FB-3	Total/NA	Water	DV-LC-0012	332167
280-85017-2	TE#5	Total/NA	Water	DV-LC-0012	332167
280-85017-3	ANGOF-001	Total/NA	Water	DV-LC-0012	332167

Lab Chronicle

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Client Sample ID: FB-3

Date Collected: 06/28/16 10:55

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			245.9 mL	5 mL	332167	07/01/16 11:30	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			335022	07/25/16 12:21	AGCM	TAL DEN

Client Sample ID: TE#5

Date Collected: 06/28/16 12:04

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			130.5 mL	5 mL	332167	07/01/16 11:30	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			335022	07/25/16 12:33	AGCM	TAL DEN

Client Sample ID: ANGOF-001

Date Collected: 06/28/16 12:45

Date Received: 06/29/16 09:55

Lab Sample ID: 280-85017-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.2 mL	5 mL	332167	07/01/16 11:30	JRK	TAL DEN
Total/NA	Analysis	DV-LC-0012		1			335022	07/25/16 12:45	AGCM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Certification Summary

Client: HDR Inc
Project/Site: Stewart International Airport (PFAS)

TestAmerica Job ID: 280-85017-1

Laboratory: TestAmerica Denver

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

Authority	Program	EPA Region	Certification ID	Expiration Date
New York	NELAP	2	11964	04-01-17

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

Analysis Method	Prep Method	Matrix	Analyte
DV-LC-0012	3535	Water	Perfluorobutane Sulfonate (PFBS)
DV-LC-0012	3535	Water	Perfluoroheptanoic acid (PFHpA)
DV-LC-0012	3535	Water	Perfluorohexane Sulfonate (PFHxS)
DV-LC-0012	3535	Water	Perfluorononanoic acid (PFNA)
DV-LC-0012	3535	Water	Perfluorooctanesulfonic acid (PFOS)
DV-LC-0012	3535	Water	Perfluorooctanoic acid (PFOA)

Oregon	NELAP	10	4025	01-09-17

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Sacramento

The certifications listed below are applicable to this report.

Authority	Program	EPA Region	Certification ID	Expiration Date
Oregon	NELAP	10	4040	01-29-17

Method PFC

Perfluronated Hydrocarbons (LC/MS)
by Method PFC

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver

Job No.: 280-85017-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): Gemini-NX ID: _____

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
FB-3	280-85017-1	101	100
TE#5	280-85017-2	102	101
ANGOF-001	280-85017-3	103	101
	MB 280-332167/1-A	99	95
	LCS 280-332167/2-A	99	104
	LCSD 280-332167/3-A	104	102
	DLCK 280-328740/14	105	106

PFOA = 13C8 PFOA
PFOS = 13C8 PFOS

QC LIMITS
60-155
45-130

Column to be used to flag recovery values

FORM II DV-LC-0012

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516G05047.d
 Lab ID: LCS 280-332167/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.177	0.132	75	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.181	91	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.173	91	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.176	88	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.155	81	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.183	92	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516G05048.d
 Lab ID: LCSD 280-332167/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
Perfluorobutane Sulfonate (PFBS)	0.177	0.137	77	3	30	70-134	
Perfluoroheptanoic acid (PFHpA)	0.200	0.196	98	8	30	70-135	
Perfluorohexane Sulfonate (PFHxS)	0.189	0.188	99	8	30	70-132	
Perfluorononanoic acid (PFNA)	0.200	0.180	90	2	30	69-143	
Perfluorooctanesulfonic acid (PFOS)	0.191	0.171	89	10	20	70-130	
Perfluorooctanoic acid (PFOA)	0.200	0.190	95	3	20	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Matrix: Water Level: Low Lab File ID: PC516F06019.d
 Lab ID: DLCK 280-328740/14 Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorobutane Sulfonate (PFBS)	0.443	0.419	95	70-130	
Perfluoroheptanoic acid (PFHpA)	0.500	0.433	87	70-130	
Perfluorohexane Sulfonate (PFHxS)	0.473	0.446	94	70-130	
Perfluorononanoic acid (PFNA)	0.500	0.439	88	70-130	
Perfluorooctanesulfonic acid (PFOS)	0.478	0.456	95	70-130	
Perfluorooctanoic acid (PFOA)	0.500	0.459	92	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
SDG No.: _____
Lab File ID: PC516G05046.d Lab Sample ID: MB 280-332167/1-A
Matrix: Water Date Extracted: 07/01/2016 11:30
Instrument ID: LC_LCMS5 Date Analyzed: 07/05/2016 20:42
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-332167/2-A	PC516G05047 .d	07/05/2016 20:54
	LCSD 280-332167/3-A	PC516G05048 .d	07/05/2016 21:06
FB-3	280-85017-1	PC516G25009 .d	07/25/2016 12:21
TE#5	280-85017-2	PC516G25010 .d	07/25/2016 12:33
ANGOF-001	280-85017-3	PC516G25011 .d	07/25/2016 12:45

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		BA		HXA		HXS	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		27989040	4.19	22165860	5.83	2309602	6.26
UPPER LIMIT		41983560	4.69	33248790	6.33	3464403	6.76
LOWER LIMIT		13994520	3.69	11082930	5.33	1154801	5.76
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		28978482	4.19	21836187	5.96	2386106	6.43
ICV 280-328740/13		32017793	4.47	23574022	5.89	2511258	6.30
DLCK 280-328740/14		20323348	4.20	23600887	5.89	2616206	6.30
CCV 280-332595/3		29649144	4.10	18505786	5.75	2292835	6.19
MB 280-332167/1-A		30848357	4.02	19806843	5.73	2649797	6.17
LCS 280-332167/2-A		32056566	4.02	19931308	5.72	2656225	6.16
LCSD 280-332167/3-A		30313779	4.00	18806550	5.71	2379241	6.15
CCV 280-332595/14		28423254	4.07	17047727	5.72	2369294	6.16
CCV 280-335022/3		24437404	4.07	16556682	5.71	2192412	6.15
280-85017-1	FB-3	24985690	3.96	17935150	5.69	2409015	6.12
280-85017-2	TE#5	13864712*	3.94	9569935*	5.68	1272031	6.12
280-85017-3	ANGOF-001	28013942	3.94	18775193	5.67	2450568	6.10
CCV 280-335022/7		21262781	4.01	16330750	5.68	2066855	6.11

BA = 13C4 PFBA (IS)
 HXA = 13C2 PFHxA (IS)
 HXS = 18O2 PFHxS (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		OA		PFOS		NA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		29955425	6.60	8404326	6.87	21941427	6.89
UPPER LIMIT		44933138	7.10	12606489	7.37	32912141	7.39
LOWER LIMIT		14977713	6.10	4202163	6.37	10970714	6.39
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		34004746	6.78	9303800	7.07	25696131	7.09
ICV 280-328740/13		33074850	6.63	9669285	6.90	25183863	6.91
DLCK 280-328740/14		34601296	6.62	9456457	6.88	27571989	6.90
CCV 280-332595/3		29618386	6.54	8872947	6.80	21624674	6.82
MB 280-332167/1-A		30997787	6.50	9324866	6.77	23983932	6.79
LCS 280-332167/2-A		30809256	6.50	9441302	6.77	23436477	6.79
LCSD 280-332167/3-A		28335779	6.49	9129799	6.76	22589518	6.78
CCV 280-332595/14		29633799	6.50	8616985	6.77	23307949	6.79
CCV 280-335022/3		24713510	6.50	8543601	6.77	19557631	6.79
280-85017-1	FB-3	26282183	6.46	8651099	6.73	21991152	6.75
280-85017-2	TE#5	13854046*	6.45	3385805*	6.73	9805038*	6.74
280-85017-3	ANGOF-001	28773285	6.44	7909115	6.72	22403426	6.73
CCV 280-335022/7		24818653	6.45	8350642	6.72	19599336	6.74

OA = 13C4 PFOA (IS)
 PFOS = 13C4 PFOS (IS)
 NA = 13C5 PFNA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		DA		UNA		DOA	
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24627236	7.13	14935970	7.34	31753371	7.51
UPPER LIMIT		36940854	7.63	22403955	7.84	47630057	8.01
LOWER LIMIT		12313618	6.63	7467985	6.84	15876686	7.01
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		26344510	7.33	15946426	7.54	35155268	7.71
ICV 280-328740/13		27322567	7.16	17486001	7.37	34783992	7.55
DLCK 280-328740/14		28251355	7.13	17474457	7.34	35228011	7.51
CCV 280-332595/3		23716185	7.06	13895899	7.27	30249694	7.45
MB 280-332167/1-A		25991890	7.04	15160140	7.24	27106743	7.42
LCS 280-332167/2-A		25480230	7.03	14189080	7.24	25191655	7.41
LCSD 280-332167/3-A		24202247	7.03	14364305	7.23	24980179	7.41
CCV 280-332595/14		23957658	7.04	15124315	7.24	31080389	7.42
CCV 280-335022/3		21891266	7.04	12290585	7.24	28183936	7.43
280-85017-1	FB-3	21707250	7.00	12139481	7.22	21024624	7.39
280-85017-2	TE#5	8010219*	6.99	4390920*	7.21	8110898*	7.38
280-85017-3	ANGOF-001	20786422	6.99	10508650	7.20	16377947	7.38
CCV 280-335022/7		20572174	7.00	12669731	7.21	26622876	7.39

DA = 13C2 PFDA (IS)
 UNA = 13C2 PFUnA (IS)
 DOA = 13C2 PFDoA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Instrument ID: LC_LCMS5 Calibration Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calibration End Date: 06/06/2016 16:28
 Calibration ID: 26146

		FOSA					
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		24015655	7.61				
UPPER LIMIT		36023483	8.11				
LOWER LIMIT		12007828	7.11				
LAB SAMPLE ID	CLIENT SAMPLE ID						
ICB 280-328740/12		26245096	7.82				
ICV 280-328740/13		26768431	7.64				
DLCK 280-328740/14		27255655	7.61				
CCV 280-332595/3							
MB 280-332167/1-A							
LCS 280-332167/2-A							
LCSD 280-332167/3-A							
CCV 280-332595/14							
CCV 280-335022/3							
280-85017-1	FB-3						
280-85017-2	TE#5						
280-85017-3	ANGOF-001						
CCV 280-335022/7							

FOSA = 13C8 FOSA (IS)

Area Limit = 50%-150% of internal standard area
 RT Limit = $\pm$ 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII DV-LC-0012

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-85017-1</u>
SDG No.: _____	
Client Sample ID: <u>FB-3</u>	Lab Sample ID: <u>280-85017-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516G25009.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/28/2016 10:55</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>07/01/2016 11:30</u>
Sample wt/vol: <u>245.9(mL)</u>	Date Analyzed: <u>07/25/2016 12:21</u>
Con. Extract Vol.: <u>5(mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25(uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>335022</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0084	U	0.020	0.0084
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.031	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0071	U	0.031	0.0071
375-95-1	Perfluorononanoic acid (PFNA)	0.018	U	0.041	0.018
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.014	U	0.031	0.014
335-67-1	Perfluorooctanoic acid (PFOA)	0.010	U	0.020	0.010

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	101		60-155
STL01054	13C8 PFOS	100		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25009.d
 Lims ID: 280-85017-B-1-A Lab Sample ID: 280-85017-1
 Client ID: FB-3
 Sample Type: Client
 Inject. Date: 25-Jul-2016 12:21:06 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-85017-B-1-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 25-Jul-2016 13:41:57 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK025

First Level Reviewer: meyer

Date: 25-Jul-2016 13:39:14

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.963 4.067 -0.104 24985690 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.251 ND

298.9 > 98.9 5.251

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.686 5.714 -0.028 17935150 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 ND

363.0 > 168.9 6.150

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.120 6.149 -0.029 2409015 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.149 ND

398.9 > 98.9 6.149

\$ 14 13C8 PFOA

421.0 > 375.9 6.461 6.498 -0.037 1.000 21561079 10.1

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.461 6.499 -0.038 26282183 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.499 ND

413.0 > 169.0 6.499

\$ 18 13C8 PFOS

506.9 > 80.0 6.742 6.771 -0.029 1.001 5308575 9.60

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.733 6.771 -0.038 8651099 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.771 ND

498.9 > 98.9 6.771

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.753	6.791	-0.038		21991152	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	7.035	-0.038		21707250	10.0			
* 26 13C2 PFA (IS)									
564.9 > 520.0	7.215	7.243	-0.028		12139481	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.431	-0.038		21024624	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.538	7.557	-0.019		824203	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25009.d

Injection Date: 25-Jul-2016 12:21:06

Instrument ID: LC_LCMS5

Lims ID: 280-85017-B-1-A

Lab Sample ID: 280-85017-1

Client ID: FB-3

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

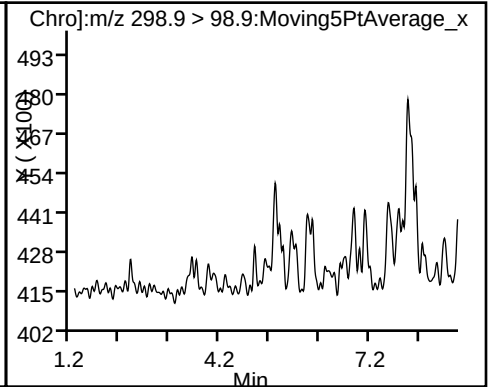
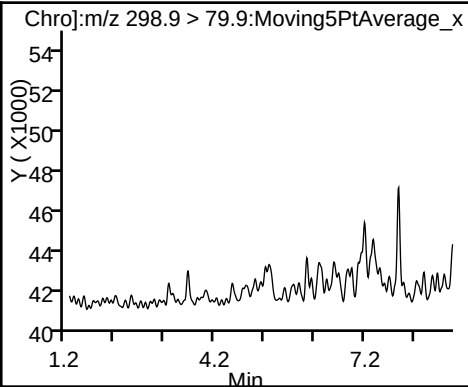
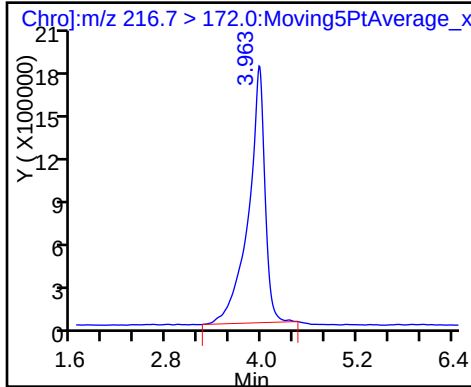
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate (ND)

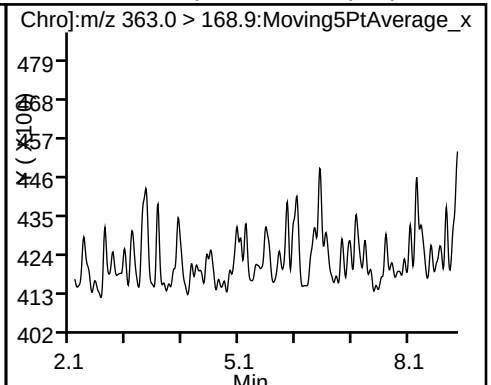
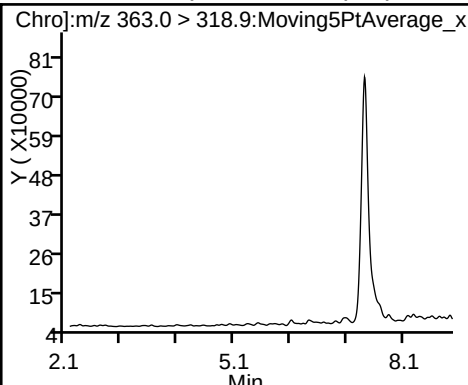
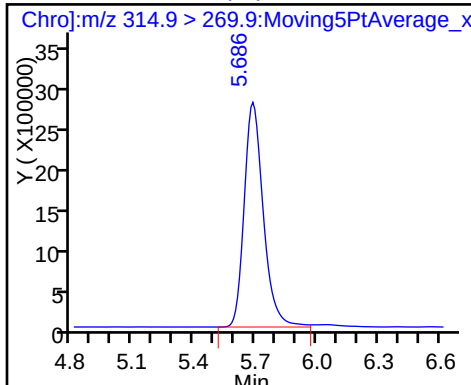
4 Perfluorobutane Sulfonate (ND)



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (ND)

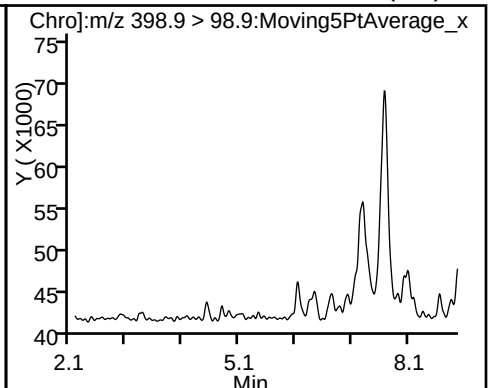
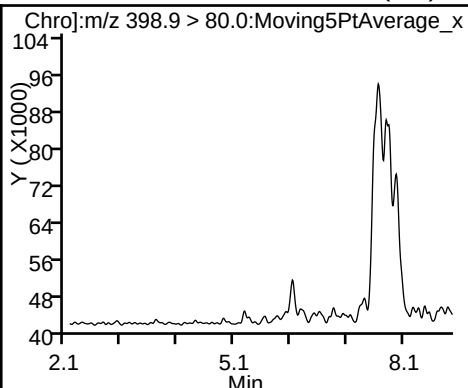
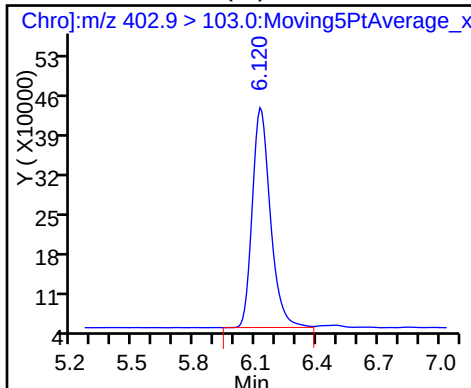
8 Perfluoroheptanoic acid (ND)



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate (ND)

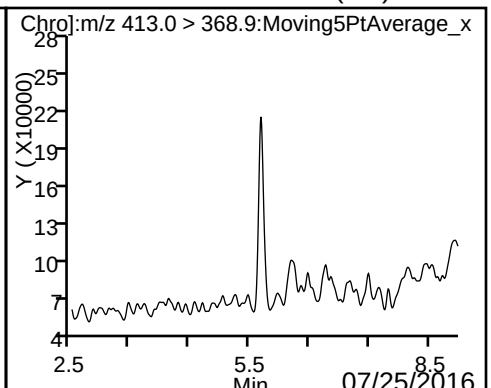
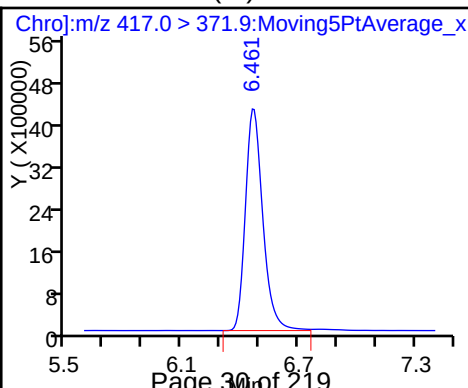
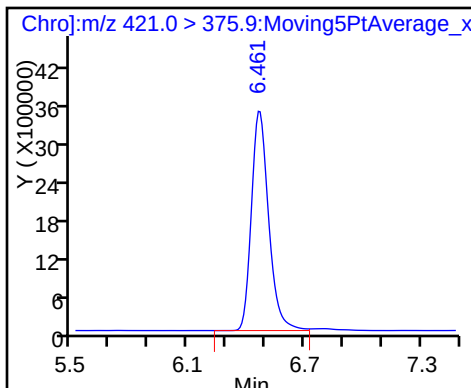
10 Perfluorohexane Sulfonate (ND)



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

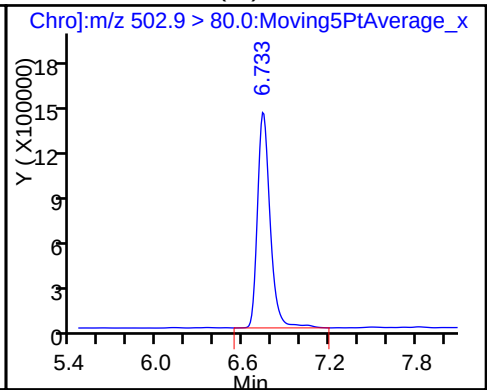
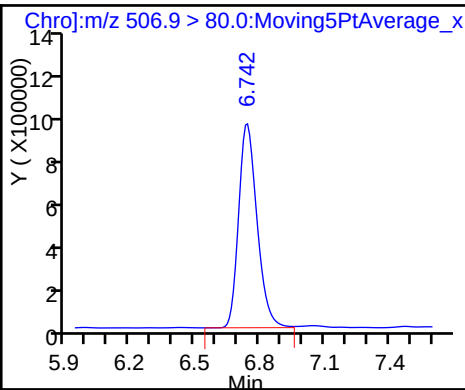
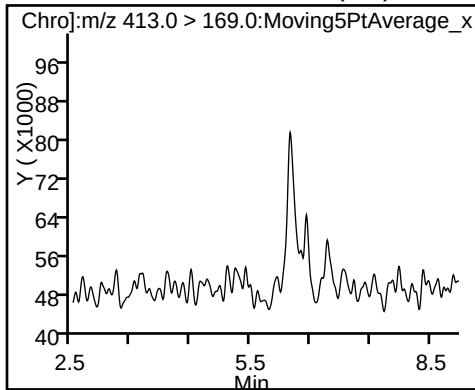
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

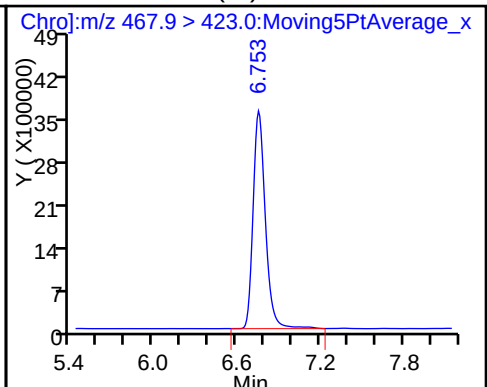
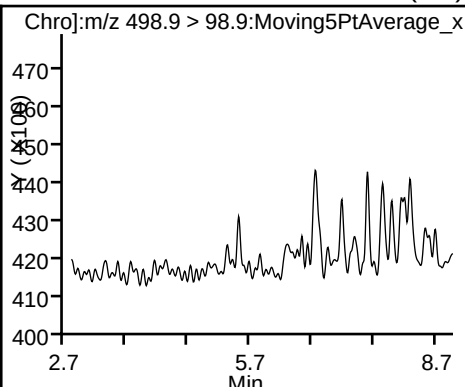
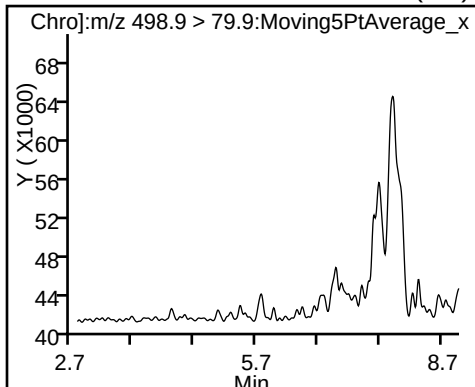
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

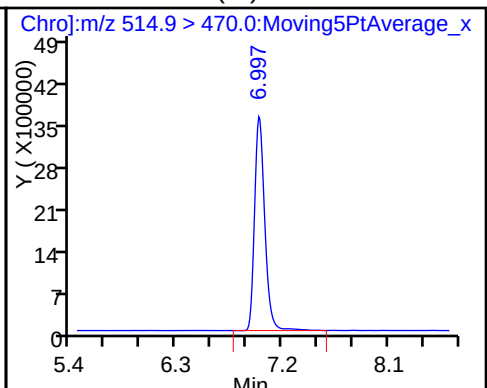
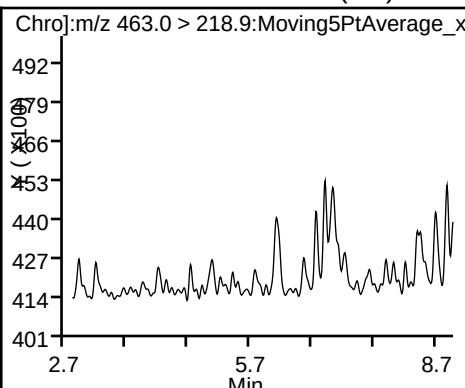
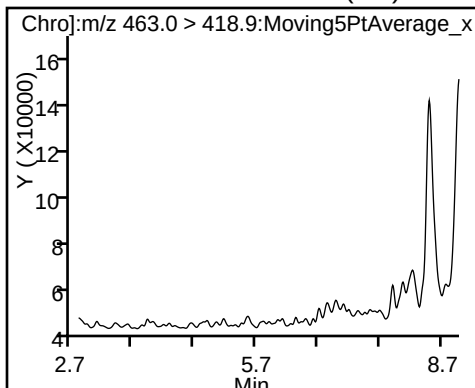
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

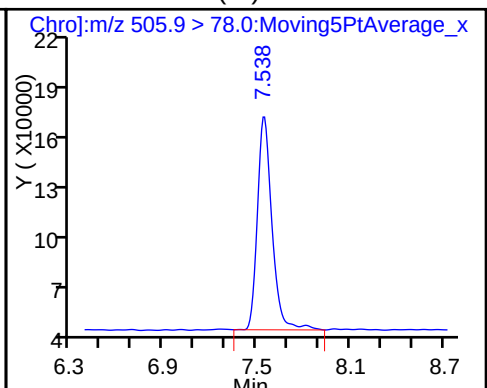
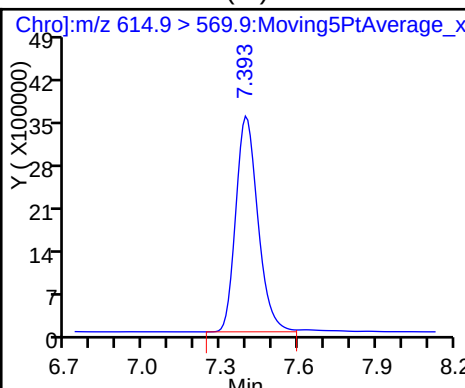
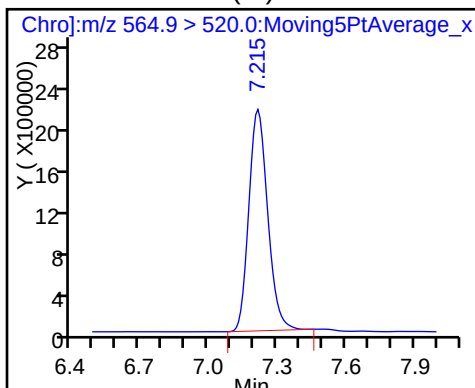
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-85017-1</u>
SDG No.: _____	
Client Sample ID: <u>TE#5</u>	Lab Sample ID: <u>280-85017-2</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516G25010.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/28/2016 12:04</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>07/01/2016 11:30</u>
Sample wt/vol: <u>130.5 (mL)</u>	Date Analyzed: <u>07/25/2016 12:33</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>335022</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.016	U	0.038	0.016
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.025	U	0.057	0.025
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.013	U	0.057	0.013
375-95-1	Perfluorononanoic acid (PFNA)	0.033	U	0.077	0.033
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.025	U	0.057	0.025
335-67-1	Perfluorooctanoic acid (PFOA)	0.019	U	0.038	0.019

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		60-155
STL01054	13C8 PFOS	101		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25010.d
 Lims ID: 280-85017-B-2-A Lab Sample ID: 280-85017-2
 Client ID: TE#5
 Sample Type: Client
 Inject. Date: 25-Jul-2016 12:33:24 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-85017-B-2-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 25-Jul-2016 13:41:57 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK025

First Level Reviewer: meyer

Date: 25-Jul-2016 13:39:46

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									S
216.7 > 172.0	3.944	4.067	-0.123		13864712	5.22			
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.213	5.251	-0.038	0.852	126569	0.1021			R
298.9 > 98.9	5.232	5.251	-0.019	0.855	34891		3.63(1.80-3.35)		
* 6 13C2 PFHxA (IS)									S
314.9 > 269.9	5.676	5.714	-0.038		9569935	5.22			
8 Perfluoroheptanoic acid									
363.0 > 318.9		6.150				ND			
363.0 > 168.9		6.150							
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.120	6.149	-0.029		1272031	4.94			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.111	6.149	-0.038	0.998	181719	0.0980			R
398.9 > 98.9	6.111	6.149	-0.038	0.998	70362		2.58(1.30-2.41)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.461	6.498	-0.037	1.001	11528716	5.35			
* 15 13C4 PFOA (IS)									S
417.0 > 371.9	6.451	6.499	-0.048		13854046	5.22			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.499				ND			
413.0 > 169.0		6.499							
\$ 18 13C8 PFOS									
506.9 > 80.0	6.733	6.771	-0.038	1.000	2092224	5.03			
* 17 13C4 PFOS (IS)									S
502.9 > 80.0	6.733	6.771	-0.038		3385805	4.99			
19 Perfluorooctane sulfonic acid									R7
498.9 > 79.9	6.715	6.771	-0.056	0.997	70347	0.0169			R7
498.9 > 98.9	6.743	6.771	-0.028	1.001	27136		2.59(1.31-2.43)		
LOD = 0.0700									

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									S
467.9 > 423.0	6.744	6.791	-0.047		9805038	5.22			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									S
514.9 > 470.0	6.988	7.035	-0.047		8010219	5.22			
* 26 13C2 PFUnA (IS)									S
564.9 > 520.0	7.205	7.243	-0.038		4390920	5.22			
* 28 13C2 PFDaA (IS)									S
614.9 > 569.9	7.384	7.431	-0.047		8110898	5.22			
* 31 13C8 FOSA (IS)									S
505.9 > 78.0	7.538	7.557	-0.019		360444	5.22			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

7 - Failed Limit of Detection

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25010.d

Injection Date: 25-Jul-2016 12:33:24

Instrument ID: LC_LCMS5

Lims ID: 280-85017-B-2-A

Lab Sample ID: 280-85017-2

Client ID: TE#5

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

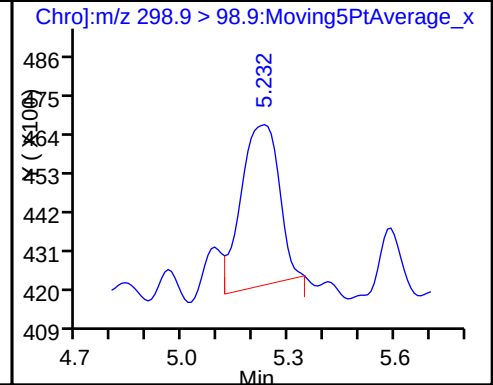
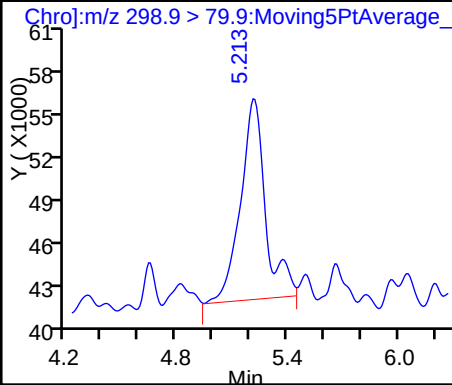
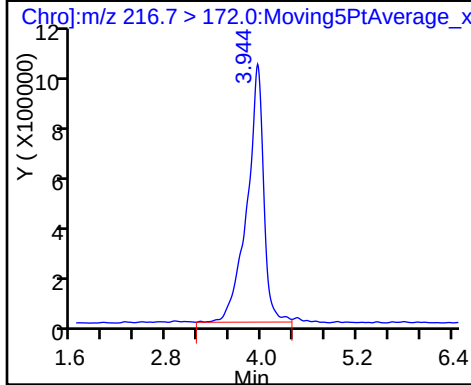
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

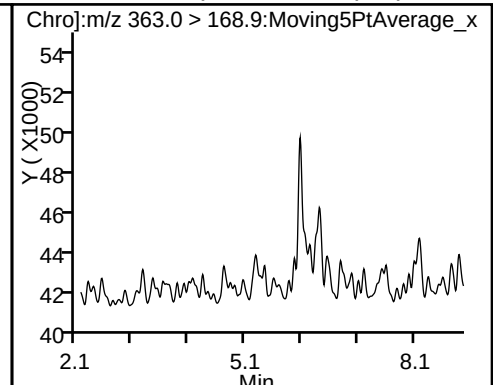
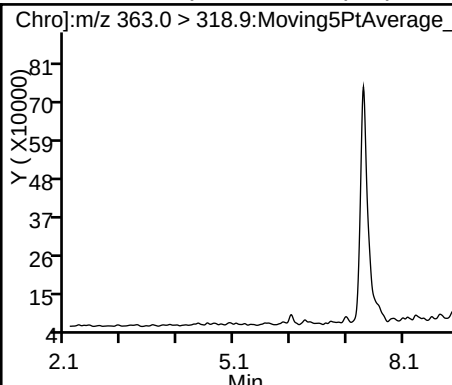
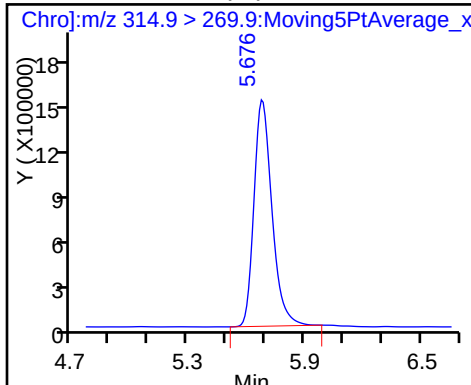
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (ND)

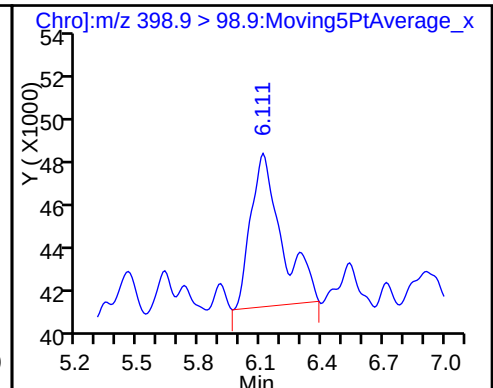
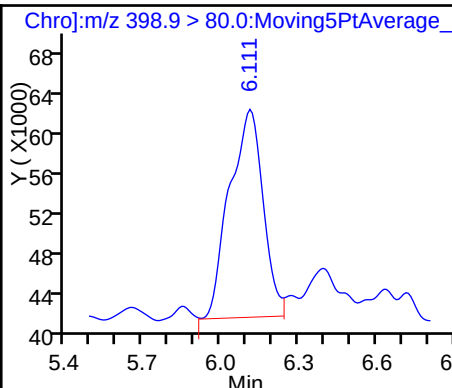
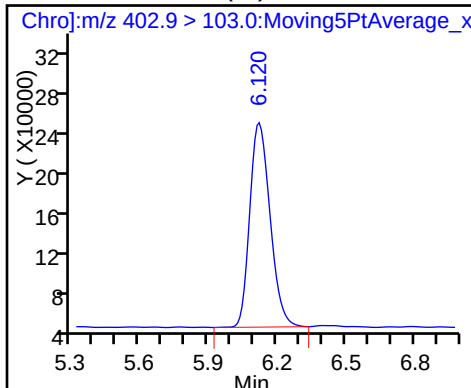
8 Perfluoroheptanoic acid (ND)



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

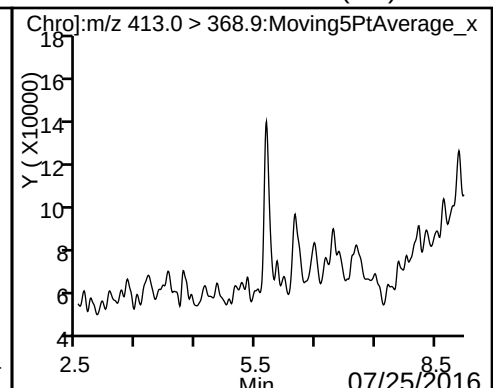
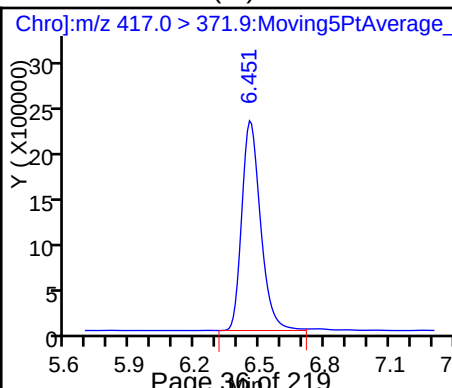
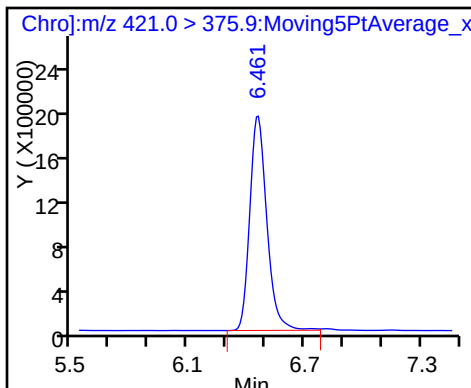
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

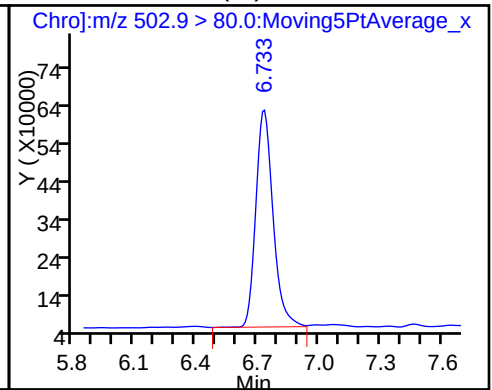
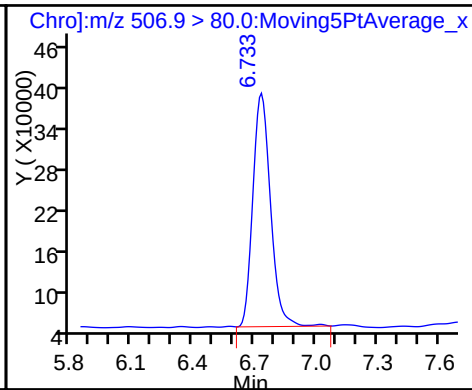
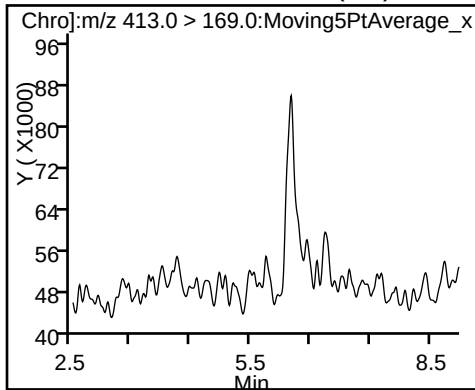
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

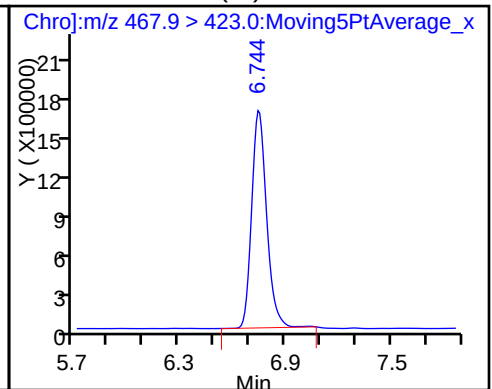
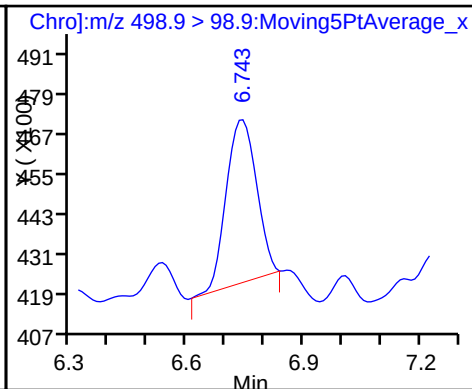
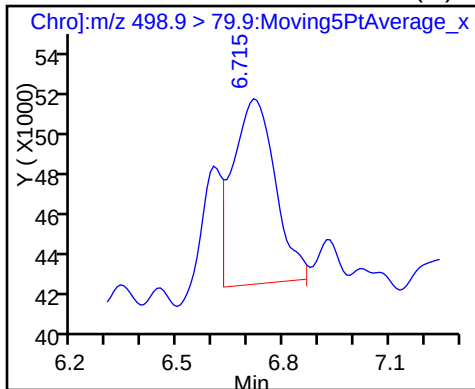
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (M)

19 Perfluorooctane sulfonic acid

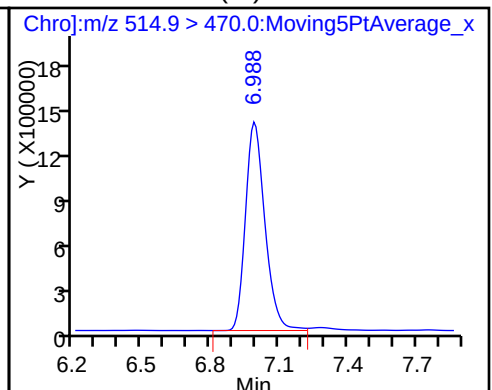
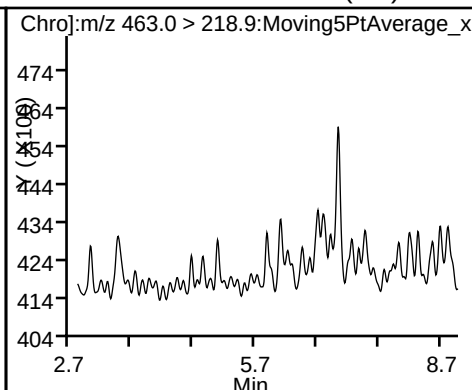
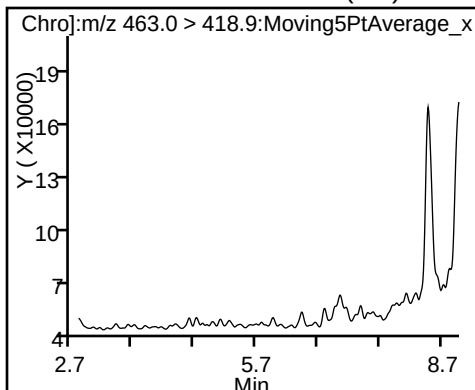
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

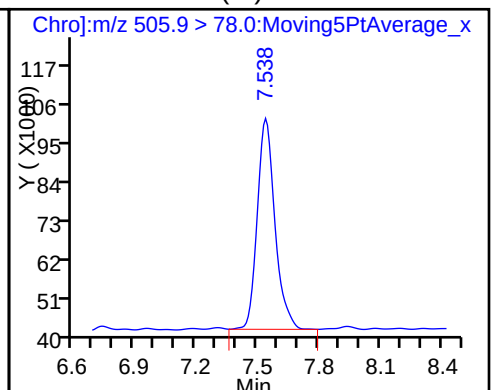
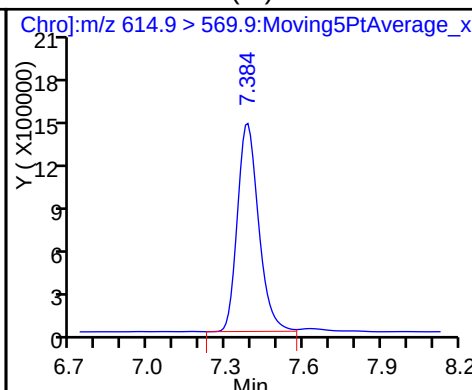
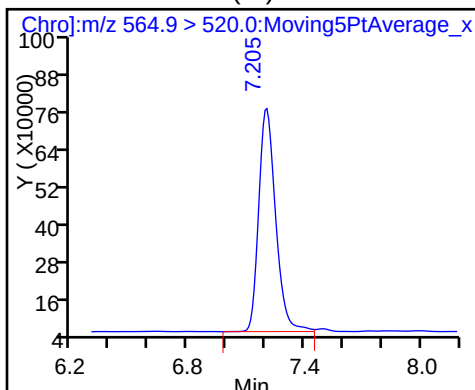
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-85017-1</u>
SDG No.: _____	
Client Sample ID: <u>ANGOF-001</u>	Lab Sample ID: <u>280-85017-3</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516G25011.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: <u>06/28/2016 12:45</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>07/01/2016 11:30</u>
Sample wt/vol: <u>253.2 (mL)</u>	Date Analyzed: <u>07/25/2016 12:45</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>335022</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0081	U	0.020	0.0081
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0096	J	0.030	0.0069
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.039	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.014	J	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0097	U	0.020	0.0097

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		60-155
STL01054	13C8 PFOS	101		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25011.d
 Lims ID: 280-85017-B-3-A Lab Sample ID: 280-85017-3
 Client ID: ANGOF-001
 Sample Type: Client
 Inject. Date: 25-Jul-2016 12:45:43 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: 280-85017-C-3-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 25-Jul-2016 13:41:57 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK025

First Level Reviewer: meyer

Date: 25-Jul-2016 13:40:06

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 3.935 4.067 -0.132 28013942 10.0

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.175 5.251 -0.076 0.848 120901 0.0974

298.9 > 98.9 5.184 5.251 -0.067 0.850 47177 2.56(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.667 5.714 -0.047 18775193 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.093 6.150 -0.057 0.946 677688 0.2382

363.0 > 168.9 6.083 6.150 -0.067 0.944 163907 4.13(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.102 6.149 -0.047 2450568 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.102 6.149 -0.047 1.000 569552 0.4873

398.9 > 98.9 6.102 6.149 -0.047 1.000 194112 2.93(1.30-2.41)

R

R

\$ 14 13C8 PFOA

421.0 > 375.9 6.442 6.498 -0.056 1.000 23848447 10.3

* 15 13C4 PFOA (IS)

417.0 > 371.9 6.442 6.499 -0.057 28773285 10.0

16 Perfluorooctanoic acid

413.0 > 368.9 6.452 6.499 -0.047 1.002 733940 0.1749

413.0 > 169.0 6.452 6.499 -0.047 1.002 287682 2.55(2.86-5.31)

R

R

\$ 18 13C8 PFOS

506.9 > 80.0 6.723 6.771 -0.048 1.000 4871288 9.63

* 17 13C4 PFOS (IS)

502.9 > 80.0 6.724 6.771 -0.047 7909115 9.56

19 Perfluorooctane sulfonic acid

498.9 > 79.9 6.715 6.771 -0.056 0.999 766242 0.7241

498.9 > 98.9 6.724 6.771 -0.047 1.000 201659 3.80(1.31-2.43)

R

R

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25011.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.734	6.791	-0.057		22403426	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9		6.791				ND			
463.0 > 218.9		6.791							
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.988	7.035	-0.047		20786422	10.0			
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.196	7.243	-0.047		10508650	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.384	7.431	-0.047		16377947	10.0			
* 31 13C8 FOSA (IS)									s
505.9 > 78.0	7.529	7.557	-0.028		1430275	10.0			

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25011.d

Injection Date: 25-Jul-2016 12:45:43

Instrument ID: LC_LCMS5

Lims ID: 280-85017-B-3-A

Lab Sample ID: 280-85017-3

Client ID: ANGOF-001

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

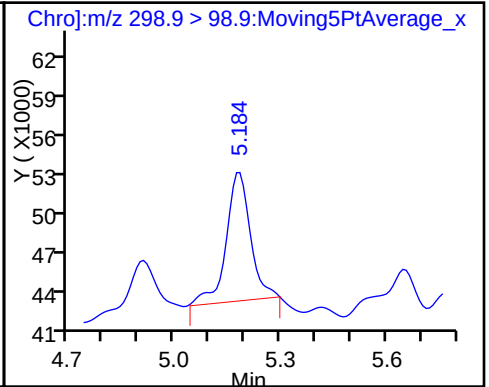
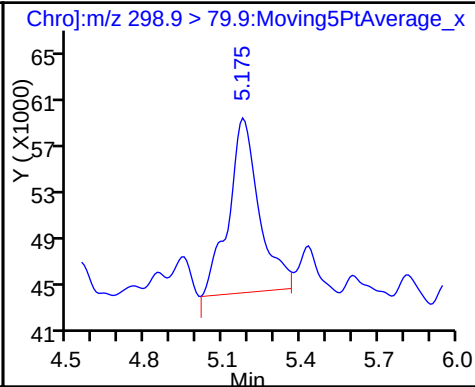
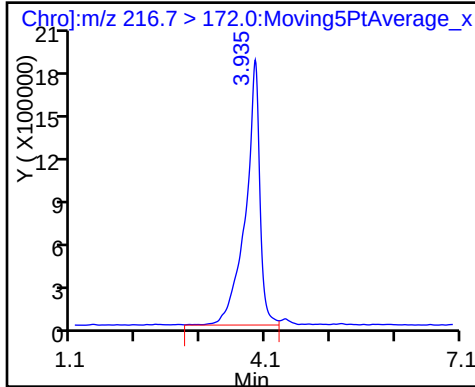
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

4 Perfluorobutane Sulfonate

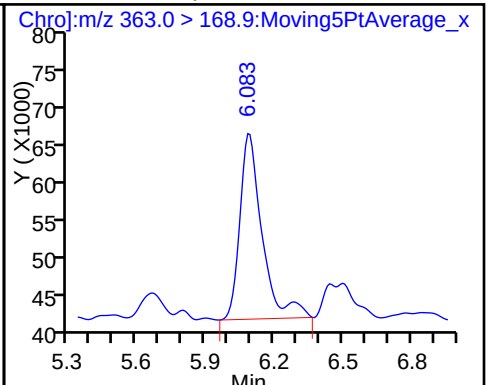
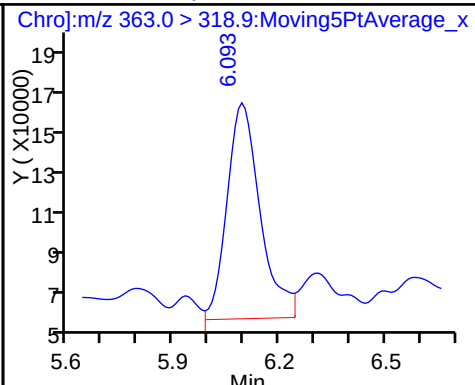
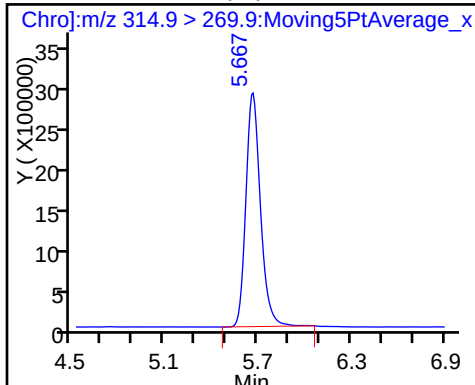
4 Perfluorobutane Sulfonate



* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

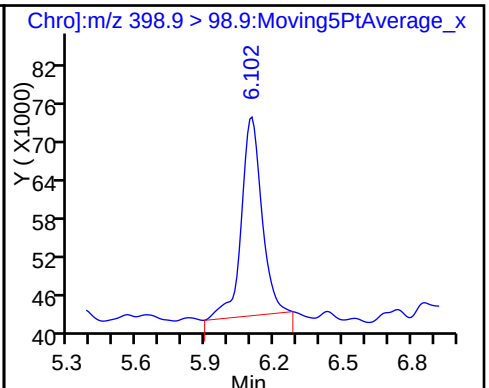
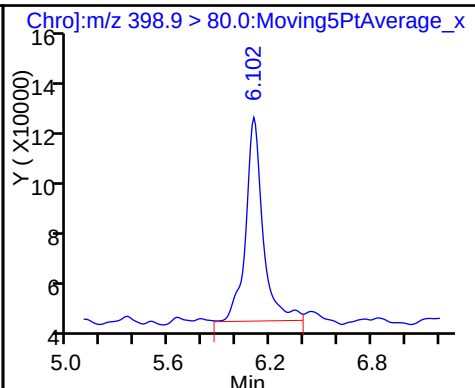
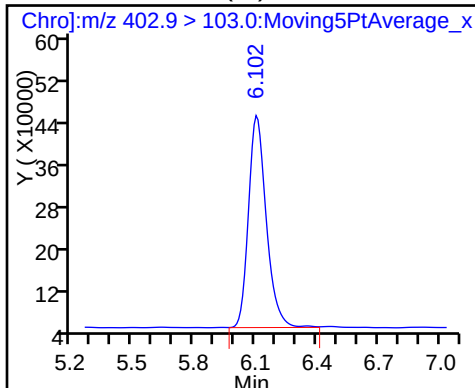
8 Perfluoroheptanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

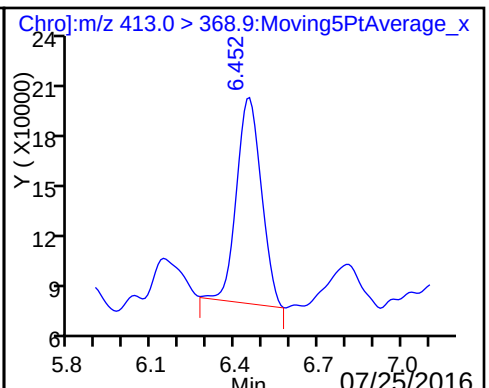
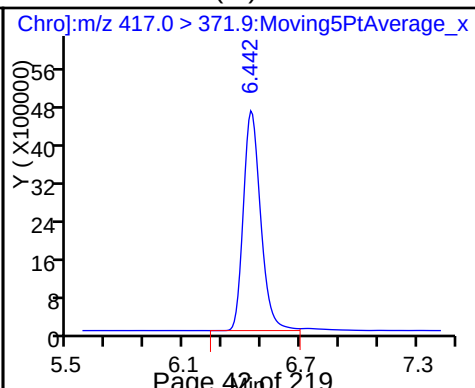
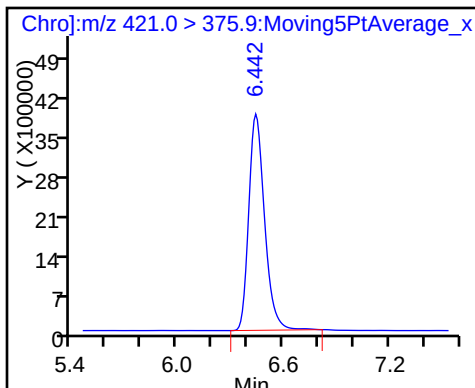
10 Perfluorohexane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

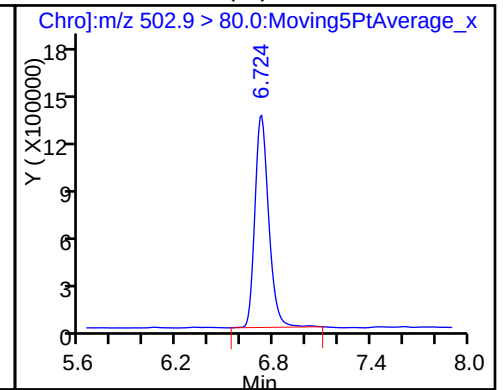
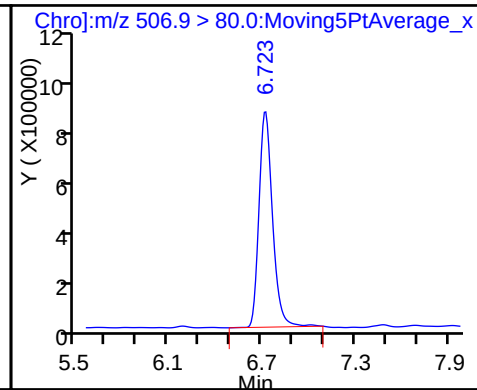
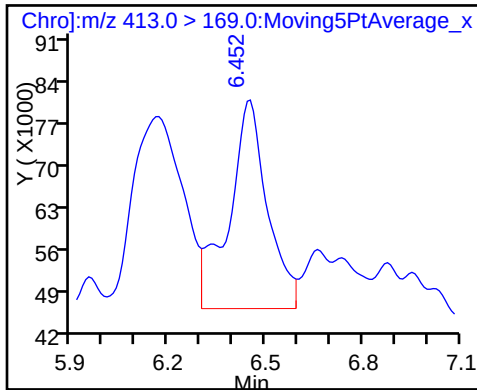
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

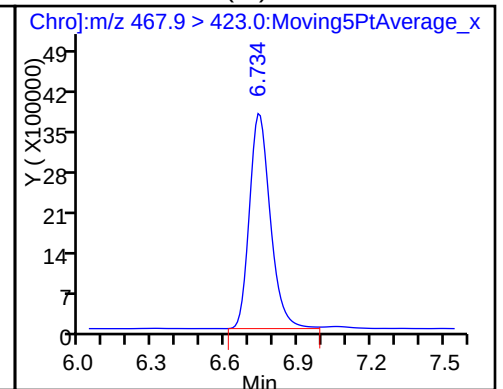
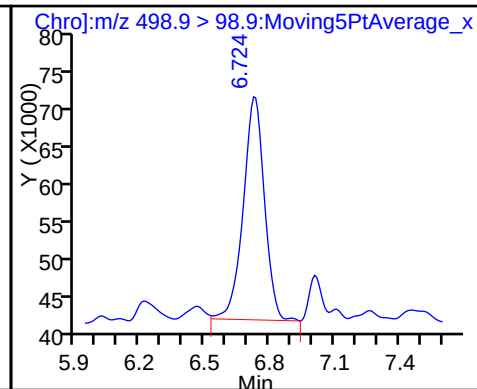
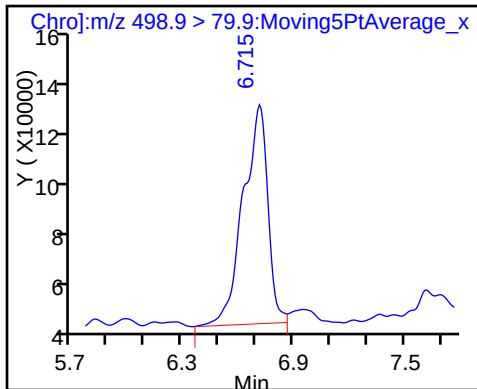
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

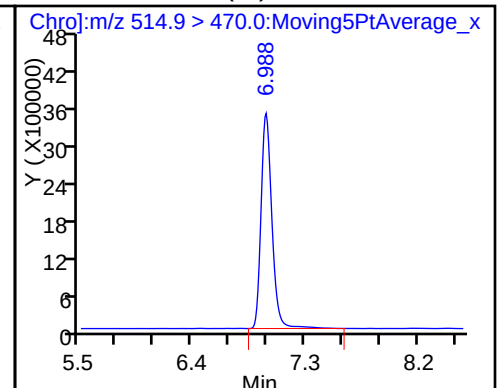
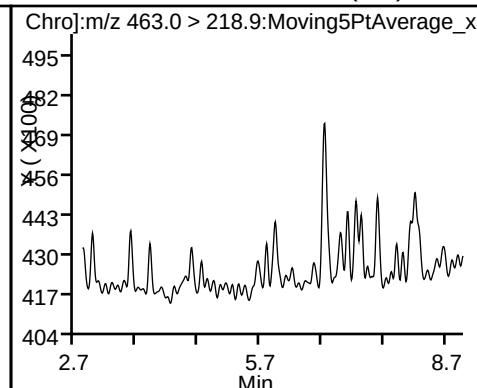
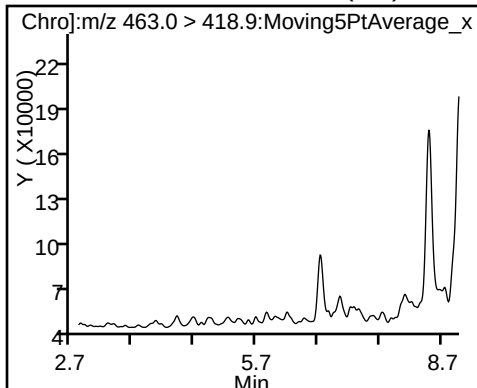
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid (ND)

20 Perfluorononanoic acid (ND)

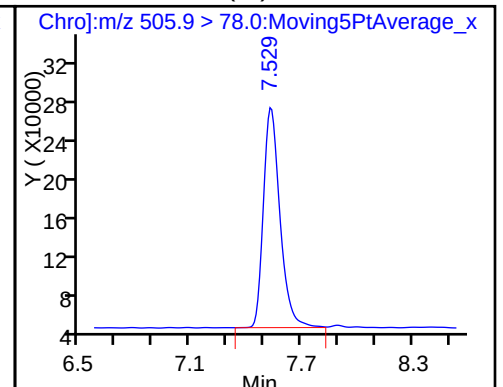
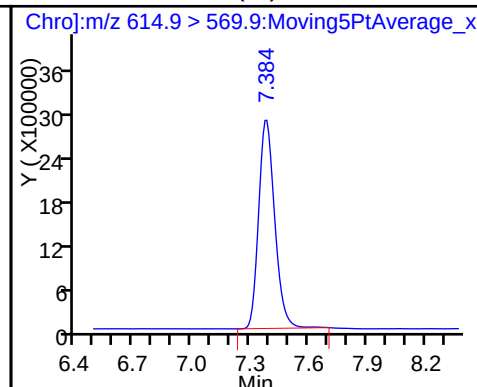
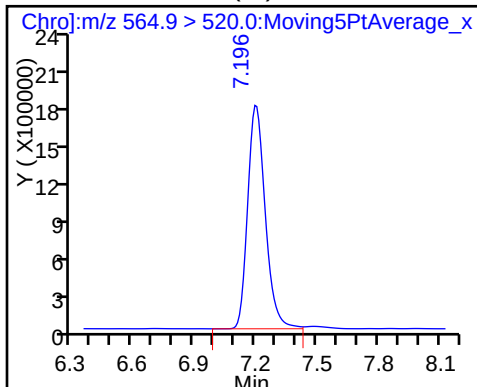
* 22 13C2 PFDA (IS)



* 26 13C2 PFUnA (IS)

* 28 13C2 PFDaA (IS)

* 31 13C8 FOSA (IS)



FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-85017-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-328740/3	PC516F06008.d
Level 2	STD0005 280-328740/4	PC516F06009.d
Level 3	STD0010 280-328740/5	PC516F06010.d
Level 4	STD0020 280-328740/6	PC516F06011.d
Level 5	STD0050 280-328740/7	PC516F06012.d
Level 6	STD0100 280-328740/8	PC516F06013.d
Level 7	STD0200 280-328740/9	PC516F06014.d
Level 8	STD0500 280-328740/10	PC516F06015.d
Level 9	STD1250 280-328740/11	PC516F06016.d

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 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Perfluorobutanoic acid (PFBA)	1.0935 1.0731	0.9682 1.1168	1.1011 1.0889	1.0163 1.1259	1.0411	Lin2	-0.004	1.0730							0.9970		0.9800
Perfluoropentanoic acid (PFPA)	1.3959 1.2078	1.0565 1.2222	1.2095 1.2100	1.1322 1.1856	1.2067	Lin2	0.0300	1.1734							0.9950		0.9800
Perfluorobutane Sulfonate (PFBS)	5.1403 4.7868	4.9725 5.2449	5.0208 5.5169	4.6740 5.9824	5.2935	Lin2	-0.043	5.2289							0.9930		0.9800
Perfluorobutanesulfonic acid	5.1403 4.7868	4.9725 5.2449	5.0208 5.5169	4.6740 5.9824	5.2935	Lin2	-0.043	5.2289							0.9930		0.9800
Perfluorohexanoic acid (PFHxA)	1.0267 0.9482	1.0181 0.9452	0.9750 0.9241	1.0158 0.9118	0.9109	Lin2	0.0206	0.9436							0.9990		0.9800
Perfluoroheptanoic acid (PFHpA)	1.0268 0.9363	0.9027 0.9087	0.8648 0.8487	0.8655 0.8270	0.8797	Lin2	0.0290	0.8670							0.9980		0.9800
Perfluorohexane Sulfonate (PFHxS)	5.5961 3.6390	4.4606 4.0123	4.1902 3.7210	4.0834 3.8307	4.0848	Lin2	0.3295	3.8358							0.9990		0.9800
Perfluorohexanesulfonic acid	5.5961 3.6390	4.4606 4.0123	4.1902 3.7210	4.0834 3.8307	4.0848	Lin2	0.3295	3.8358							0.9990		0.9800
Perfluoroheptane Sulfonate	1.0469 1.2337	1.4301 1.1966	1.2370 1.2023	1.1876 1.0563	1.2143	Lin2	-0.012	1.2131							0.9900		0.9800
Perfluoroheptanesulfonic Acid (PFHpS)	1.0469 1.2337	1.4301 1.1966	1.2370 1.2023	1.1876 1.0563	1.2143	Lin2	-0.012	1.2131							0.9900		0.9800
Perfluorooctanoic acid (PFOA)	1.3260 1.0892	1.3937 1.0793	1.0859 0.9740	1.0522 0.9049	1.0619	Lin2	0.0742	1.0342							0.9890		0.9800
Perfluorooctanesulfonic acid (PFOS)	1.5676 1.2584	1.3596 1.1582	1.3732 1.1122	1.1887 0.9589	1.2720	Lin2	0.0841	1.1630							0.9910		0.9800
Perfluorononanoic acid (PFNA)	1.3972 1.1280	1.1487 1.1212	1.0990 1.1350	1.1535 1.1303	1.1718	Lin2	0.0488	1.1168							0.9980		0.9800

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

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-85017-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8	LVL 9													
Perfluorodecanoic acid (PFDA)	1.1899 1.0233	1.0247 0.9665	1.0818 1.0033	1.0008 0.9920	1.0636	Lin2	0.0350	1.0039							0.9990		0.9800
Perfluorodecane sulfonate (PFDS)	1.4838 1.2796	1.3630 1.2639	1.2150 1.2964	1.2209 1.1582	1.2487	Lin2	0.0481	1.2319							0.9980		0.9800
Perfluorodecane Sulfonic acid	1.4838 1.2796	1.3630 1.2639	1.2150 1.2964	1.2209 1.1582	1.2487	Lin2	0.0481	1.2319							0.9980		0.9800
Perfluoroundecanoic acid (PFUnA)	1.7146 1.4647	1.7101 1.3676	1.5648 1.3430	1.3951 1.3939	1.4002	Lin2	0.0750	1.4098							0.9960		0.9800
Perfluorododecanoic acid (PFDoA)	1.3017 1.0587	1.1956 1.0311	1.0672 0.9868	1.0267 1.0217	1.0324	Lin2	0.0595	1.0215							0.9990		0.9800
Perfluorooctane Sulfonamide (FOSA)	1.1447 1.0951	1.0906 1.0524	1.0905 1.0899	1.0591 1.1084	1.1227	Lin2	0.0103	1.0846							0.9990		0.9800
Perfluorotridecanoic Acid (PFTriA)	1.2872 0.9589	1.0900 0.9686	0.9993 0.8414	0.9813 0.8847	0.9590	Lin2	0.0751	0.9227							0.9980		0.9800
Perfluorotetradecanoic acid (PFTeA)	0.6533 0.5880	0.5308 0.6377	0.5451 0.6135	0.5482 0.6668	0.5681	Lin2	0.0042	0.5905							0.9910		0.9800
13C8 PFOA	0.9499 0.8392	0.9381 0.7496	0.9704 0.7015	0.8844 0.6647	0.8995	Lin2	0.0401	0.8046							0.9840		0.9800
13C8 PFOS	0.6559 0.6428	0.7415 0.5602	0.6905 0.5481	0.6966 0.4724	0.6607	Lin2	0.0199	0.6093							0.9800		0.9800

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

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-85017-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-328740/3	PC516F06008.d
Level 2	STD0005 280-328740/4	PC516F06009.d
Level 3	STD0010 280-328740/5	PC516F06010.d
Level 4	STD0020 280-328740/6	PC516F06011.d
Level 5	STD0050 280-328740/7	PC516F06012.d
Level 6	STD0100 280-328740/8	PC516F06013.d
Level 7	STD0200 280-328740/9	PC516F06014.d
Level 8	STD0500 280-328740/10	PC516F06015.d
Level 9	STD1250 280-328740/11	PC516F06016.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorobutanoic acid (PFBA)	BA	Lin2	595154 30314584	1295896 64808389	3038727 157344591	5302668 394160471	15646483	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoropentanoic acid (PFPA)	HXA	Lin2	684905 26550357	1319121 52945593	2769987 120508960	5174660 255912628	14121680	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorobutane Sulfonate (PFBS)	HXS	Lin2	250069 10998014	623522 21952626	1117801 52661159	2150148 113831493	5710734	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorobutanesulfonic acid	HXS	Lin2	250069 10998014	623522 21952626	1117801 52661159	2150148 113831493	5710734	0.177 8.85	0.443 17.7	0.885 44.3	1.77 111	4.43
Perfluorohexanoic acid (PFHxA)	HXA	Lin2	503746 20841959	1271251 40945931	2232965 92031312	4642778 196806552	10659437	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluoroheptanoic acid (PFHpA)	OA	Lin2	696517 27517800	1648753 50554239	2810806 102889489	5744336 201805611	14292973	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorohexane Sulfonate (PFHxS)	HXS	Lin2	290699 8927761	597251 17932033	996121 37926174	2005825 77830813	4705477	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluorohexanesulfonic acid	HXS	Lin2	290699 8927761	597251 17932033	996121 37926174	2005825 77830813	4705477	0.189 9.45	0.473 18.9	0.945 47.3	1.89 118	4.73
Perfluoroheptane Sulfonate	PFOS	Lin2	193401 10232509	677069 20264466	1051810 43315154	2150073 81786282	5403580	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluoroheptanesulfonic Acid (PFHpS)	PFOS	Lin2	193401 10232509	677069 20264466	1051810 43315154	2150073 81786282	5403580	0.190 9.52	0.476 19.0	0.952 47.6	1.90 119	4.76
Perfluorooctanoic acid (PFOA)	OA	Lin2	899444 32009782	2545486 60046068	3529270 118077119	6983614 220819164	17252348	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctanesulfonic acid (PFOS)	PFOS	Lin2	290513 10470143	645716 19674973	1171224 40197453	2158847 74481235	5678428	0.191 9.55	0.478 19.1	0.955 47.8	1.91 119	4.78
Perfluorononanoic acid (PFNA)	NA	Lin2	740676 25021117	1587923 43845776	2681286 90947910	5817495 168854641	14058059	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorodecanoic acid (PFDA)	DA	Lin2	647522 25238466	1445379 48421431	2800062 109010928	5187930 219177035	13455719	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-85017-1 Analy Batch No.: 328740

SDG No.: _____

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: _____ Heated Purge: (Y/N) N

Calibration Start Date: 06/06/2016 14:49 Calibration End Date: 06/06/2016 16:28 Calibration ID: 26146

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Perfluorodecane sulfonate (PFDS)	PFOS	Lin2	277874 10758635	654135 21695661	1047130 47343835	2240490 90907790	5632521	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluorodecane Sulfonic acid	PFOS	Lin2	277874 10758635	654135 21695661	1047130 47343835	2240490 90907790	5632521	0.193 9.65	0.483 19.3	0.965 48.3	1.93 121	4.83
Perfluoroundecanoic acid (PFUnA)	UNA	Lin2	588700 21285381	1566038 39180966	2540060 77899378	4772902 154032440	11414147	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorododecanoic acid (PFDoA)	DOA	Lin2	915560 33735988	2159339 63246783	3492545 142077526	6822134 293807930	17657166	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonamide (FOSA)	FOSA	Lin2	590186 26107207	1495146 51602388	2697496 117575149	5393596 250150013	13895071	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotridecanoic Acid (PFTriA)	DOA	Lin2	905331 30556604	1968702 59415459	3270152 121132497	6520781 254423900	16402113	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorotetradecanoic acid (PFTeA)	DOA	Lin2	459487 18737310	958729 39118116	1783816 88331768	3642443 191754560	9715521	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOA	OA	Lin2	644366 24662701	1713329 41702455	3153884 85046612	5869974 162199054	14613722	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	121681 5353658	352518 9525828	589580 19830288	1266475 36728856	2952684	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:

Lin2 = Linear 1/conc^2 ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d
 Lims ID: STD0002
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 06-Jun-2016 14:49:59 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0002, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:32 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:00:17

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.446 4.020 0.426 27213757 10.0

2 Perfluorobutyric acid

213.0 > 168.9 3.982 4.020 -0.038 0.896 595154 0.2072

3 Perfluoropentanoic acid

263.0 > 218.9 5.355 5.100 0.255 0.910 684905 0.2124

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.450 5.222 0.228 0.865 250069 0.1822

298.9 > 98.9 5.459 5.222 0.237 0.866 81289 3.08(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.450 5.222 0.228 0.865 250069 0.1822

298.9 > 98.9 5.459 5.222 0.237 0.866 81289 3.08(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.885 5.695 0.190 24532160 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.894 5.686 0.208 1.002 503746 0.1957

313.0 > 118.6 5.923 5.686 0.237 1.006 10193 49.42(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.292 6.121 0.171 0.949 696517 0.2034

363.0 > 168.9 6.292 6.121 0.171 0.949 191107 3.64(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.300 6.130 0.170 2600098 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.301 6.130 0.171 1.000 290699 0.1898

398.9 > 98.9 6.291 6.130 0.161 0.999 100556 2.89(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.301 6.130 0.171 1.000 290699 0.1898

398.9 > 98.9 6.291 6.130 0.161 0.999 100556 2.89(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.621	6.460	0.161	0.959	193401	0.1743			
449.0 > 98.9	6.621	6.460	0.161	0.959	76248		2.54(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.621	6.460	0.161	0.959	193401	0.1743			
449.0 > 98.9	6.621	6.460	0.161	0.959	76248		2.54(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.470	0.161	1.000	644366	0.1863			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.470	0.161		33916758	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.471	0.161	1.000	899444	0.1846			
413.0 > 169.0	6.632	6.471	0.161	1.000	303395		2.96(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.894	6.742	0.152	0.999	121681	0.1731			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.743	0.161		9276020	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.904	6.743	0.161	1.000	290513	0.1852			R
498.9 > 98.9	6.885	6.743	0.142	0.997	81976		3.54(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.753	0.161		26504778	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.924	6.753	0.171	1.001	740676	0.2065			
463.0 > 218.9	6.905	6.753	0.152	0.999	111132		6.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.159	6.998	0.161	1.000	647522	0.2022			R
513.0 > 219.0	7.159	6.998	0.161	1.000	83452		7.76(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.007	0.151		27209809	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.347	7.186	0.161	1.064	277874	0.1934			
598.9 > 99.0	7.356	7.186	0.170	1.066	72213		3.85(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.347	7.186	0.161	1.064	277874	0.1934			R
598.9 > 99.0	7.356	7.186	0.170	1.066	72213		3.85(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.215	0.151		17167663	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.366	7.215	0.151	1.000	588700	0.1901			
563.0 > 268.9	7.366	7.215	0.151	1.000	96854		6.08(3.47-6.45)		
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.545	7.393	0.152		35167056	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.545	7.394	0.151	1.000	915560	0.1966			
613.0 > 168.9	7.545	7.394	0.151	1.000	122464		7.48(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.696	7.545	0.151	1.020	905331	0.1977			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.529	0.113		25779733	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.530	0.113	1.000	590186	0.2016			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.829	7.677	0.152	1.038	459487	0.2142			
712.9 > 169.0	7.829	7.677	0.152	1.038	71115		6.46(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC_CAL_stock_00033

Amount Added: 10.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06008.d

Injection Date: 06-Jun-2016 14:49:59

Instrument ID: LC_LCMS5

Lims ID: STD0002

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

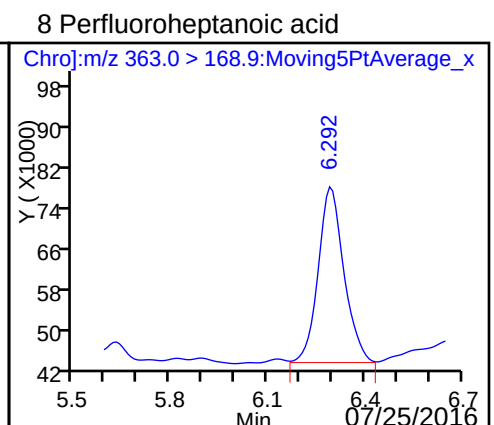
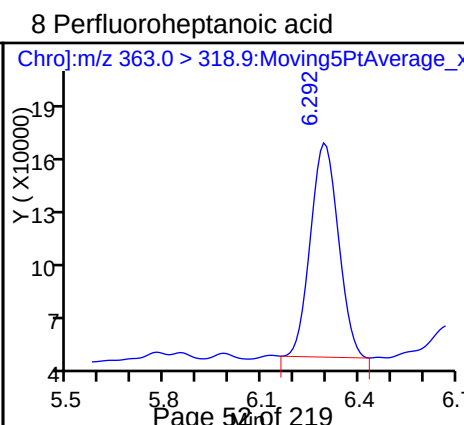
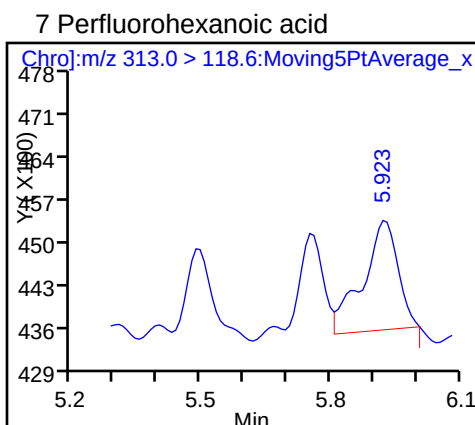
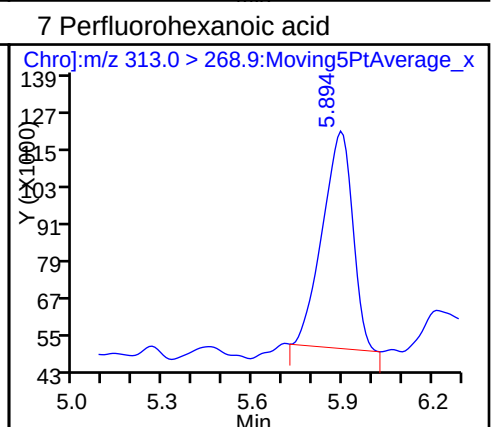
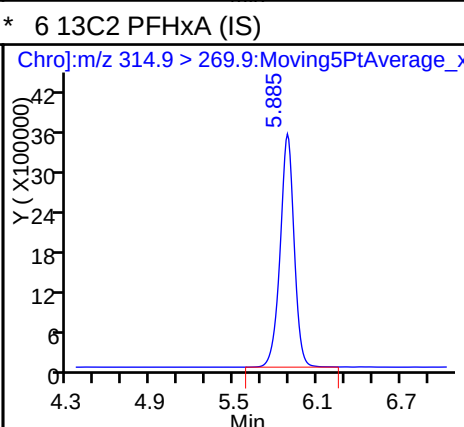
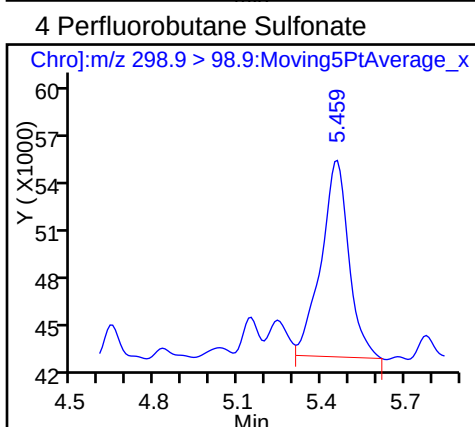
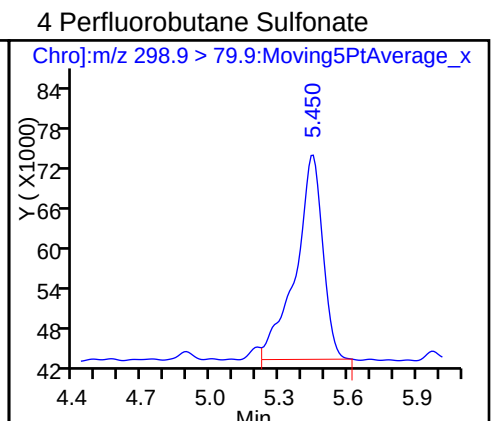
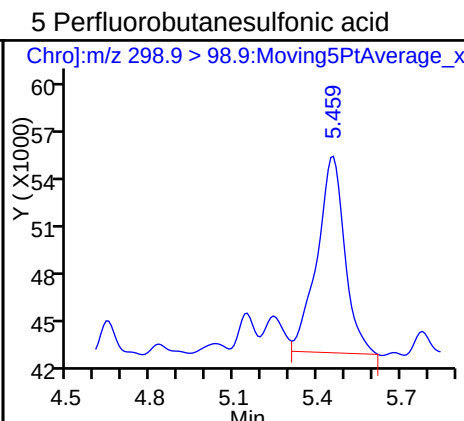
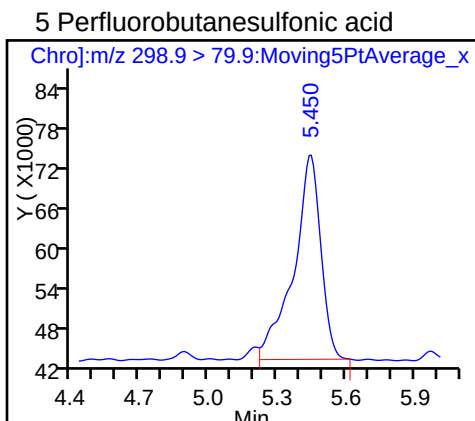
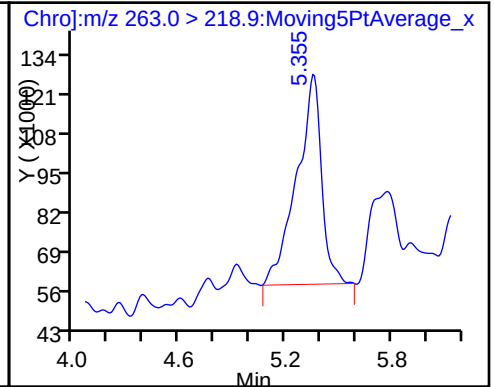
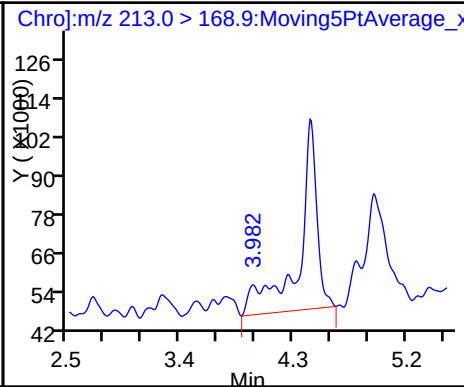
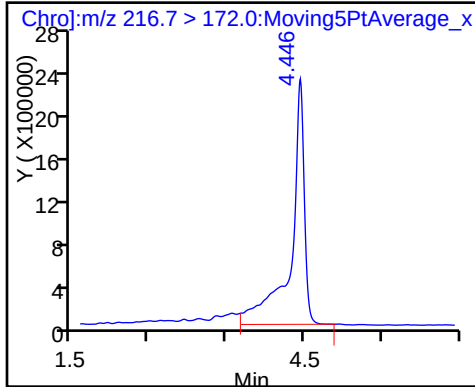
Method: 8321_PFC

Limit Group: LC - PFC

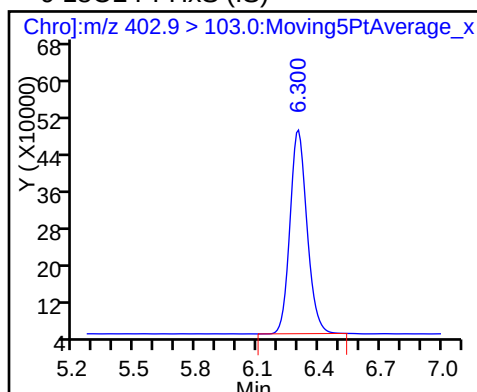
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

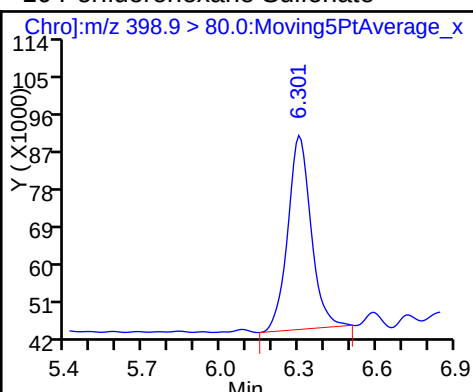
3 Perfluoropentanoic acid



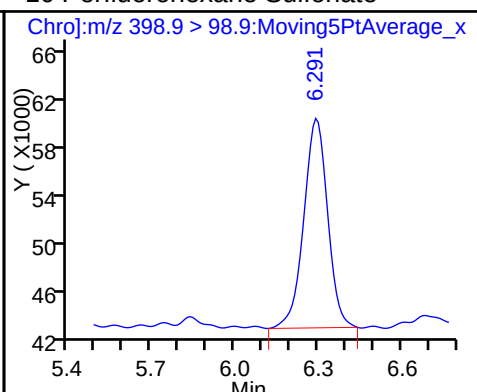
* 9 18O2 PFHxS (IS)



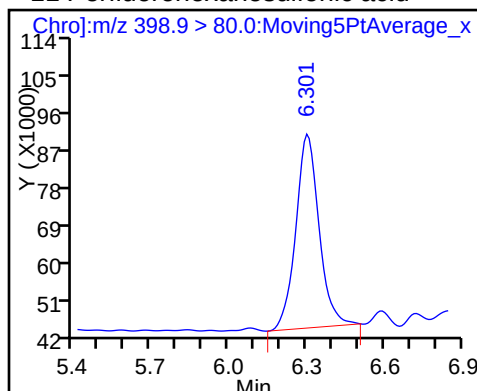
10 Perfluorohexane Sulfonate



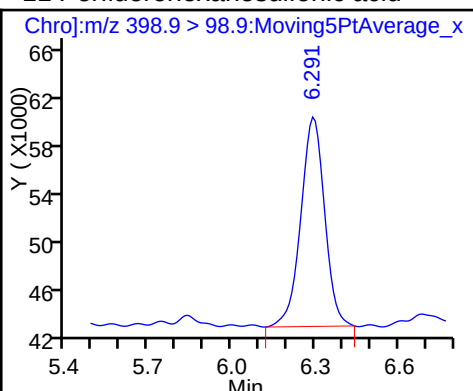
10 Perfluorohexane Sulfonate



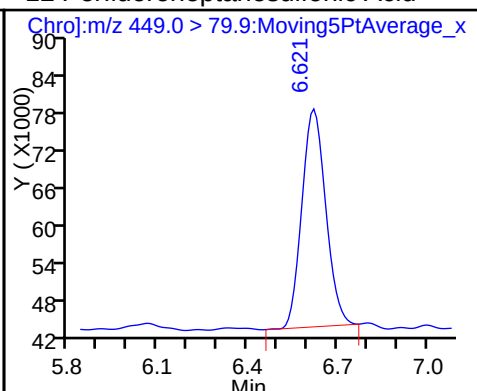
11 Perfluorohexanesulfonic acid



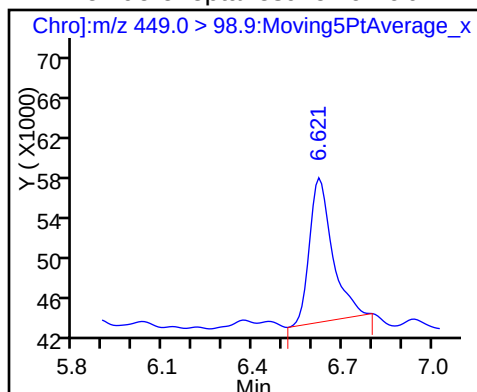
11 Perfluorohexanesulfonic acid



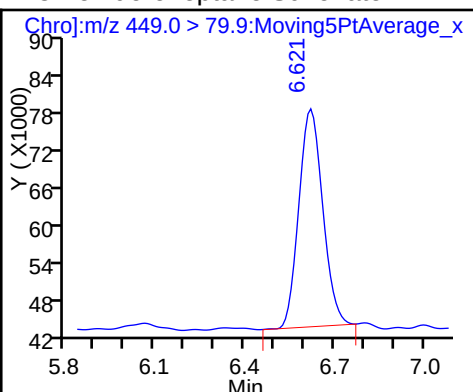
12 Perfluoroheptanesulfonic Acid



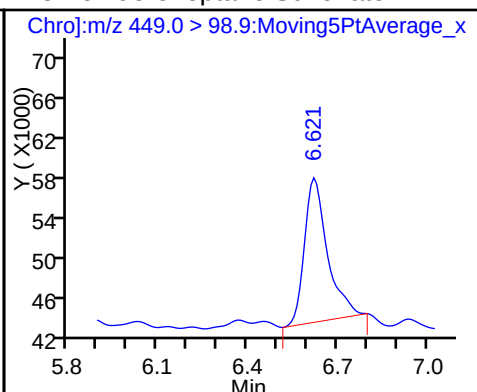
12 Perfluoroheptanesulfonic Acid



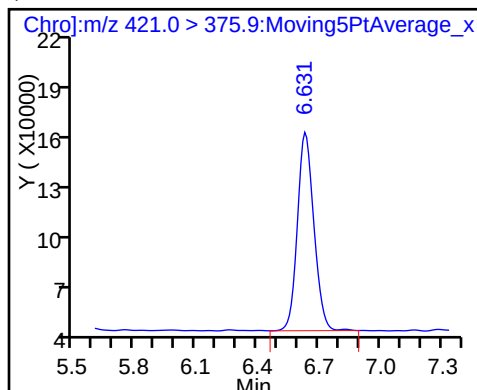
13 Perfluoroheptane Sulfonate



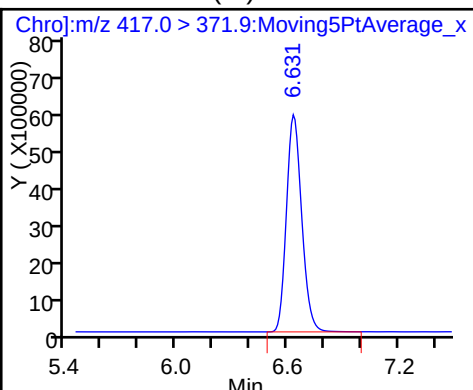
13 Perfluoroheptane Sulfonate



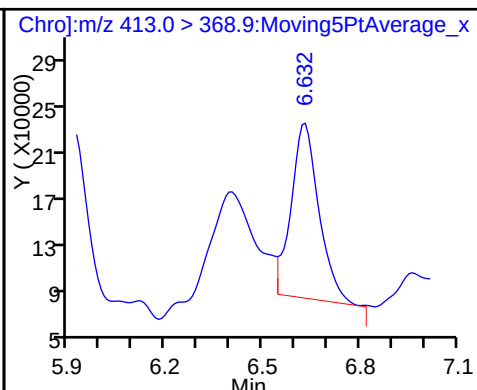
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



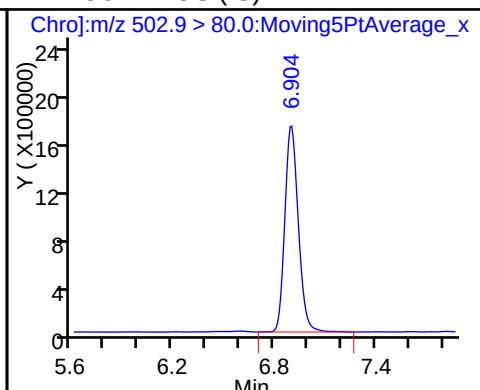
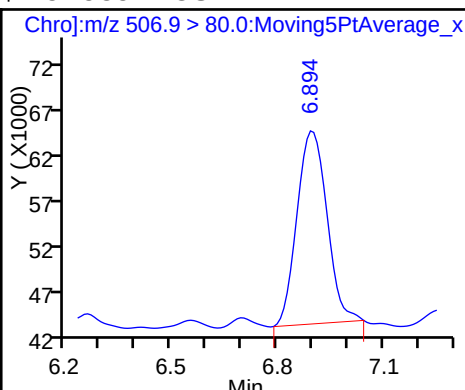
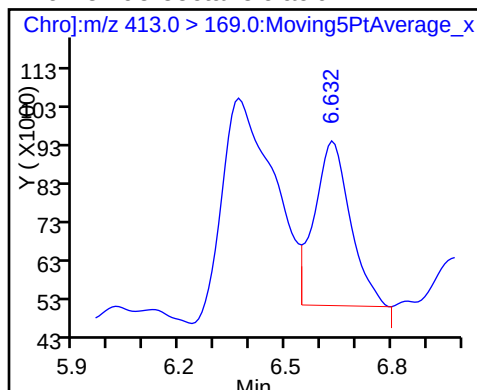
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

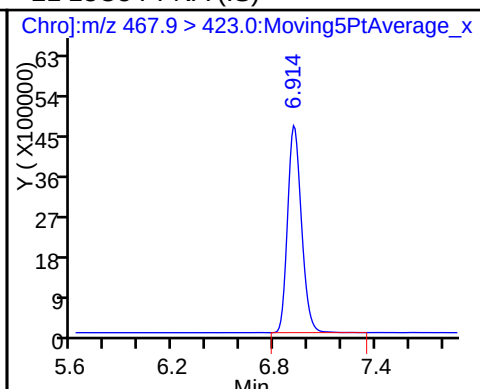
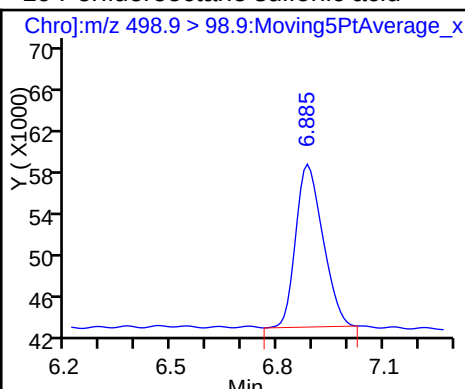
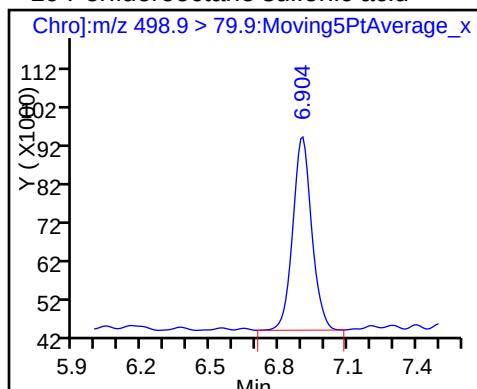
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

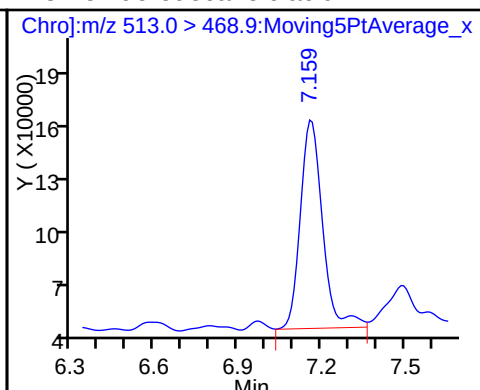
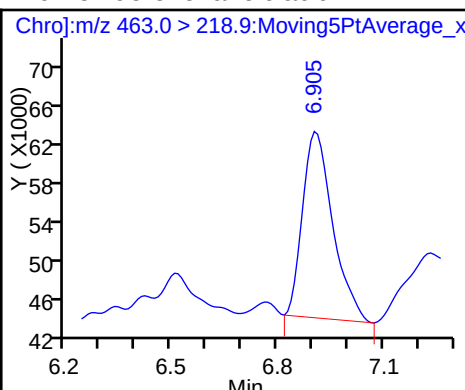
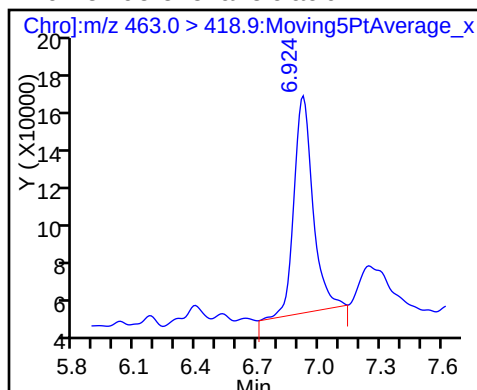
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

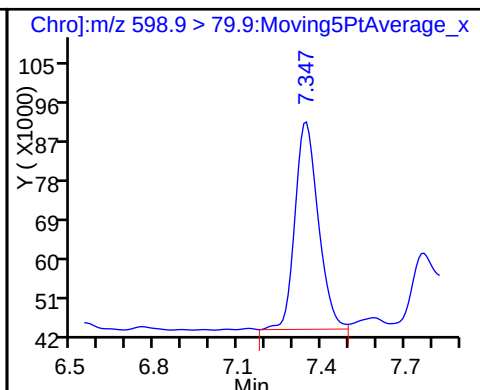
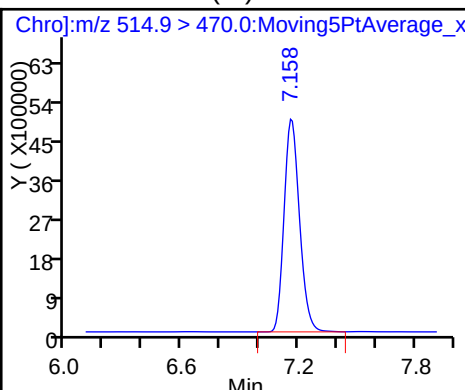
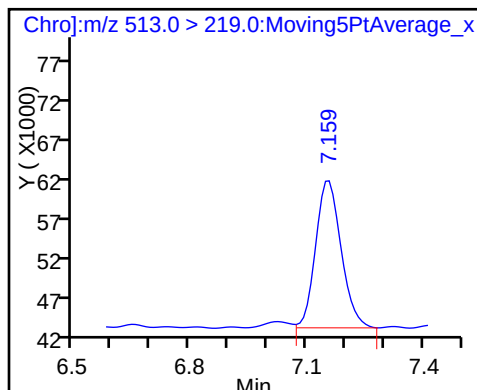
23 Perfluorodecanoic acid



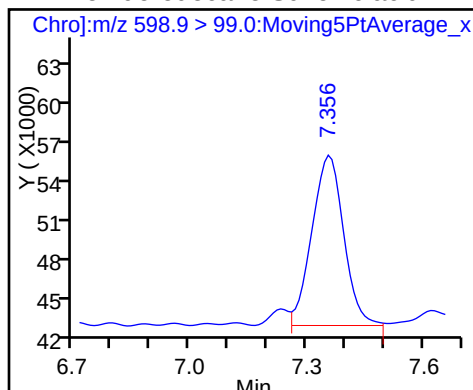
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

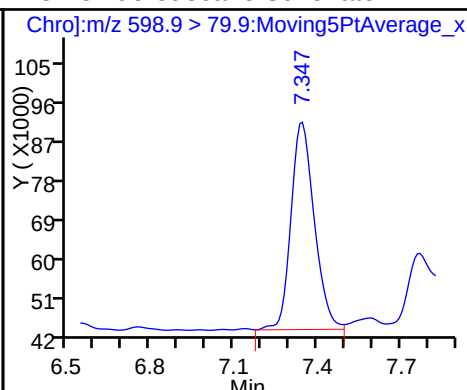
24 Perfluorodecane Sulfonic acid



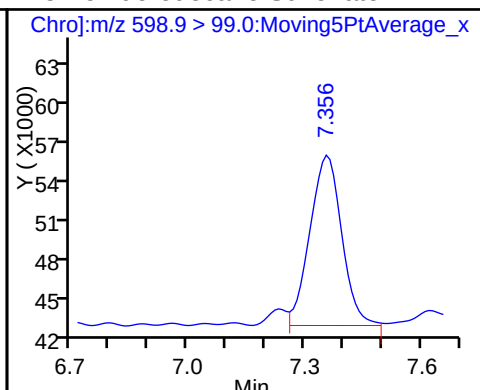
24 Perfluorodecane Sulfonic acid



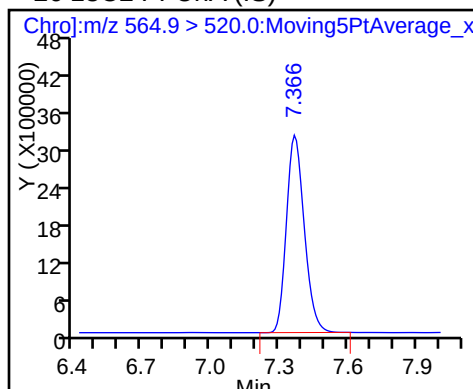
25 Perfluorodecane Sulfonate



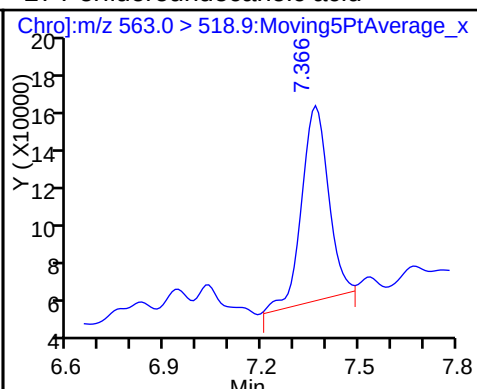
25 Perfluorodecane Sulfonate



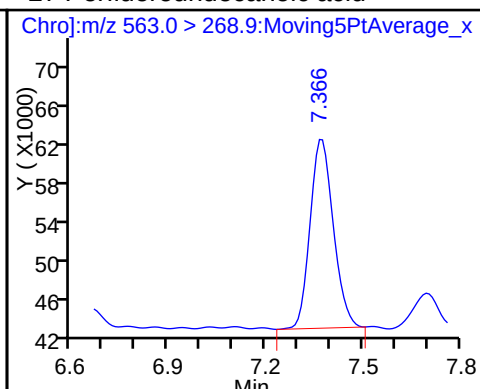
* 26 13C2 PFUnA (IS)



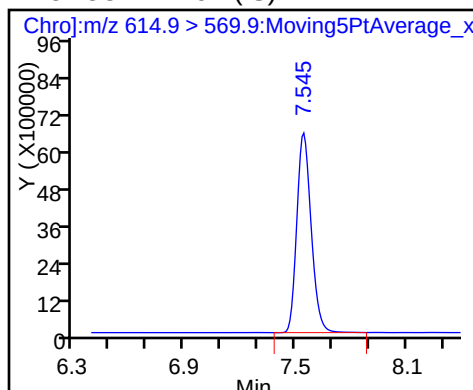
27 Perfluoroundecanoic acid



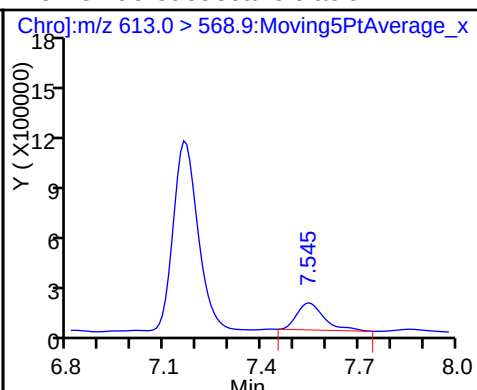
27 Perfluoroundecanoic acid



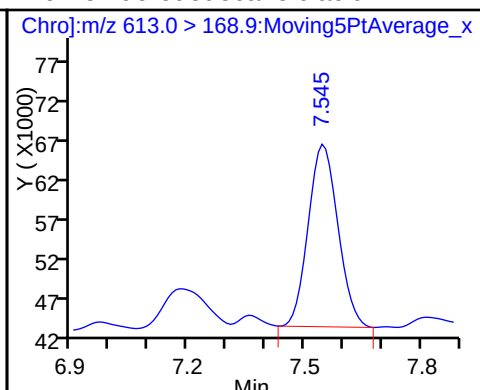
* 28 13C2 PFDaA (IS)



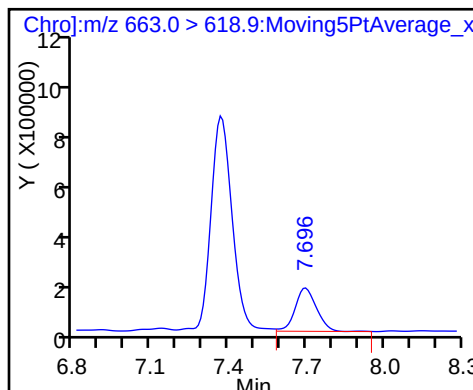
29 Perfluorododecanoic acid



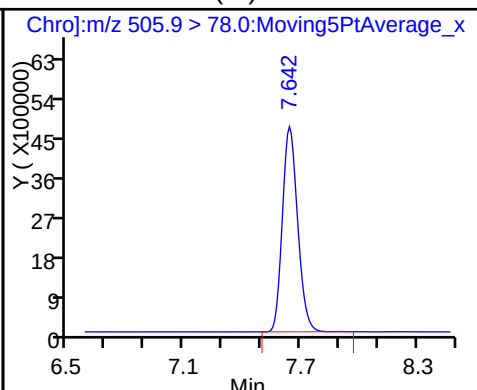
29 Perfluorododecanoic acid



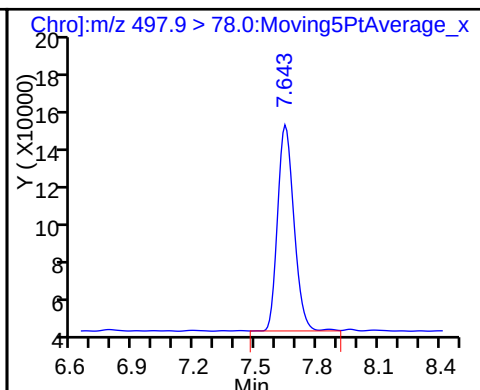
30 Perfluorotridecanoic acid



* 31 13C8 FOSA (IS)



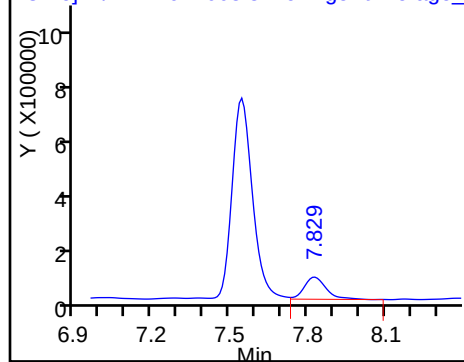
32 Perfluorooctane Sulfonamide



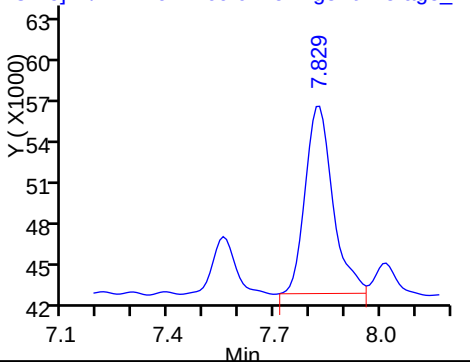
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d
 Lims ID: STD0005
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 06-Jun-2016 15:02:17 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0005, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:40 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:59:51

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.172	4.020	0.152		26769557	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.172	4.020	0.152	1.000	1295896	0.4546			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.242	5.100	0.142	0.899	1319121	0.4247			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.355	5.222	0.133	0.855	623522	0.4290			
298.9 > 98.9	5.364	5.222	0.142	0.857	199278		3.13(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.355	5.222	0.133	0.855	623522	0.4290			
298.9 > 98.9	5.364	5.222	0.142	0.857	199278		3.13(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.828	5.686	0.142	1.000	1271251	0.5176			
313.0 > 118.6	5.819	5.686	0.133	0.998	31432		40.44(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.695	0.133		24971837	10.0			
8 Perfluoroheptanoic acid									R
363.0 > 318.9	6.254	6.121	0.133	0.947	1648753	0.4872			R
363.0 > 168.9	6.263	6.121	0.142	0.949	498178		3.31(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.130	0.133		2680752	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.130	0.133	1.000	597251	0.4636			R
398.9 > 98.9	6.272	6.130	0.142	1.002	202471		2.95(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.130	0.133	1.000	597251	0.4636			
398.9 > 98.9	6.272	6.130	0.142	1.002	202471		2.95(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.460	0.133	0.959	677069	0.5711			
449.0 > 98.9	6.593	6.460	0.133	0.959	152739		4.43(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.460	0.133	0.959	677069	0.5711			
449.0 > 98.9	6.593	6.460	0.133	0.959	152739		4.43(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.603	6.470	0.133	1.000	1713329	0.5331			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.603	6.470	0.133		36529272	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.603	6.471	0.132	1.000	2545486	0.6020			
413.0 > 169.0	6.613	6.471	0.142	1.001	723773		3.52(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.875	6.742	0.133	1.000	352518	0.5490			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.875	6.743	0.132		9508598	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.876	6.743	0.133	1.000	645716	0.4859			R
498.9 > 98.9	6.876	6.743	0.133	1.000	212089		3.04(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.753	0.142		27647688	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.895	6.753	0.142	1.000	1587923	0.4706			
463.0 > 218.9	6.895	6.753	0.142	1.000	280755		5.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.140	6.998	0.142	1.000	1445379	0.4755			R
513.0 > 219.0	7.130	6.998	0.132	0.999	198159		7.29(10.49-19.48)		R
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.140	7.007	0.133		28209499	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.318	7.186	0.132	1.064	654135	0.4948			
598.9 > 99.0	7.318	7.186	0.132	1.064	165840		3.94(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.318	7.186	0.132	1.064	654135	0.4948			R
598.9 > 99.0	7.318	7.186	0.132	1.064	165840		3.94(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.215	0.123		18315536	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.215	0.123	1.000	1566038	0.5533			R
563.0 > 268.9	7.347	7.215	0.132	1.001	163382		9.59(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.393	0.124		36122892	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.394	0.123	1.000	2159339	0.5269			
613.0 > 168.9	7.517	7.394	0.123	1.000	311344		6.94(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.529	0.085		27418934	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.530	0.085	1.000	1495146	0.4932			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.668	7.545	0.123	1.020	1968702	0.5093			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.677	0.123	1.038	958729	0.4424			
712.9 > 169.0	7.800	7.677	0.123	1.038	162064		5.92(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 25.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d

Injection Date: 06-Jun-2016 15:02:17

Instrument ID: LC_LCMS5

Lims ID: STD0005

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

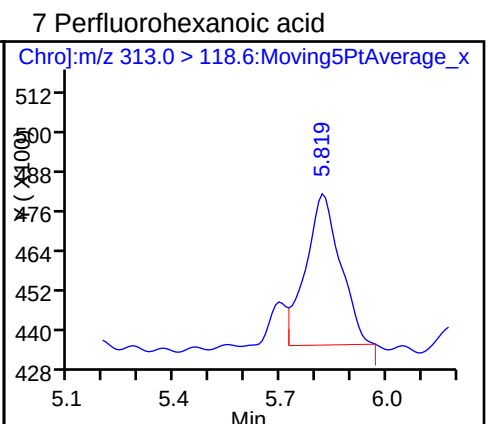
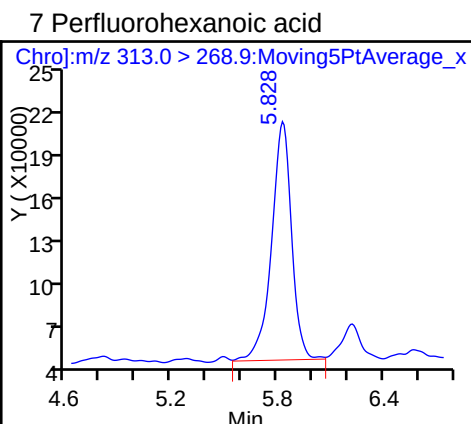
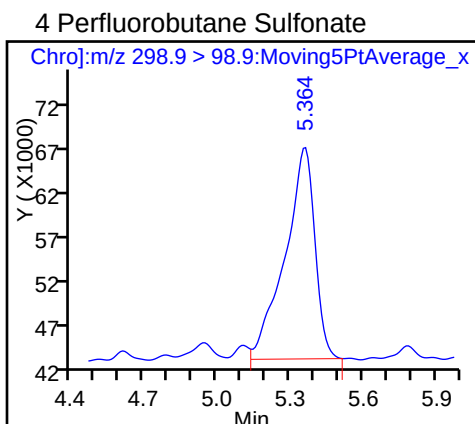
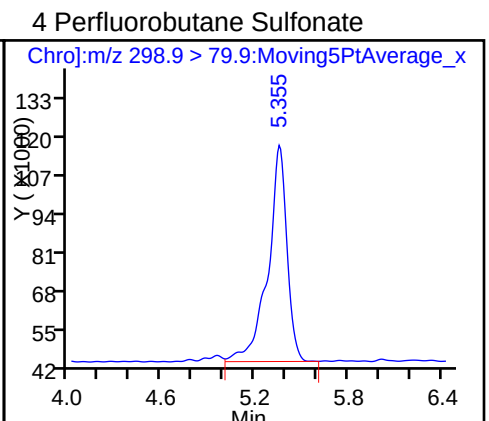
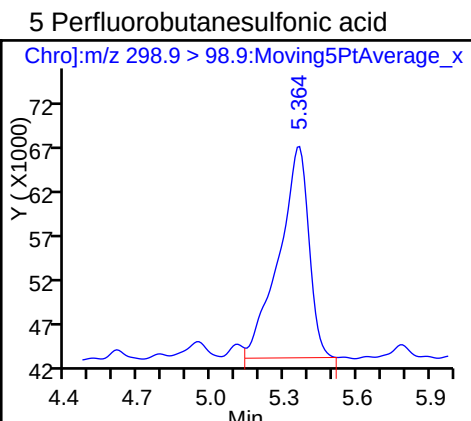
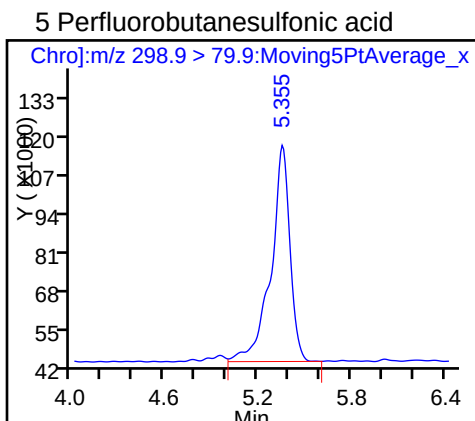
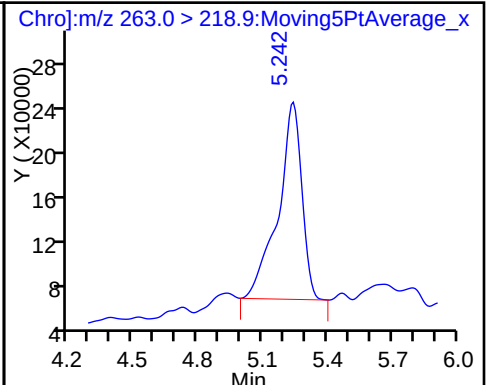
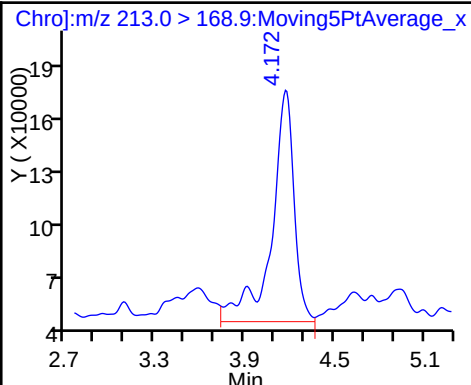
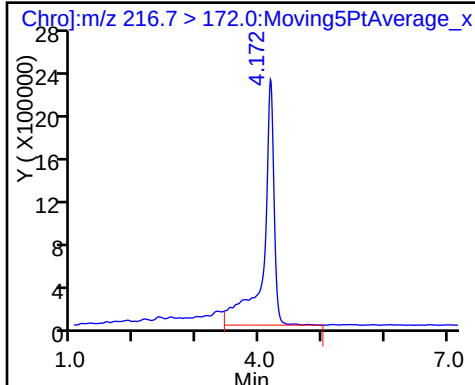
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

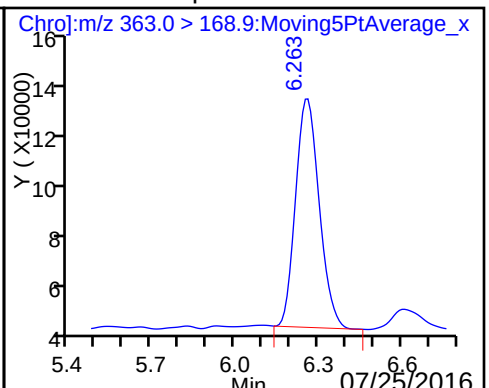
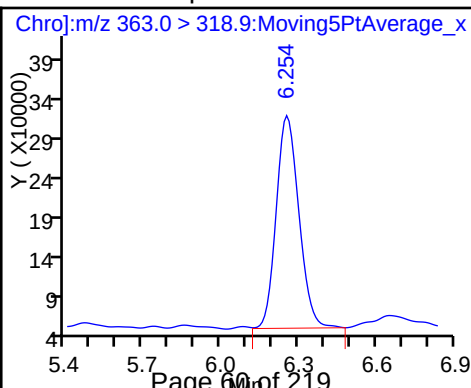
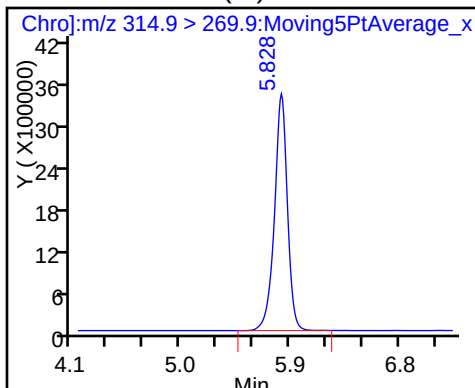
3 Perfluoropentanoic acid



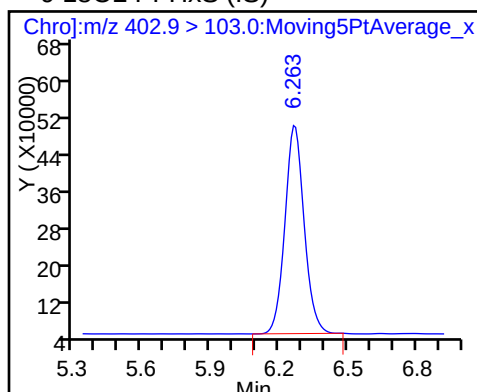
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

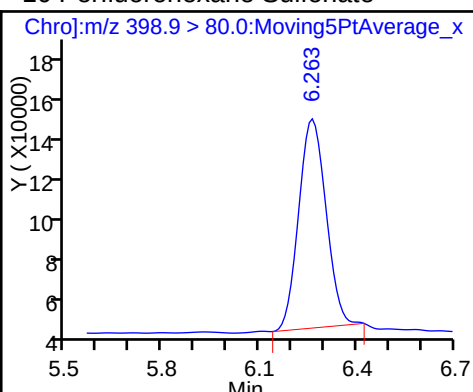
8 Perfluoroheptanoic acid



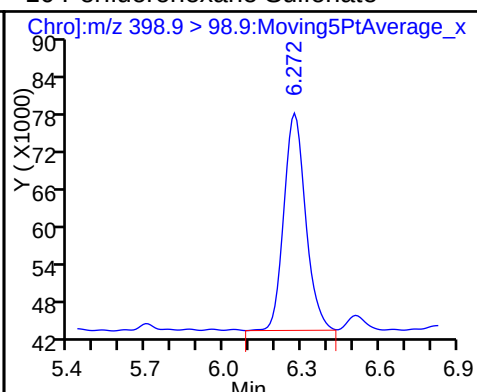
* 9 18O2 PFHxS (IS)



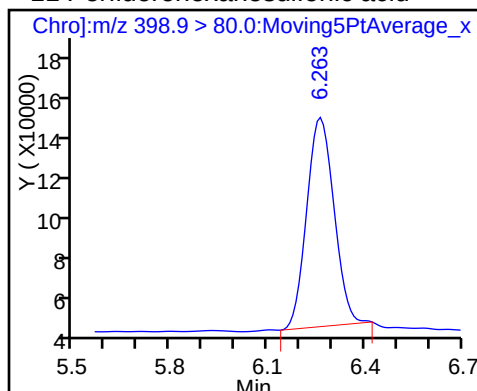
10 Perfluorohexane Sulfonate



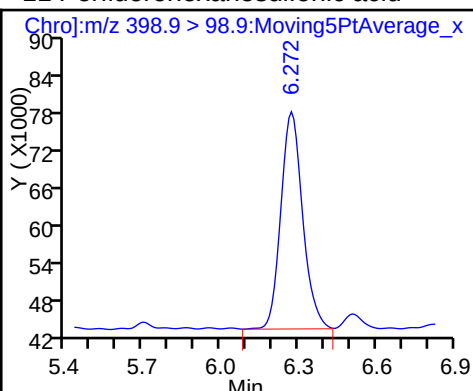
10 Perfluorohexane Sulfonate



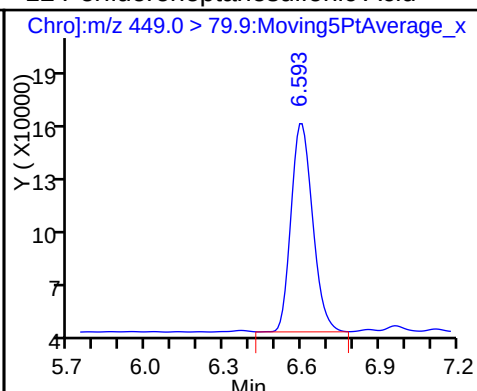
11 Perfluorohexanesulfonic acid



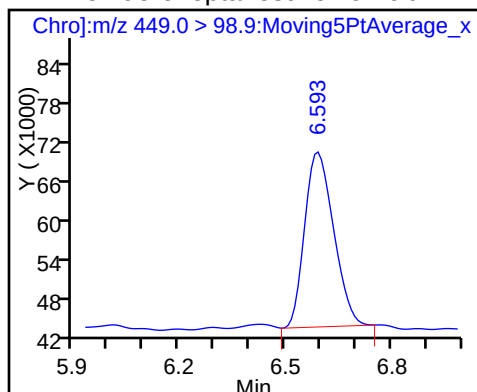
11 Perfluorohexanesulfonic acid



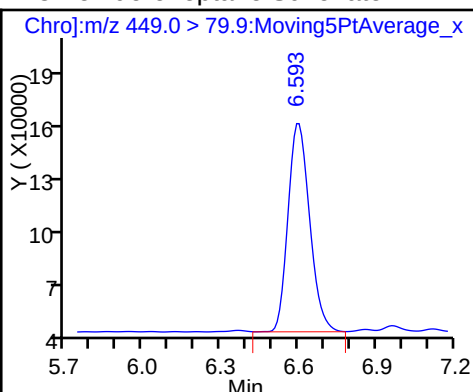
12 Perfluoroheptanesulfonic Acid



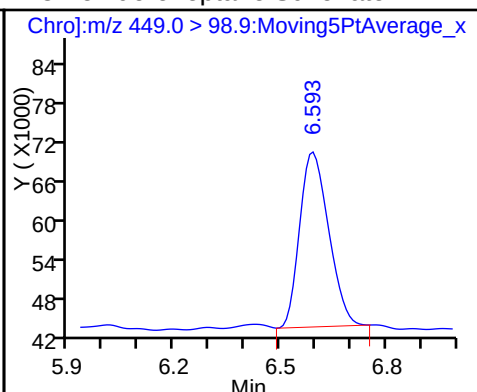
12 Perfluoroheptanesulfonic Acid



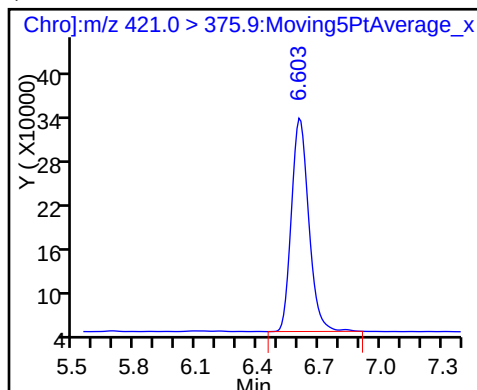
13 Perfluoroheptane Sulfonate



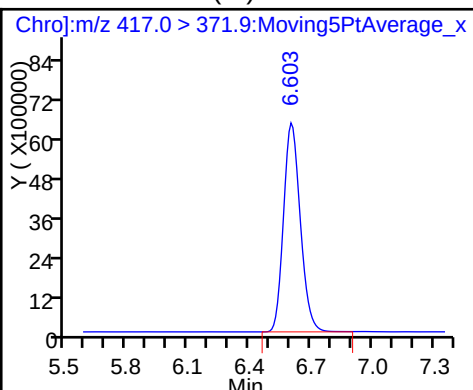
13 Perfluoroheptane Sulfonate



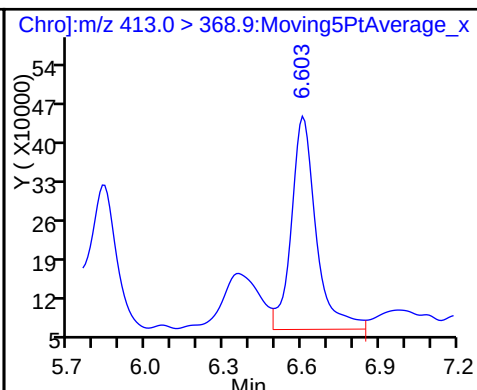
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



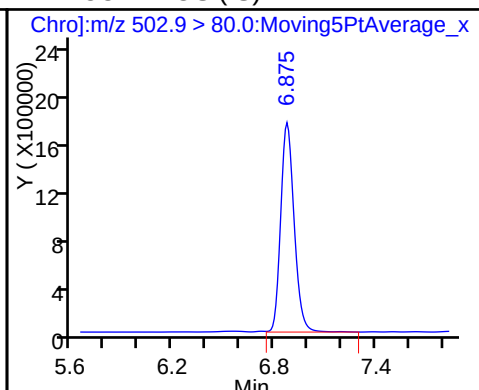
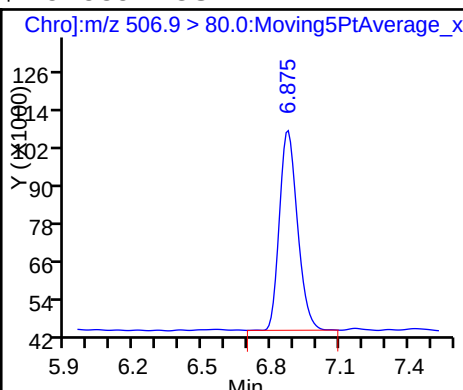
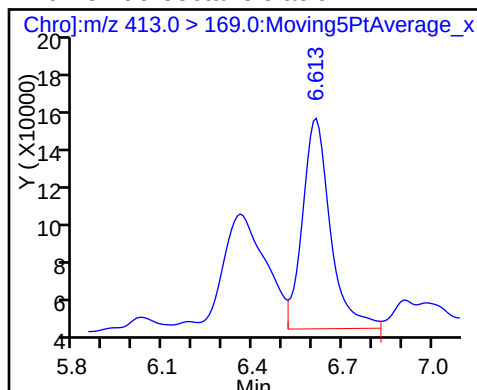
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

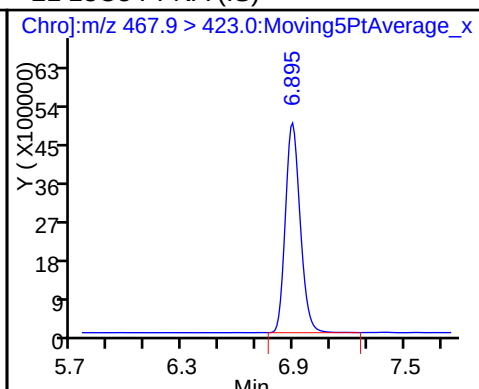
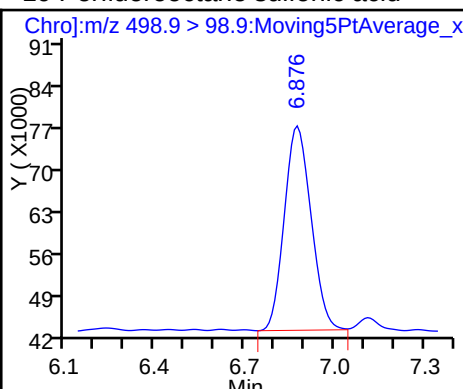
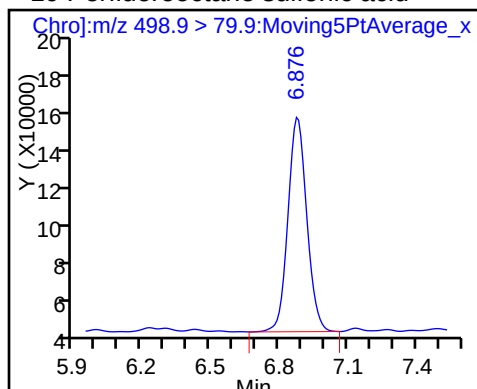
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

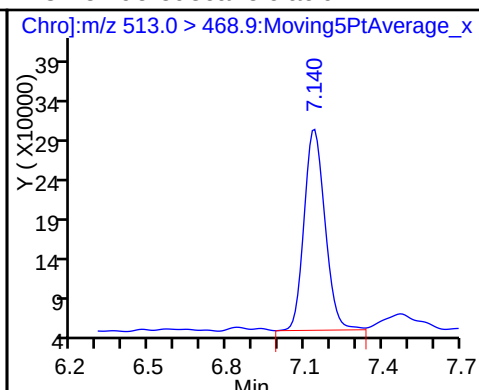
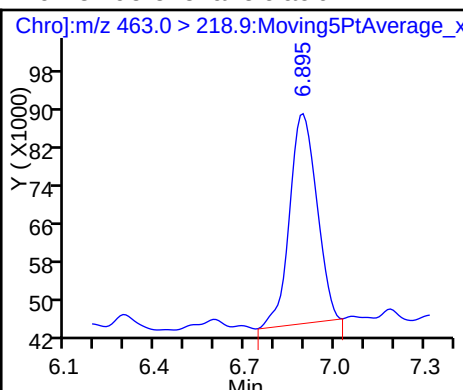
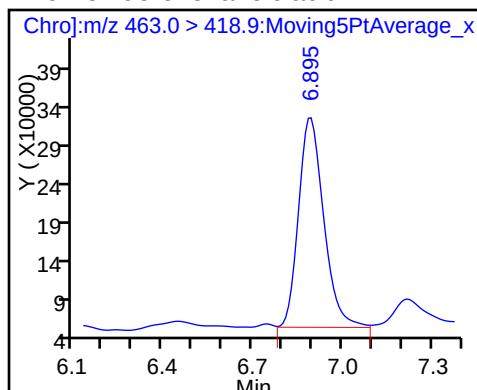
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

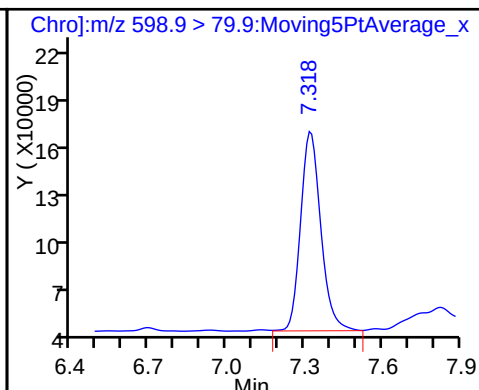
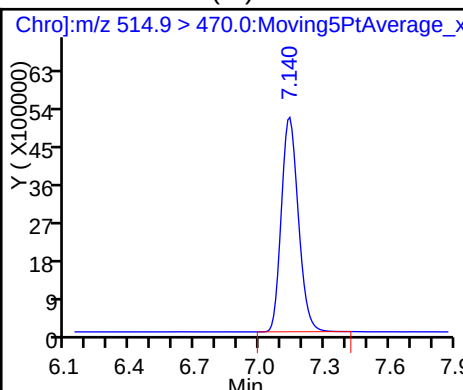
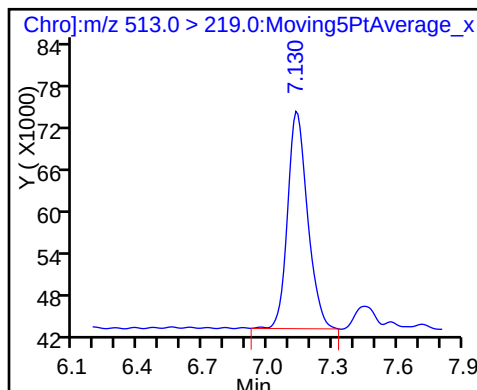
23 Perfluorodecanoic acid



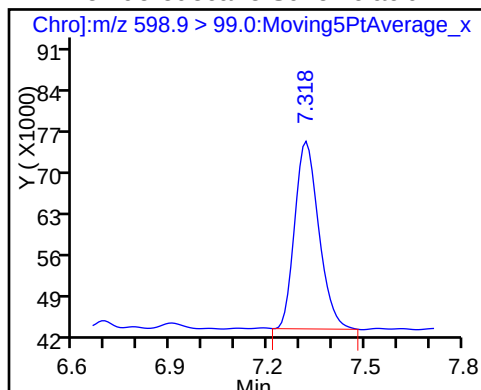
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

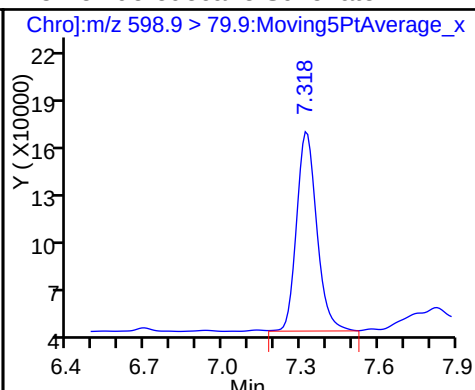
24 Perfluorodecane Sulfonic acid



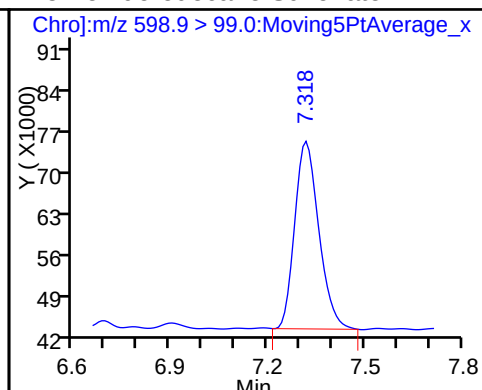
24 Perfluorodecane Sulfonic acid



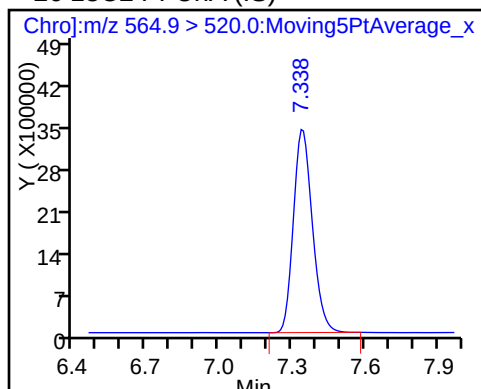
25 Perfluorodecane Sulfonate



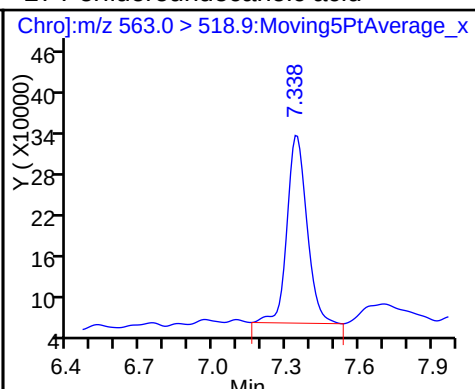
25 Perfluorodecane Sulfonate



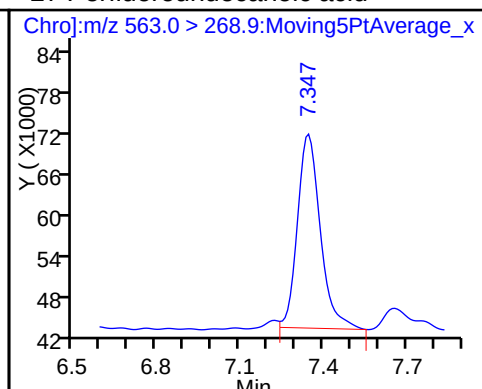
* 26 13C2 PFUnA (IS)



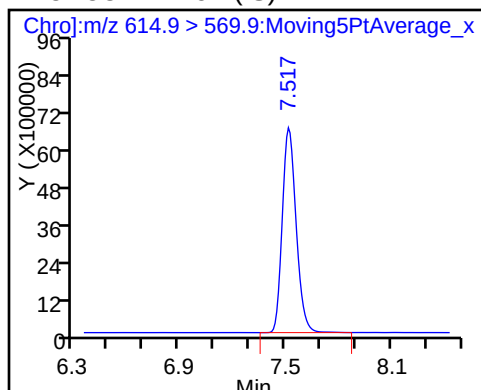
27 Perfluoroundecanoic acid



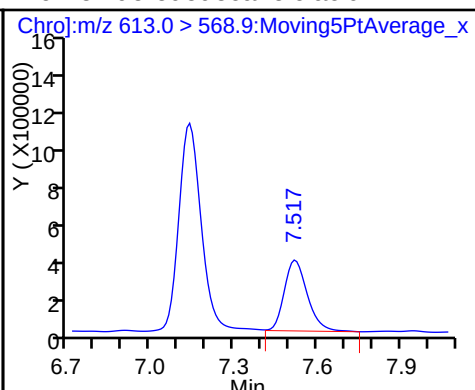
27 Perfluoroundecanoic acid



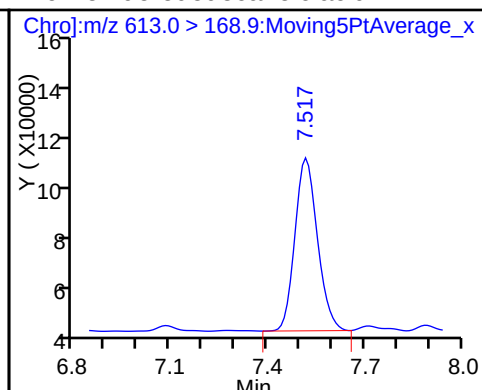
* 28 13C2 PFDaA (IS)



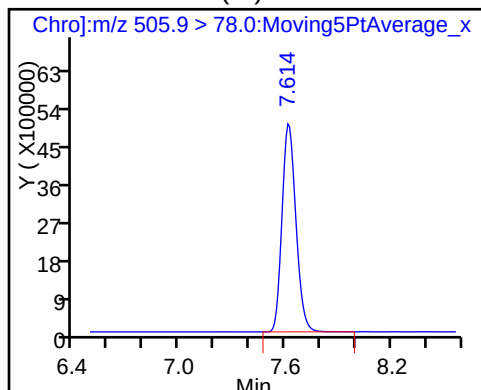
29 Perfluorododecanoic acid



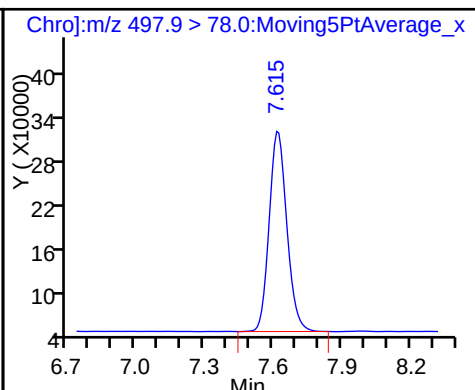
29 Perfluorododecanoic acid



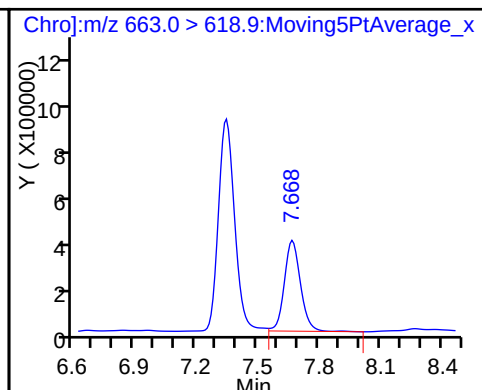
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

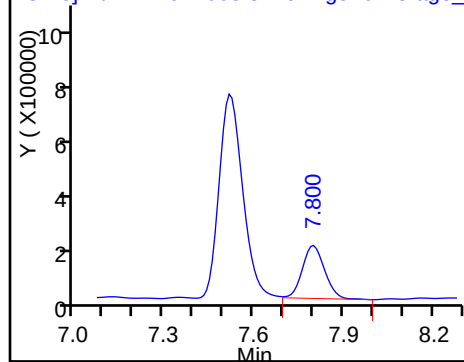


30 Perfluorotridecanoic acid



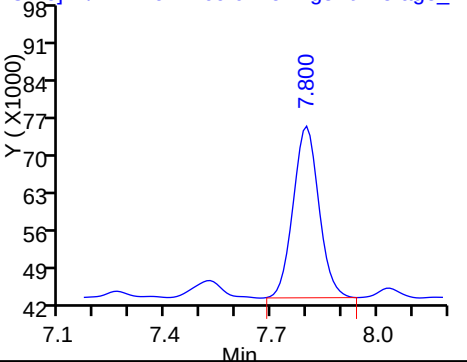
33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



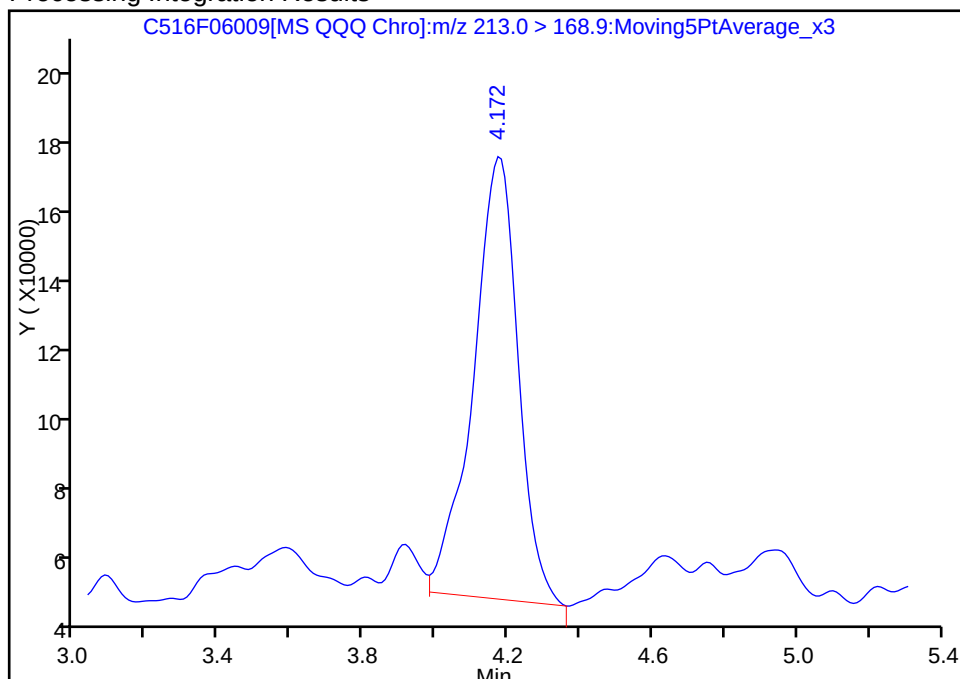
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06009.d
Injection Date: 06-Jun-2016 15:02:17 Instrument ID: LC_LCMS5
Lims ID: STD0005
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 4
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

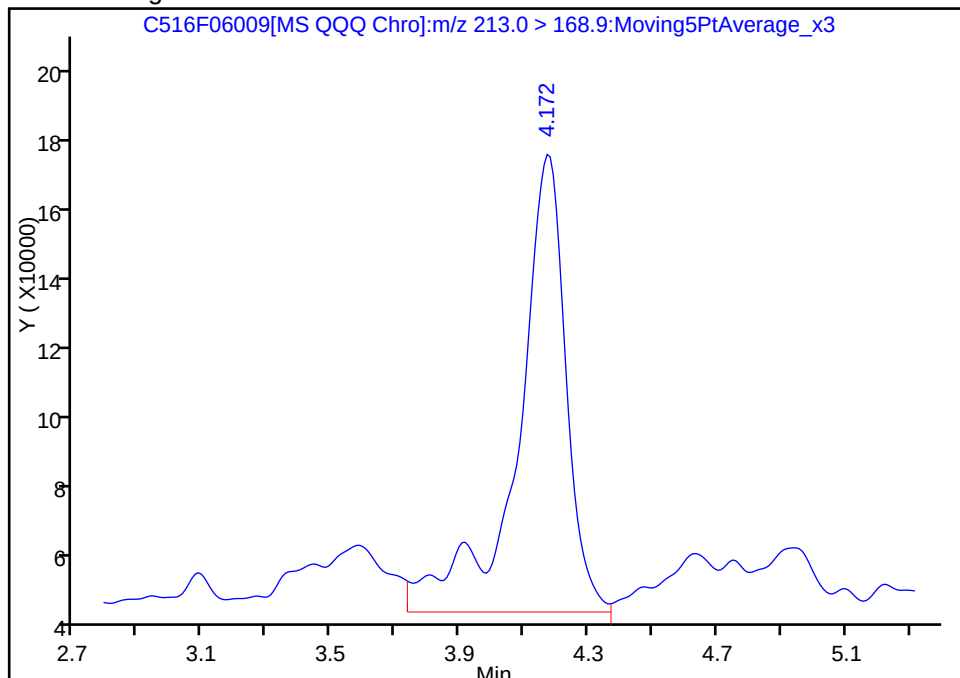
RT: 4.17
Area: 1029041
Amount: 0.374913
Amount Units: ug/L

Processing Integration Results



RT: 4.17
Area: 1295896
Amount: 0.454566
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:51
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
 Lims ID: STD0010
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 06-Jun-2016 15:14:36 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0010, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:47 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:59:20

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.020	0.142		27598245	10.0			M
2 Perfluorobutyric acid									M
213.0 > 168.9	4.162	4.020	0.142	1.000	3038727	1.03			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.242	5.100	0.142	0.901	2769987	1.01			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.364	5.222	0.142	0.857	1117801	0.8579			
298.9 > 98.9	5.355	5.222	0.133	0.855	317629		3.52(2.57-2.57)		
4 Perfluorobutane Sulfonate									R
298.9 > 79.9	5.364	5.222	0.142	0.857	1117801	0.8579			R
298.9 > 98.9	5.355	5.222	0.133	0.855	317629		3.52(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.819	5.686	0.133	1.000	2232965	1.01			
313.0 > 118.6	5.847	5.686	0.161	1.005	55910		39.94(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.818	5.695	0.123		22902773	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.121	0.133	0.948	2810806	0.9641			
363.0 > 168.9	6.254	6.121	0.133	0.948	746729		3.76(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.130	0.133		2379792	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.130	0.133	1.000	996121	0.9464			R
398.9 > 98.9	6.263	6.130	0.133	1.000	385155		2.59(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.130	0.133	1.000	996121	0.9464			
398.9 > 98.9	6.263	6.130	0.133	1.000	385155		2.59(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.460	0.133	0.960	1051810	0.9808			
449.0 > 98.9	6.593	6.460	0.133	0.960	322325		3.26(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.460	0.133	0.960	1051810	0.9808			
449.0 > 98.9	6.593	6.460	0.133	0.960	322325		3.26(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.470	0.123	1.000	3153884	1.16			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.470	0.123		32501126	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.471	0.123	1.000	3529270	0.9782			
413.0 > 169.0	6.594	6.471	0.123	1.000	1161058		3.04(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.742	0.123	1.000	589580	1.05			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.743	0.123		8538322	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.743	0.123	1.000	1171224	1.06			R
498.9 > 98.9	6.866	6.743	0.123	1.000	385147		3.04(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.753	0.133		24397078	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.753	0.133	1.000	2681286	0.9404			
463.0 > 218.9	6.886	6.753	0.133	1.000	402542		6.66(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	6.998	0.132	1.000	2800062	1.04			
513.0 > 219.0	7.121	6.998	0.123	0.999	245568		11.40(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.007	0.123		25884523	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.186	0.123	1.065	1047130	0.9127			
598.9 > 99.0	7.309	7.186	0.123	1.065	256407		4.08(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.186	0.123	1.065	1047130	0.9127			R
598.9 > 99.0	7.309	7.186	0.123	1.065	256407		4.08(1.99-3.69)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.215	0.123		16232780	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.215	0.123	1.000	2540060	1.06			R
563.0 > 268.9	7.329	7.215	0.113	0.999	344361		7.38(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.393	0.114		32725502	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.394	0.113	1.000	3492545	0.9865			
613.0 > 168.9	7.507	7.394	0.113	1.000	493117		7.08(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.529	0.085		24736240	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.530	0.085	1.000	2697496	1.00			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.545	0.113	1.020	3270152	1.00			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.677	0.114	1.038	1783816	0.9160			
712.9 > 169.0	7.791	7.677	0.114	1.038	269547		6.62(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 50.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d

Injection Date: 06-Jun-2016 15:14:36

Instrument ID: LC_LCMS5

Lims ID: STD0010

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

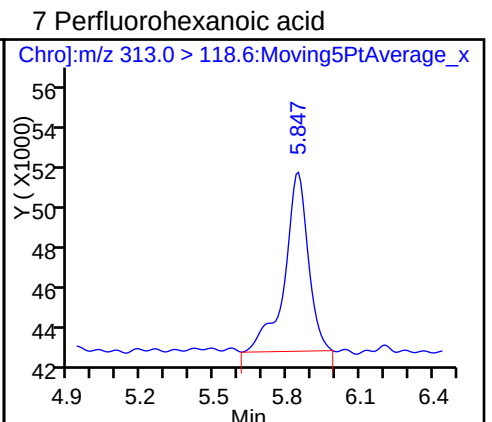
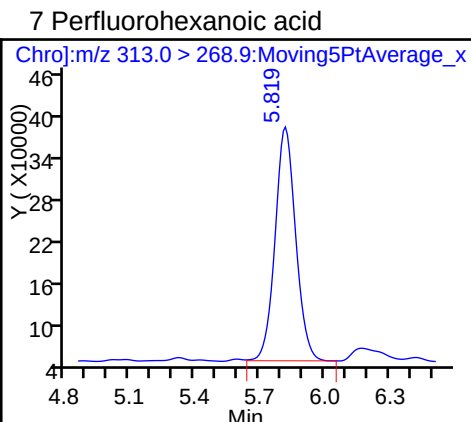
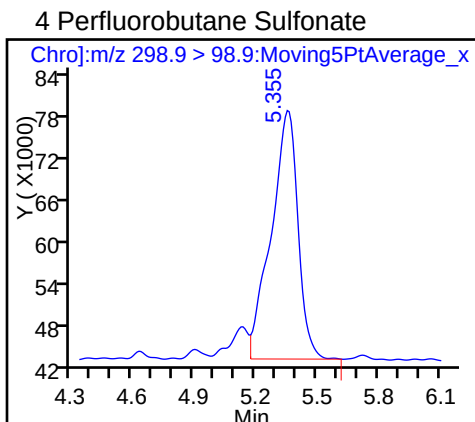
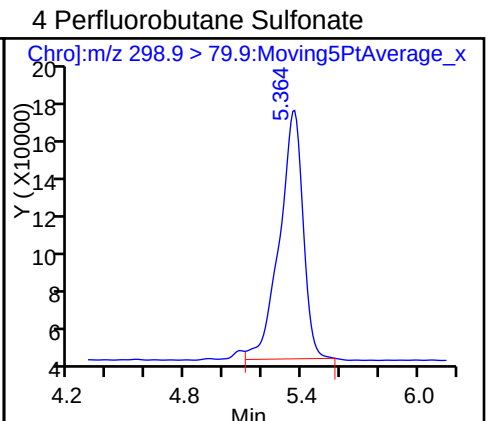
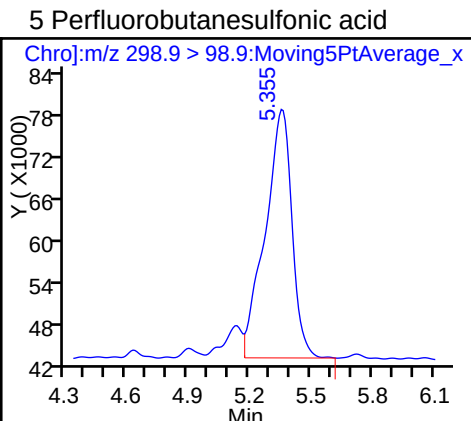
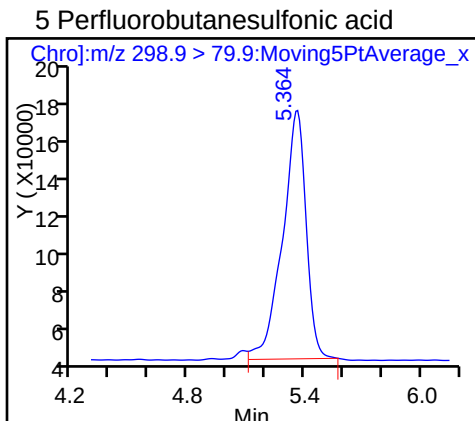
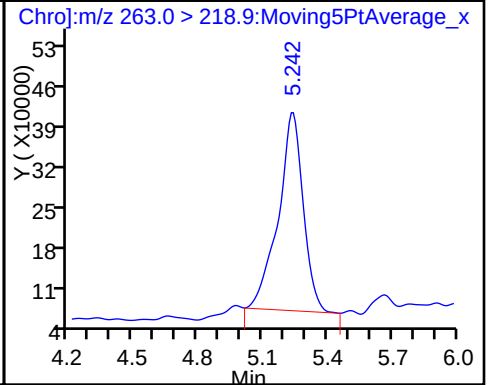
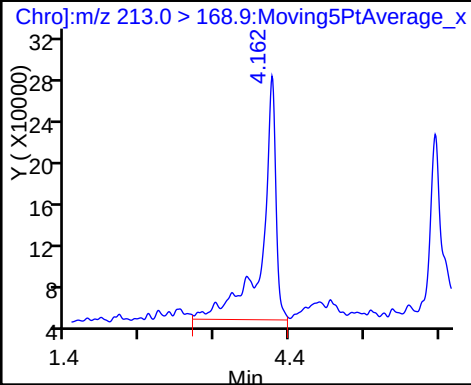
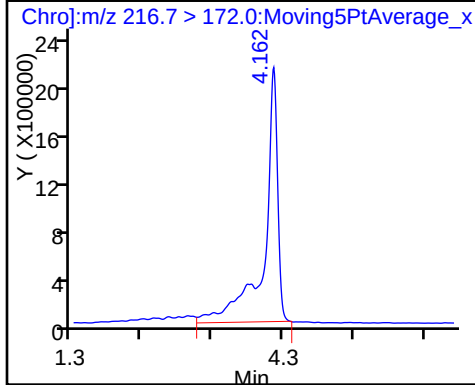
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid (M)

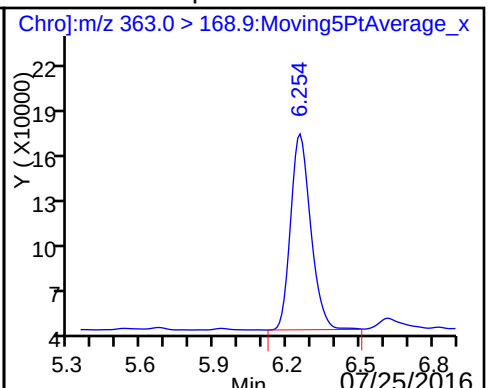
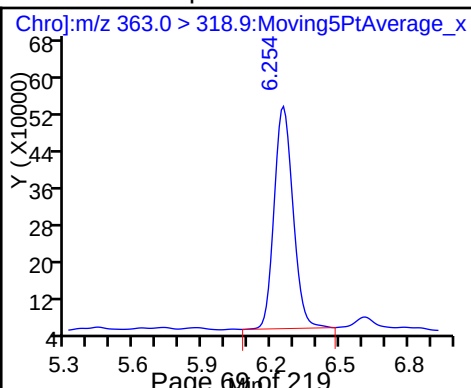
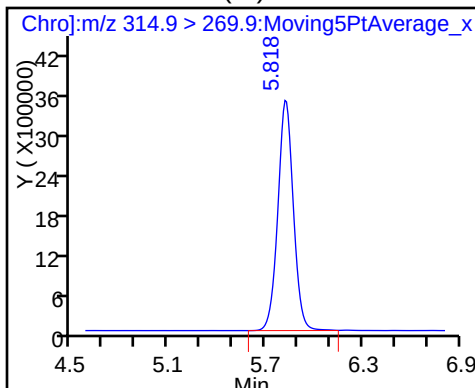
3 Perfluoropentanoic acid



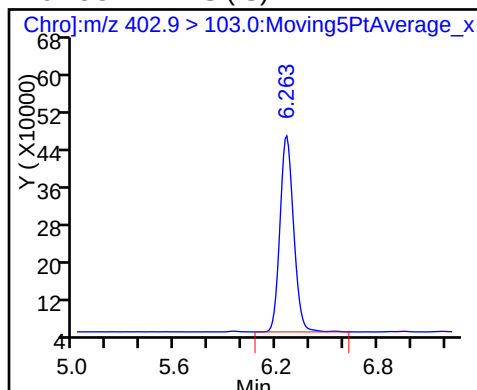
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

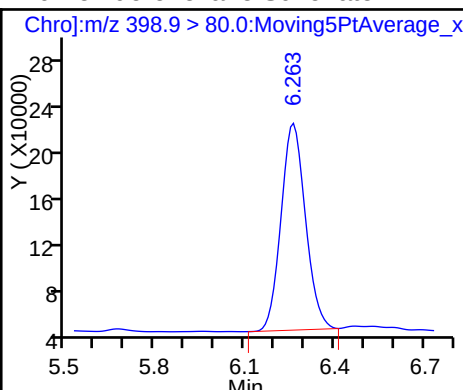
8 Perfluoroheptanoic acid



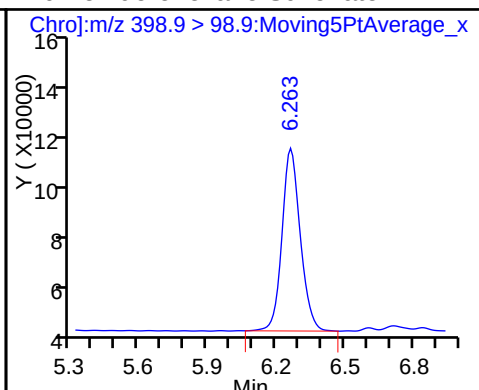
* 9 18O2 PFHxS (IS)



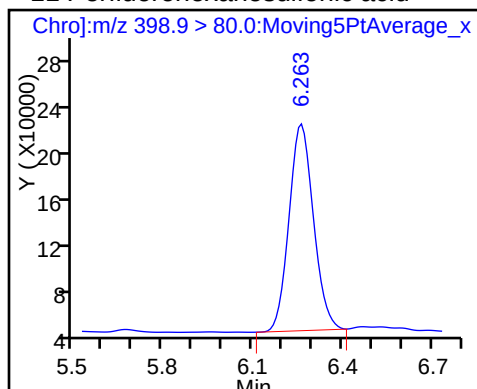
10 Perfluorohexane Sulfonate



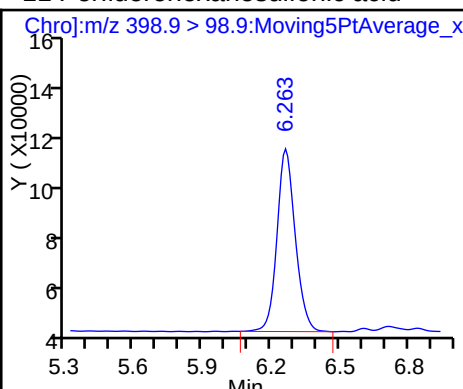
10 Perfluorohexane Sulfonate



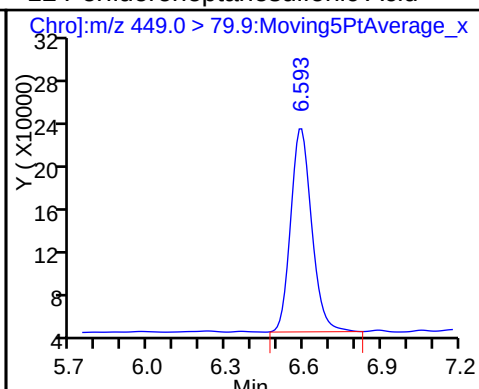
11 Perfluorohexanesulfonic acid



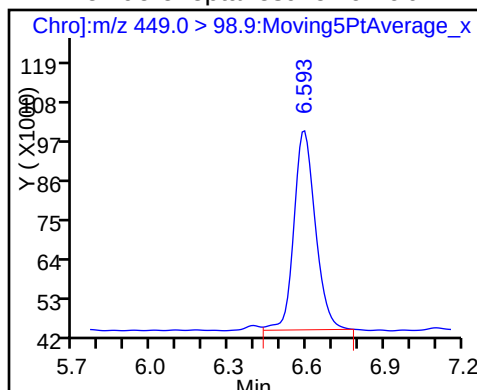
11 Perfluorohexanesulfonic acid



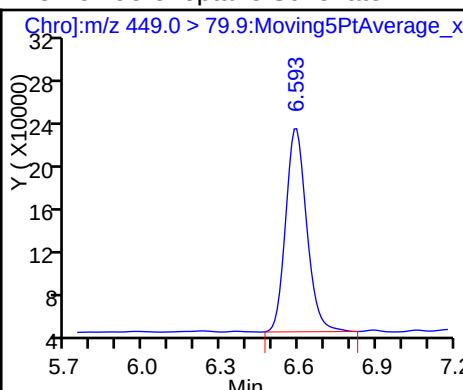
12 Perfluoroheptanesulfonic Acid



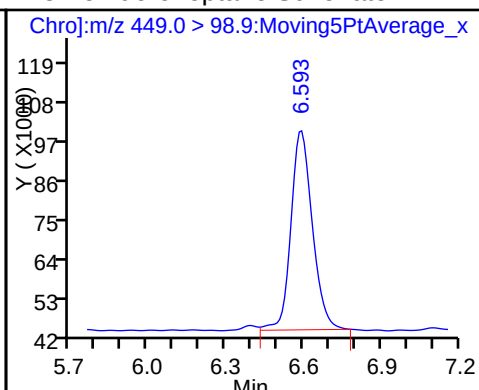
12 Perfluoroheptanesulfonic Acid



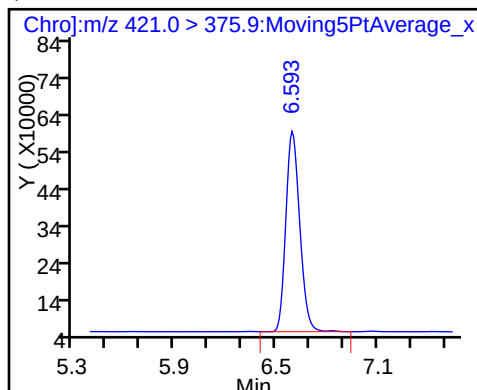
13 Perfluoroheptane Sulfonate



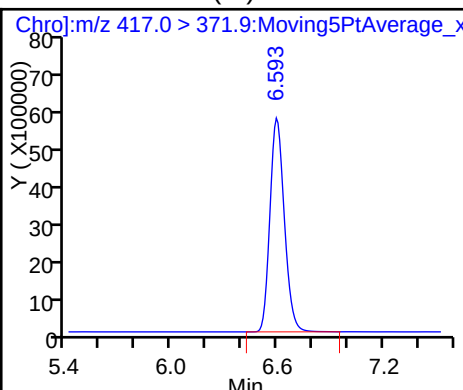
13 Perfluoroheptane Sulfonate



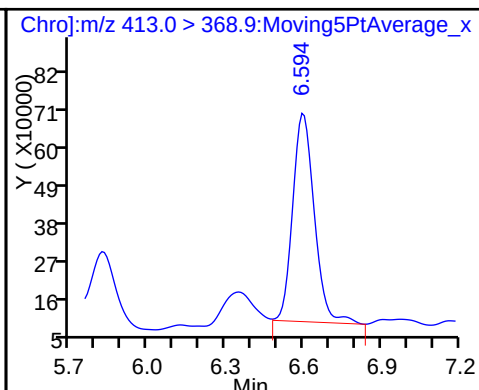
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



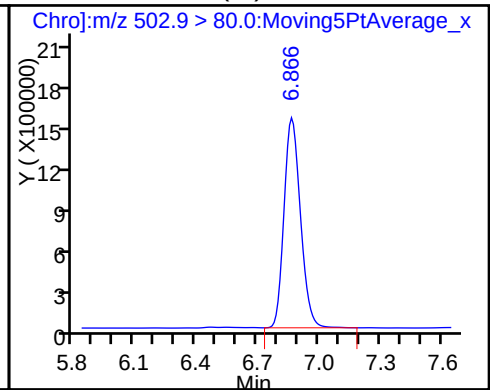
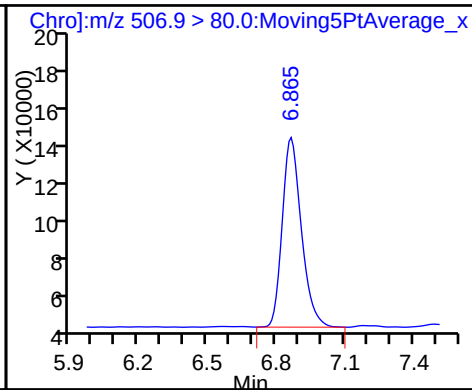
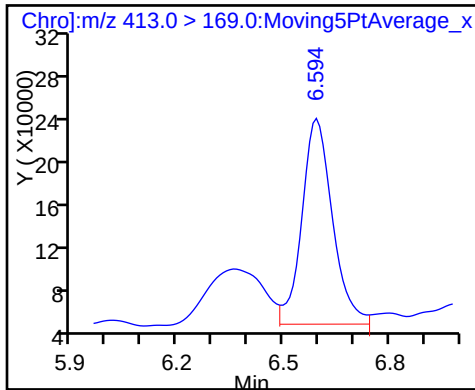
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

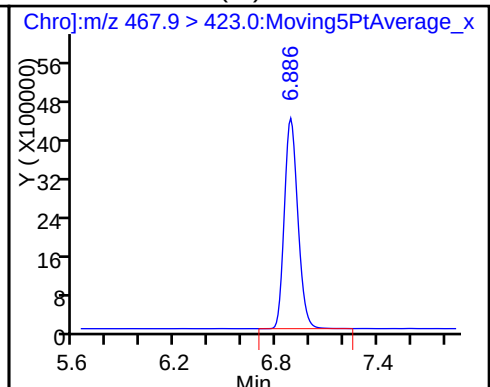
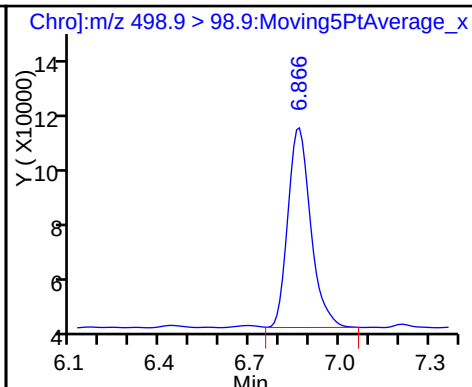
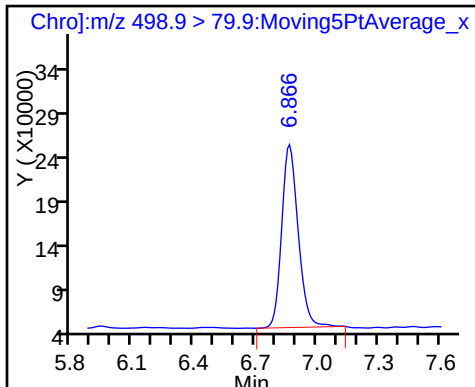
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

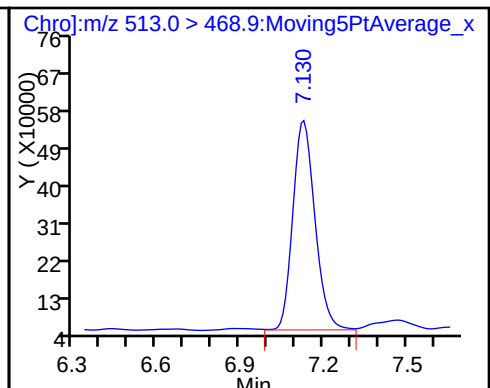
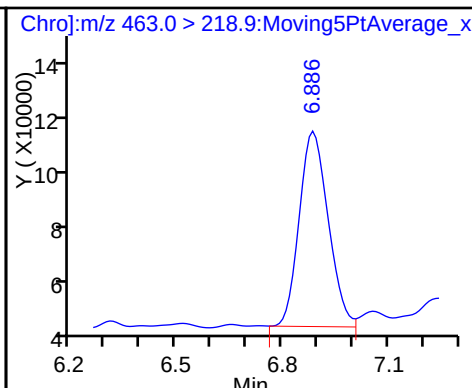
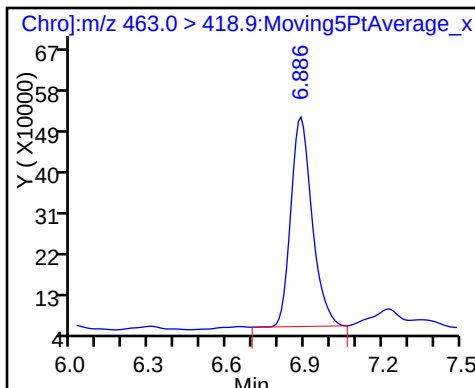
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

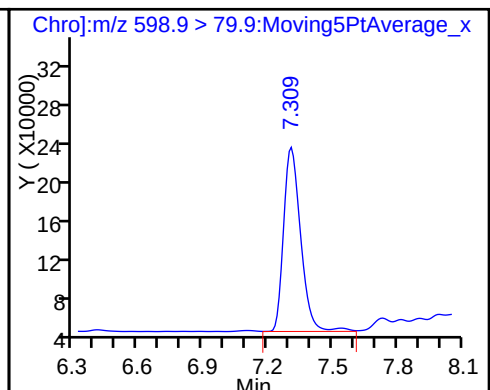
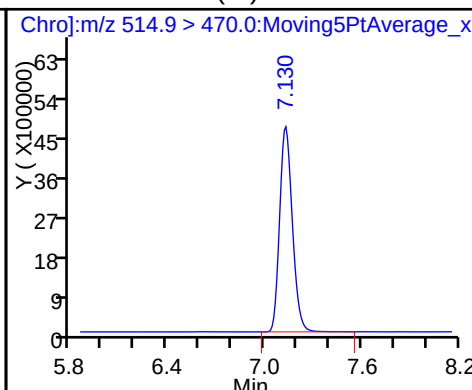
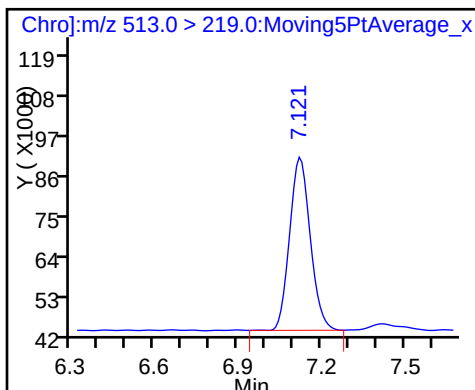
23 Perfluorodecanoic acid



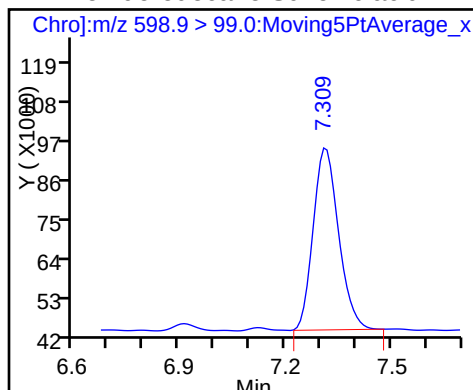
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

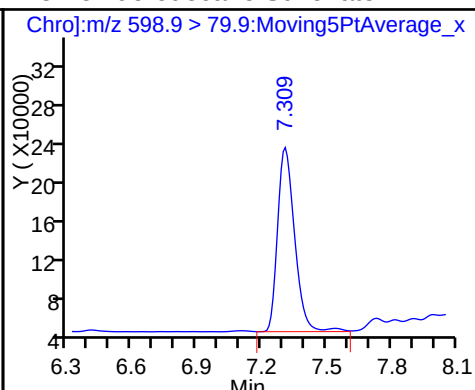
24 Perfluorodecane Sulfonic acid



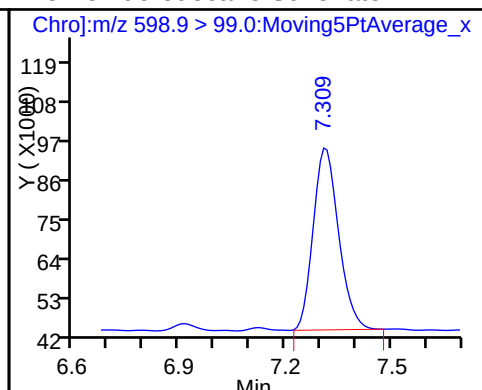
24 Perfluorodecane Sulfonic acid



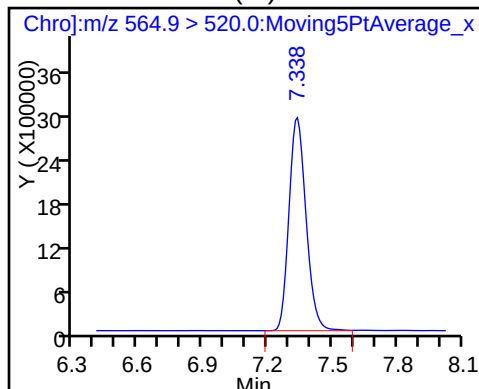
25 Perfluorodecane Sulfonate



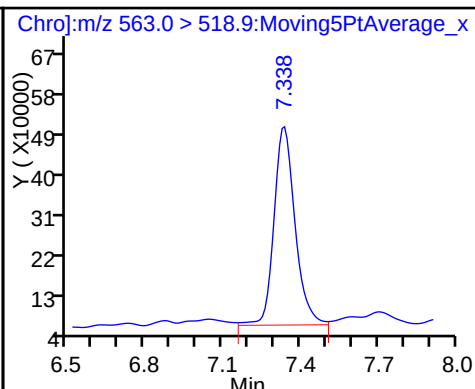
25 Perfluorodecane Sulfonate



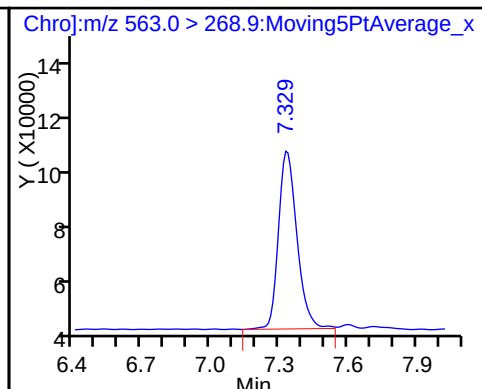
* 26 13C2 PFUnA (IS)



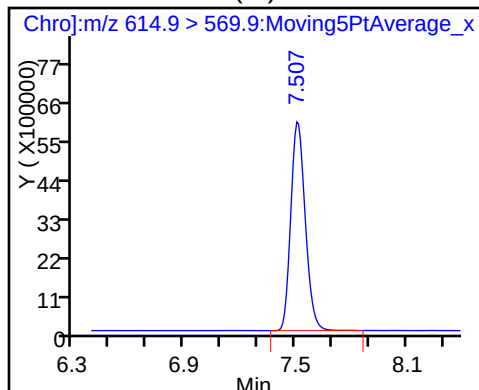
27 Perfluoroundecanoic acid



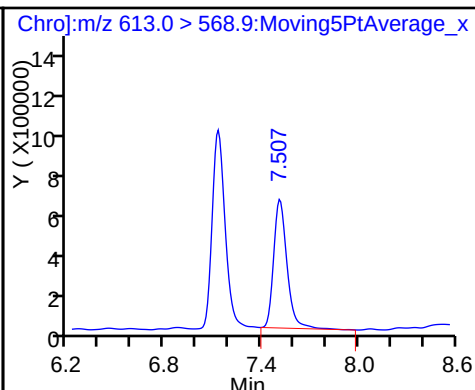
27 Perfluoroundecanoic acid



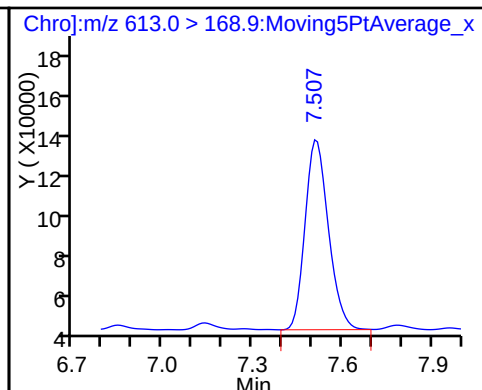
* 28 13C2 PFDaA (IS)



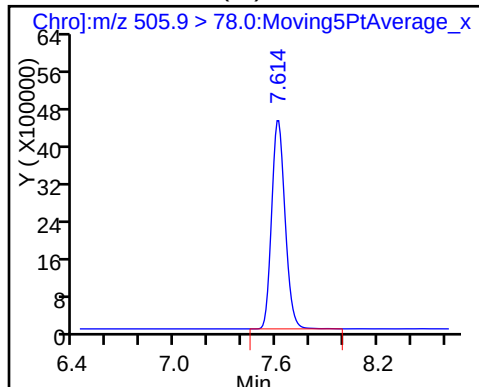
29 Perfluorododecanoic acid



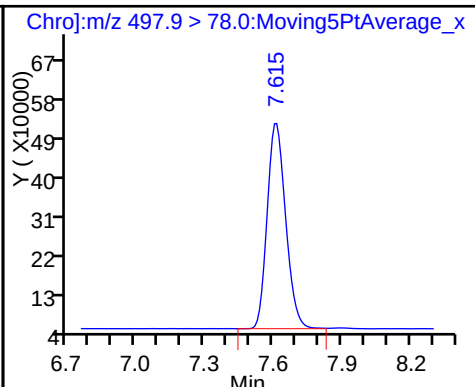
29 Perfluorododecanoic acid



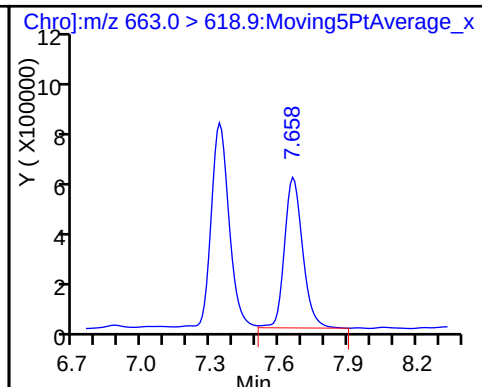
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



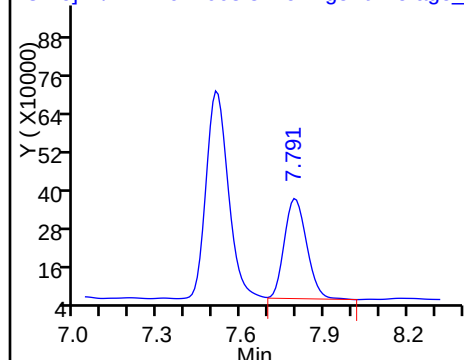
30 Perfluorotridecanoic acid



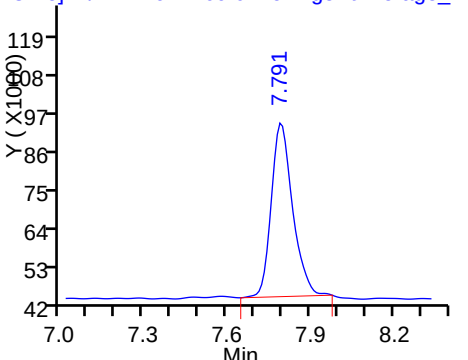
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



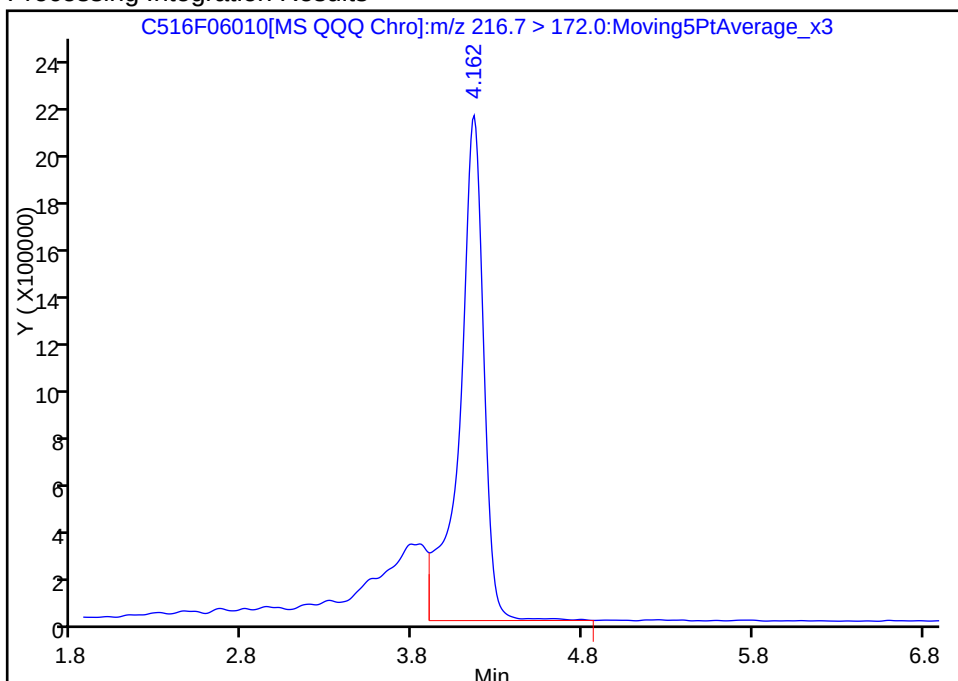
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
Injection Date: 06-Jun-2016 15:14:36 Instrument ID: LC_LCMS5
Lims ID: STD0010
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

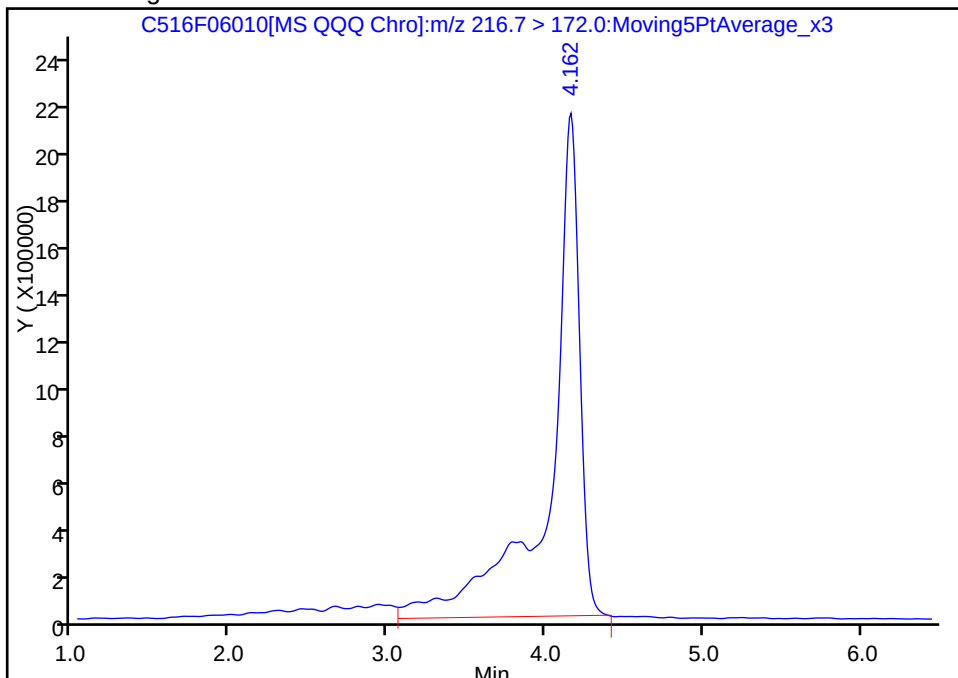
RT: 4.16
Area: 20559374
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 27598245
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:20
Audit Action: Manually Integrated
Audit Reason: Baseline

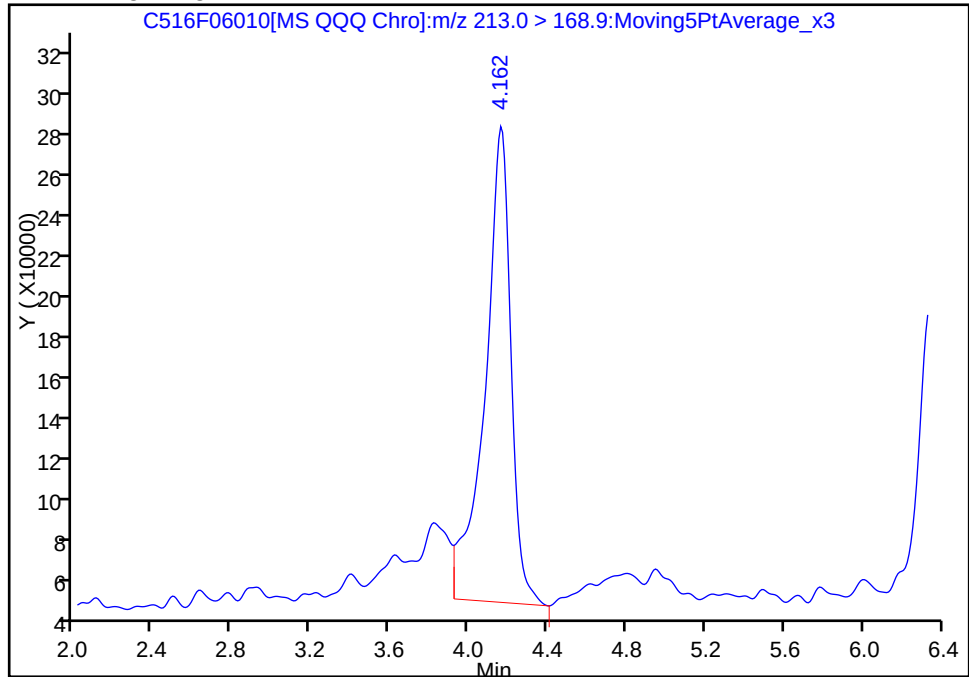
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06010.d
Injection Date: 06-Jun-2016 15:14:36 Instrument ID: LC_LCMS5
Lims ID: STD0010
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 5
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

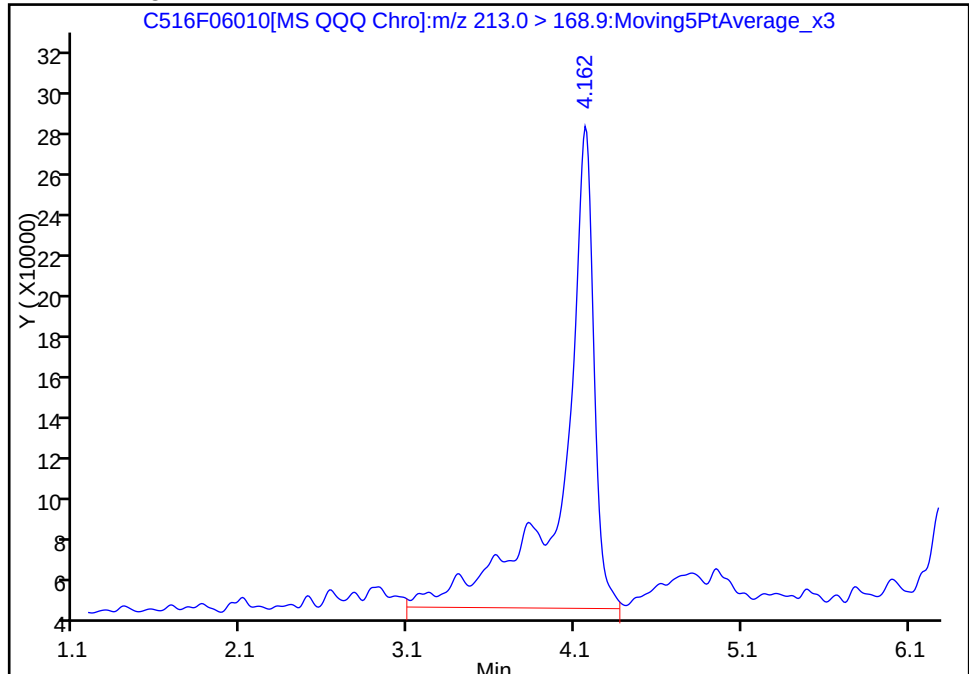
RT: 4.16
Area: 2073405
Amount: 0.770220
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 3038727
Amount: 1.029538
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:59:20
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
 Lims ID: STD0020
 Client ID:
 Sample Type: ICISAV Calib Level: 4
 Inject. Date: 06-Jun-2016 15:26:53 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0020, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:08:54 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:56:38

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.162	0.0		26088805	10.0			M
2 Perfluorobutyric acid									M
213.0 > 168.9	4.162	4.162	0.0	1.000	5302668	1.90			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.232	5.232	0.0	0.899	5174660	1.90			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.364	5.364	0.0	0.858	2150148	1.59			
298.9 > 98.9	5.355	5.364	-0.009	0.856	668844		3.21(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.364	5.364	0.0	0.858	2150148	1.59			
298.9 > 98.9	5.355	5.364	-0.009	0.856	668844		3.21(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.819	5.819	0.0	1.000	4642778	2.13			
313.0 > 118.6	5.828	5.819	0.009	1.002	128162		36.23(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.818	5.818	0.0		22852723	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.244	6.244	0.0	0.947	5744336	1.96			
363.0 > 168.9	6.244	6.244	0.0	0.947	1519317		3.78(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.253	0.0		2458667	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.253	6.253	0.0	1.000	2005825	1.93			R
398.9 > 98.9	6.253	6.253	0.0	1.000	598069		3.35(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.253	6.253	0.0	1.000	2005825	1.93			
398.9 > 98.9	6.253	6.253	0.0	1.000	598069		3.35(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.959	2150073	1.87			
449.0 > 98.9	6.583	6.583	0.0	0.959	294863		7.29(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.959	2150073	1.87			
449.0 > 98.9	6.583	6.583	0.0	0.959	294863		7.29(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	5869974	2.15			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		33184339	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	6983614	1.96			
413.0 > 169.0	6.594	6.594	0.0	1.000	2269227		3.08(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	1266475	2.15			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		9090094	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	2158847	1.88			R
498.9 > 98.9	6.866	6.866	0.0	1.000	810717		2.66(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.886	0.0		25217378	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	1.000	5817495	2.02			
463.0 > 218.9	6.886	6.886	0.0	1.000	799914		7.27(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.130	0.0	1.000	5187930	1.96			
513.0 > 219.0	7.130	7.130	0.0	1.000	484901		10.70(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.130	0.0		25918394	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.318	7.318	0.0	1.066	2240490	1.87			
598.9 > 99.0	7.318	7.318	0.0	1.066	751846		2.98(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.318	7.318	0.0	1.066	2240490	1.87			
598.9 > 99.0	7.318	7.318	0.0	1.066	751846		2.98(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.347	7.347	0.0		17106034	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.347	7.347	0.0	1.000	4772902	1.93			R
563.0 > 268.9	7.338	7.347	-0.009	0.999	637651		7.49(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.517	7.517	0.0		33224124	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.517	7.517	0.0	1.000	6822134	1.95			
613.0 > 168.9	7.517	7.517	0.0	1.000	1007833		6.77(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.614	7.614	0.0		25464298	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.615	7.615	0.0	1.000	5393596	1.94			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.668	7.668	0.0	1.020	6520781	2.05			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.800	7.800	0.0	1.038	3642443	1.85			
712.9 > 169.0	7.800	7.800	0.0	1.038	615826		5.91(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_CAL_stock_00033

Amount Added: 100.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d

Injection Date: 06-Jun-2016 15:26:53

Instrument ID: LC_LCMS5

Lims ID: STD0020

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

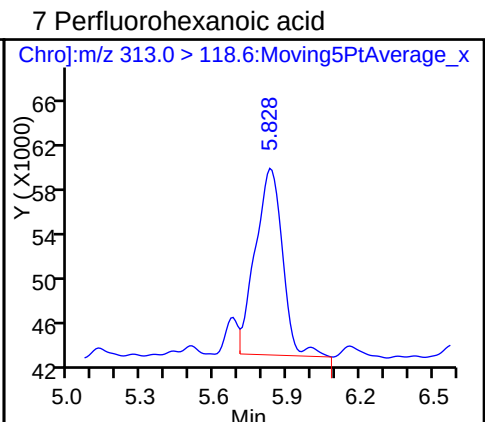
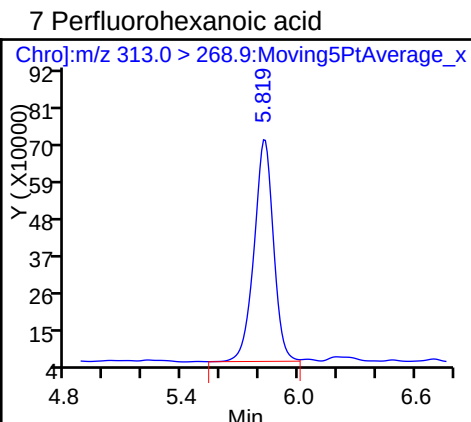
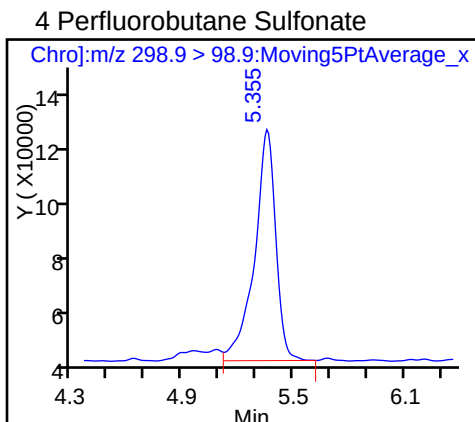
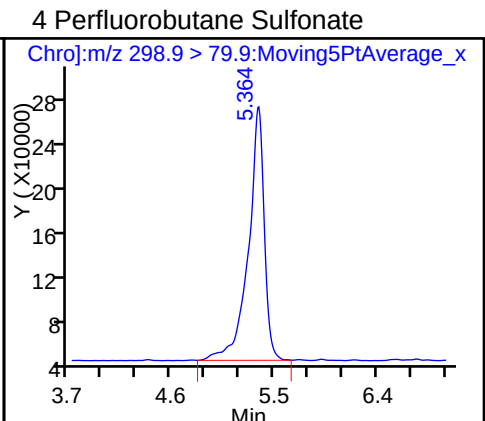
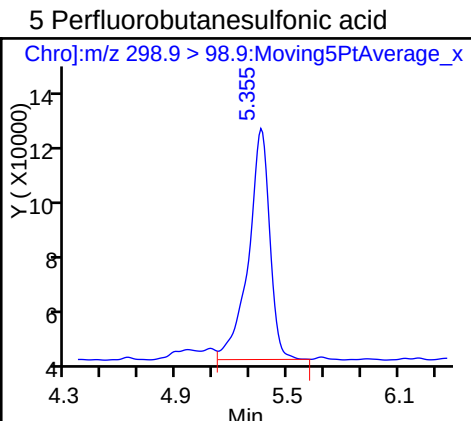
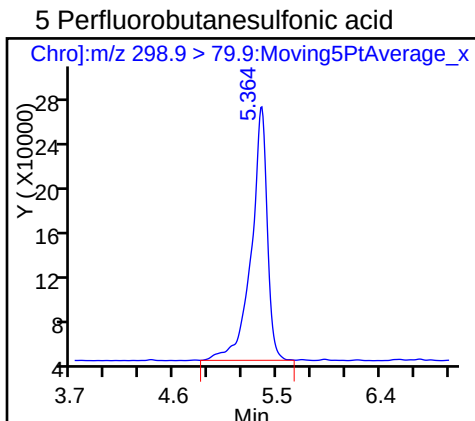
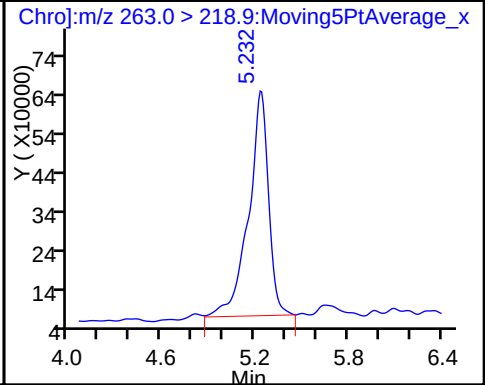
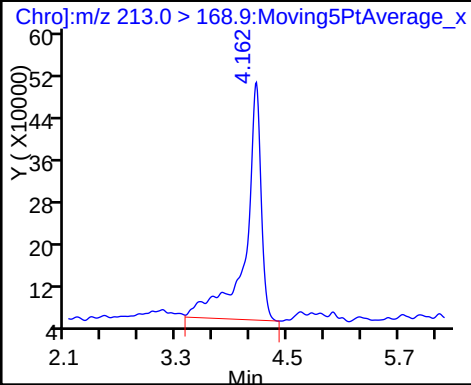
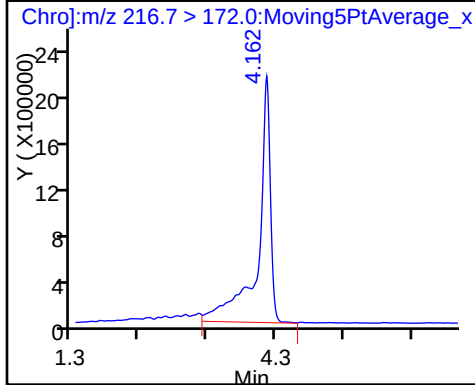
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid (M)

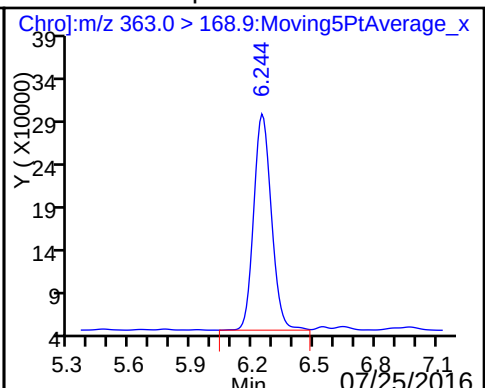
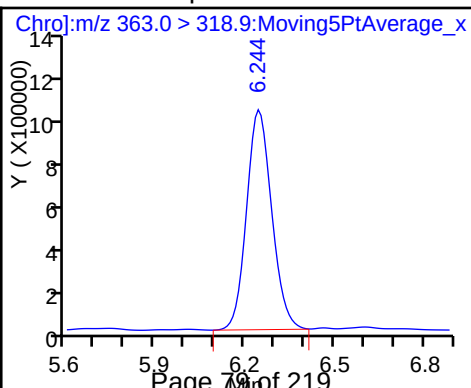
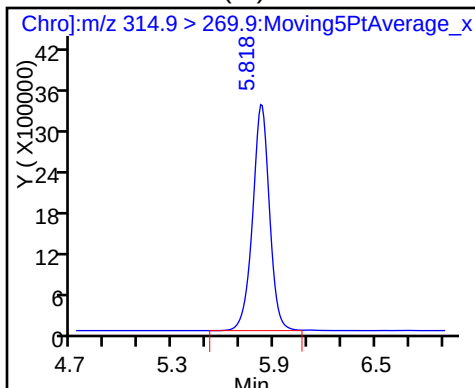
3 Perfluoropentanoic acid



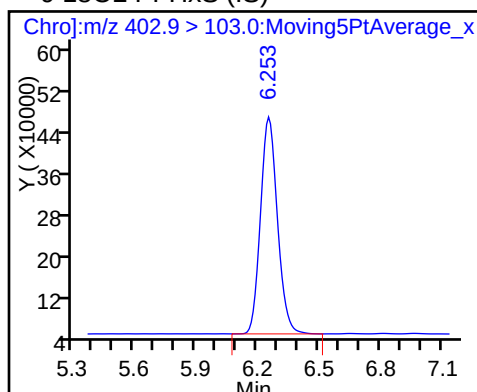
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

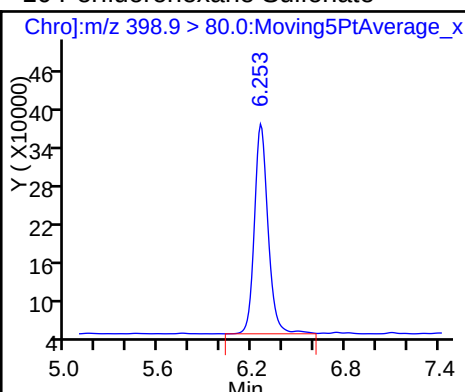
8 Perfluoroheptanoic acid



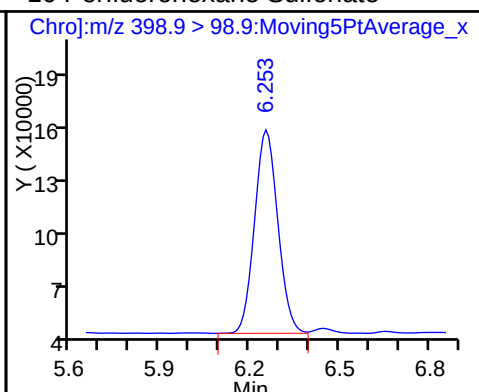
* 9 18O2 PFHxS (IS)



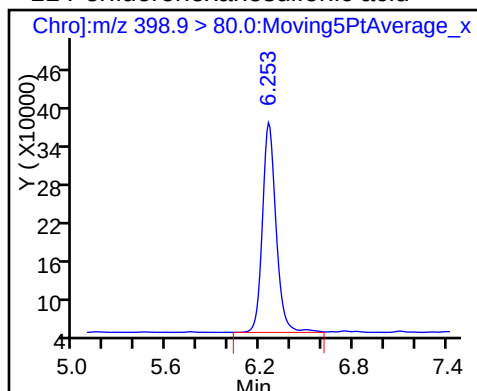
10 Perfluorohexane Sulfonate



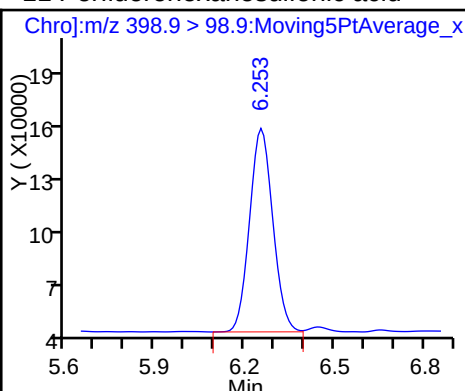
10 Perfluorohexane Sulfonate



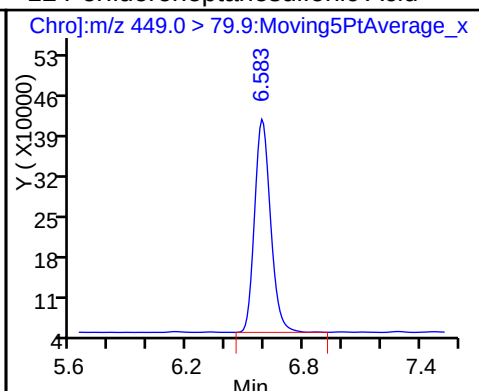
11 Perfluorohexanesulfonic acid



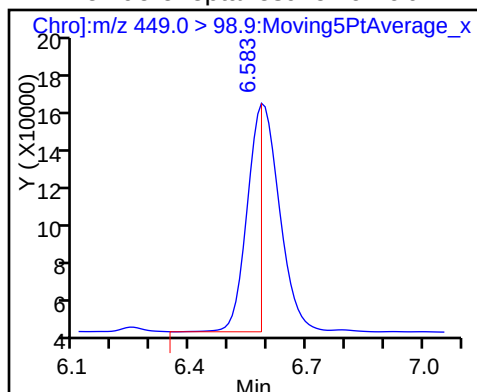
11 Perfluorohexanesulfonic acid



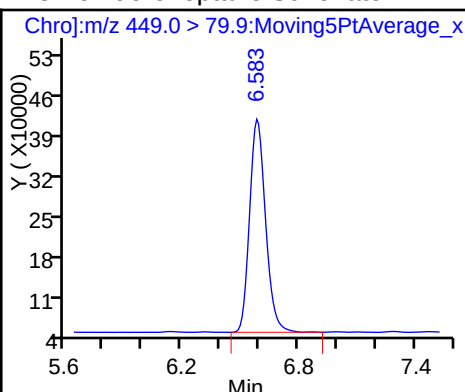
12 Perfluoroheptanesulfonic Acid



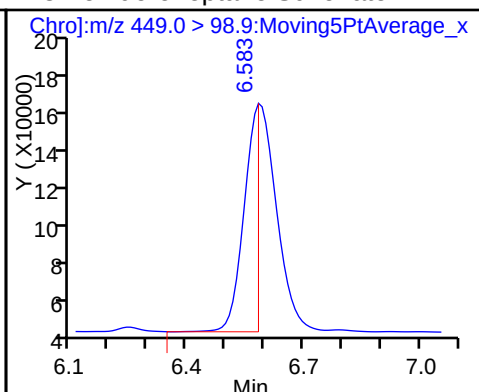
12 Perfluoroheptanesulfonic Acid



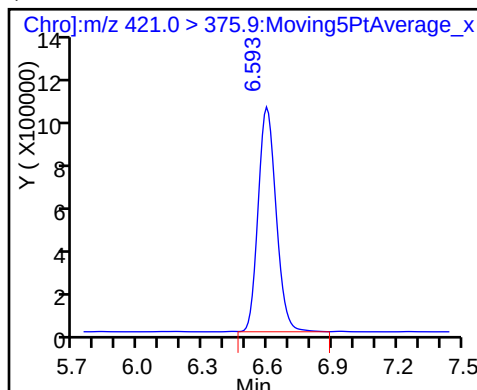
13 Perfluoroheptane Sulfonate



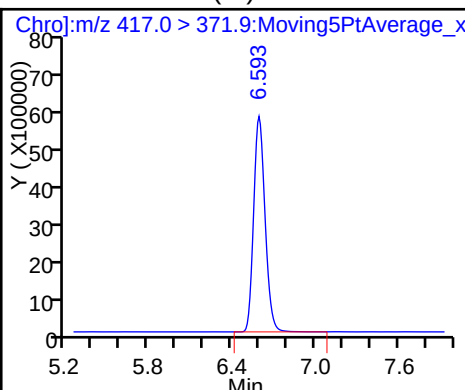
13 Perfluoroheptane Sulfonate



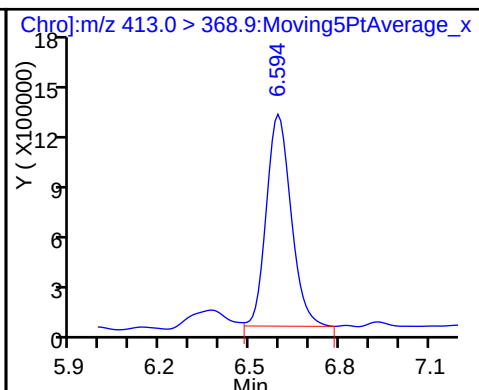
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



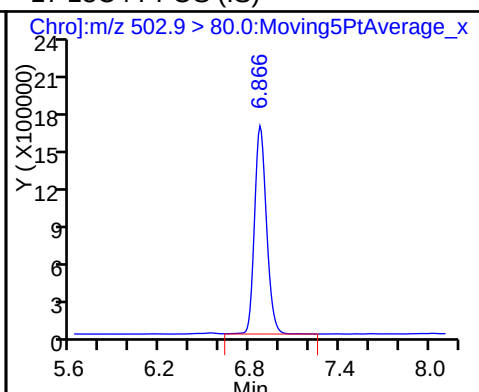
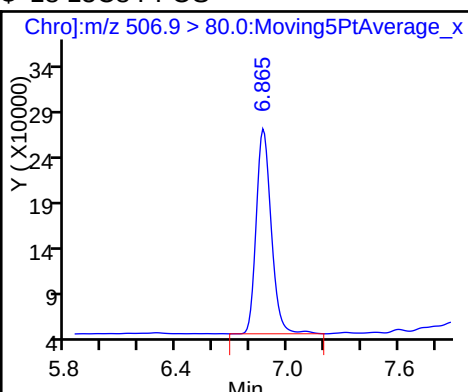
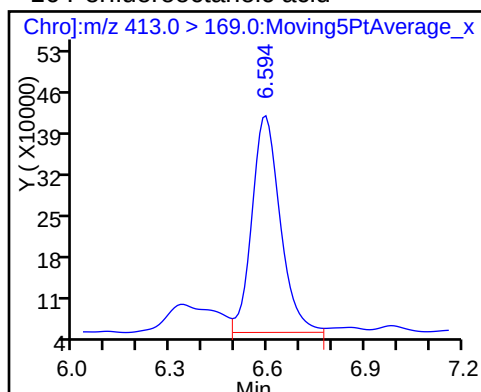
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

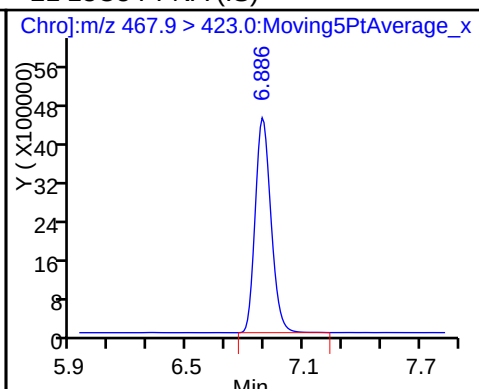
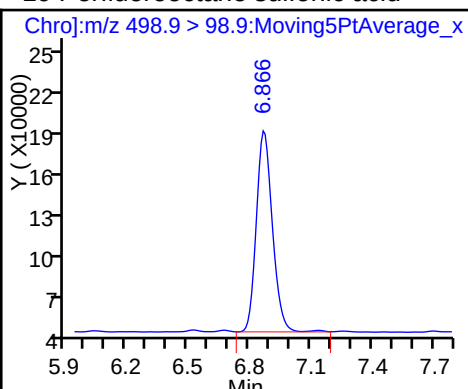
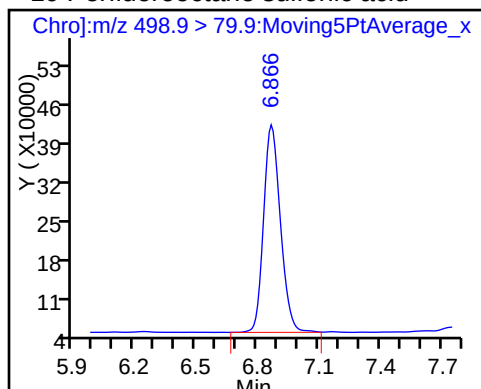
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

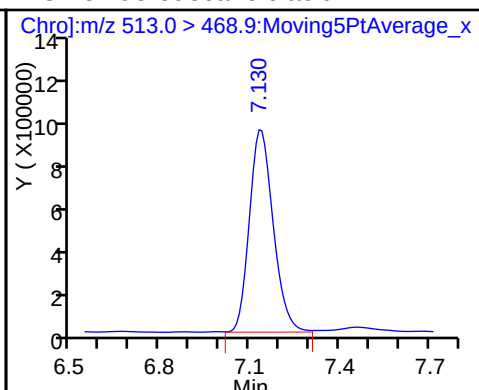
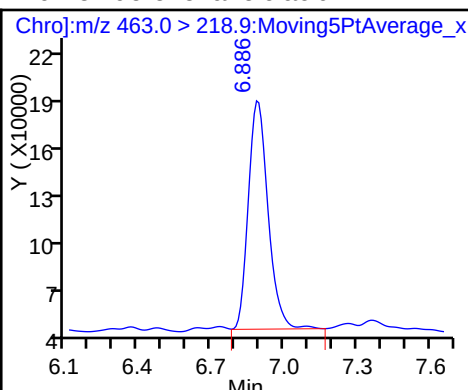
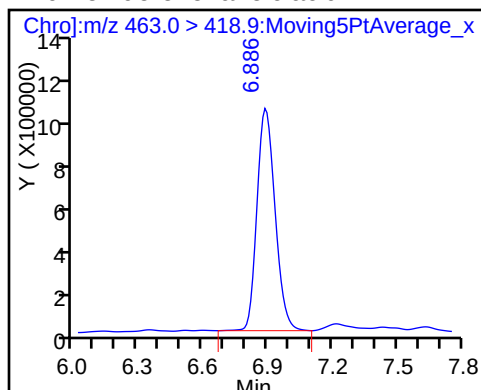
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

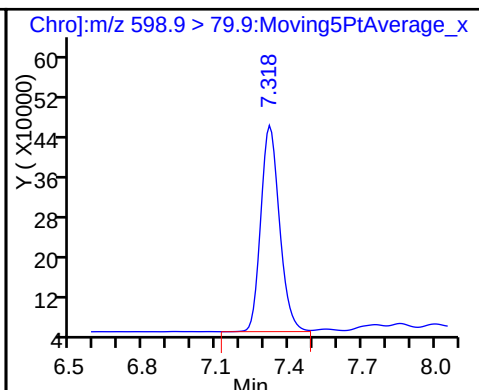
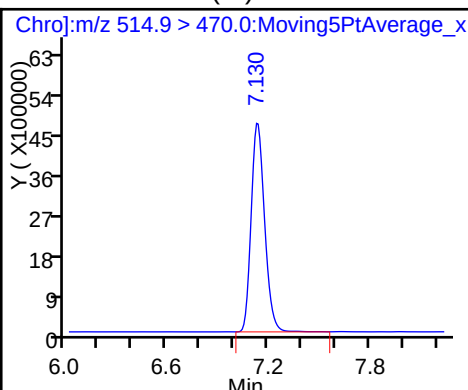
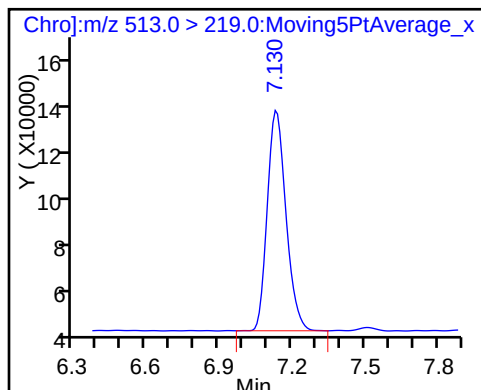
23 Perfluorodecanoic acid



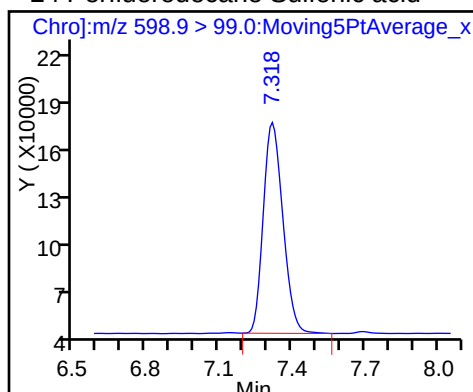
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

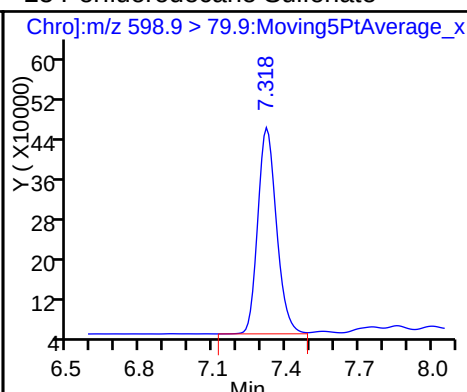
24 Perfluorodecane Sulfonic acid



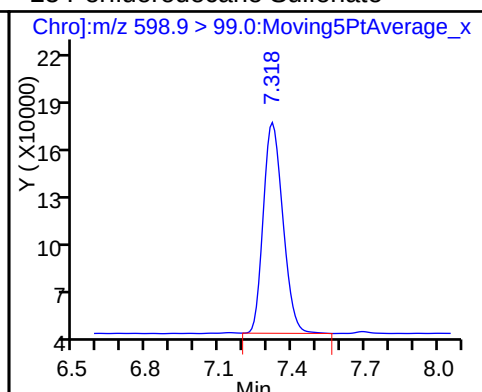
24 Perfluorodecane Sulfonic acid



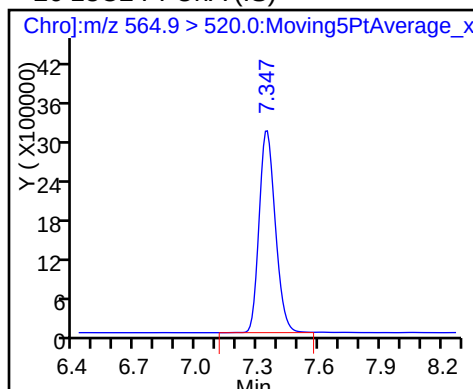
25 Perfluorodecane Sulfonate



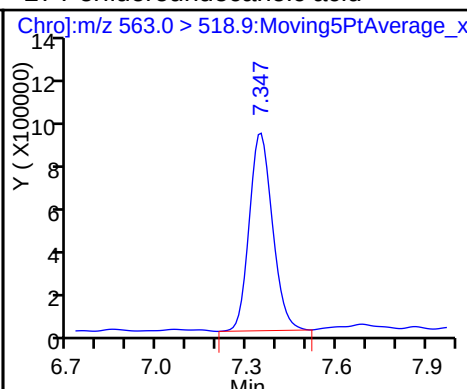
25 Perfluorodecane Sulfonate



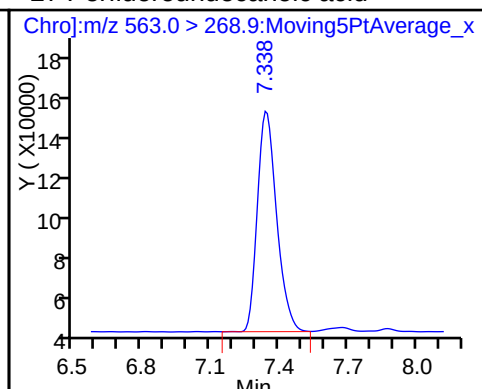
* 26 13C2 PFUnA (IS)



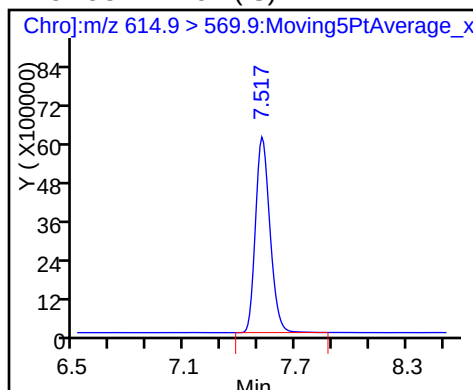
27 Perfluoroundecanoic acid



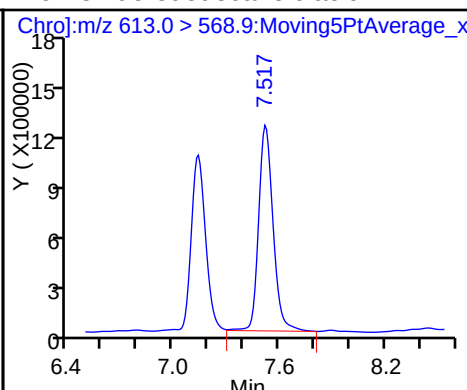
27 Perfluoroundecanoic acid



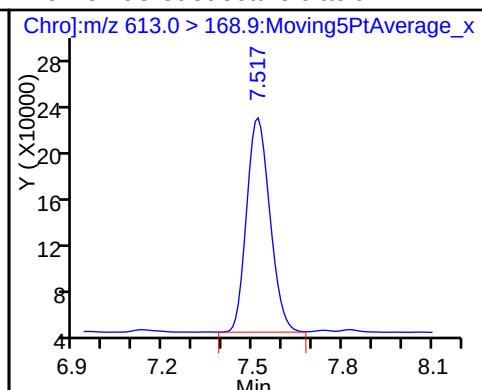
* 28 13C2 PFDaA (IS)



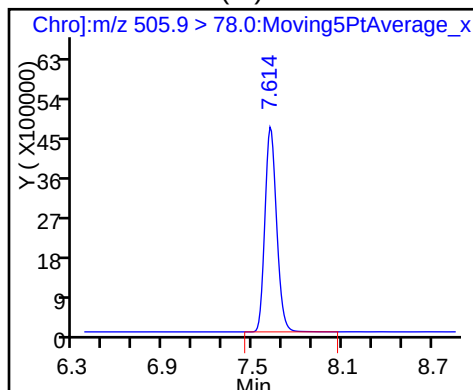
29 Perfluorododecanoic acid



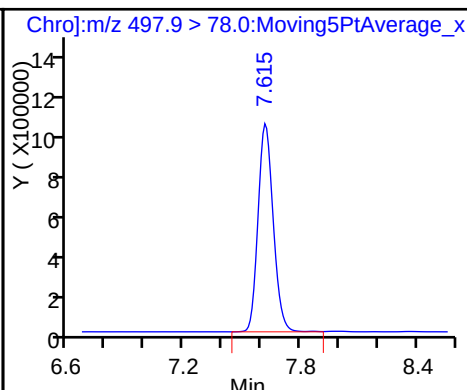
29 Perfluorododecanoic acid



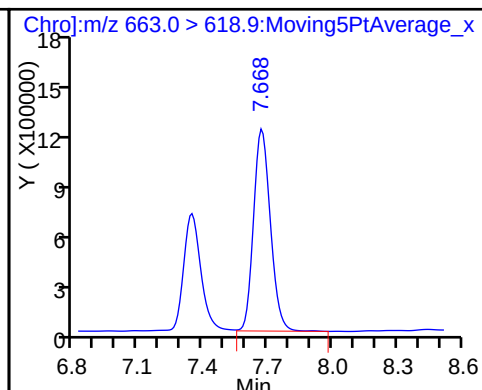
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



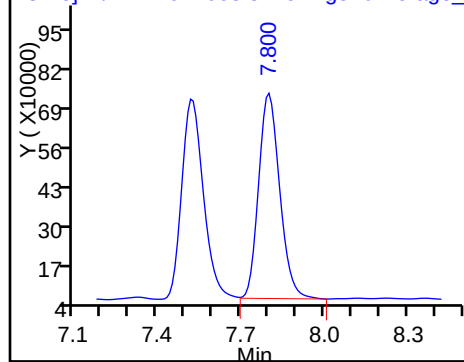
30 Perfluorotridecanoic acid



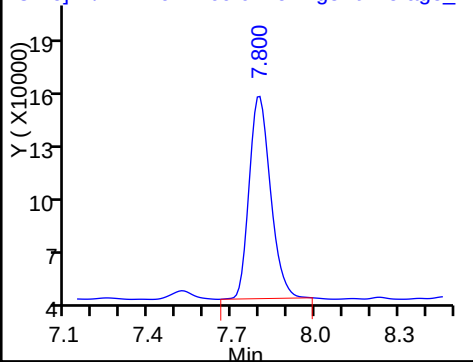
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



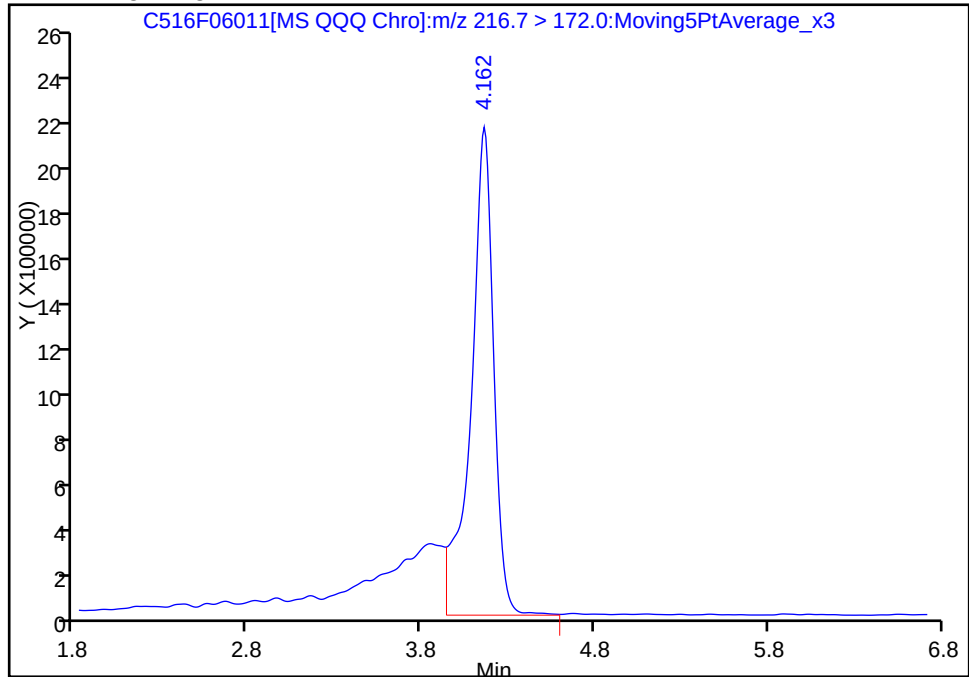
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
Injection Date: 06-Jun-2016 15:26:53 Instrument ID: LC_LCMS5
Lims ID: STD0020
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

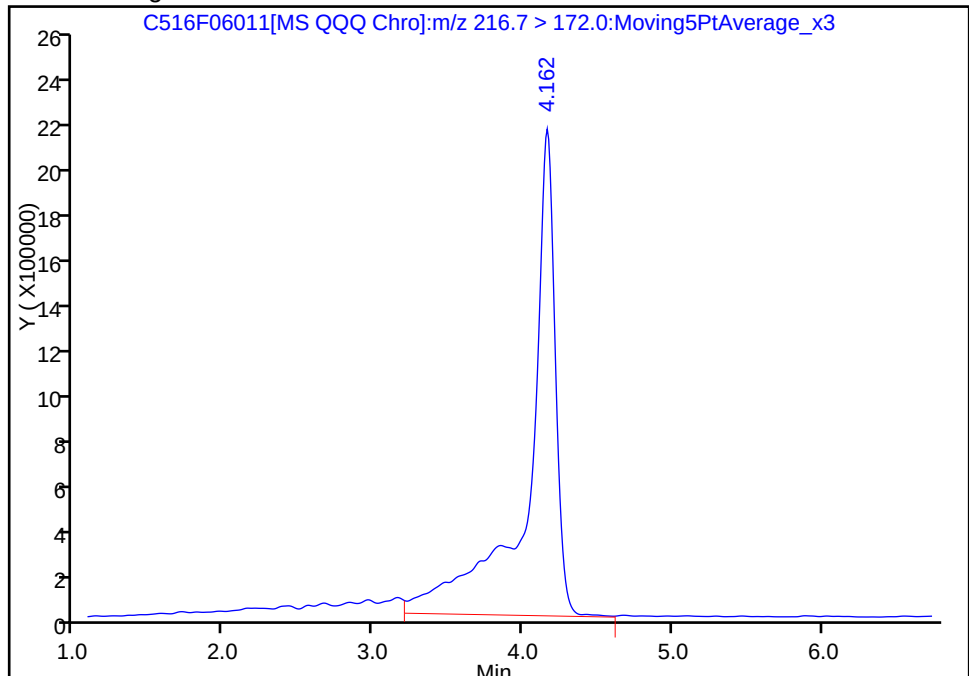
RT: 4.16
Area: 18712233
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 26088805
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:56:38
Audit Action: Manually Integrated
Audit Reason: Baseline

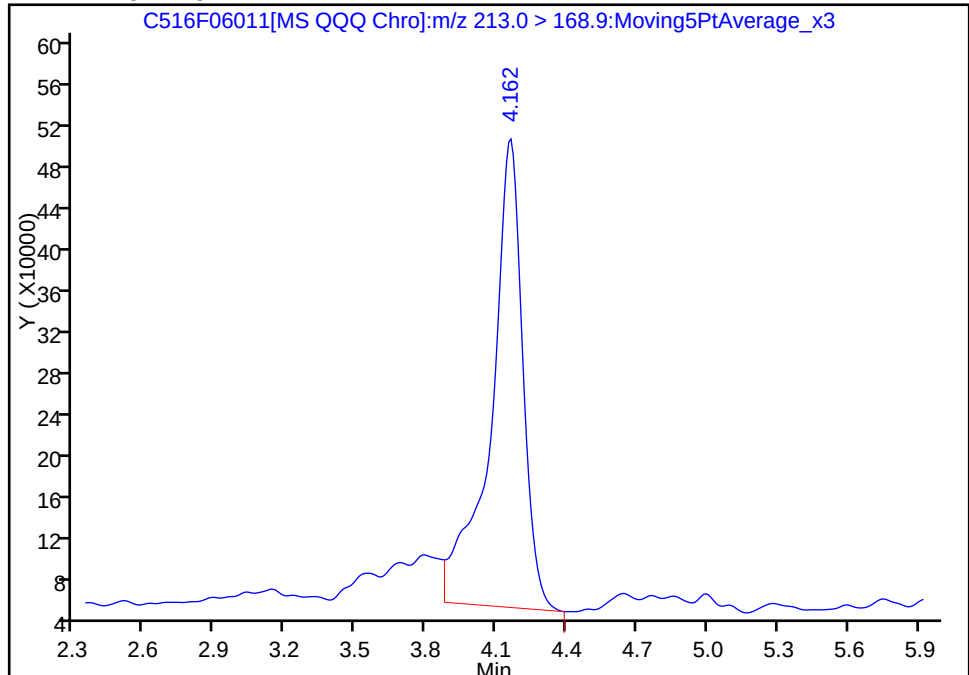
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06011.d
Injection Date: 06-Jun-2016 15:26:53 Instrument ID: LC_LCMS5
Lims ID: STD0020
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 6
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

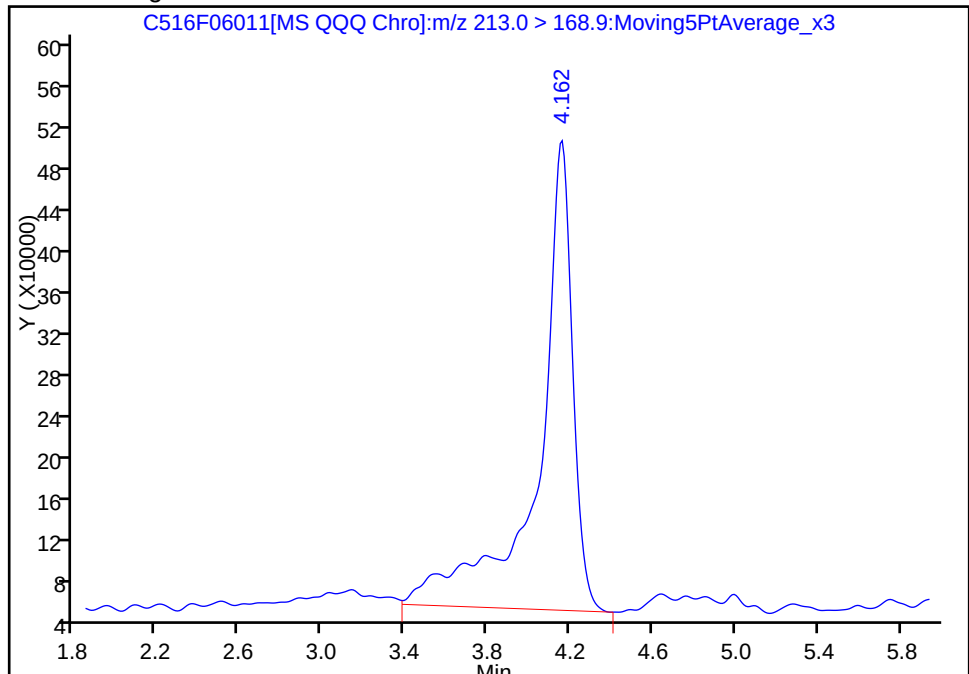
RT: 4.16
Area: 4262347
Amount: 0.917918
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 5302668
Amount: 1.897623
Amount Units: ug/L

Manual Integration Results



Reviewer: meyera, 07-Jun-2016 12:56:38
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d
 Lims ID: STD0050
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 06-Jun-2016 15:39:12 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0050, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:00 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:14

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.143	4.162	-0.019		30058395	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.153	4.162	-0.009	1.002	15646483	4.85			M
3 Perfluoropentanoic acid									
263.0 > 218.9	5.232	5.232	0.0	0.898	14121680	5.12			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.355	5.364	-0.009	0.855	5710734	4.49			
298.9 > 98.9	5.355	5.364	-0.009	0.855	1741559		3.28(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.355	5.364	-0.009	0.855	5710734	4.49			
298.9 > 98.9	5.355	5.364	-0.009	0.855	1741559		3.28(1.80-3.35)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.828	5.819	0.009	1.000	10659437	4.80			
313.0 > 118.6	5.838	5.819	0.019	1.002	355910		29.95(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.828	5.818	0.010		23405456	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.263	6.244	0.019	0.947	14292973	5.04			
363.0 > 168.9	6.263	6.244	0.019	0.947	3943282		3.62(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.253	0.010		2306359	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.272	6.253	0.019	1.002	4705477	4.95			R
398.9 > 98.9	6.272	6.253	0.019	1.002	1732235		2.72(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.272	6.253	0.019	1.002	4705477	4.95			
398.9 > 98.9	6.272	6.253	0.019	1.002	1732235		2.72(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.602	6.583	0.019	0.959	5403580	4.77			
449.0 > 98.9	6.602	6.583	0.019	0.959	1549855		3.49(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.602	6.583	0.019	0.959	5403580	4.77			
449.0 > 98.9	6.602	6.583	0.019	0.959	1549855		3.49(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.612	6.593	0.019	1.000	14613722	5.54			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.612	6.593	0.019		32493562	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.613	6.594	0.019	1.000	17252348	5.06			
413.0 > 169.0	6.613	6.594	0.019	1.000	5369504		3.21(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.884	6.865	0.019	1.000	2952684	5.15			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.885	6.866	0.019		8937624	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.885	6.866	0.019	1.000	5678428	5.15			R
498.9 > 98.9	6.885	6.866	0.019	1.000	2095239		2.71(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.905	6.886	0.019		23993318	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.905	6.886	0.019	1.000	14058059	5.20			
463.0 > 218.9	6.905	6.886	0.019	1.000	1958954		7.18(5.59-10.38)		
23 Perfluorodecanoic acid									
513.0 > 468.9	7.149	7.130	0.019	1.000	13455719	5.26			
513.0 > 219.0	7.149	7.130	0.019	1.000	1185162		11.35(10.49-19.48)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.149	7.130	0.019		25302155	10.0			
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.328	7.318	0.010	1.064	5632521	4.85			
598.9 > 99.0	7.328	7.318	0.010	1.064	1578945		3.57(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.328	7.318	0.010	1.064	5632521	4.85			
598.9 > 99.0	7.328	7.318	0.010	1.064	1578945		3.57(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.357	7.347	0.010		16303477	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.357	7.347	0.010	1.000	11414147	4.91			R
563.0 > 268.9	7.357	7.347	0.010	1.000	1382008		8.26(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.526	7.517	0.009		34205513	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.526	7.517	0.009	1.000	17657166	5.00			
613.0 > 168.9	7.526	7.517	0.009	1.000	2239694		7.88(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.624	7.614	0.010		24753508	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.624	7.615	0.009	1.000	13895071	5.17			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.677	7.668	0.009	1.020	16402113	5.12			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.810	7.800	0.010	1.038	9715521	4.80			
712.9 > 169.0	7.810	7.800	0.010	1.038	1482345		6.55(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00078

Amount Added: 10.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

PFC_Surr_00021

Amount Added: 10.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d

Injection Date: 06-Jun-2016 15:39:12

Instrument ID: LC_LCMS5

Lims ID: STD0050

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 7

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

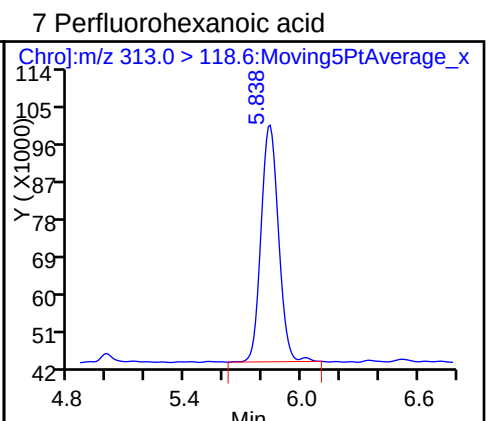
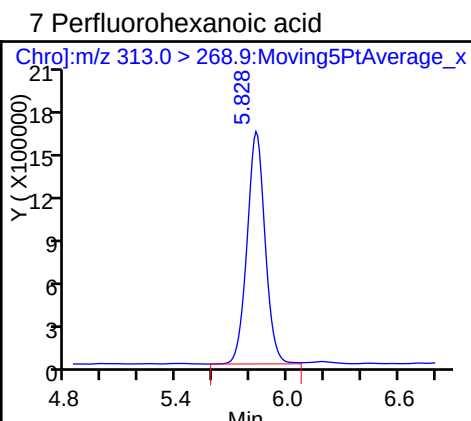
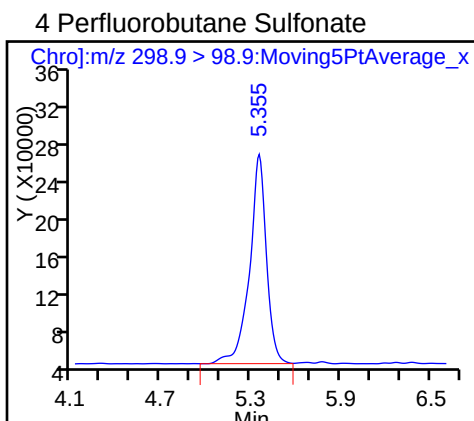
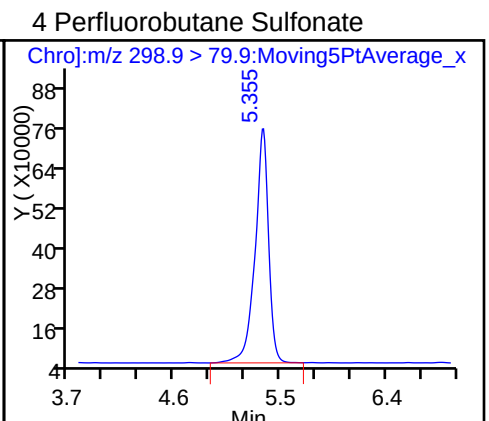
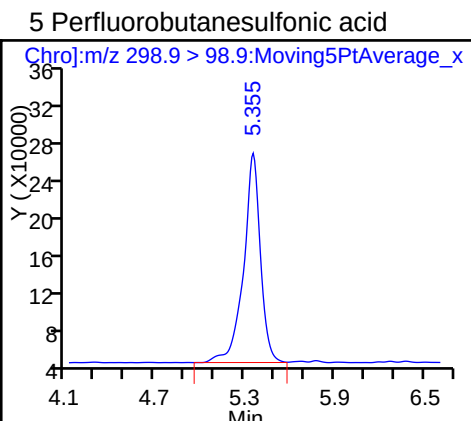
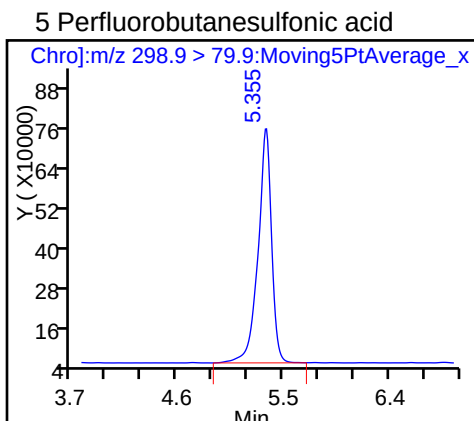
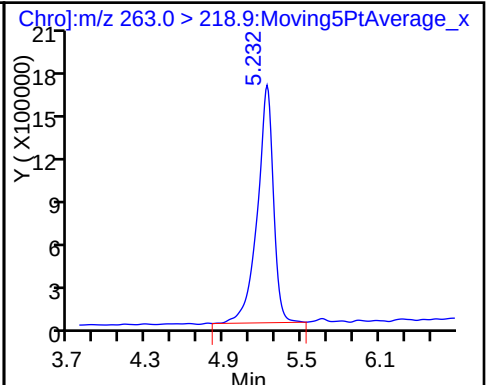
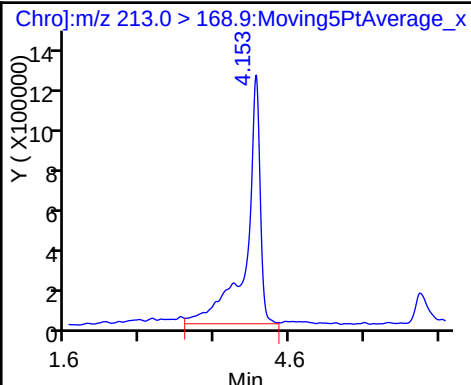
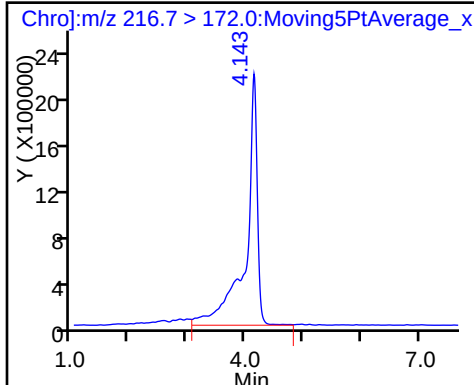
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

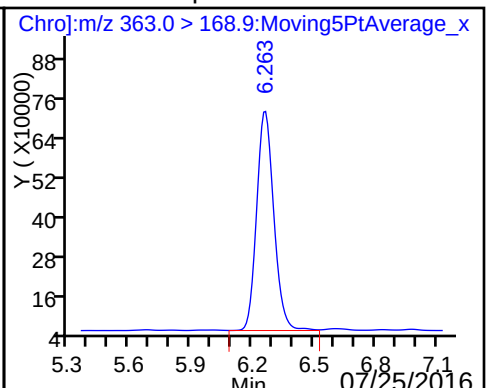
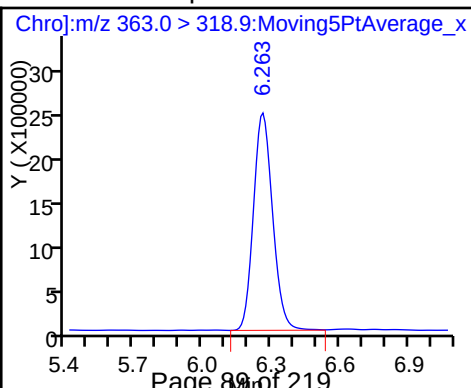
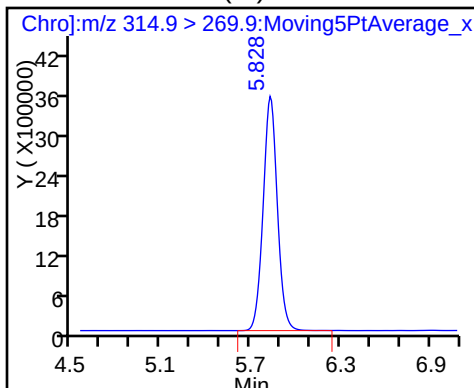
3 Perfluoropentanoic acid



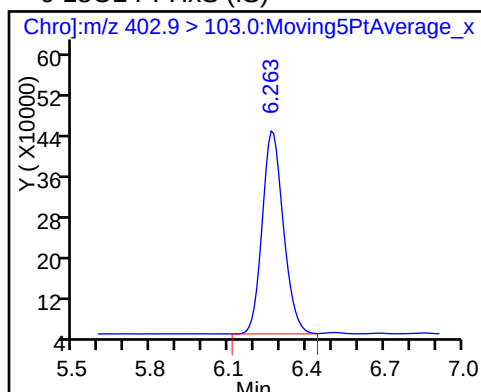
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

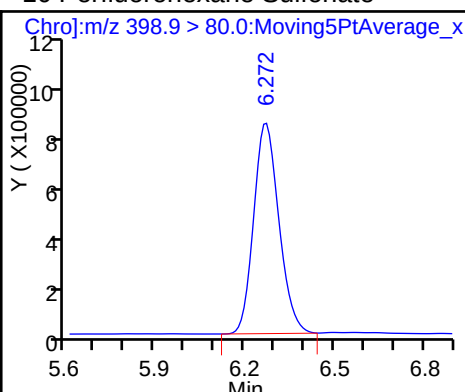
8 Perfluoroheptanoic acid



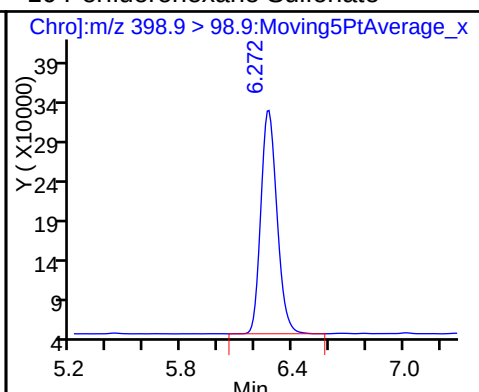
* 9 18O2 PFHxS (IS)



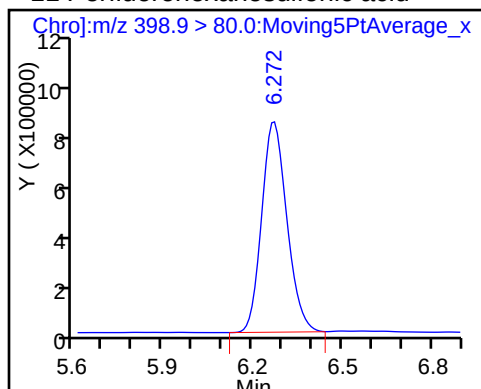
10 Perfluorohexane Sulfonate



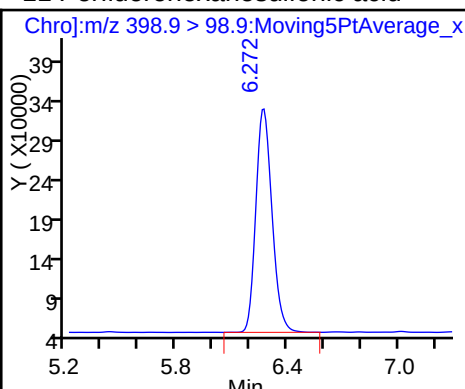
10 Perfluorohexane Sulfonate



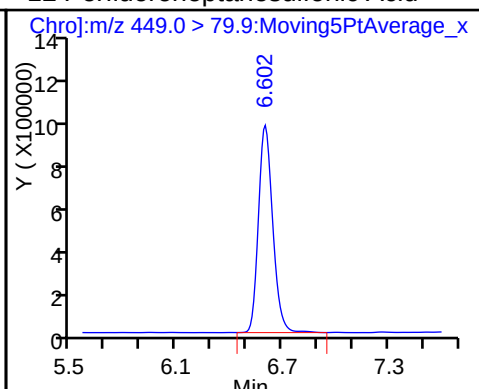
11 Perfluorohexanesulfonic acid



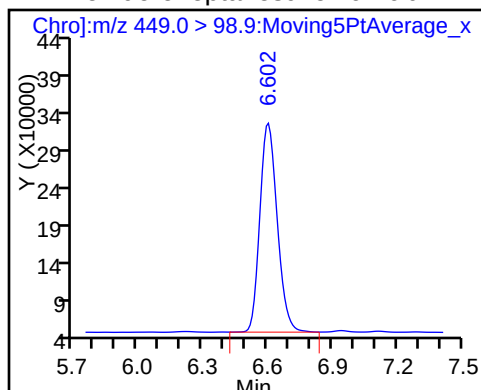
11 Perfluorohexanesulfonic acid



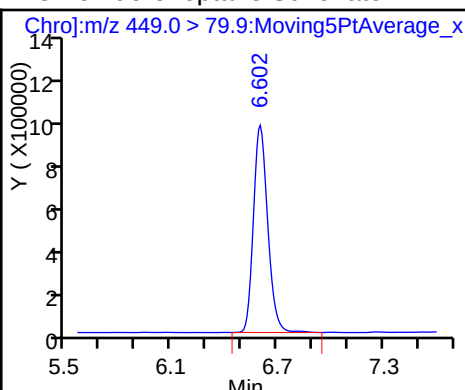
12 Perfluoroheptanesulfonic Acid



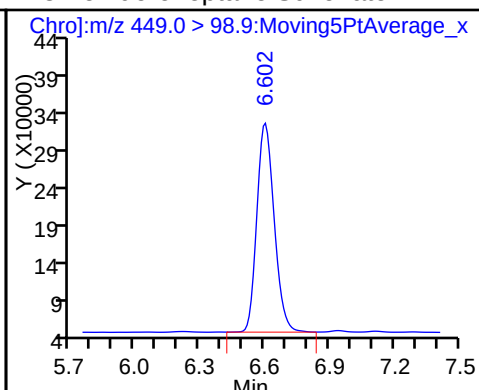
12 Perfluoroheptanesulfonic Acid



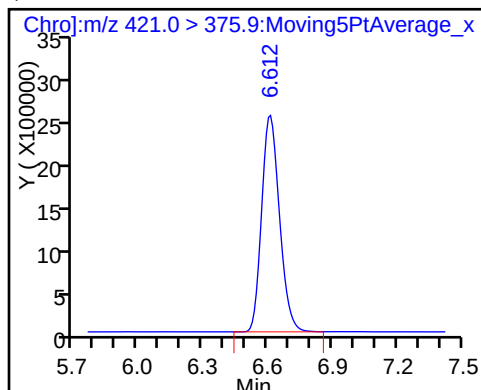
13 Perfluoroheptane Sulfonate



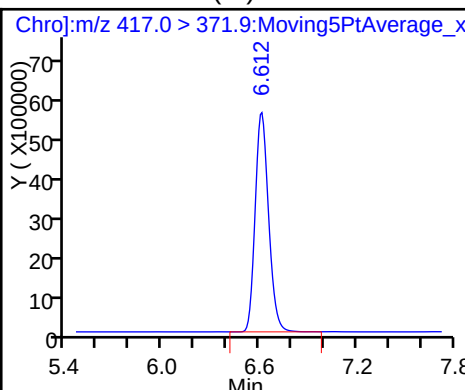
13 Perfluoroheptane Sulfonate



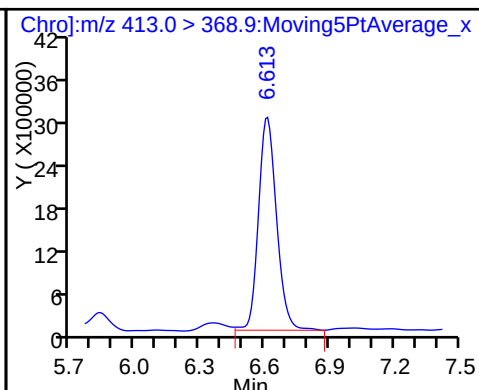
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



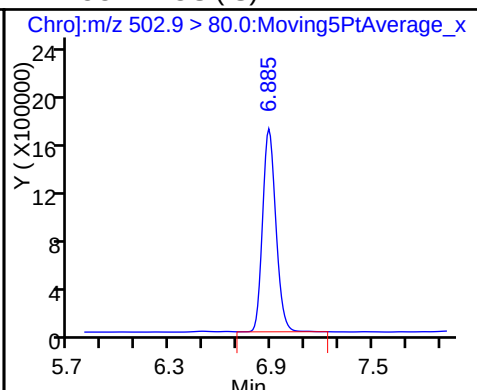
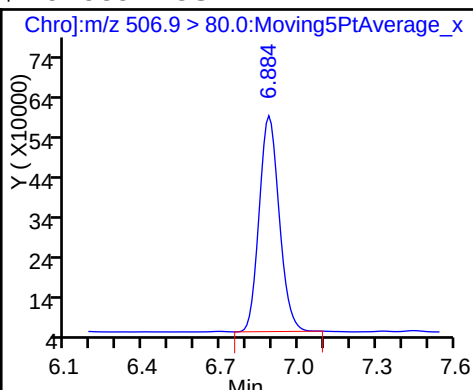
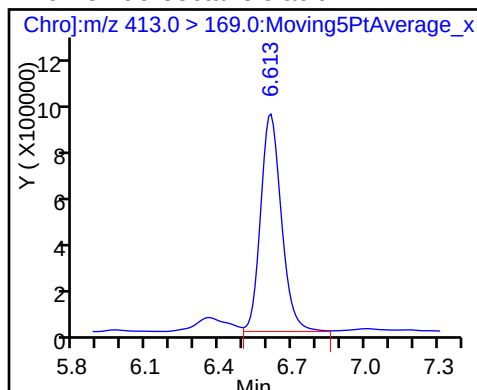
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

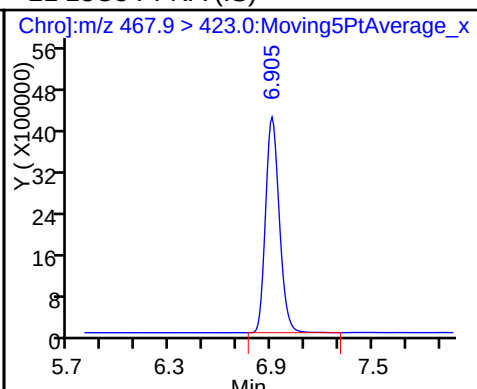
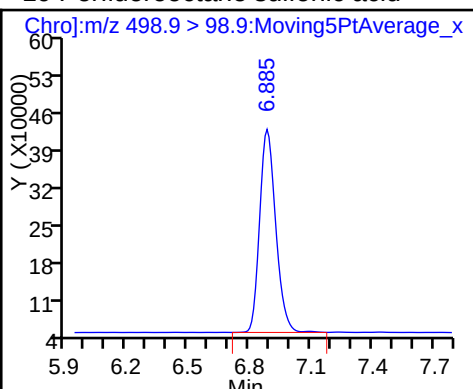
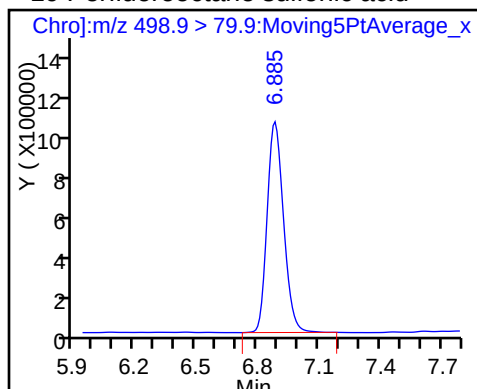
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

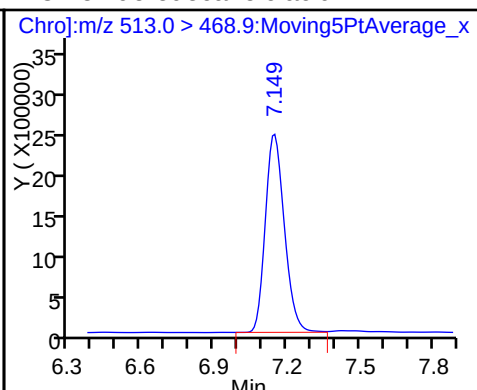
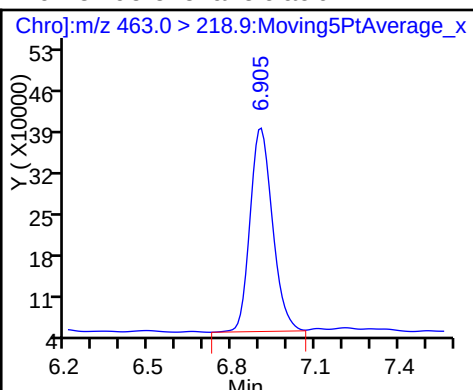
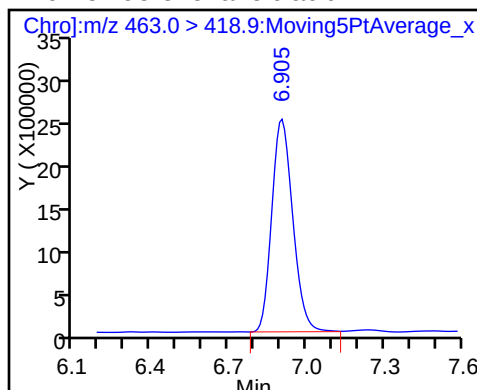
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

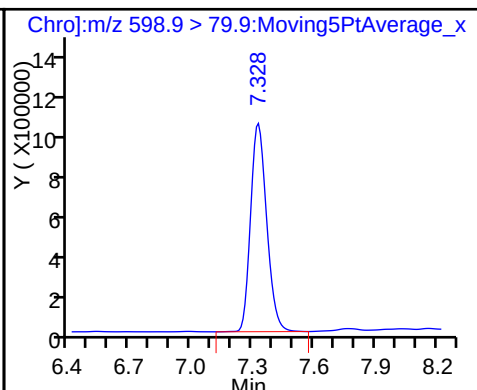
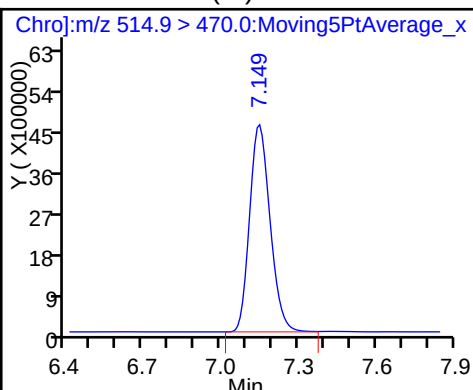
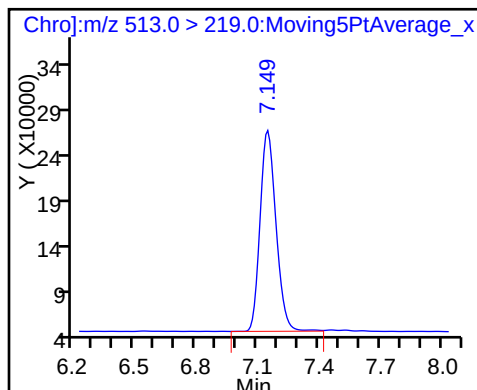
23 Perfluorodecanoic acid



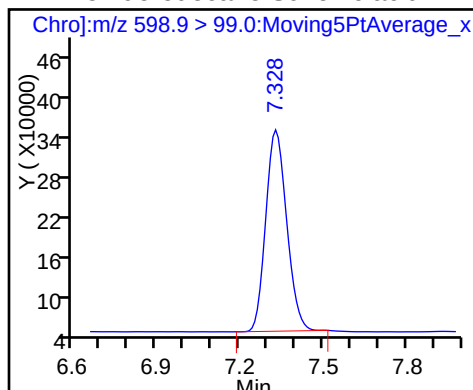
23 Perfluorodecanoic acid

* 22 13C2 PFDA (IS)

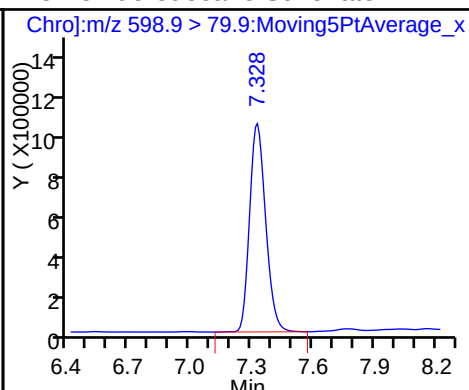
24 Perfluorodecane Sulfonic acid



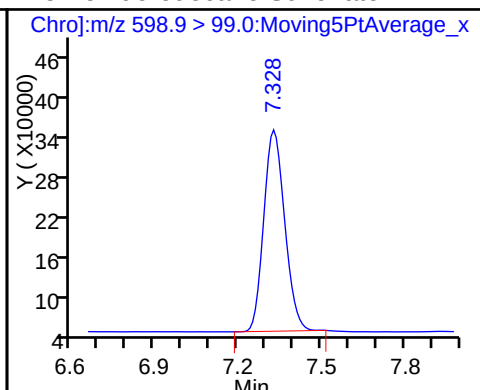
24 Perfluorodecane Sulfonic acid



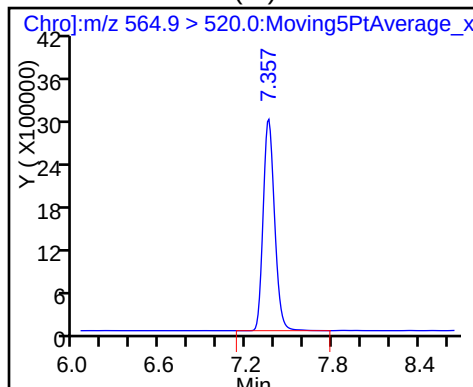
25 Perfluorodecane Sulfonate



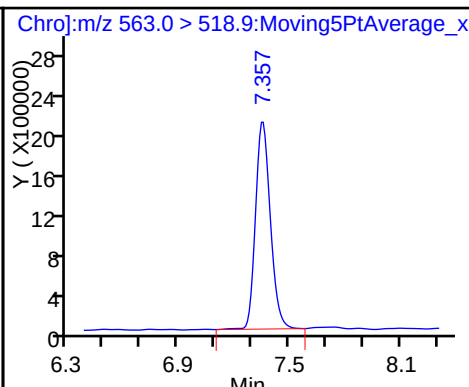
25 Perfluorodecane Sulfonate



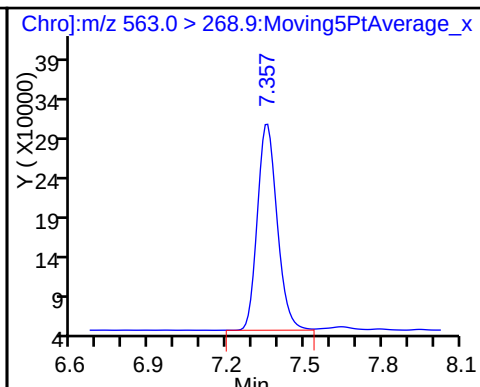
* 26 13C2 PFUnA (IS)



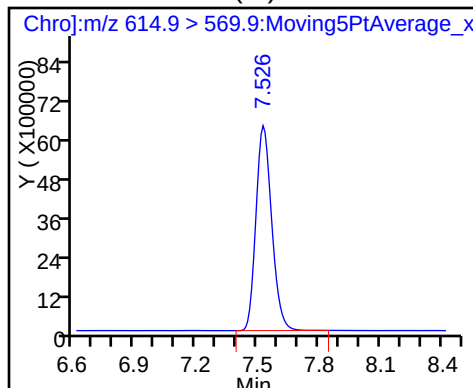
27 Perfluoroundecanoic acid



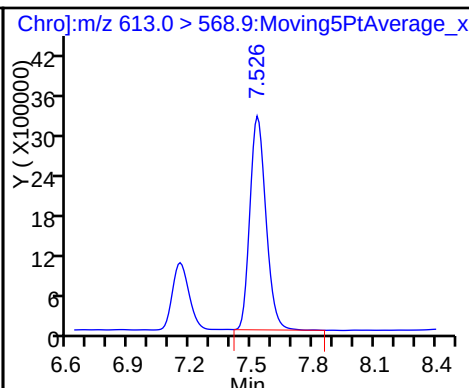
27 Perfluoroundecanoic acid



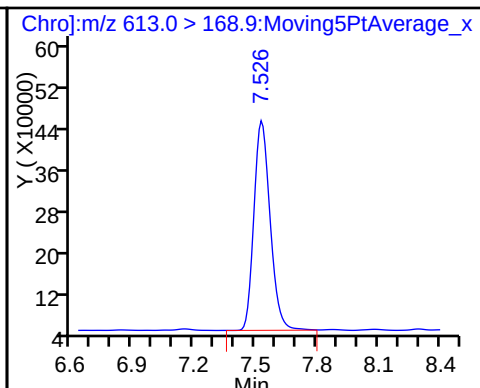
* 28 13C2 PFDaA (IS)



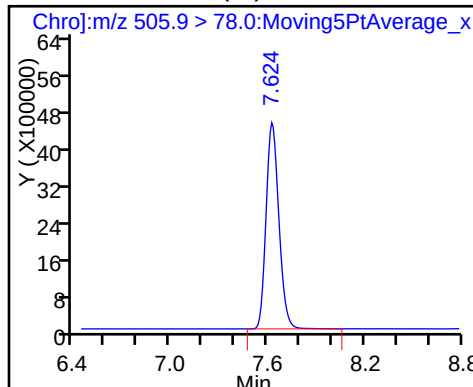
29 Perfluorododecanoic acid



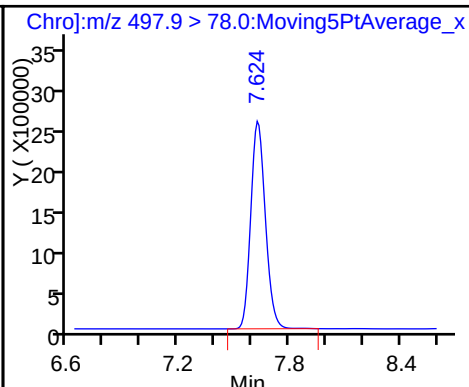
29 Perfluorododecanoic acid



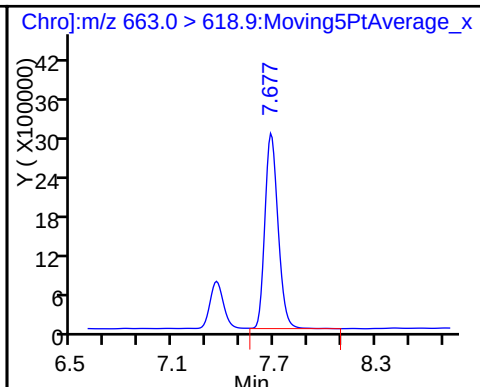
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

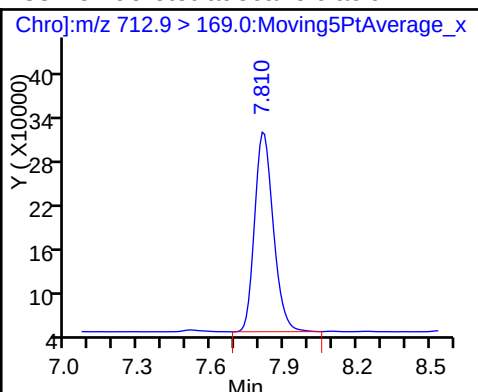
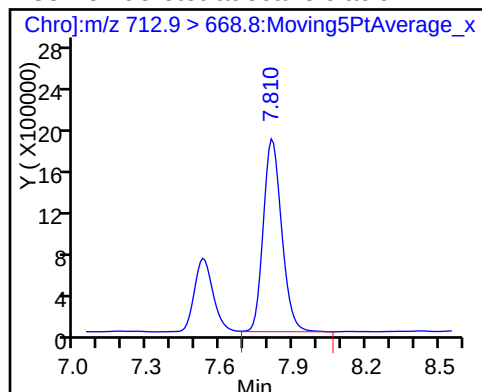


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



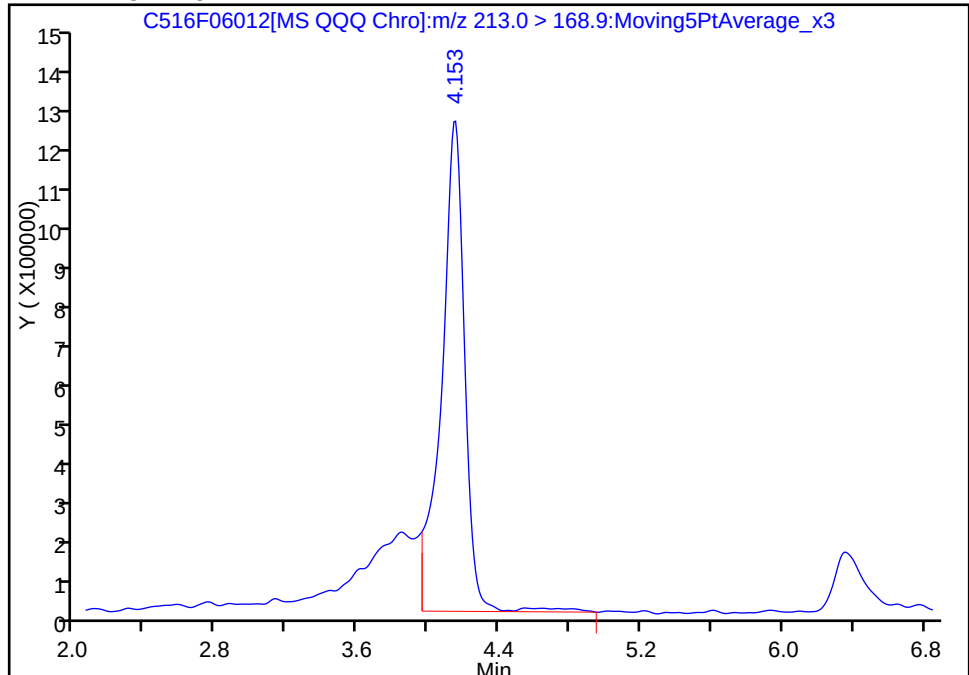
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06012.d
Injection Date: 06-Jun-2016 15:39:12 Instrument ID: LC_LCMS5
Lims ID: STD0050
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 7
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

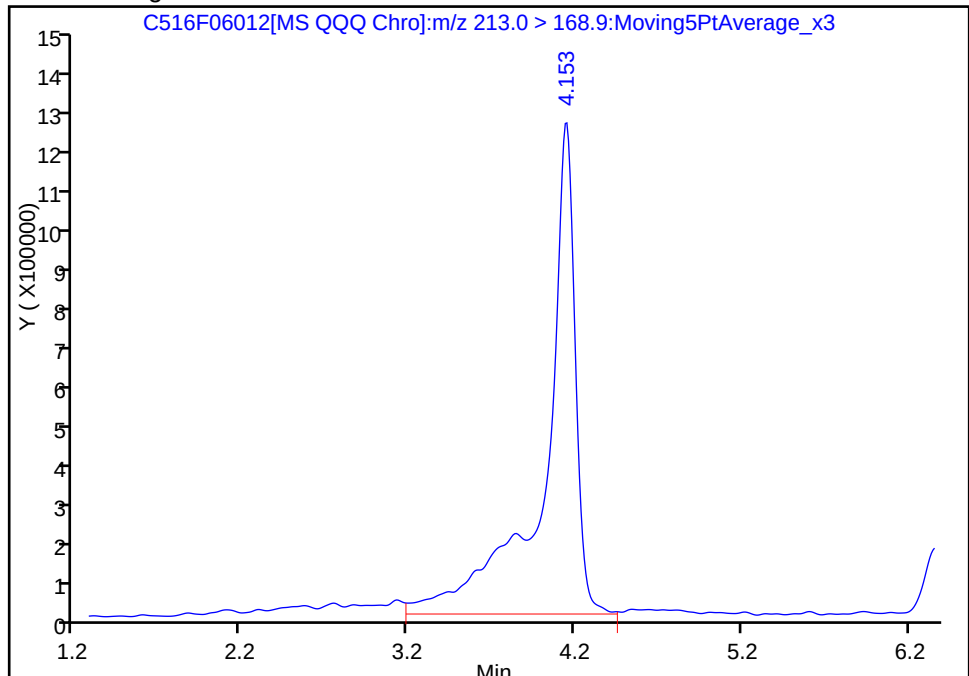
RT: 4.15
Area: 10960038
Amount: 3.437278
Amount Units: ug/L

Processing Integration Results



RT: 4.15
Area: 15646483
Amount: 4.854483
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:57:14
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06013.d
 Lims ID: STD0100
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 06-Jun-2016 15:51:29 ALS Bottle#: 0 Worklist Smp#: 8
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0100, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:06 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.143	4.162	-0.019		28249772	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.143	4.162	-0.019	1.000	30314584	10.0			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.213	5.232	-0.019	0.896	26550357	10.3			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.345	5.364	-0.019	0.855	10998014	8.11			
298.9 > 98.9	5.345	5.364	-0.019	0.855	3490279		3.15(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.345	5.364	-0.019	0.855	10998014	8.11			
298.9 > 98.9	5.345	5.364	-0.019	0.855	3490279		3.15(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.818	5.818	0.0		21981575	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.819	5.819	0.0	1.000	20841959	10.0			
313.0 > 118.6	5.819	5.819	0.0	1.000	627599		33.21(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.244	6.244	0.0	0.947	27517800	10.8			
363.0 > 168.9	6.244	6.244	0.0	0.947	7342155		3.75(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.253	6.253	0.0		2455924	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.253	6.253	0.0	1.000	8927761	8.88			R
398.9 > 98.9	6.253	6.253	0.0	1.000	3322393		2.69(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.253	6.253	0.0	1.000	8927761	8.88			
398.9 > 98.9	6.253	6.253	0.0	1.000	3322393		2.69(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.960	10232509	9.69			
449.0 > 98.9	6.583	6.583	0.0	0.960	3190245		3.21(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.960	10232509	9.69			
449.0 > 98.9	6.583	6.583	0.0	0.960	3190245		3.21(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	24662701	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		29389195	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	32009782	10.5			
413.0 > 169.0	6.594	6.594	0.0	1.000	9374363		3.41(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.856	6.865	-0.009	1.000	5353658	10.1			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.856	6.866	-0.010		8329164	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.857	6.866	-0.009	1.000	10470143	10.3			R
498.9 > 98.9	6.857	6.866	-0.009	1.000	3923550		2.67(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.876	6.886	-0.010		22181375	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.877	6.886	-0.010	1.000	25021117	10.1			
463.0 > 218.9	6.877	6.886	-0.010	1.000	3962775		6.31(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		24664744	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	25238466	10.2			R
513.0 > 219.0	7.121	7.130	-0.009	1.000	2479122		10.18(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.066	10758635	9.98			
598.9 > 99.0	7.309	7.318	-0.009	1.066	3209764		3.35(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.066	10758635	9.98			
598.9 > 99.0	7.309	7.318	-0.009	1.066	3209764		3.35(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		14532277	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.329	7.347	-0.019	0.999	21285381	10.3			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	2714333		7.84(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		31864705	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	33735988	10.3			
613.0 > 168.9	7.507	7.517	-0.010	1.000	4286959		7.87(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		23840347	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06013.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	26107207	10.1			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	30556604	10.3			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	18737310	9.95			
712.9 > 169.0	7.791	7.800	-0.009	1.038	2736267		6.85(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06013.d

Injection Date: 06-Jun-2016 15:51:29

Instrument ID: LC_LCMS5

Lims ID: STD0100

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 8

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

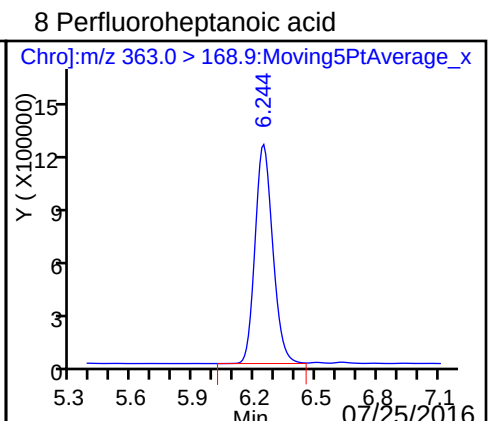
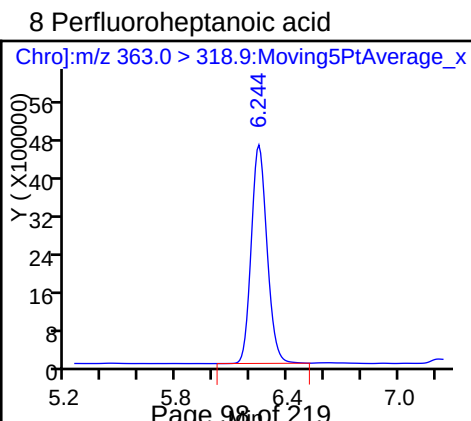
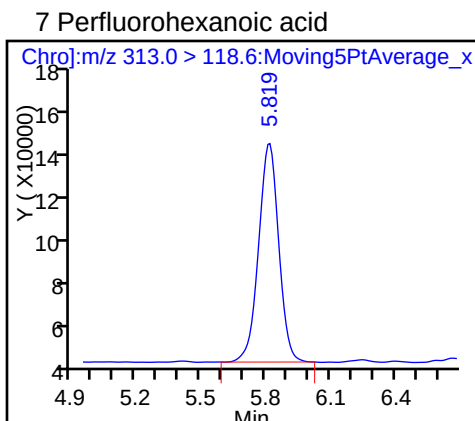
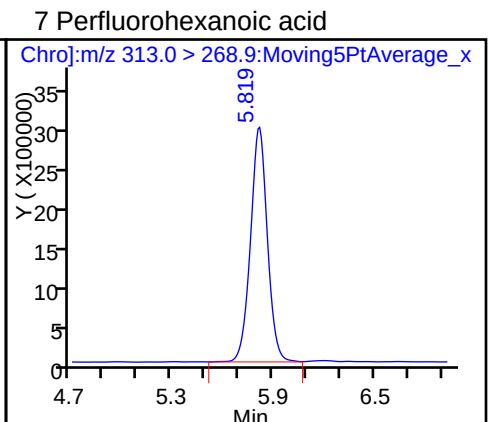
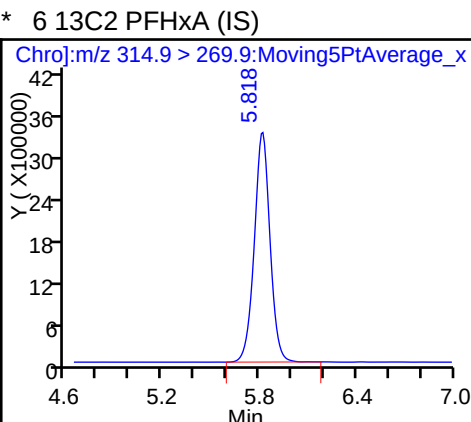
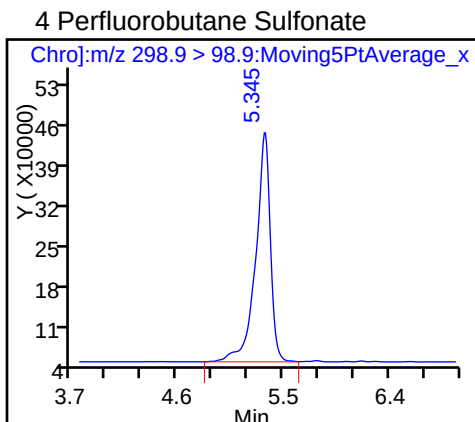
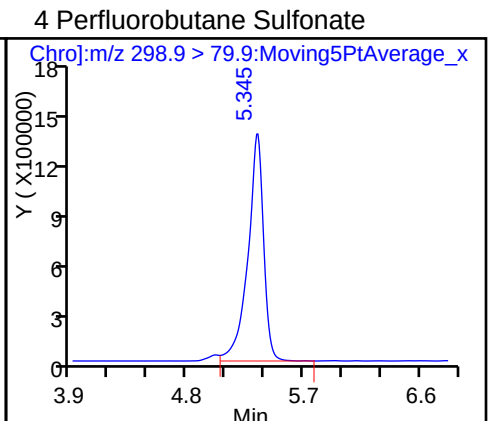
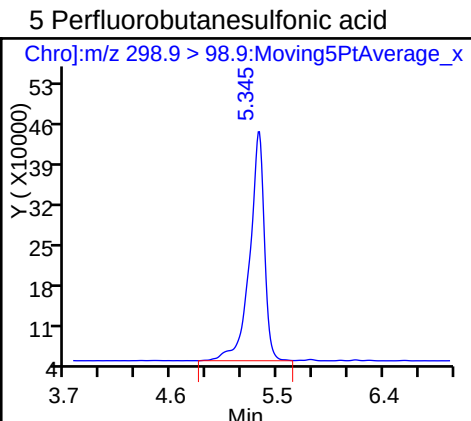
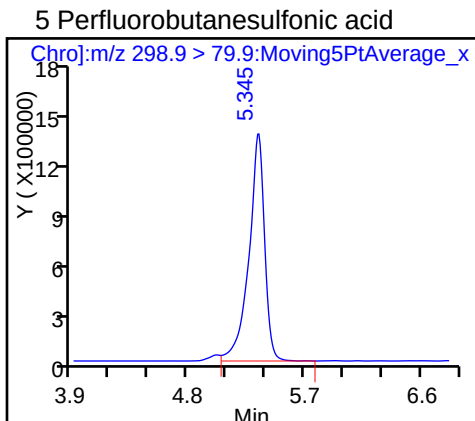
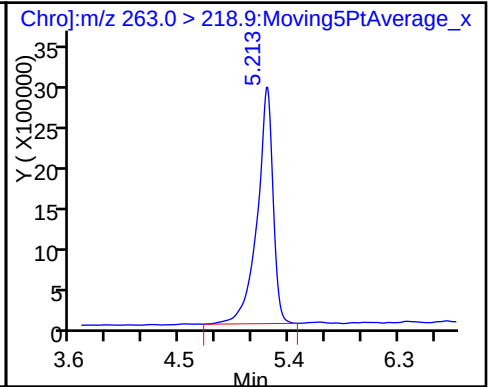
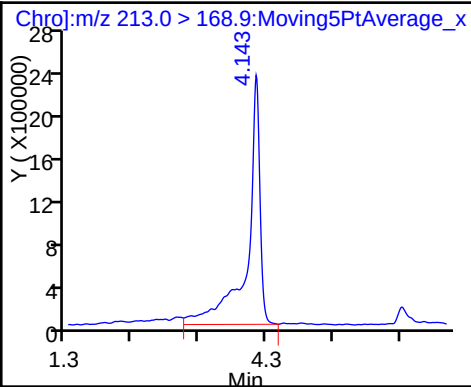
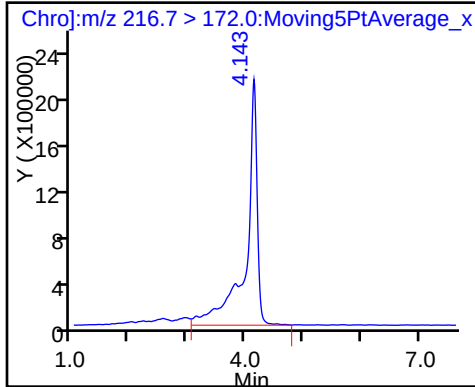
Method: 8321_PFC

Limit Group: LC - PFC

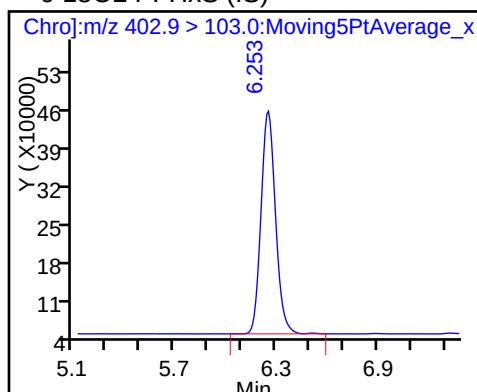
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

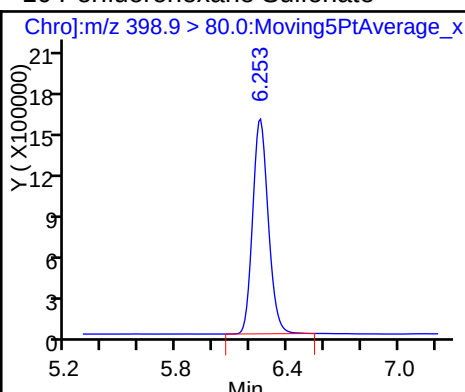
3 Perfluoropentanoic acid



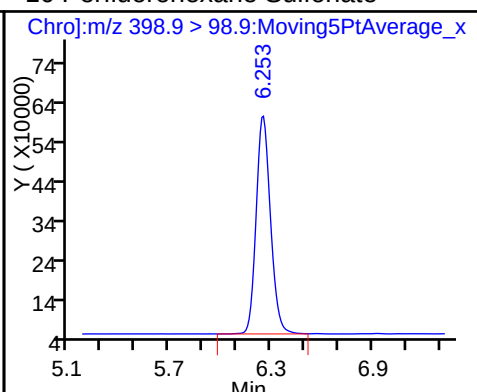
* 9 18O2 PFHxS (IS)



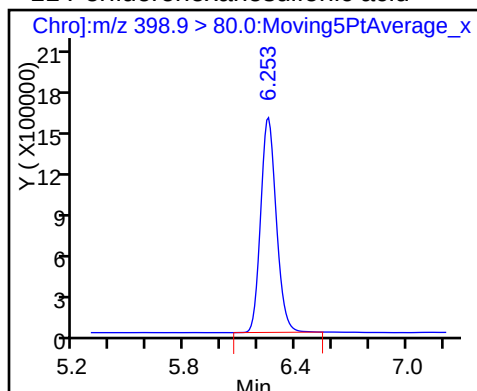
10 Perfluorohexane Sulfonate



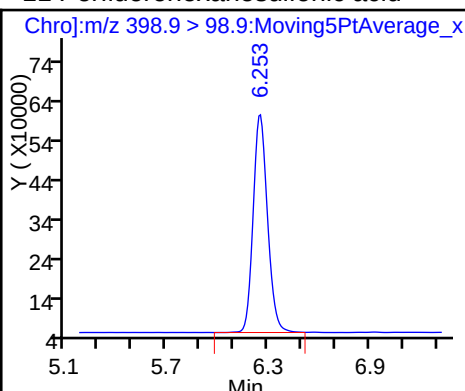
10 Perfluorohexane Sulfonate



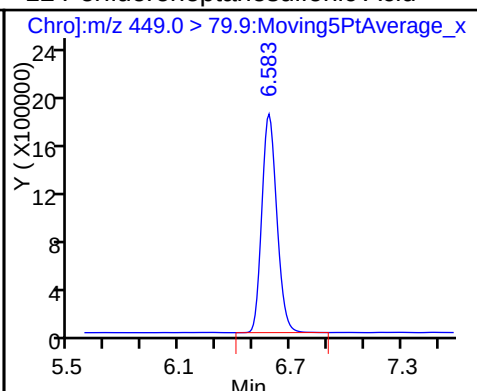
11 Perfluorohexanesulfonic acid



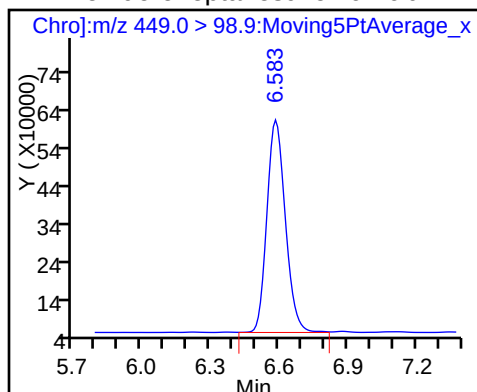
11 Perfluorohexanesulfonic acid



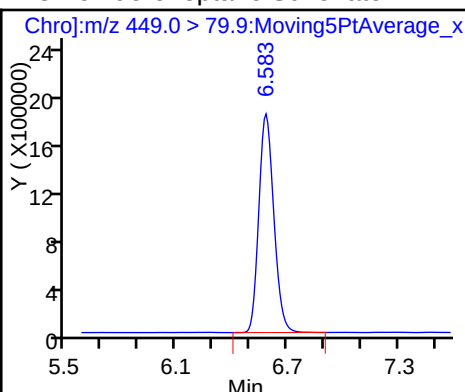
12 Perfluoroheptanesulfonic Acid



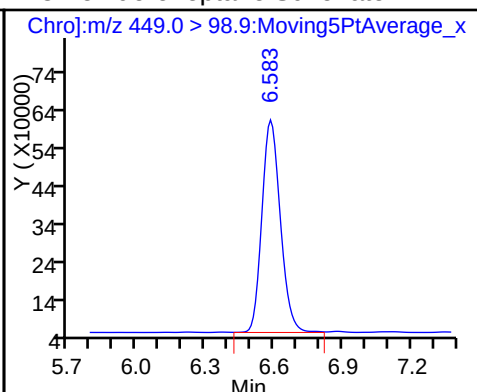
12 Perfluoroheptanesulfonic Acid



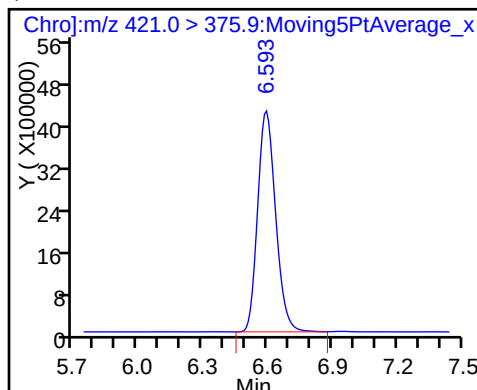
13 Perfluoroheptane Sulfonate



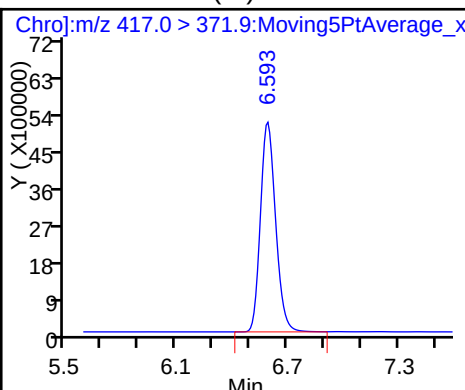
13 Perfluoroheptane Sulfonate



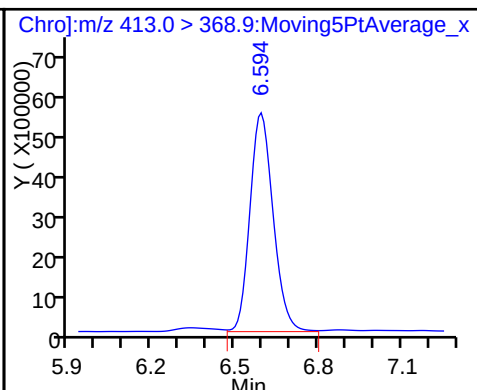
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



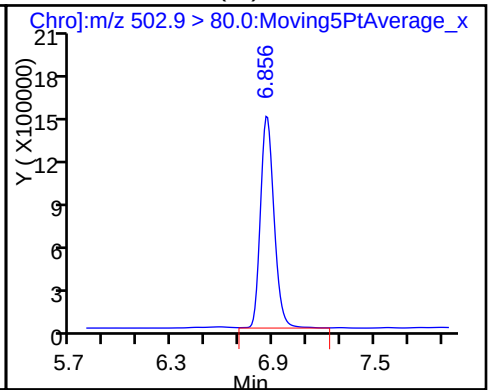
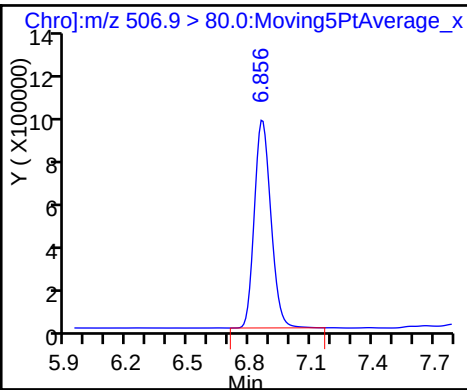
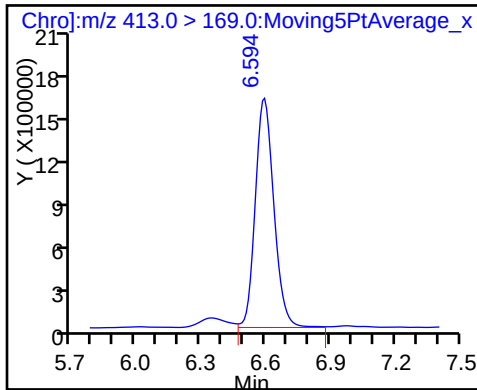
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

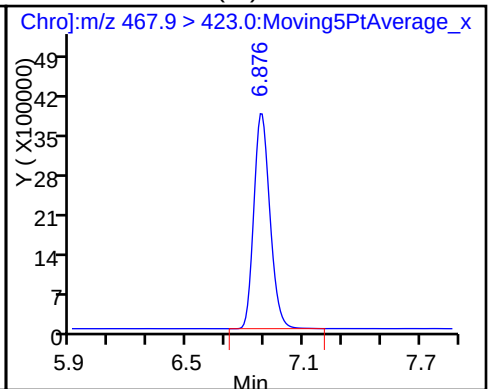
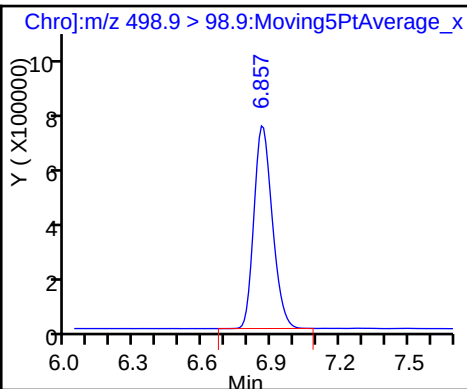
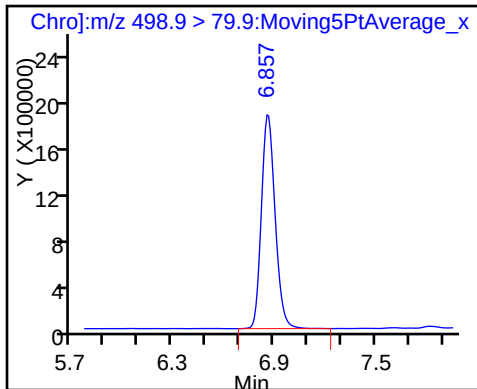
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

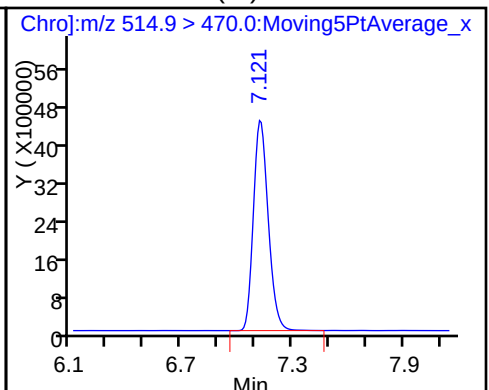
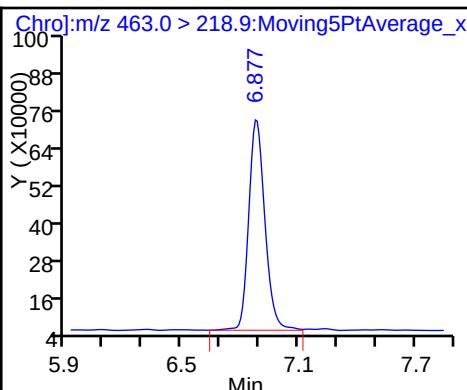
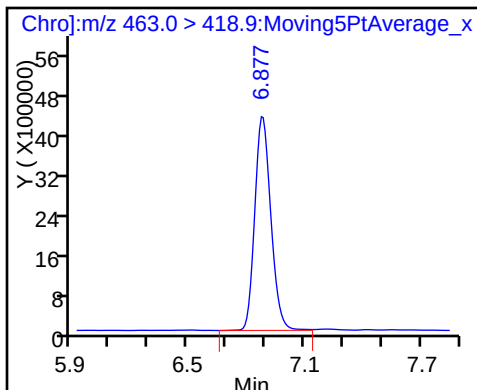
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

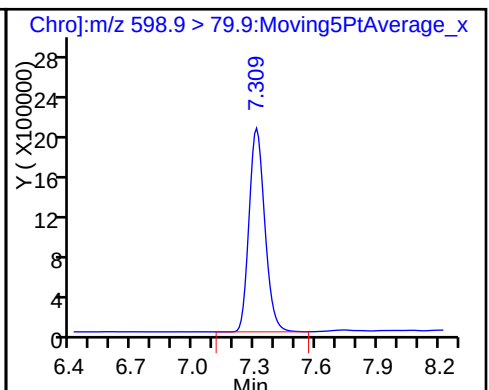
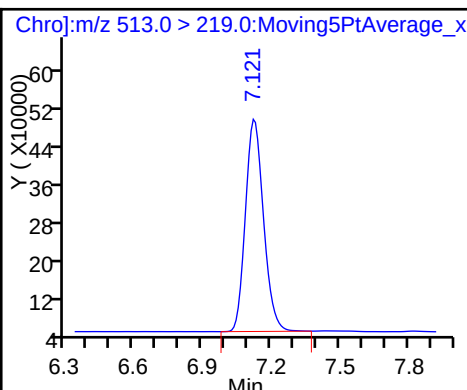
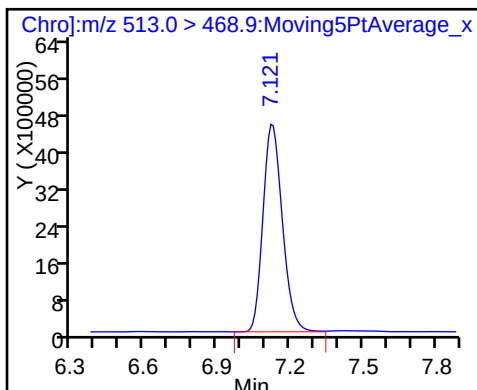
* 22 13C2 PFDA (IS)



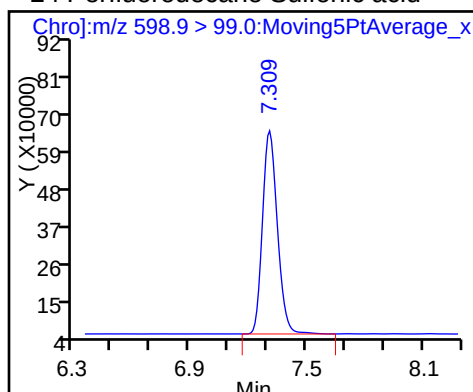
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

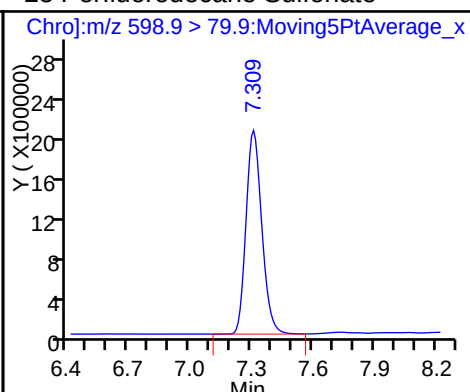
24 Perfluorodecane Sulfonic acid



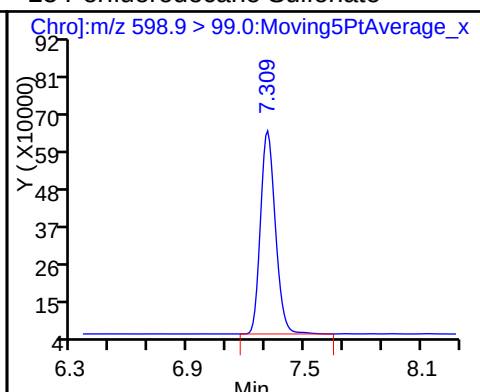
24 Perfluorodecane Sulfonic acid



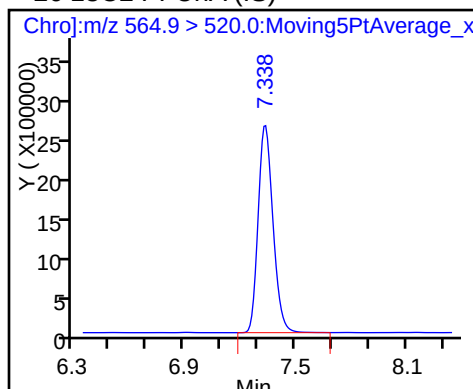
25 Perfluorodecane Sulfonate



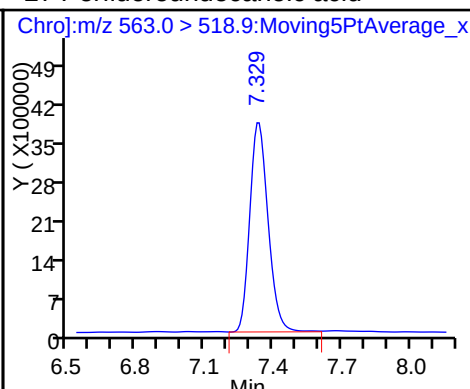
25 Perfluorodecane Sulfonate



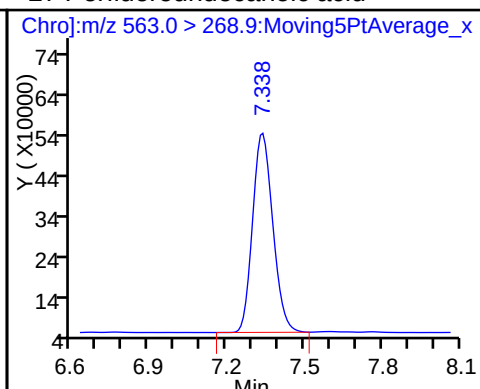
* 26 13C2 PFUnA (IS)



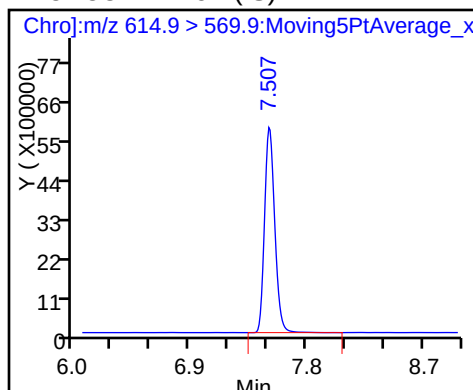
27 Perfluoroundecanoic acid



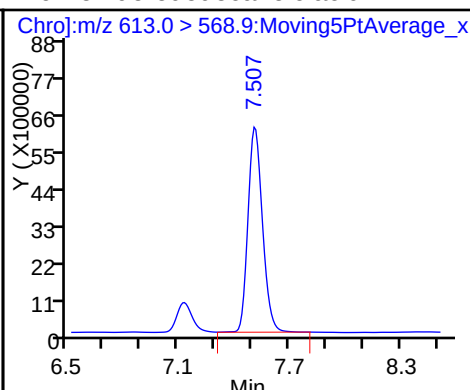
27 Perfluoroundecanoic acid



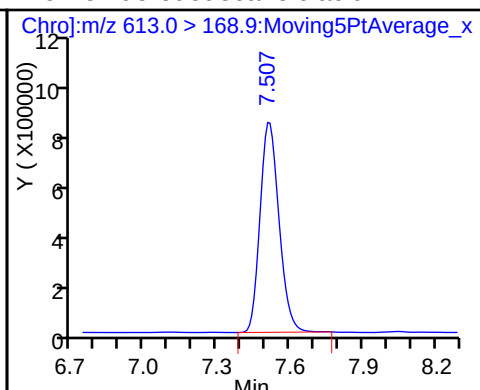
* 28 13C2 PFDaA (IS)



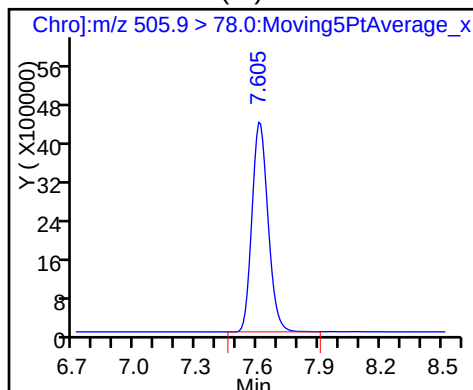
29 Perfluorododecanoic acid



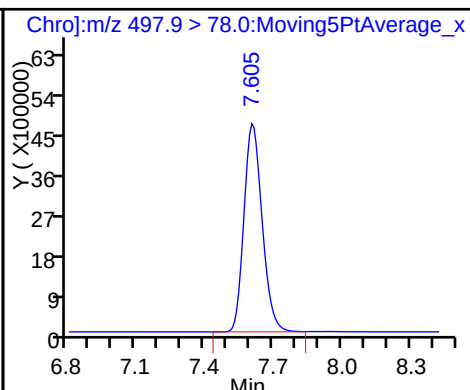
29 Perfluorododecanoic acid



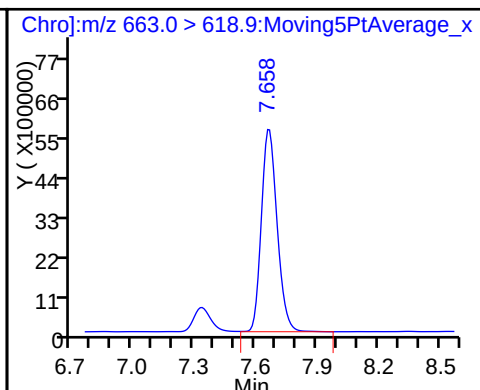
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

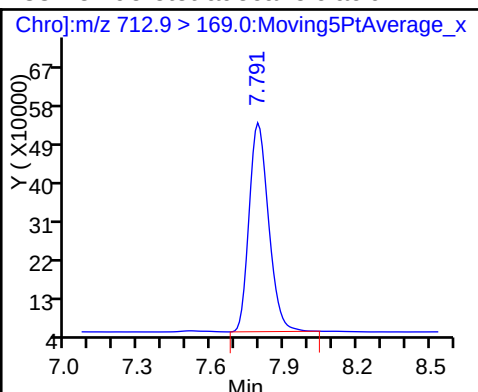
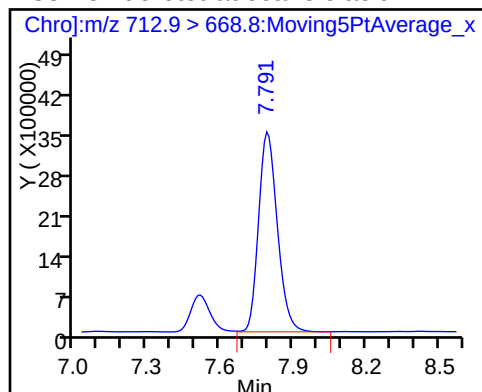


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d
 Lims ID: STD0200
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 06-Jun-2016 16:03:46 ALS Bottle#: 0 Worklist Smp#: 9
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0200, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:11 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:57:55

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									M
216.7 > 172.0	4.162	4.162	0.0		29015390	10.0			M
2 Perfluorobutyric acid									
213.0 > 168.9	4.162	4.162	0.0	1.000	64808389	20.8			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.251	5.232	0.019	0.900	52945593	20.8			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.374	5.364	0.010	0.858	21952626	17.8			
298.9 > 98.9	5.374	5.364	0.010	0.858	6871828		3.19(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.374	5.364	0.010	0.858	21952626	17.8			
298.9 > 98.9	5.374	5.364	0.010	0.858	6871828		3.19(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.837	5.818	0.019		21659671	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.838	5.819	0.019	1.000	40945931	20.0			
313.0 > 118.6	5.838	5.819	0.019	1.000	1093299		37.45(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.254	6.244	0.010	0.947	50554239	20.9			
363.0 > 168.9	6.254	6.244	0.010	0.947	13048171		3.87(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.263	6.253	0.010		2237000	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.263	6.253	0.010	1.000	17932033	19.7			R
398.9 > 98.9	6.263	6.253	0.010	1.000	6554762		2.74(1.30-2.41)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.263	6.253	0.010	1.000	17932033	19.7			
398.9 > 98.9	6.263	6.253	0.010	1.000	6554762		2.74(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.593	6.583	0.010	0.960	20264466	18.8			
449.0 > 98.9	6.593	6.583	0.010	0.960	6205577		3.27(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.593	6.583	0.010	0.960	20264466	18.8			
449.0 > 98.9	6.593	6.583	0.010	0.960	6205577		3.27(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.603	6.593	0.010	1.000	41702455	18.6			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.603	6.593	0.010		27817355	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.603	6.594	0.009	1.000	60046068	20.8			
413.0 > 169.0	6.603	6.594	0.009	1.000	17669896		3.40(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	9525828	17.5			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		8502855	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	19674973	18.9			R
498.9 > 98.9	6.866	6.866	0.0	1.000	7257361		2.71(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.886	0.009		19553054	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	0.999	43845776	20.0			
463.0 > 218.9	6.886	6.886	0.0	0.999	6517013		6.73(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.130	0.0		25049763	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.130	0.0	1.000	48421431	19.2			R
513.0 > 219.0	7.130	7.130	0.0	1.000	4857980		9.97(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.065	21695661	19.8			
598.9 > 99.0	7.309	7.318	-0.009	1.065	6263537		3.46(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.065	21695661	19.8			
598.9 > 99.0	7.309	7.318	-0.009	1.065	6263537		3.46(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		14324439	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.347	-0.009	1.000	39180966	19.3			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	5065272		7.74(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		30670086	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	63246783	20.1			
613.0 > 168.9	7.507	7.517	-0.010	1.000	8435480		7.50(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		24516831	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	51602388	19.4			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	59415459	20.9			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	39118116	21.6			
712.9 > 169.0	7.791	7.800	-0.009	1.038	5375239		7.28(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-LCS_00078	Amount Added: 40.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 40.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d

Injection Date: 06-Jun-2016 16:03:46

Instrument ID: LC_LCMS5

Lims ID: STD0200

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 9

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

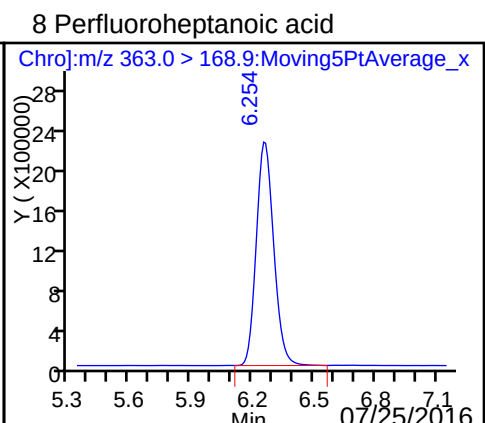
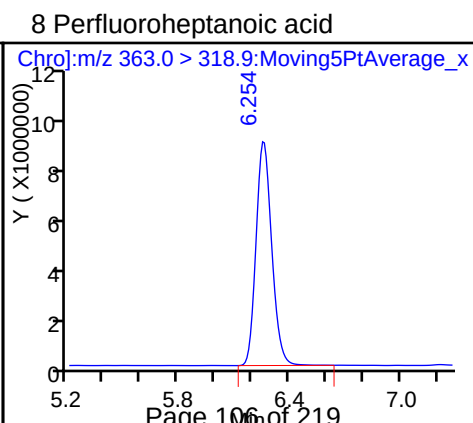
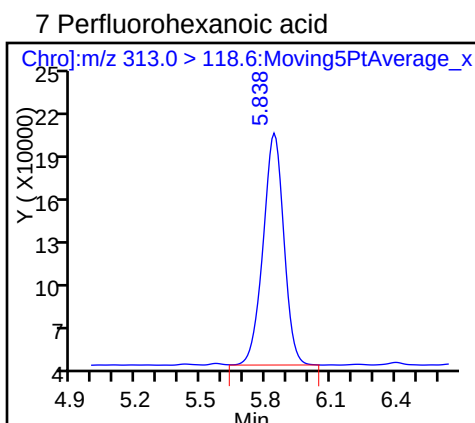
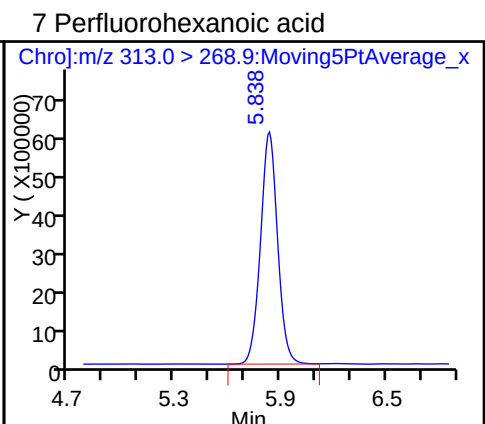
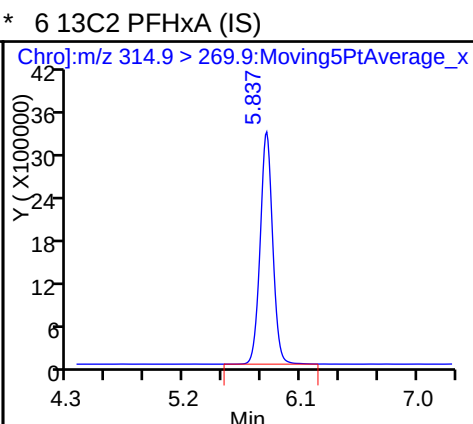
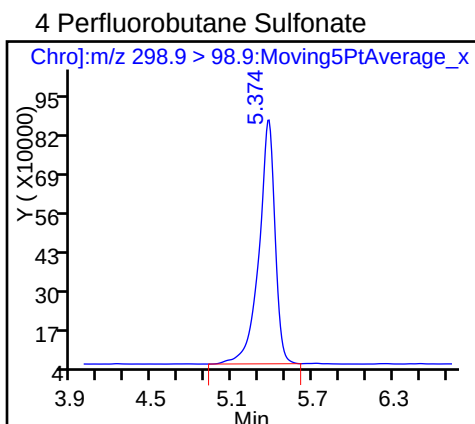
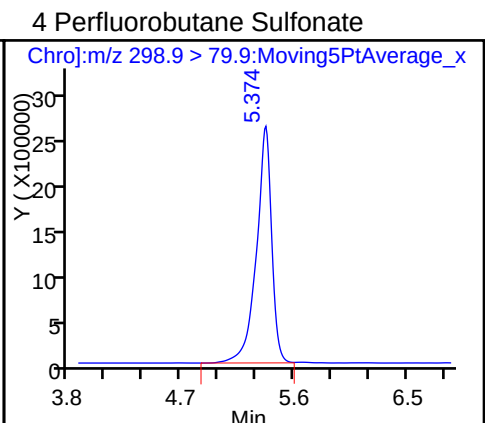
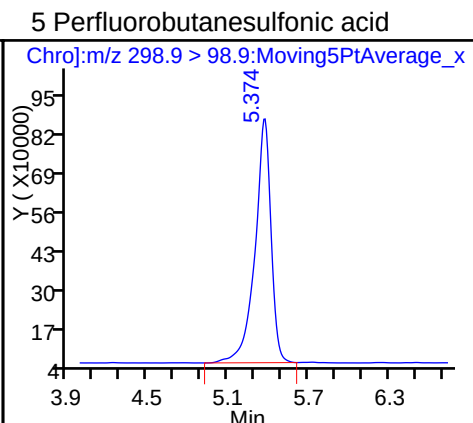
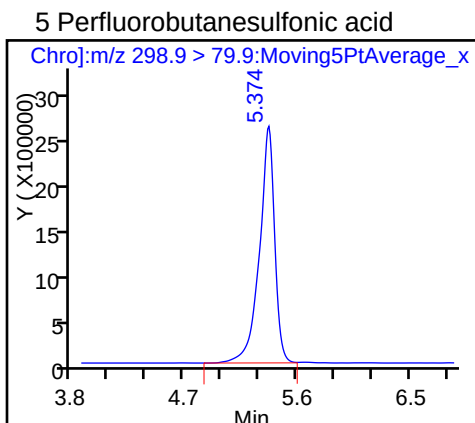
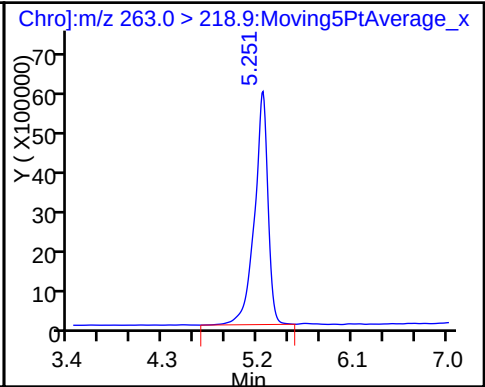
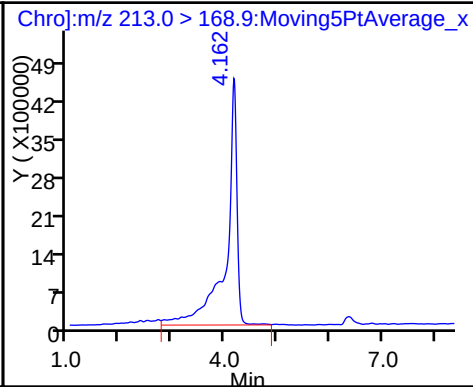
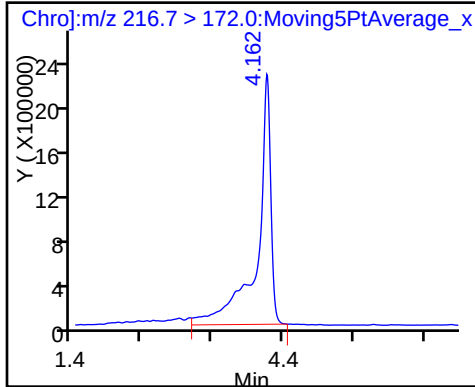
Method: 8321_PFC

Limit Group: LC - PFC

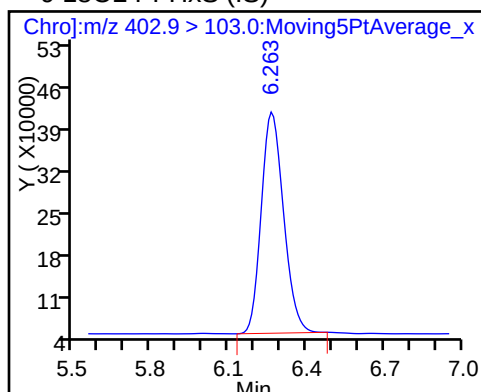
* 1 13C4 PFBA (IS) (M)

2 Perfluorobutyric acid

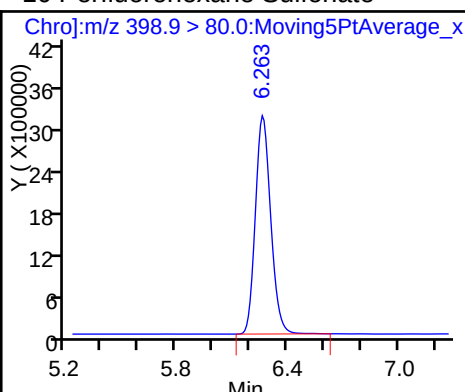
3 Perfluoropentanoic acid



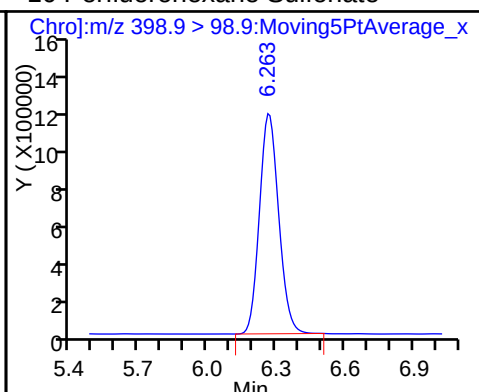
* 9 18O2 PFHxS (IS)



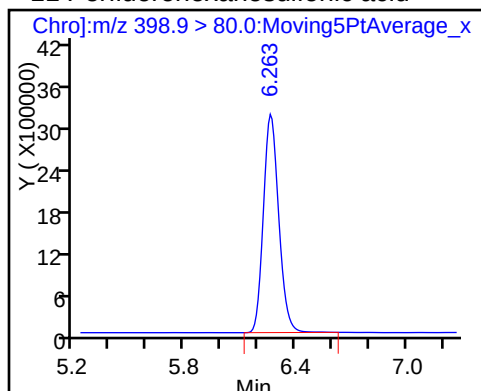
10 Perfluorohexane Sulfonate



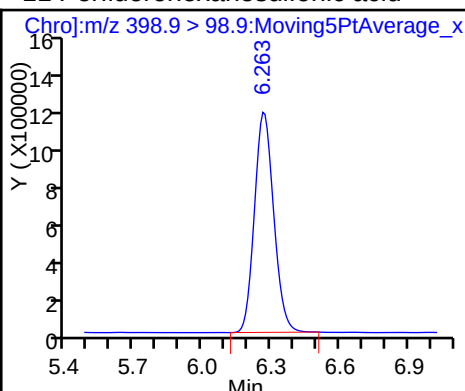
10 Perfluorohexane Sulfonate



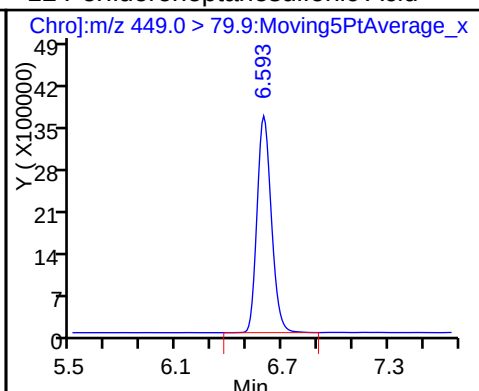
11 Perfluorohexanesulfonic acid



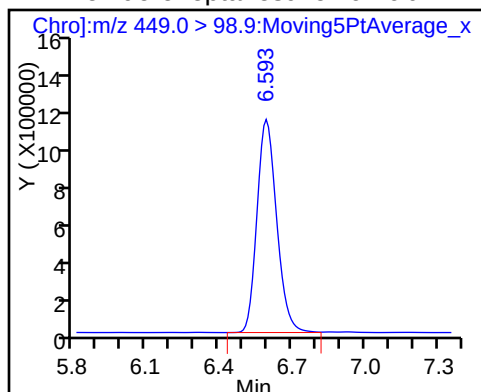
11 Perfluorohexanesulfonic acid



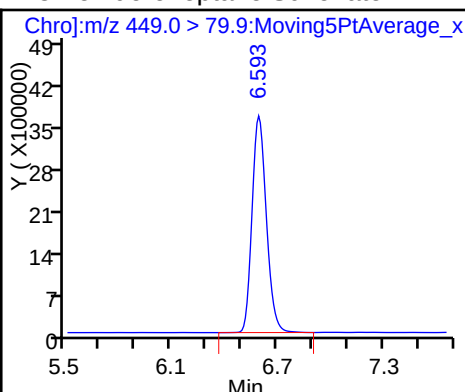
12 Perfluoroheptanesulfonic Acid



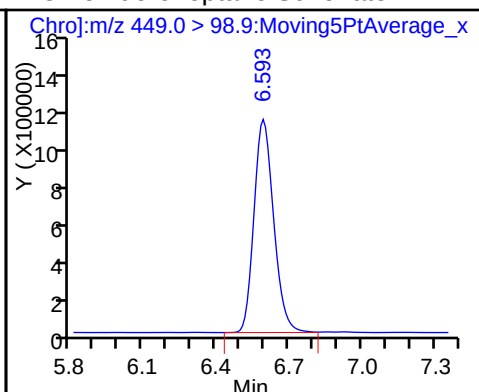
12 Perfluoroheptanesulfonic Acid



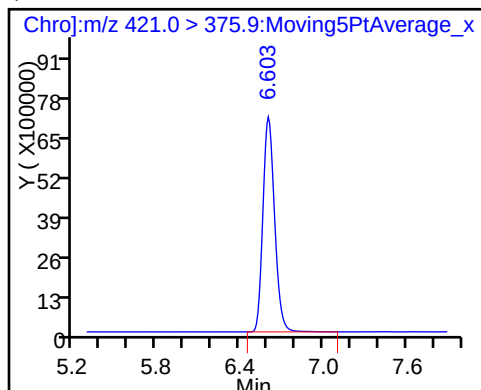
13 Perfluoroheptane Sulfonate



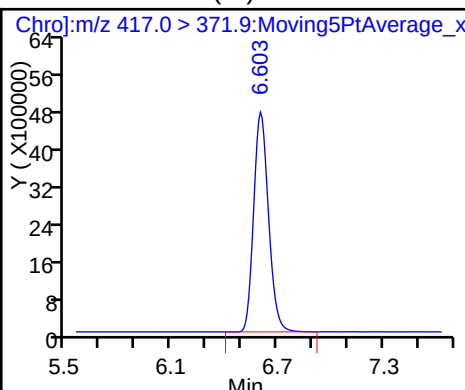
13 Perfluoroheptane Sulfonate



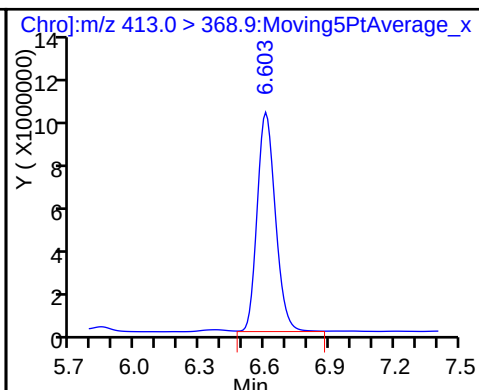
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



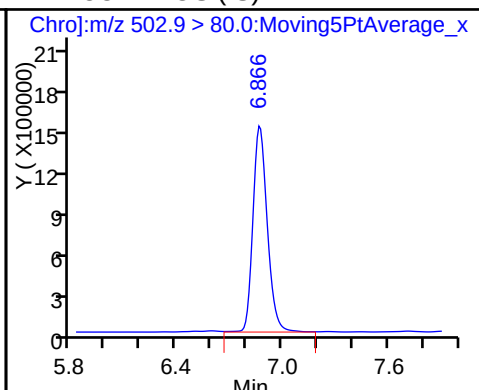
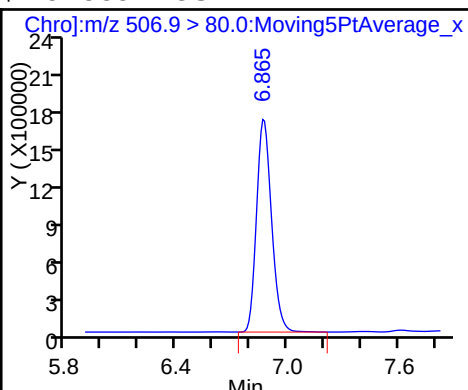
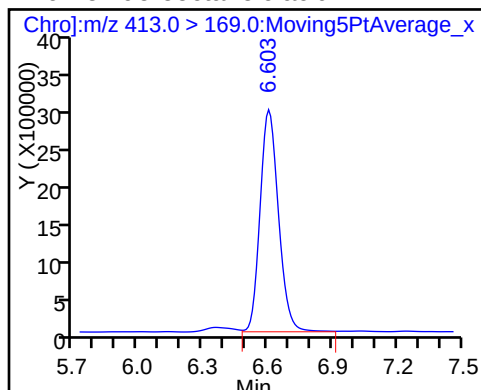
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

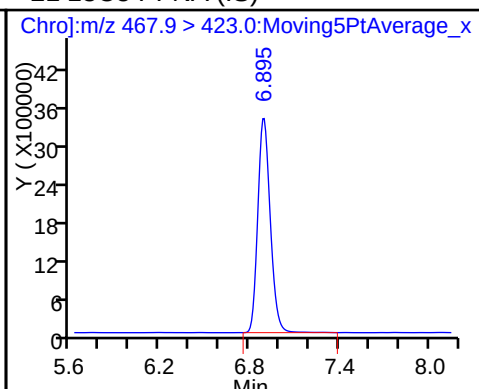
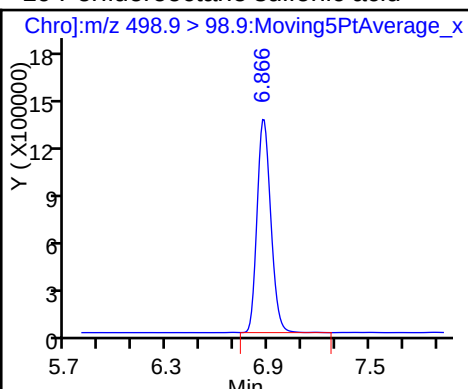
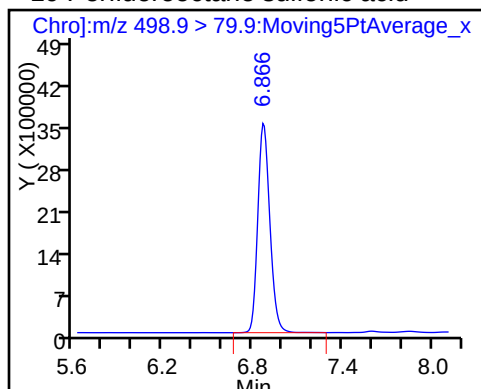
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

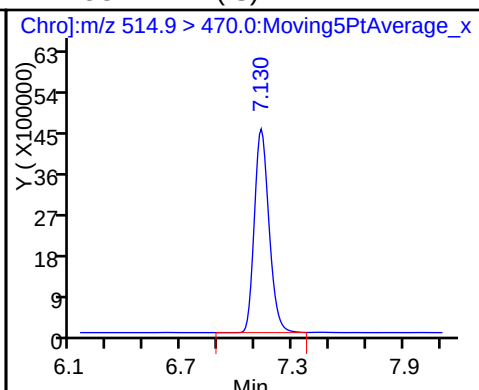
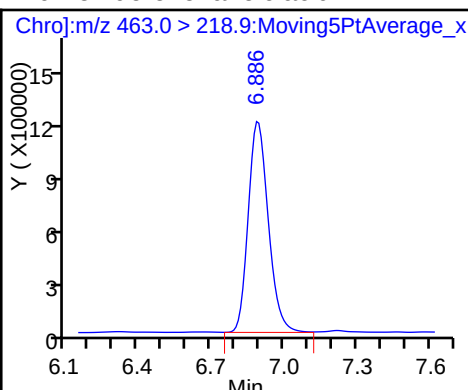
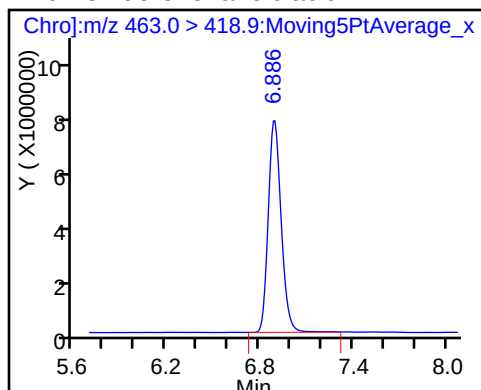
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

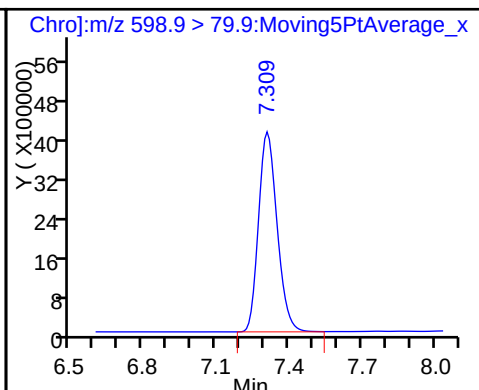
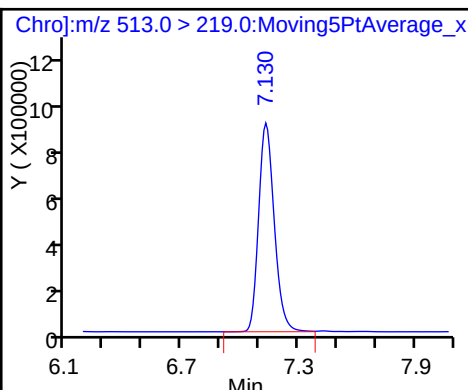
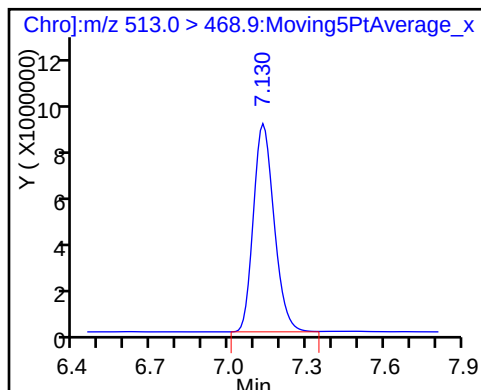
* 22 13C2 PFDA (IS)

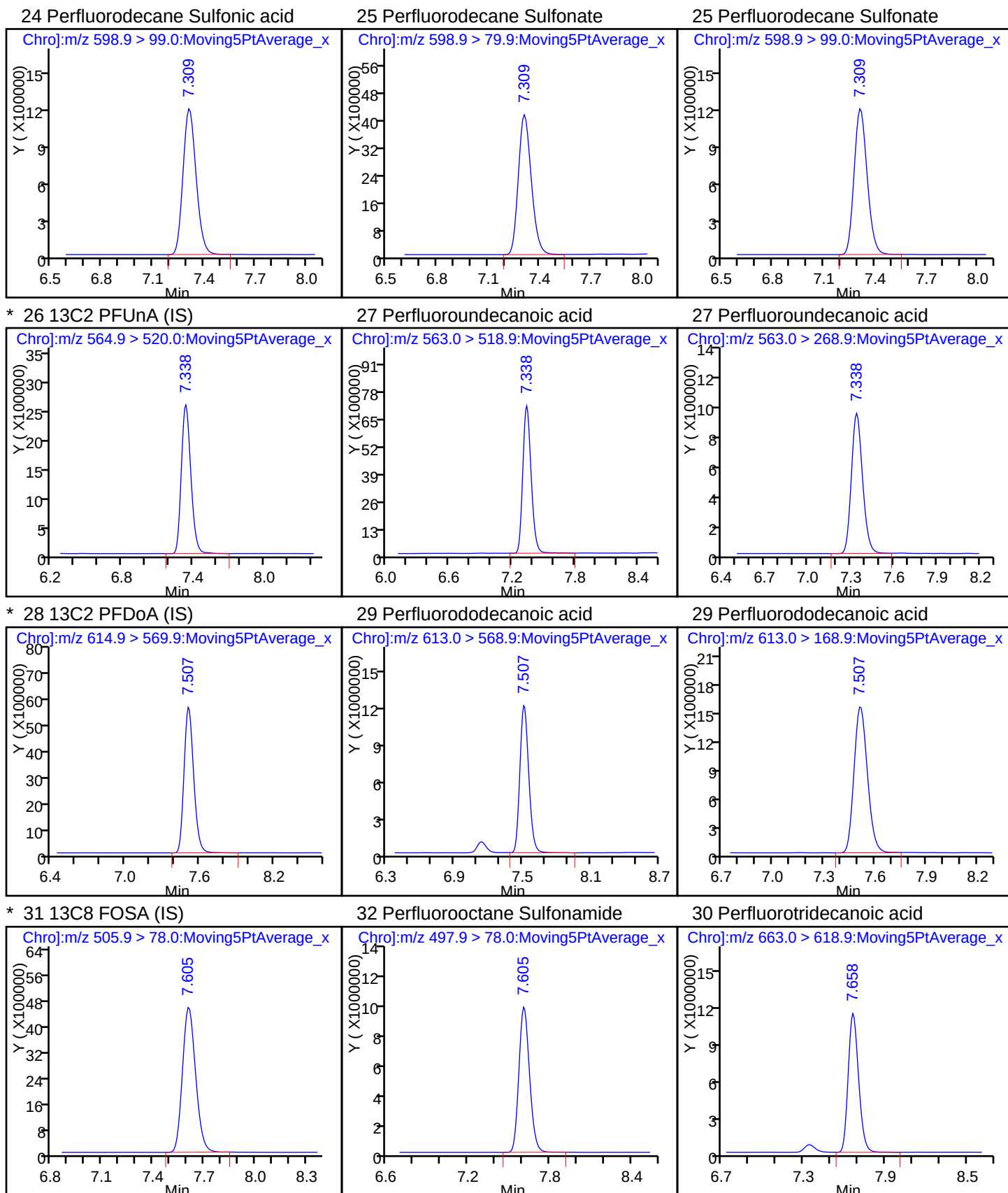


23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

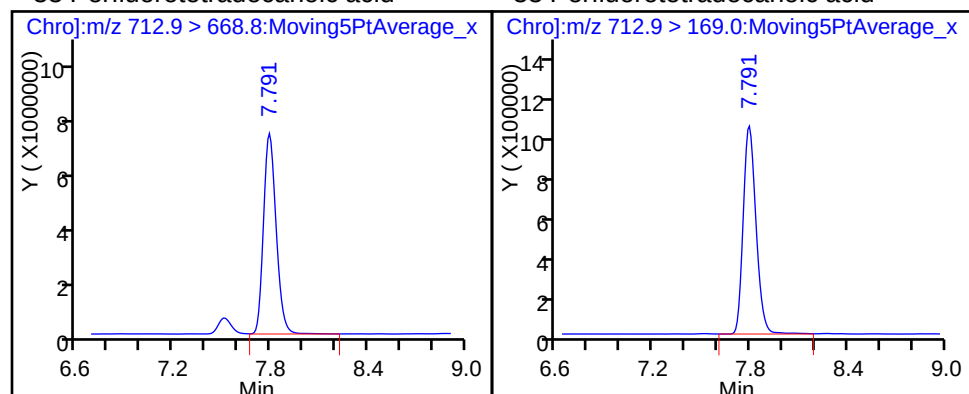
24 Perfluorodecane Sulfonic acid





33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



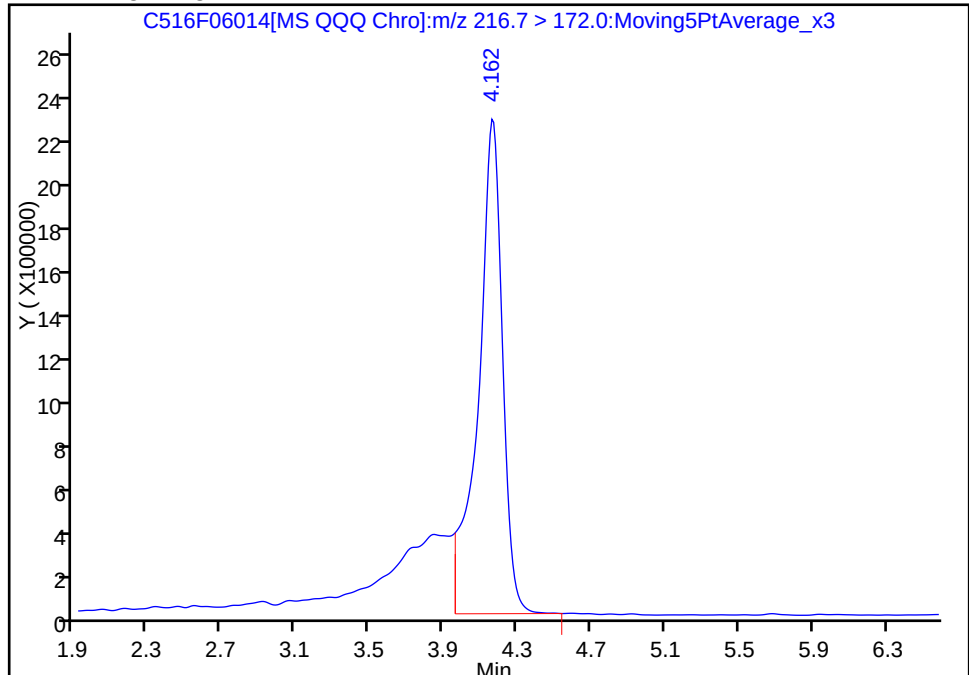
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06014.d
Injection Date: 06-Jun-2016 16:03:46 Instrument ID: LC_LCMS5
Lims ID: STD0200
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 9
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

* 1 13C4 PFBA (IS), CAS: STL01003

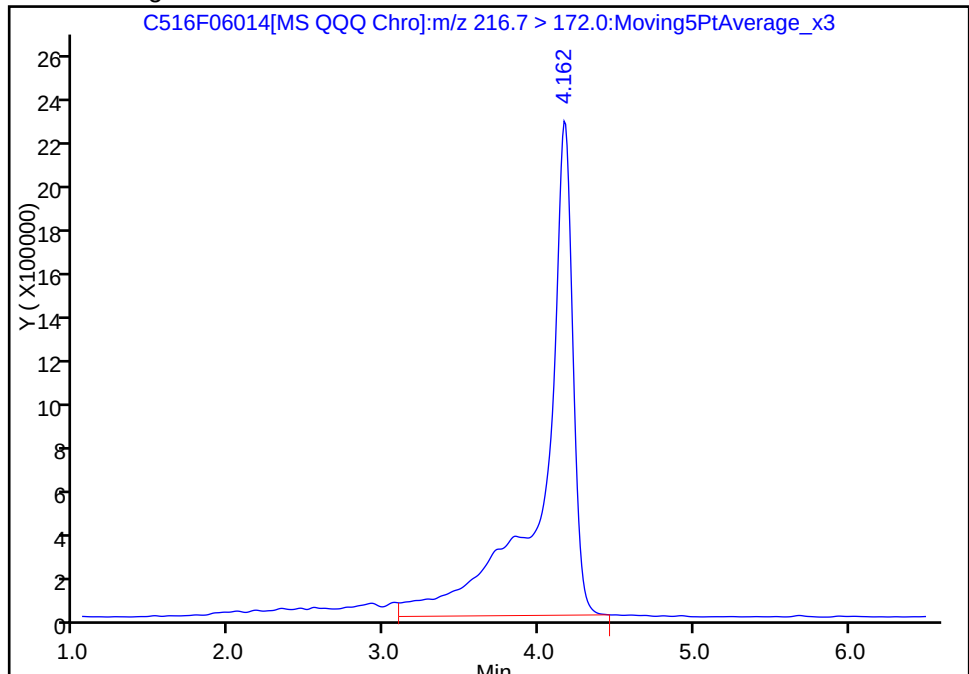
RT: 4.16
Area: 19722665
Amount: 10.000000
Amount Units: ug/L

Processing Integration Results



RT: 4.16
Area: 29015390
Amount: 10.000000
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 12:57:55
Audit Action: Manually Integrated
Audit Reason: Baseline

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06015.d
 Lims ID: STD0500
 Client ID:
 Sample Type: IC Calib Level: 8
 Inject. Date: 06-Jun-2016 16:16:04 ALS Bottle#: 0 Worklist Smp#: 10
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 0500, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:17 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:58:12

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.162 4.162 0.0 28899590 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 4.162 0.0 1.000 157344591 50.7

3 Perfluoropentanoic acid

263.0 > 218.9 5.232 5.232 0.0 0.898 120508960 51.5

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.355 5.364 -0.009 0.855 52661159 46.7

298.9 > 98.9 5.355 5.364 -0.009 0.855 15734279 3.35(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.355 5.364 -0.009 0.855 52661159 46.7

298.9 > 98.9 5.355 5.364 -0.009 0.855 15734279 3.35(1.80-3.35)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.828 5.818 0.010 19918903 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.828 5.819 0.009 1.000 92031312 48.9

313.0 > 118.6 5.819 5.819 0.0 0.998 2416833 38.08(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.254 6.244 0.010 0.948 102889489 48.9

363.0 > 168.9 6.254 6.244 0.010 0.948 26954929 3.82(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.263 6.253 0.010 2040676 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.263 6.253 0.010 1.000 37926174 45.7

398.9 > 98.9 6.263 6.253 0.010 1.000 13830962 2.74(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.263 6.253 0.010 1.000 37926174 45.7

398.9 > 98.9 6.263 6.253 0.010 1.000 13830962 2.74(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.583	6.583	0.0	0.959	43315154	47.2			
449.0 > 98.9	6.583	6.583	0.0	0.959	13564341		3.19(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.583	6.583	0.0	0.959	43315154	47.2			
449.0 > 98.9	6.583	6.583	0.0	0.959	13564341		3.19(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.593	6.593	0.0	1.000	85046612	43.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		24245688	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.594	6.594	0.0	1.000	118077119	47.0			
413.0 > 169.0	6.594	6.594	0.0	1.000	34953467		3.38(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.865	6.865	0.0	1.000	19830288	43.0			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.866	6.866	0.0		7235826	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.866	6.866	0.0	1.000	40197453	45.6			R
498.9 > 98.9	6.866	6.866	0.0	1.000	14750225		2.73(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.886	6.886	0.0		16026593	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.886	6.886	0.0	1.000	90947910	50.8			
463.0 > 218.9	6.886	6.886	0.0	1.000	13125494		6.93(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		21729944	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	109010928	49.9			
513.0 > 219.0	7.121	7.130	-0.009	1.000	10212681		10.67(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.318	-0.009	1.065	47343835	50.7			
598.9 > 99.0	7.309	7.318	-0.009	1.065	13810385		3.43(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.318	-0.009	1.065	47343835	50.7			
598.9 > 99.0	7.309	7.318	-0.009	1.065	13810385		3.43(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.347	-0.009		11601224	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.338	7.347	-0.009	1.000	77899378	47.6			R
563.0 > 268.9	7.338	7.347	-0.009	1.000	9857109		7.90(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.507	7.517	-0.010		28794485	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.517	-0.010	1.000	142077526	48.2			
613.0 > 168.9	7.507	7.517	-0.010	1.000	18271384		7.78(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.614	-0.009		21576040	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.615	-0.010	1.000	117575149	50.2			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.668	-0.010	1.020	121132497	45.5			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.800	-0.009	1.038	88331768	51.9			
712.9 > 169.0	7.791	7.800	-0.009	1.038	13420452		6.58(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078

Amount Added: 100.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

PFC_Surr_00021

Amount Added: 100.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06015.d

Injection Date: 06-Jun-2016 16:16:04

Instrument ID: LC_LCMS5

Lims ID: STD0500

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 10

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

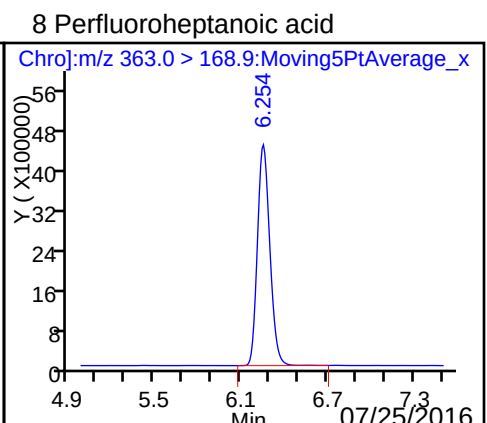
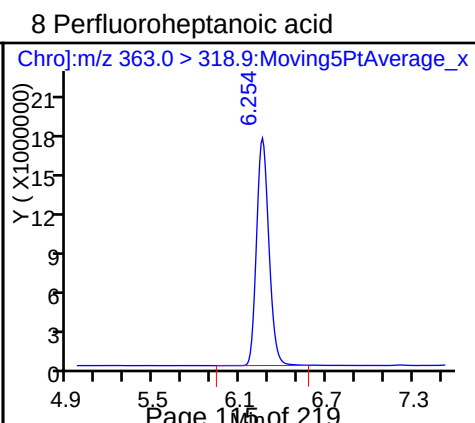
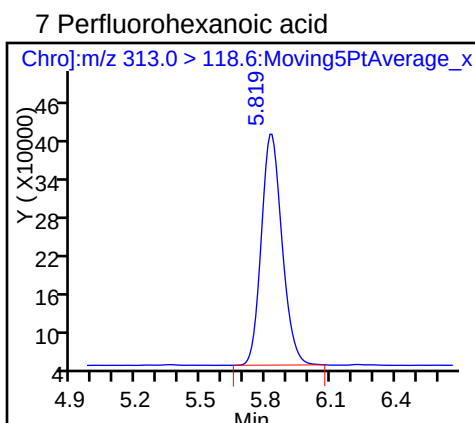
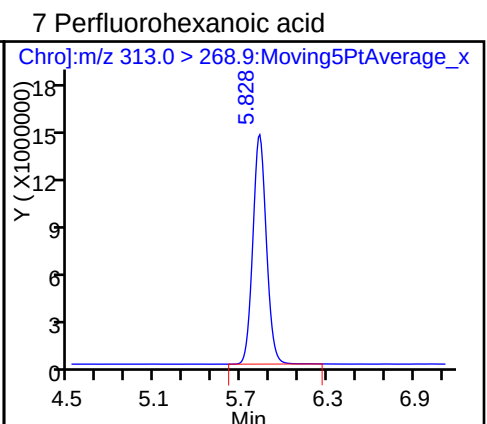
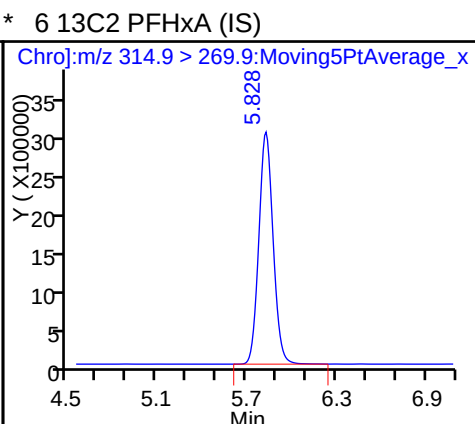
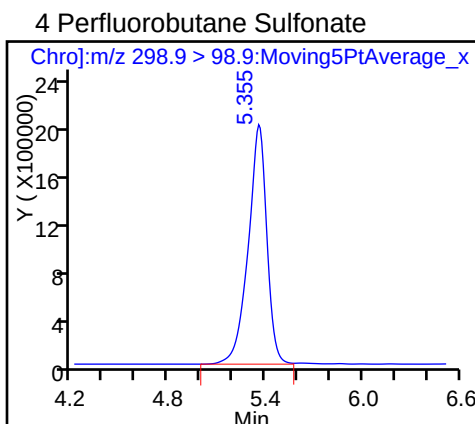
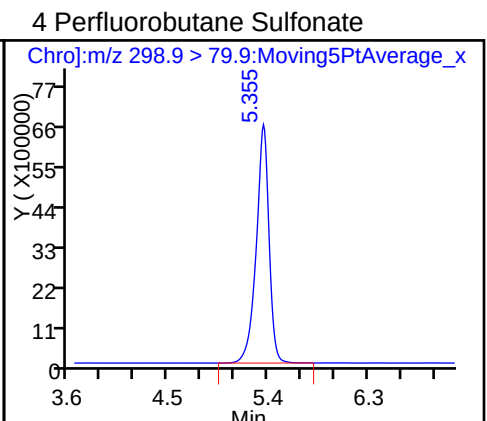
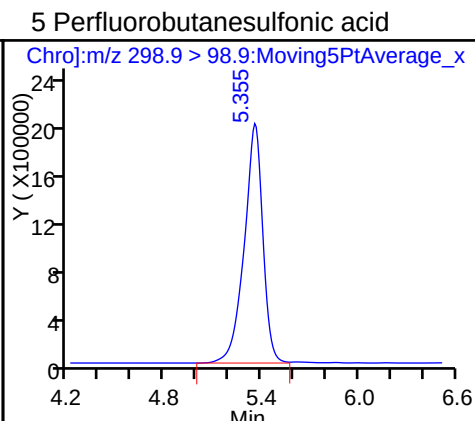
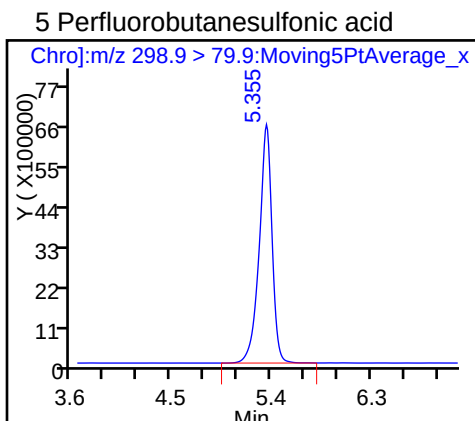
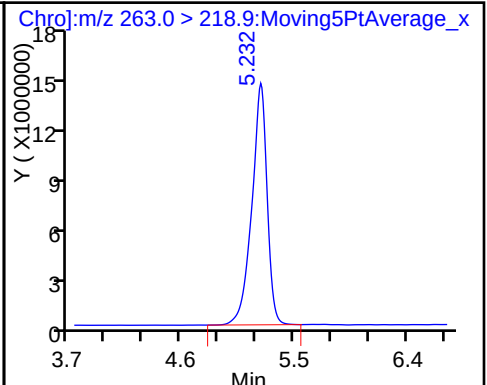
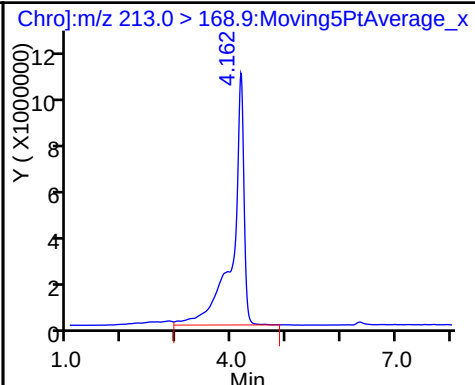
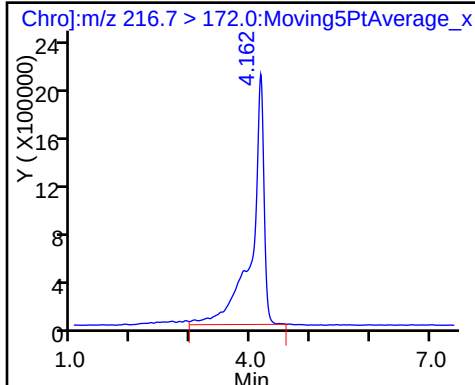
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

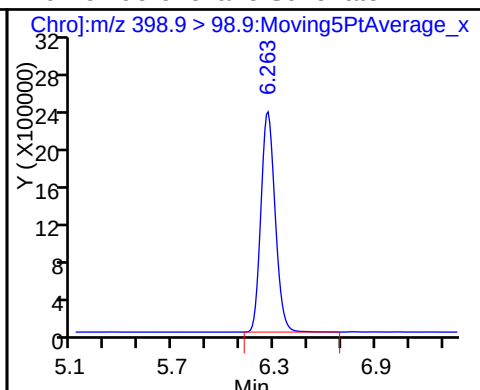
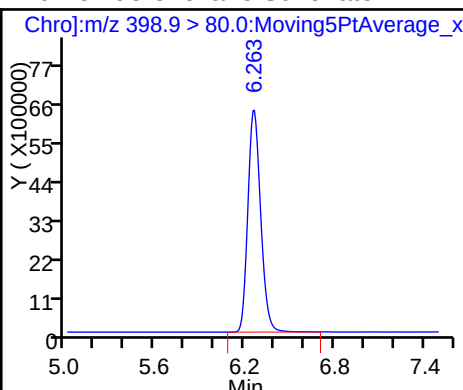
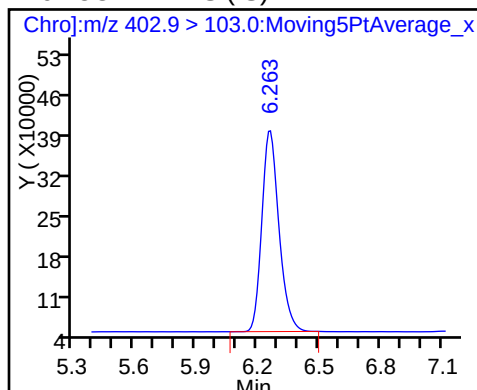
3 Perfluoropentanoic acid



* 9 18O2 PFHxS (IS)

10 Perfluorohexane Sulfonate

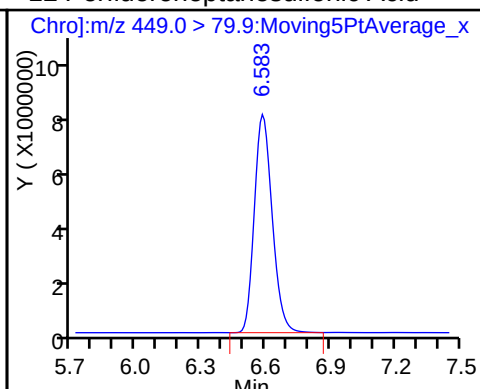
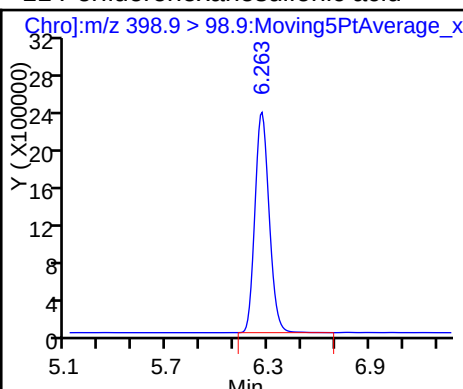
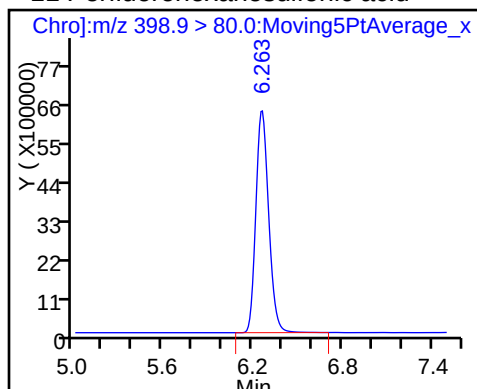
10 Perfluorohexane Sulfonate



11 Perfluorohexanesulfonic acid

11 Perfluorohexanesulfonic acid

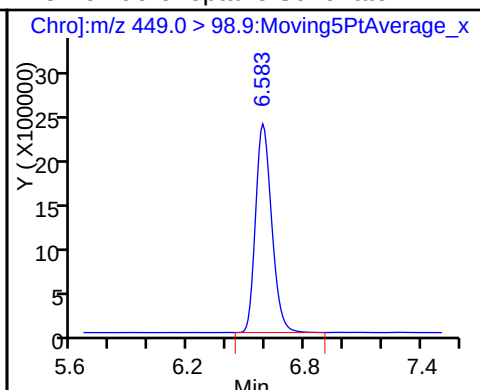
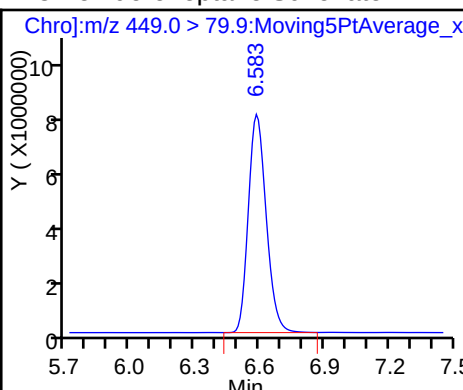
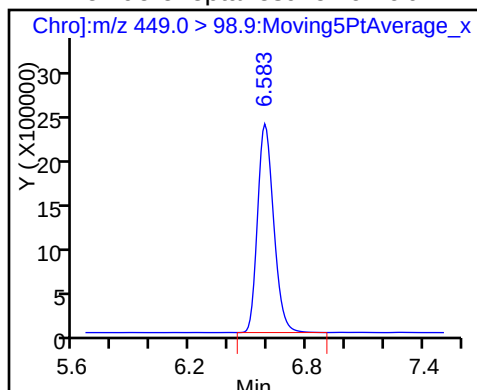
12 Perfluoroheptanesulfonic Acid



12 Perfluoroheptanesulfonic Acid

13 Perfluoroheptane Sulfonate

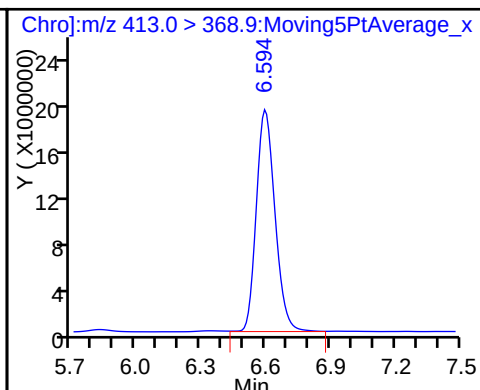
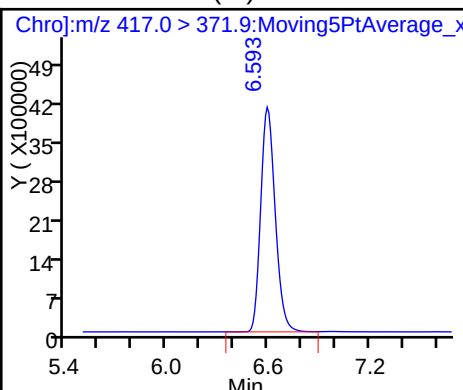
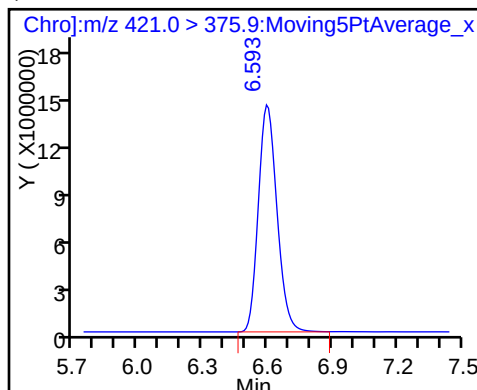
13 Perfluoroheptane Sulfonate



\$ 14 13C8 PFOA

* 15 13C4 PFOA (IS)

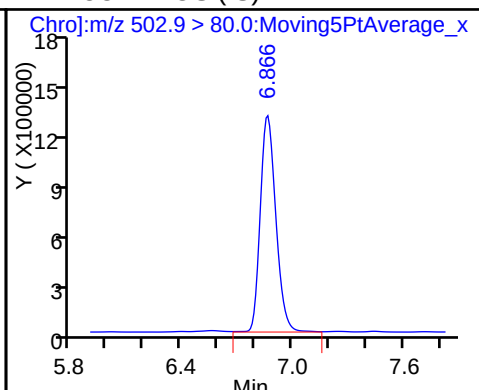
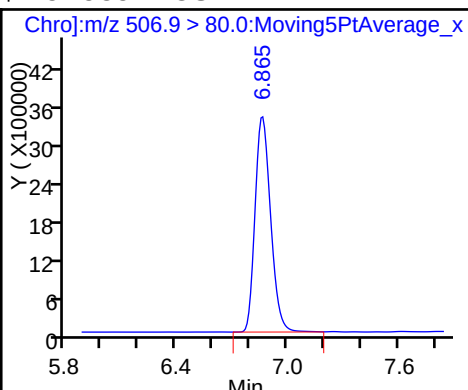
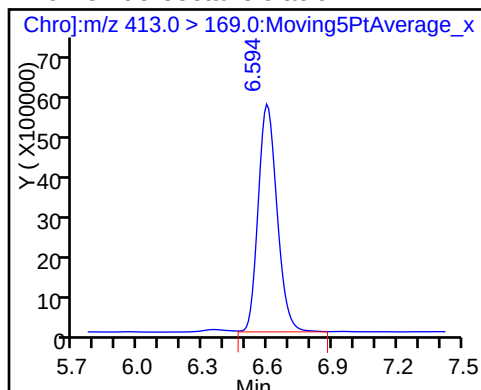
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

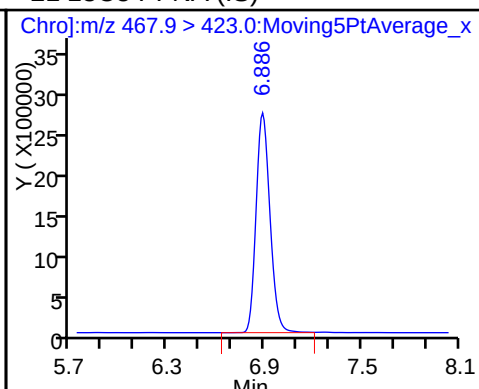
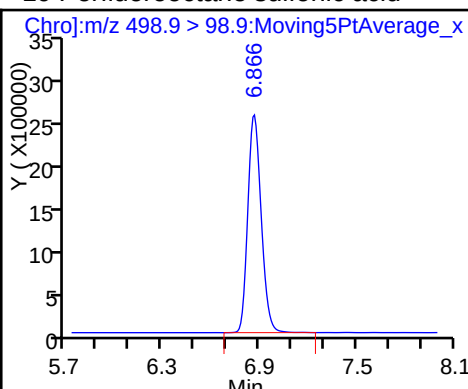
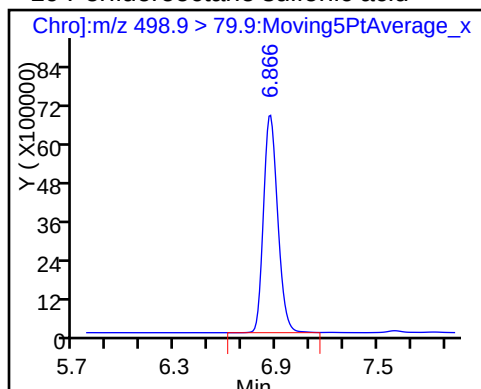
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

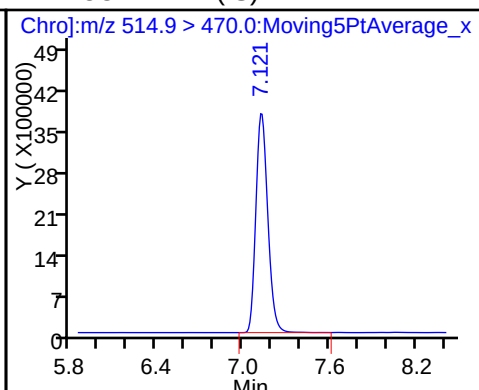
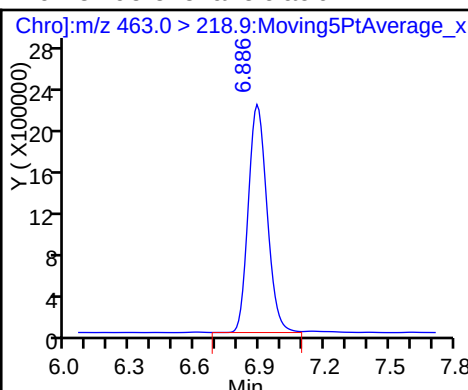
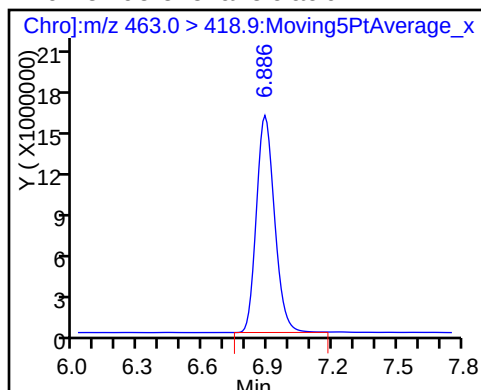
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

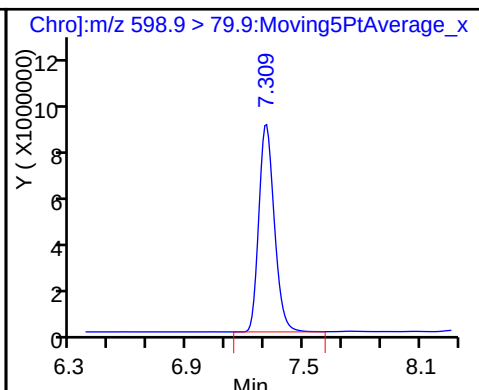
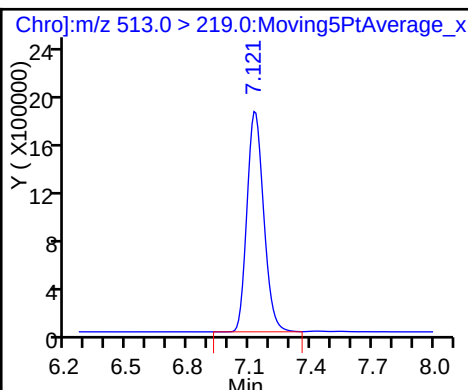
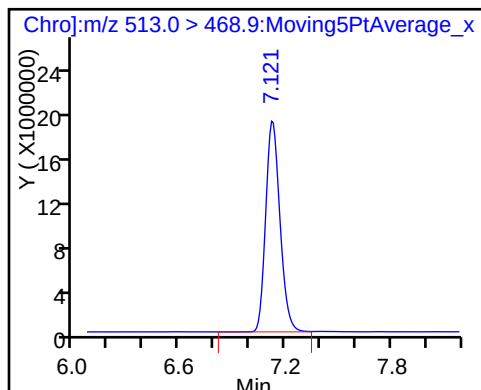
* 22 13C2 PFDA (IS)



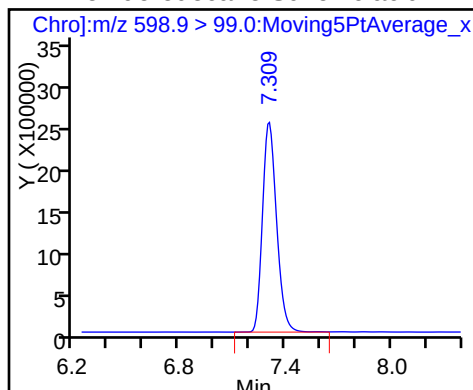
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

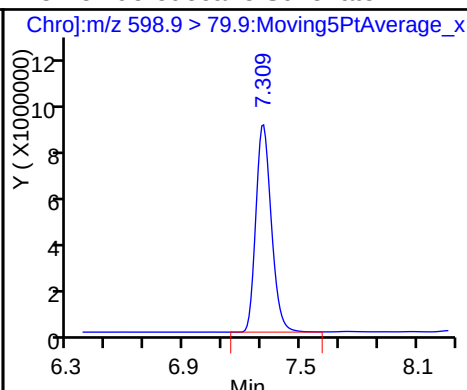
24 Perfluorodecane Sulfonic acid



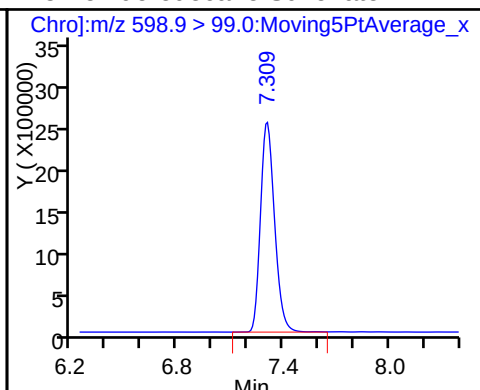
24 Perfluorodecane Sulfonic acid



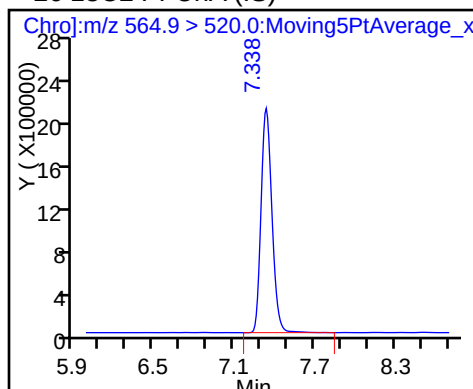
25 Perfluorodecane Sulfonate



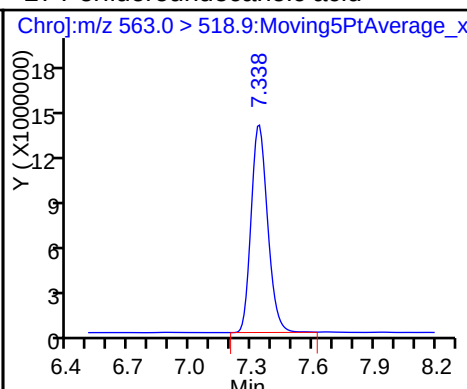
25 Perfluorodecane Sulfonate



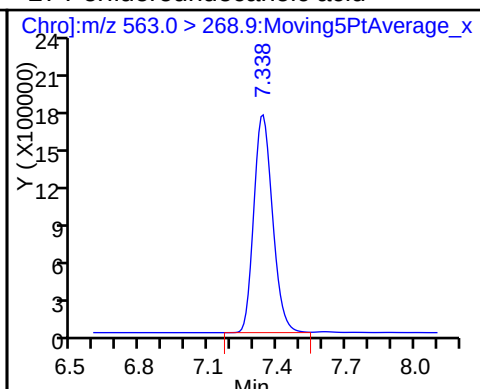
* 26 13C2 PFUnA (IS)



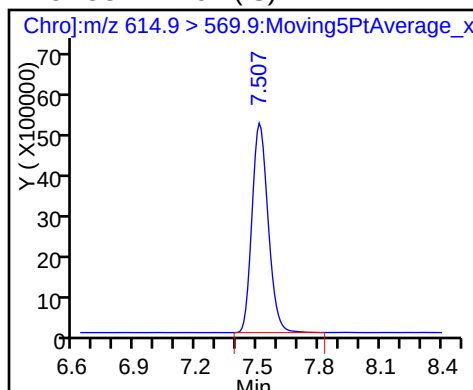
27 Perfluoroundecanoic acid



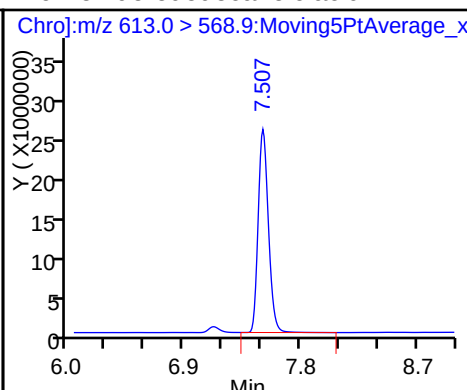
27 Perfluoroundecanoic acid



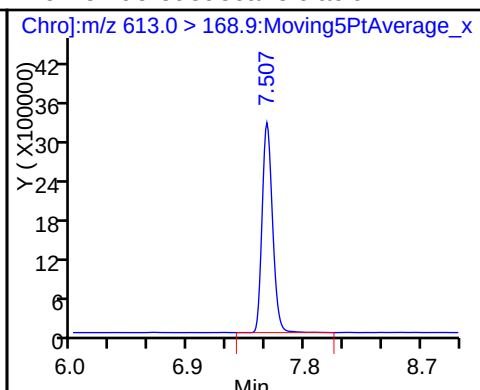
* 28 13C2 PFDaA (IS)



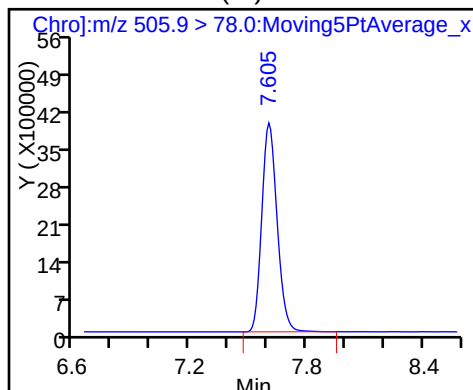
29 Perfluorododecanoic acid



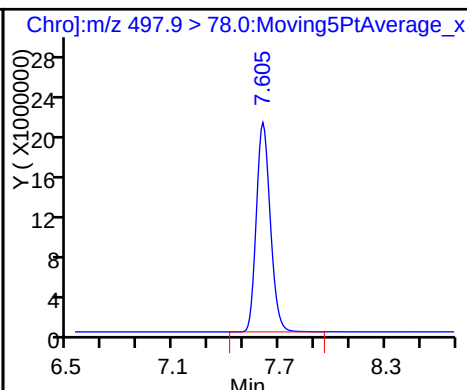
29 Perfluorododecanoic acid



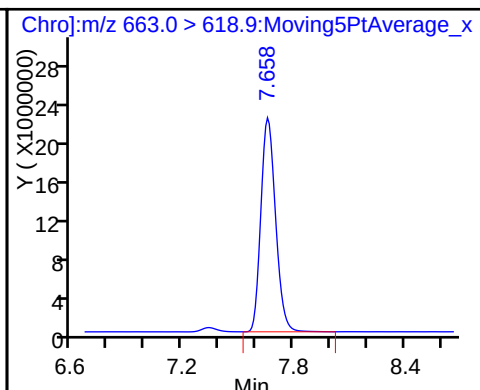
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

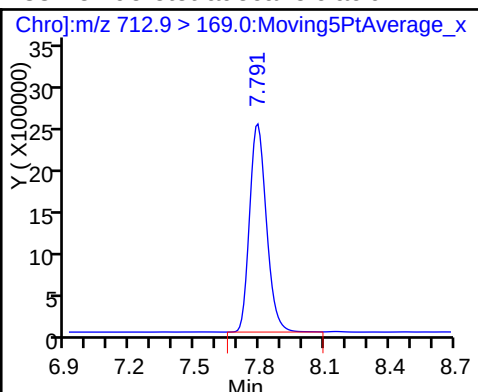
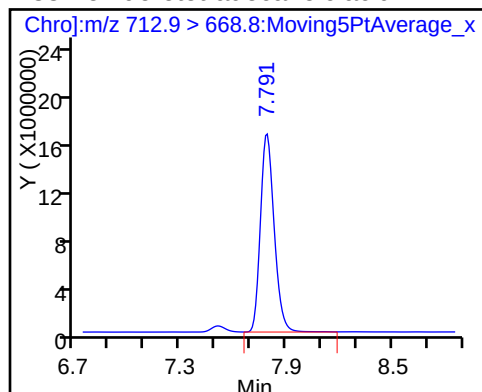


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



TestAmerica Denver
Target Compound Quantitation Report

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 Client ID:
 Sample Type: IC Calib Level: 9
 Inject. Date: 06-Jun-2016 16:28:22 ALS Bottle#: 0 Worklist Smp#: 11
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: STD 1250, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:24 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 12:58:30

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.162 4.162 0.0 28007845 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.162 4.162 0.0 1.000 394160471 131.2

3 Perfluoropentanoic acid

263.0 > 218.9 5.232 5.232 0.0 0.899 255912628 126.3

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.355 5.364 -0.009 0.856 113831493 126.6

298.9 > 98.9 5.355 5.364 -0.009 0.856 33531607 3.39(2.57-2.57)

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.355 5.364 -0.009 0.856 113831493 126.6

298.9 > 98.9 5.355 5.364 -0.009 0.856 33531607 3.39(1.80-3.35)

R
R

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.818 5.818 0.0 17267639 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.819 5.819 0.0 1.000 196806552 120.8

313.0 > 118.6 5.819 5.819 0.0 1.000 5432175 36.23(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.244 6.244 0.0 0.947 201805611 119.2

363.0 > 168.9 6.244 6.244 0.0 0.947 53021334 3.81(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.253 6.253 0.0 1627148 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.253 6.253 0.0 1.000 77830813 117.9

398.9 > 98.9 6.253 6.253 0.0 1.000 26968813 2.89(1.30-2.41)

R
R

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.253 6.253 0.0 1.000 77830813 117.9

398.9 > 98.9 6.253 6.253 0.0 1.000 26968813 2.89(1.85-1.85)

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.574	6.583	-0.009	0.959	81786282	103.6			
449.0 > 98.9	6.574	6.583	-0.009	0.959	25958942		3.15(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.574	6.583	-0.009	0.959	81786282	103.6			
449.0 > 98.9	6.574	6.583	-0.009	0.959	25958942		3.15(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.584	6.593	-0.009	0.999	162199054	103.2			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.593	6.593	0.0		19521527	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.584	6.594	-0.010	0.999	220819164	109.3			
413.0 > 169.0	6.594	6.594	0.0	1.000	64227565		3.44(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.856	6.865	-0.009	1.000	36728856	92.6			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.856	6.866	-0.010		6220431	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.857	6.866	-0.009	1.000	74481235	98.3			R
498.9 > 98.9	6.857	6.866	-0.009	1.000	26876105		2.77(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.876	6.886	-0.010		11951584	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.877	6.886	-0.010	1.000	168854641	126.5			
463.0 > 218.9	6.877	6.886	-0.010	1.000	25008074		6.75(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.121	7.130	-0.009		17676292	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.121	7.130	-0.009	1.000	219177035	123.5			R
513.0 > 219.0	7.121	7.130	-0.009	1.000	21075182		10.40(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.299	7.318	-0.019	1.065	90907790	113.4			
598.9 > 99.0	7.299	7.318	-0.019	1.065	27106961		3.35(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.299	7.318	-0.019	1.065	90907790	113.4			
598.9 > 99.0	7.299	7.318	-0.019	1.065	27106961		3.35(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.328	7.347	-0.019		8840302	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.329	7.347	-0.019	1.000	154032440	123.5			R
563.0 > 268.9	7.329	7.347	-0.019	1.000	19397481		7.94(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.498	7.517	-0.019		23005975	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.498	7.517	-0.019	1.000	293807930	125.0			
613.0 > 168.9	7.498	7.517	-0.019	1.000	37965617		7.74(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.595	7.614	-0.019		18054962	10.0			

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.596	7.615	-0.019	1.000	250150013	127.7			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.649	7.668	-0.019	1.020	254423900	119.8			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.781	7.800	-0.019	1.038	191754560	141.1			
712.9 > 169.0	7.781	7.800	-0.019	1.038	27998880		6.85(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 250.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 250.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d

Injection Date: 06-Jun-2016 16:28:22

Instrument ID: LC_LCMS5

Lims ID: STD1250

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 11

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

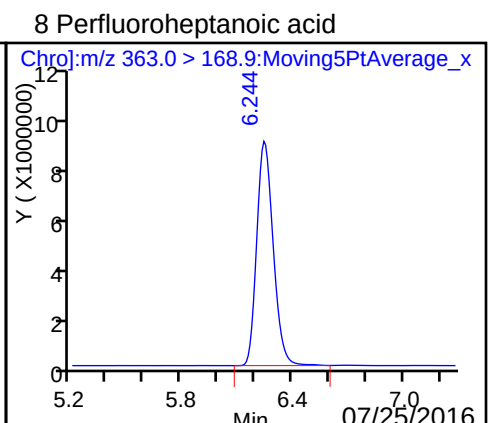
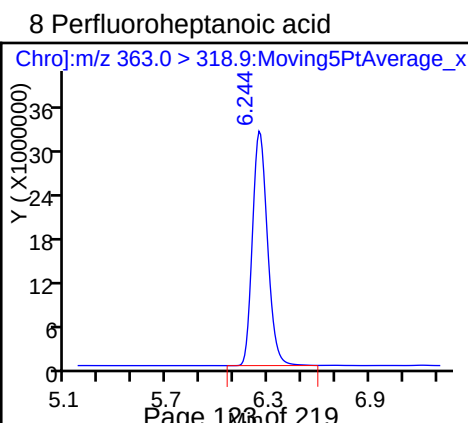
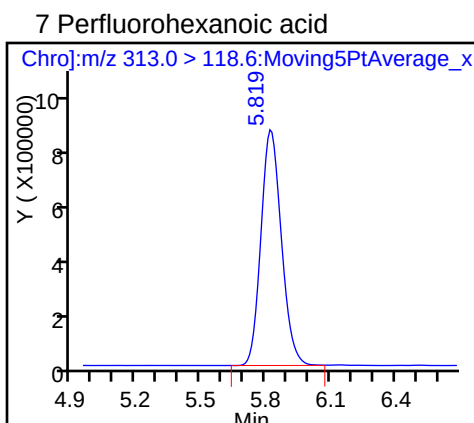
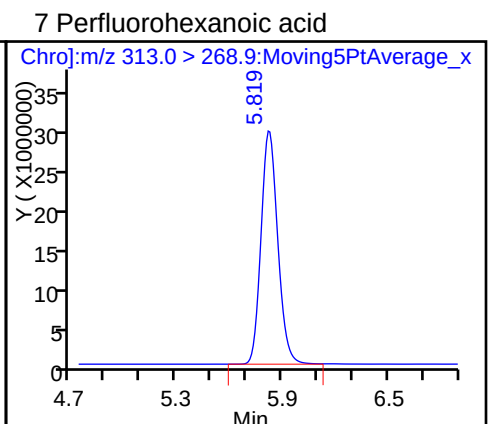
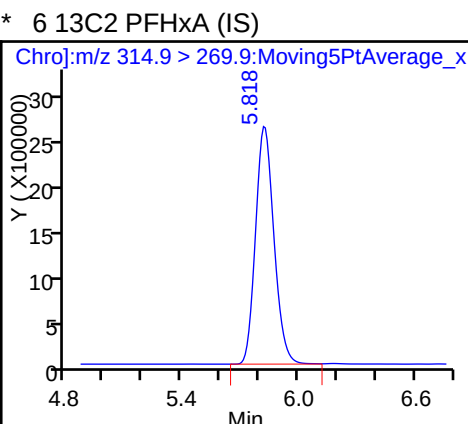
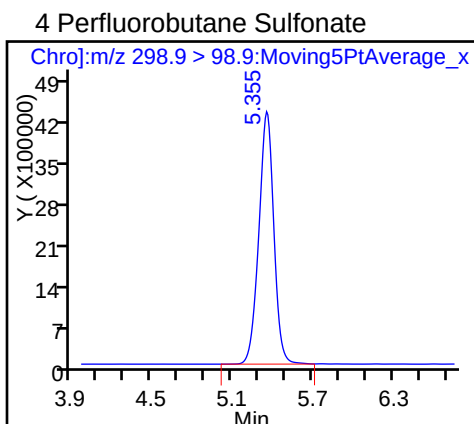
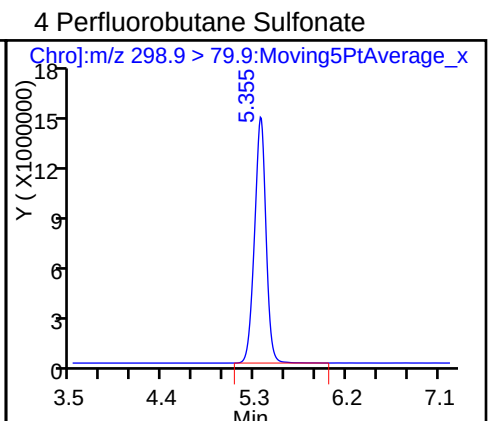
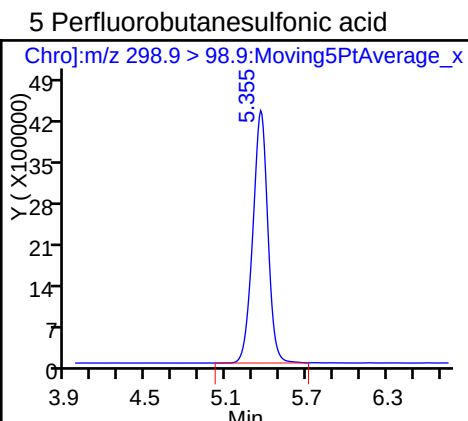
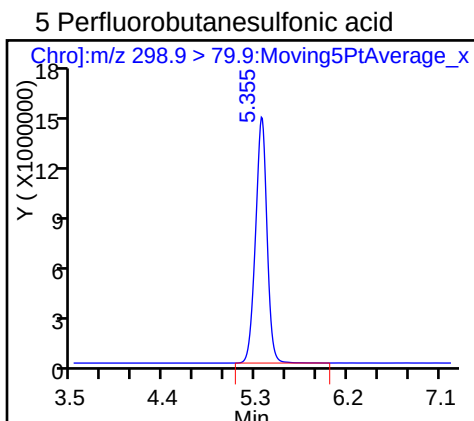
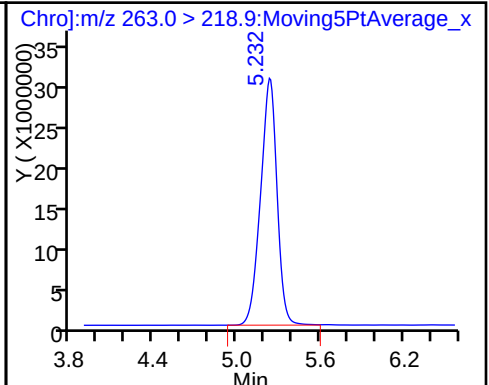
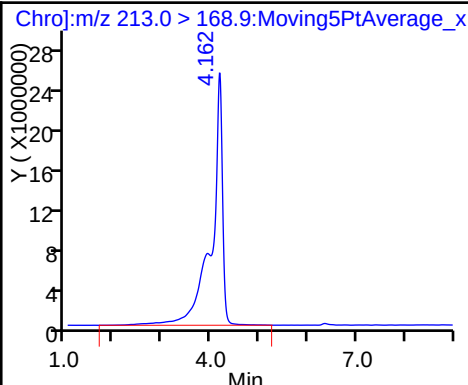
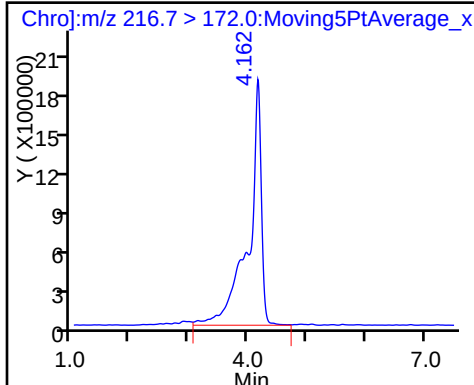
Method: 8321_PFC

Limit Group: LC - PFC

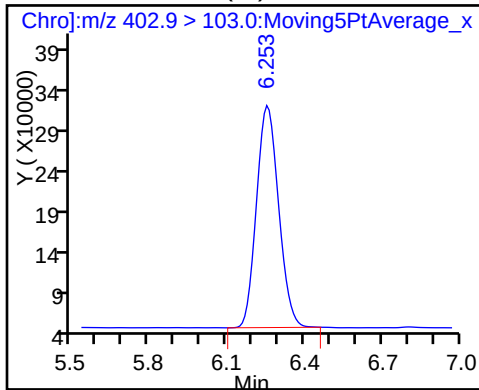
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

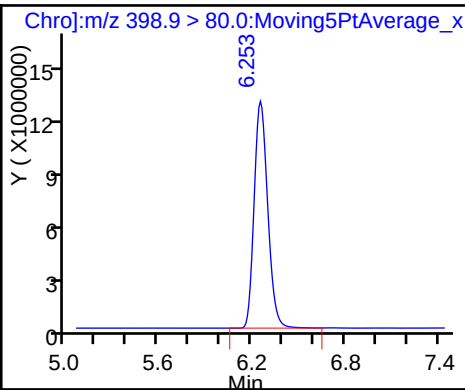
3 Perfluoropentanoic acid



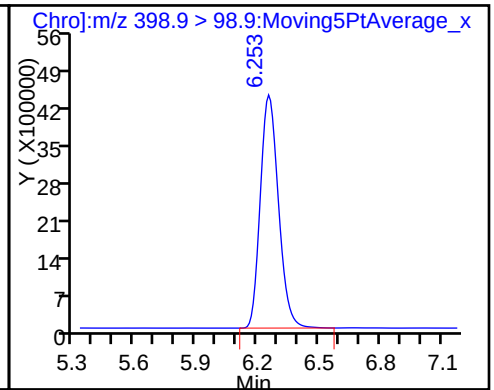
* 9 18O2 PFHxS (IS)



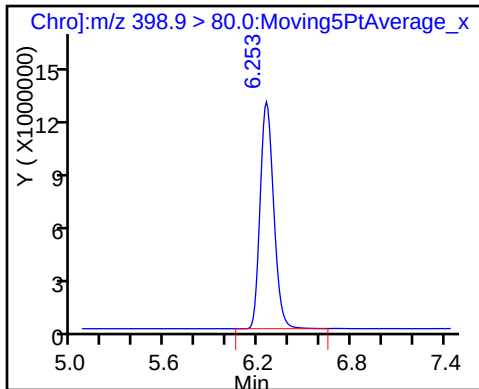
10 Perfluorohexane Sulfonate



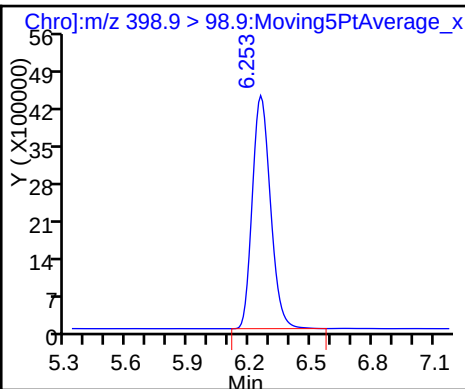
10 Perfluorohexane Sulfonate



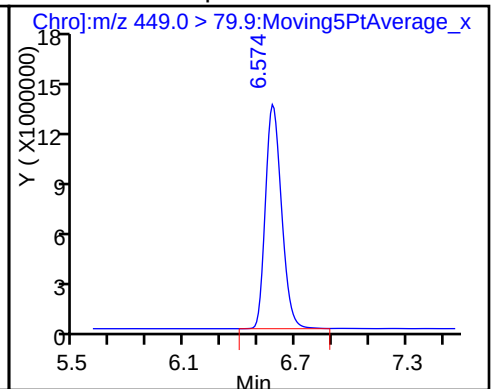
11 Perfluorohexanesulfonic acid



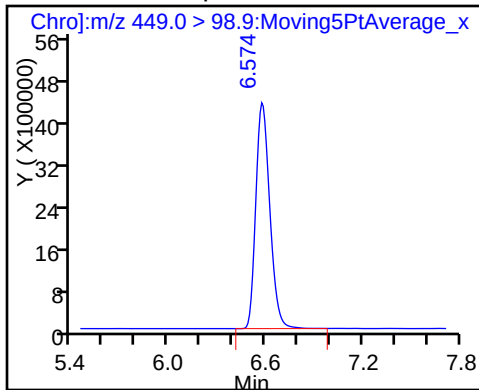
11 Perfluorohexanesulfonic acid



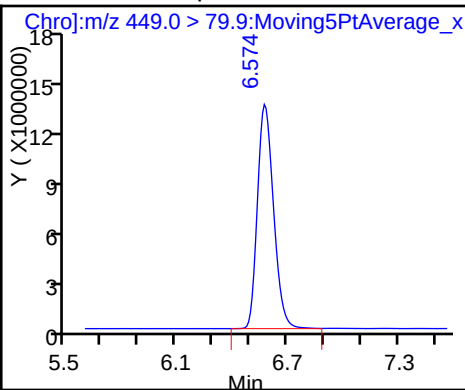
12 Perfluoroheptanesulfonic Acid



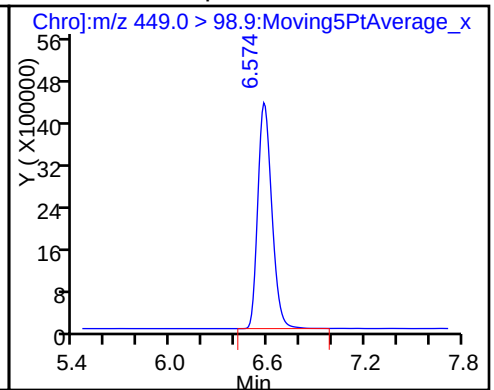
12 Perfluoroheptanesulfonic Acid



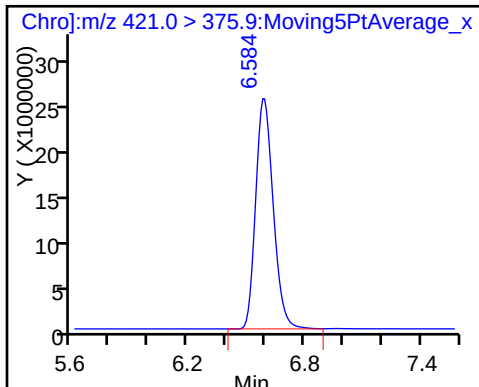
13 Perfluoroheptane Sulfonate



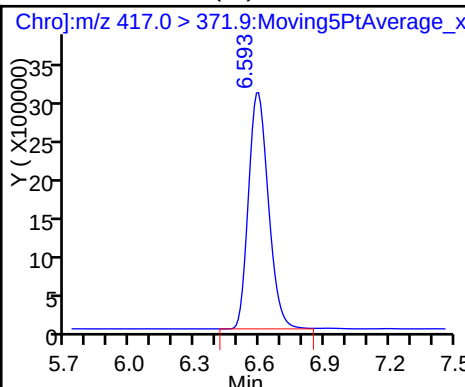
13 Perfluoroheptane Sulfonate



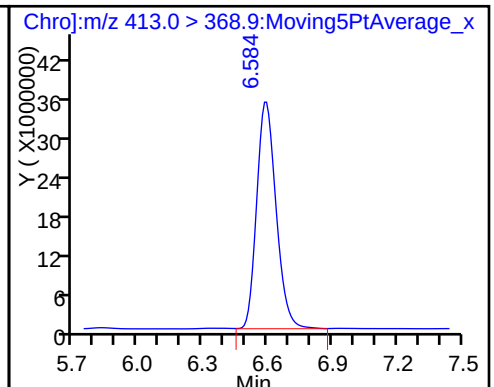
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



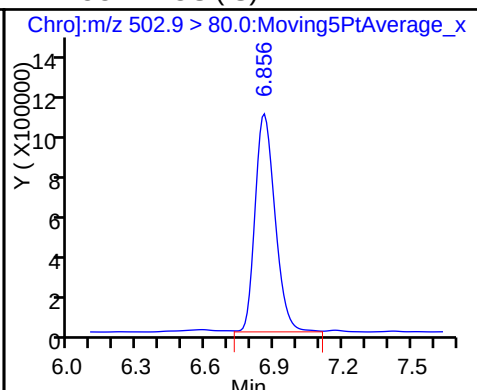
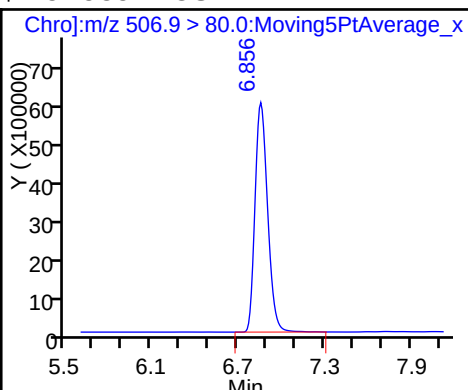
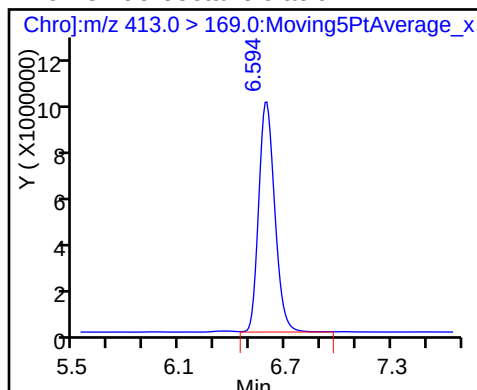
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

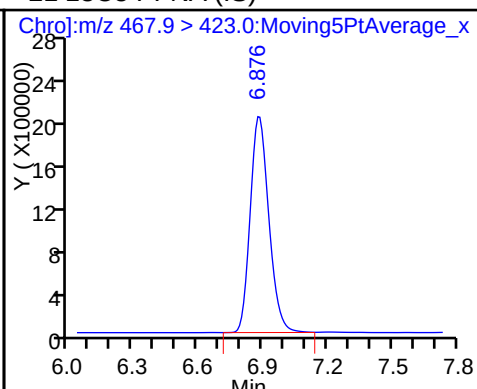
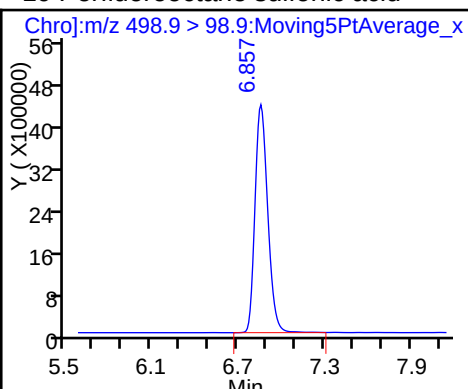
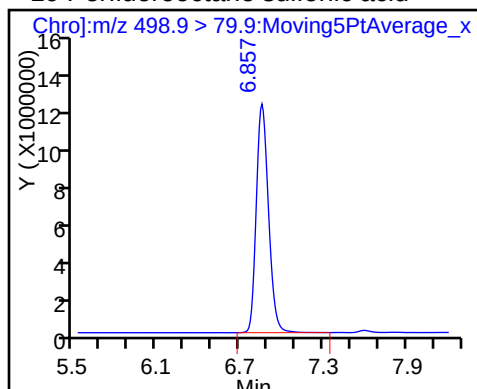
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

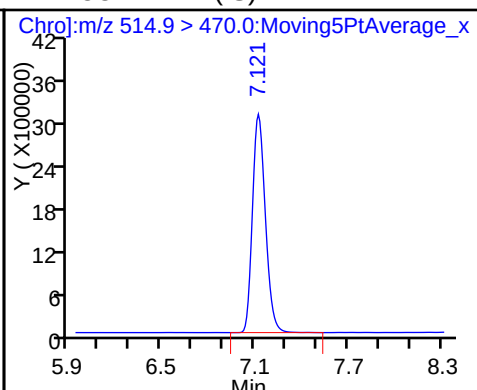
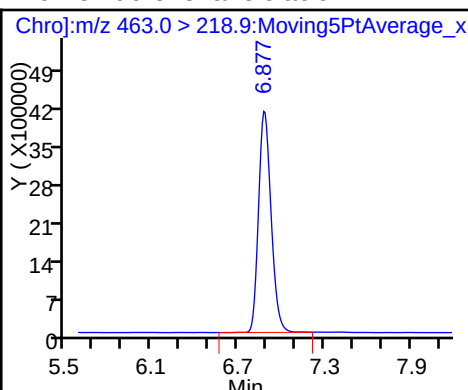
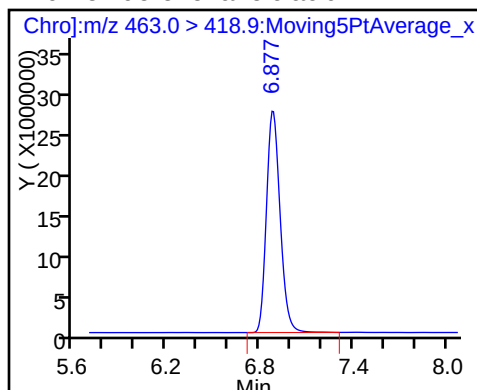
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

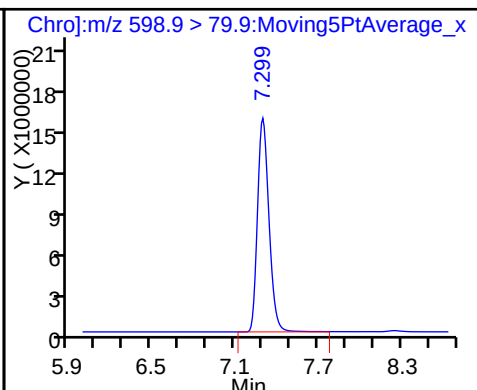
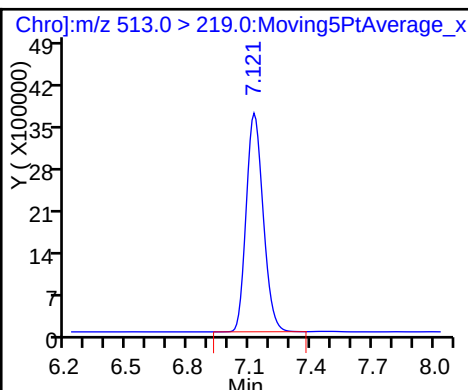
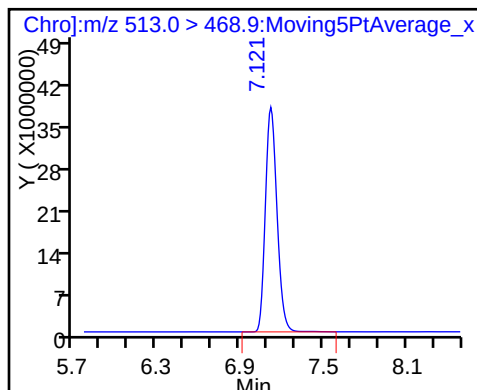
* 22 13C2 PFDA (IS)



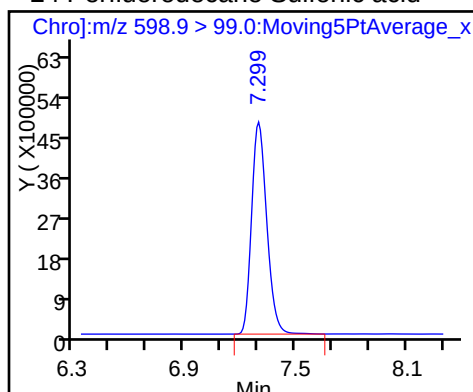
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

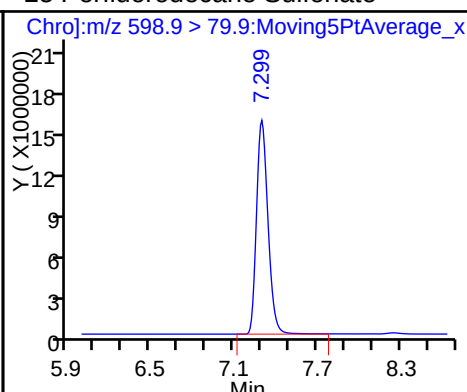
24 Perfluorodecane Sulfonic acid



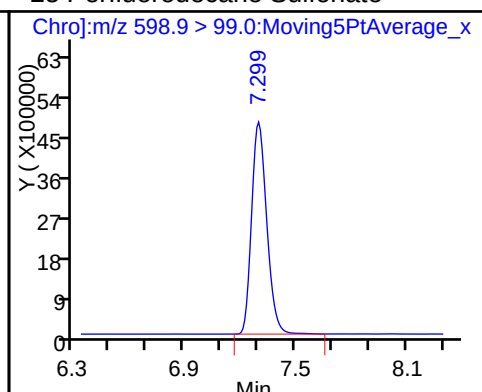
24 Perfluorodecane Sulfonic acid



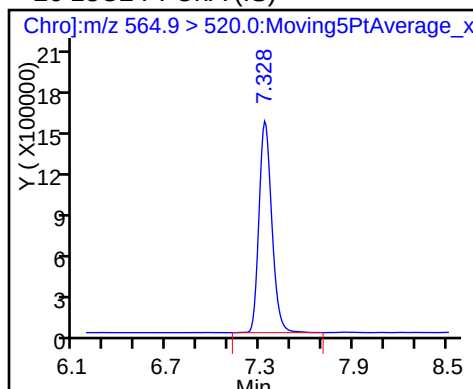
25 Perfluorodecane Sulfonate



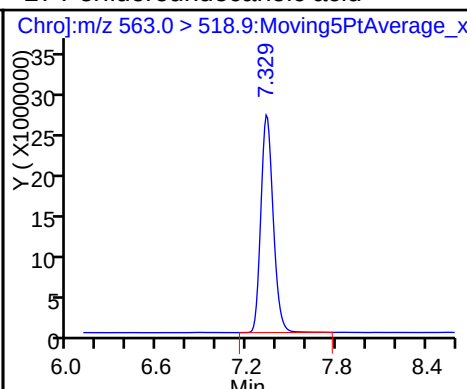
25 Perfluorodecane Sulfonate



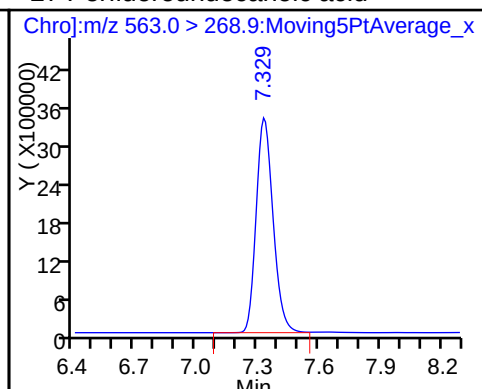
* 26 13C2 PFUnA (IS)



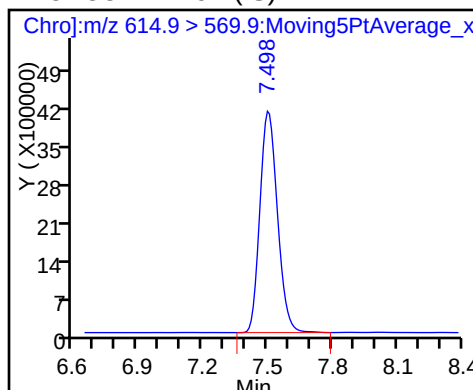
27 Perfluoroundecanoic acid



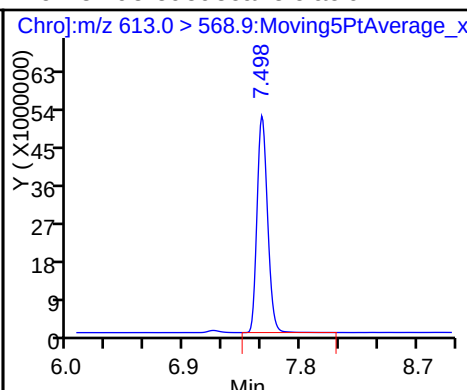
27 Perfluoroundecanoic acid



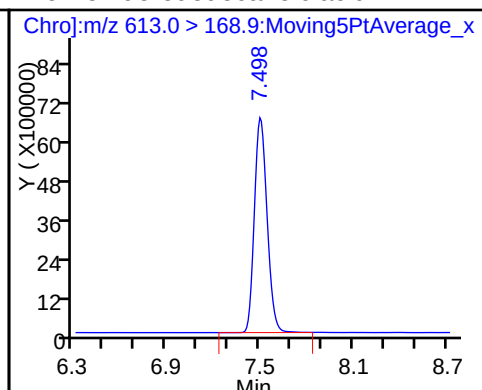
* 28 13C2 PFDaA (IS)



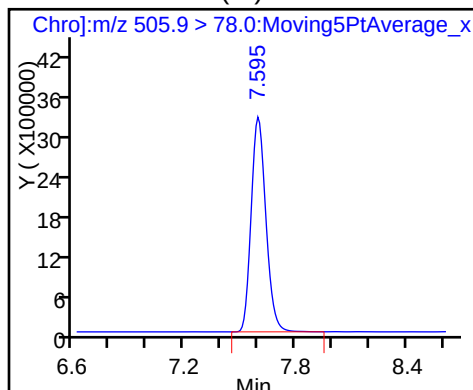
29 Perfluorododecanoic acid



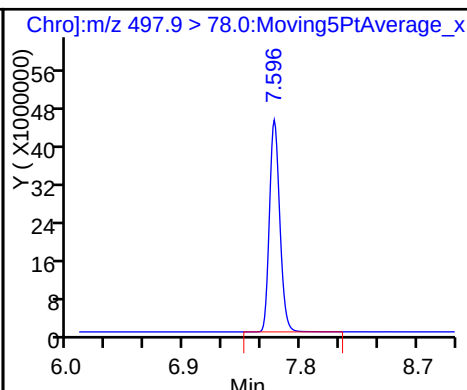
29 Perfluorododecanoic acid



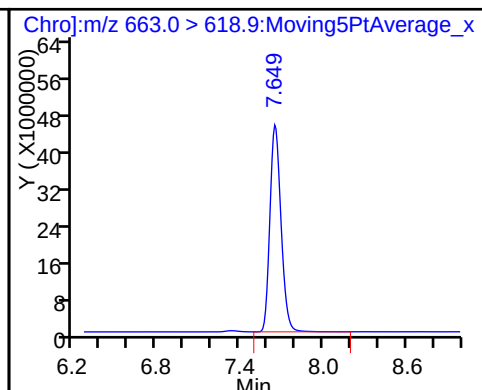
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

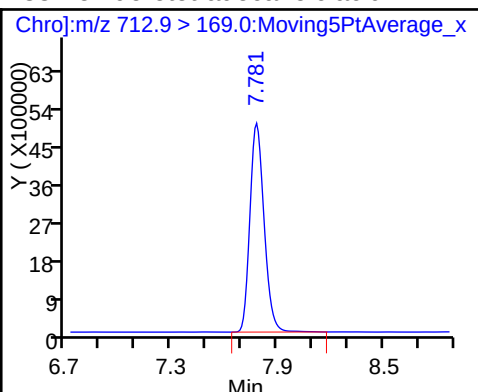
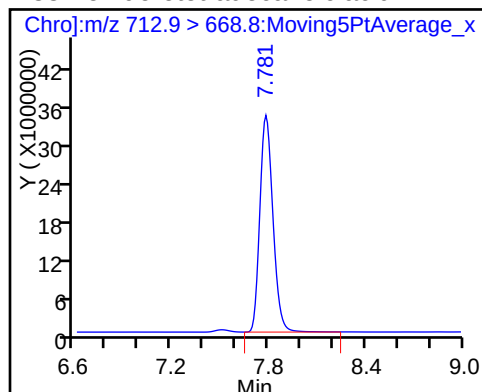


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Lab Sample ID: ICV 280-328740/13 Calibration Date: 06/06/2016 16:53

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516F06018.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.068		1.99	2.00	-0.3	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.192		2.01	2.00	0.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		5.275		1.79	1.77	1.3	30.0
Perfluorobutanesulfonic acid	Lin2		5.275		1.79	1.77	1.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		1.031		2.16	2.00	8.2	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.421		2.01	1.82	10.5	30.0
Perfluorohexanesulfonic acid	Lin2		4.421		2.01	1.82	10.5	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9850		2.24	2.00	11.9	30.0
Perfluoroheptane Sulfonate	Lin2		1.229		1.94	1.90	1.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.229		1.94	1.90	1.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.111		2.08	2.00	3.8	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.331		2.22	2.00	10.8	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.177		2.06	2.00	3.2	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.049		2.05	2.00	2.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.196		1.83	1.93	-4.9	30.0
Perfluorodecane Sulfonic acid	Lin2		1.196		1.83	1.93	-4.9	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.377		1.90	2.00	-5.0	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.036		1.97	2.00	-1.5	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.131		2.08	2.00	3.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8932		1.86	2.00	-7.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6095		2.06	2.00	2.9	30.0
13C8 PFOA	Lin2		0.8307		10.3	10.0	2.8	30.0
13C8 PFOS	Lin2		0.5950		9.30	9.56	-2.7	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 06-Jun-2016 16:53:00 ALS Bottle#: 0 Worklist Smp#: 13
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: ICV, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub2
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:01:54

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0	4.465	4.465	0.0		32017793	10.0			
2 Perfluorobutyric acid									M
213.0 > 168.9	4.465	4.465	0.0	1.000	6838874	1.99			M

3 Perfluoropentanoic acid

263.0 > 218.9	5.336	5.336	0.0	0.907	5621809	2.01			

5 Perfluorobutanesulfonic acid

298.9 > 79.9	5.440	5.440	0.0	0.863	2478614	1.79			
298.9 > 98.9	5.450	5.440	0.010	0.865	814315		3.04(2.57-2.57)		

4 Perfluorobutane Sulfonate

298.9 > 79.9	5.440	5.440	0.0	0.863	2478614	1.79			
298.9 > 98.9	5.450	5.440	0.010	0.865	814315		3.04(1.80-3.35)		

* 6 13C2 PFHxA (IS)

314.9 > 269.9	5.885	5.885	0.0		23574022	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.885	5.885	0.0	1.000	4860408	2.16			
313.0 > 118.6	5.876	5.885	-0.009	0.998	148939		32.63(34.05-63.23)		

8 Perfluoroheptanoic acid

363.0 > 318.9	6.292	6.292	0.0	0.949	6515774	2.24			
363.0 > 168.9	6.292	6.292	0.0	0.949	1577933		4.13(3.35-6.23)		

* 9 18O2 PFHxS (IS)

402.9 > 103.0	6.300	6.300	0.0		2511258	9.46			
10 Perfluorohexane Sulfonate									R
398.9 > 80.0	6.291	6.291	0.0	0.999	2138144	2.01			R
398.9 > 98.9	6.301	6.291	0.010	1.000	735033		2.91(1.30-2.41)		

11 Perfluorohexanesulfonic acid

398.9 > 80.0	6.291	6.291	0.0	0.999	2138144	2.01			
398.9 > 98.9	6.301	6.291	0.010	1.000	735033		2.91(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.621	6.621	0.0	0.959	2366786	1.94			
449.0 > 98.9	6.621	6.621	0.0	0.959	812675		2.91(0.00-0.00)		
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.621	6.621	0.0	0.959	2366786	1.94			
449.0 > 98.9	6.621	6.621	0.0	0.959	812675		2.91(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.631	6.631	0.0	1.000	27475708	10.3			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.631	6.631	0.0		33074850	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.632	6.632	0.0	1.000	7348842	2.08			
413.0 > 169.0	6.632	6.632	0.0	1.000	2155704		3.41(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.894	6.894	0.0	0.999	5752747	9.30			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.904	6.904	0.0		9669285	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.895	6.895	0.0	0.999	2692274	2.22			R
498.9 > 98.9	6.895	6.895	0.0	0.999	893875		3.01(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.914	6.914	0.0		25183863	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.924	6.924	0.0	1.001	5925743	2.06			
463.0 > 218.9	6.914	6.924	-0.010	1.000	1008448		5.88(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.158	7.158	0.0		27322567	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.159	7.159	0.0	1.000	5730976	2.05			R
513.0 > 219.0	7.159	7.159	0.0	1.000	575203		9.96(10.49-19.48)		R
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.337	7.337	0.0	1.063	2332951	1.83			
598.9 > 99.0	7.337	7.337	0.0	1.063	660422		3.53(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.337	7.337	0.0	1.063	2332951	1.83			
598.9 > 99.0	7.337	7.337	0.0	1.063	660422		3.53(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.366	7.366	0.0		17486001	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.366	7.366	0.0	1.000	4817084	1.90			R
563.0 > 268.9	7.357	7.366	-0.009	0.999	609957		7.90(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.545	7.545	0.0		34783992	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.545	7.545	0.0	1.000	7204407	1.97			
613.0 > 168.9	7.545	7.545	0.0	1.000	1003485		7.18(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.642	7.642	0.0		26768431	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.643	7.643	0.0	1.000	6056968	2.08			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.696	7.696	0.0	1.020	6213513	1.85			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.829	7.829	0.0	1.038	4240024	2.06			
712.9 > 169.0	7.829	7.829	0.0	1.038	763420		5.55(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_ICV-2_00001	Amount Added: 20.00	Units: uL
PFHpS-LCS_00002	Amount Added: 4.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d

Injection Date: 06-Jun-2016 16:53:00

Instrument ID: LC_LCMS5

Lims ID: ICV

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 13

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

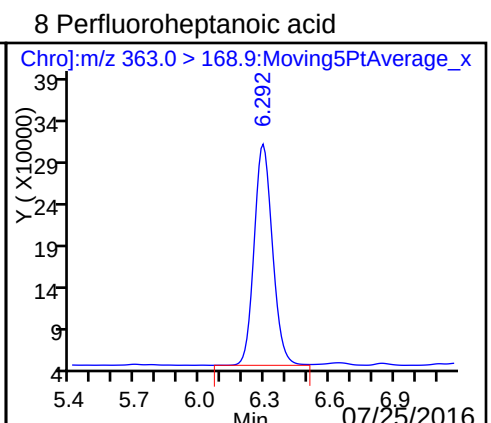
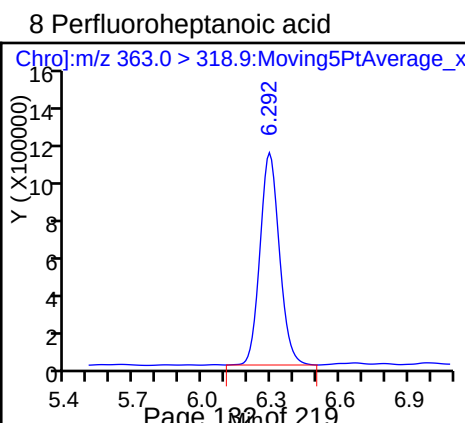
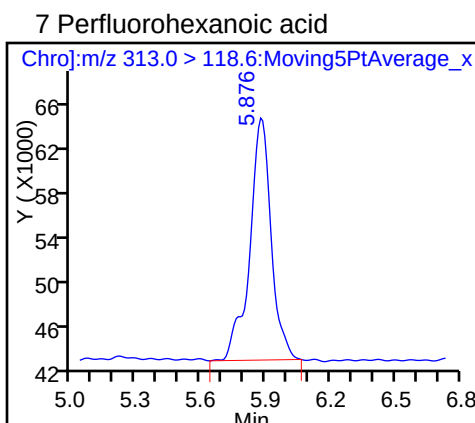
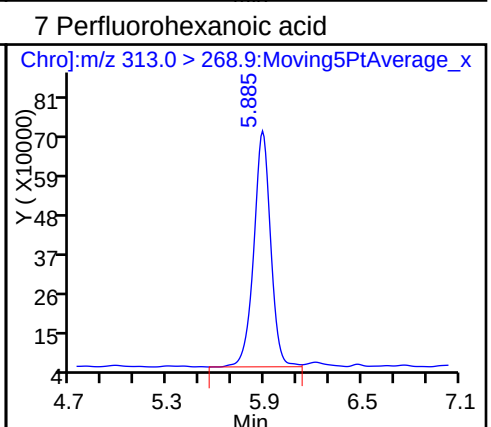
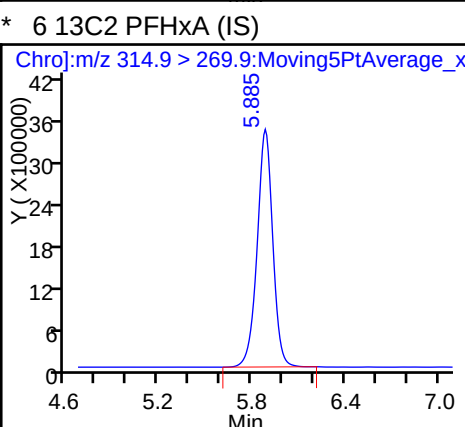
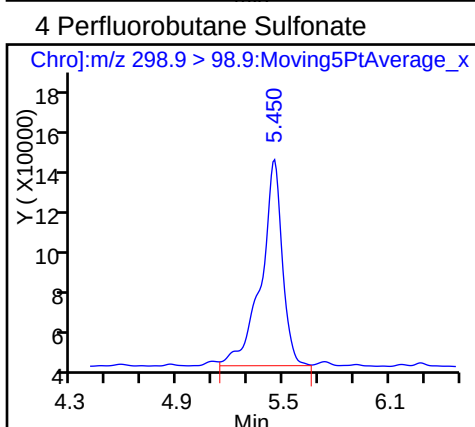
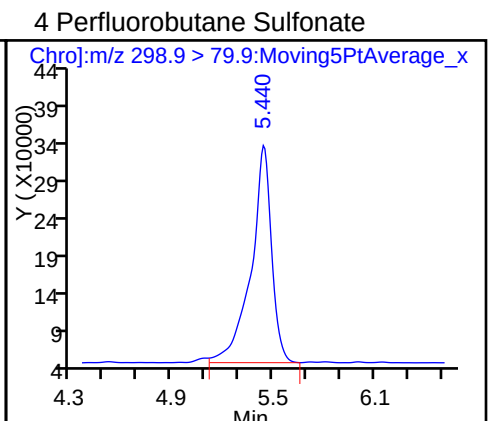
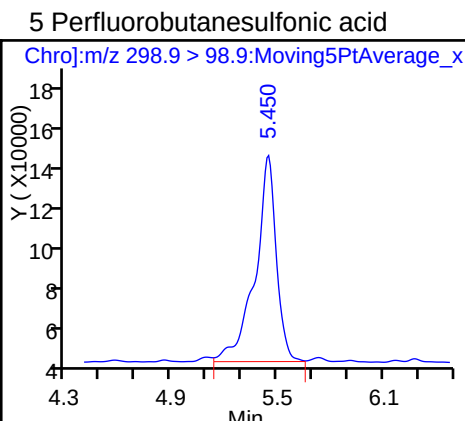
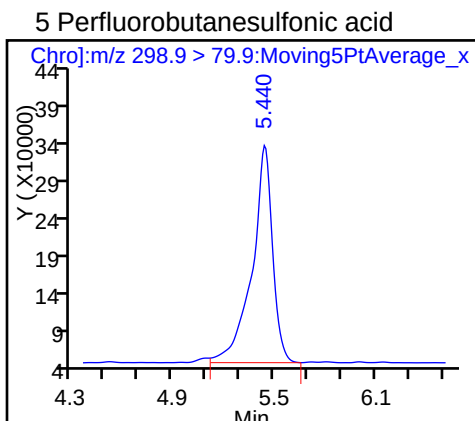
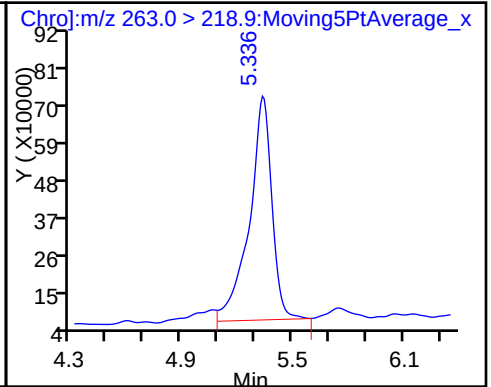
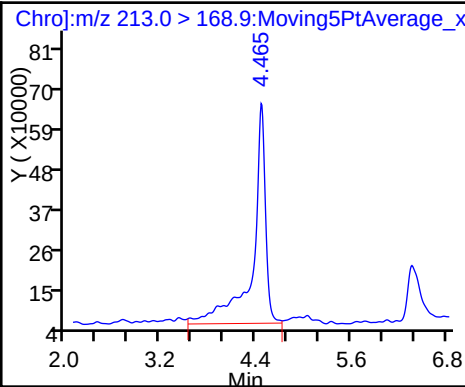
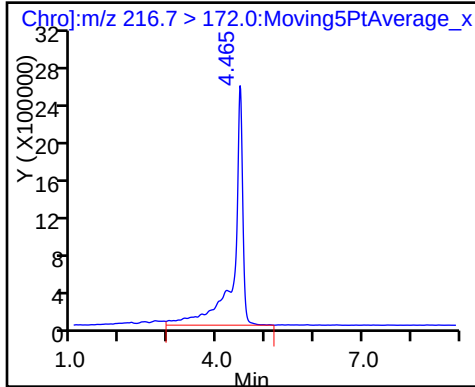
Method: 8321_PFC

Limit Group: LC - PFC

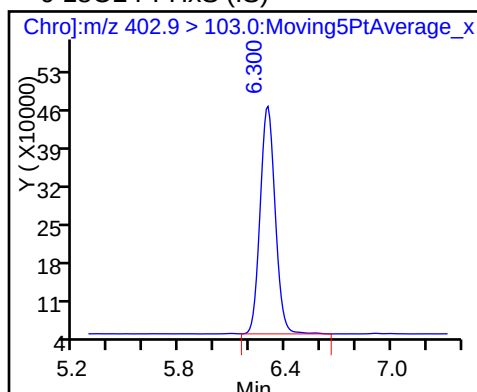
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (M)

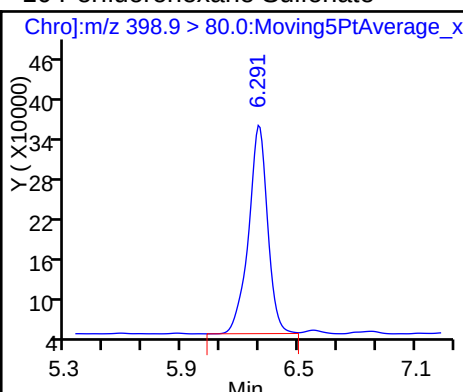
3 Perfluoropentanoic acid



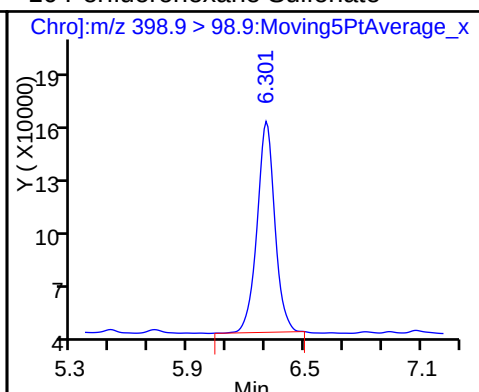
* 9 18O2 PFHxS (IS)



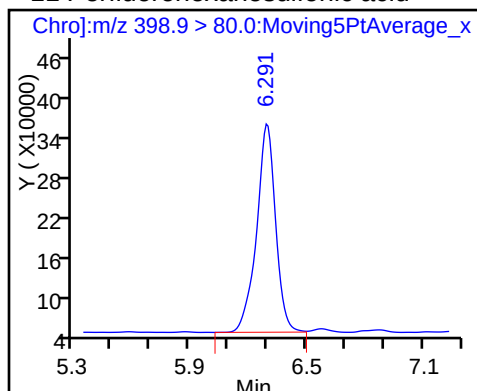
10 Perfluorohexane Sulfonate



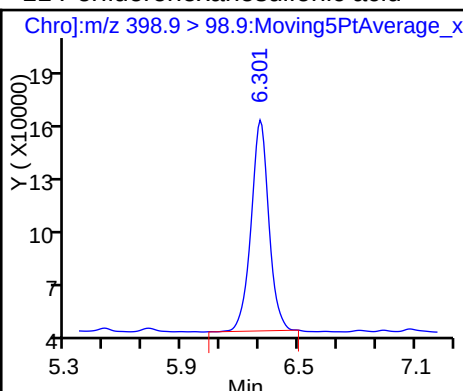
10 Perfluorohexane Sulfonate



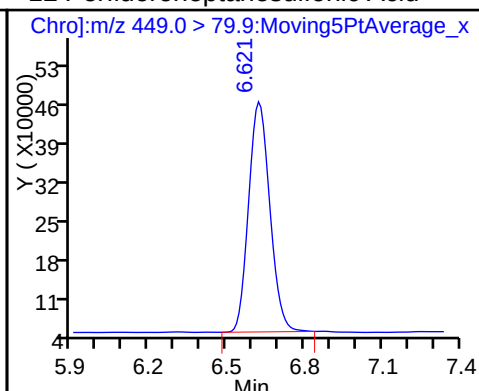
11 Perfluorohexanesulfonic acid



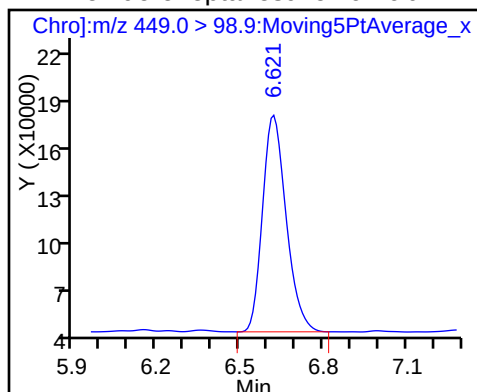
11 Perfluorohexanesulfonic acid



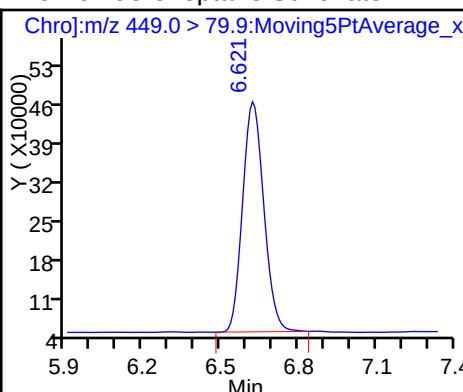
12 Perfluoroheptanesulfonic Acid



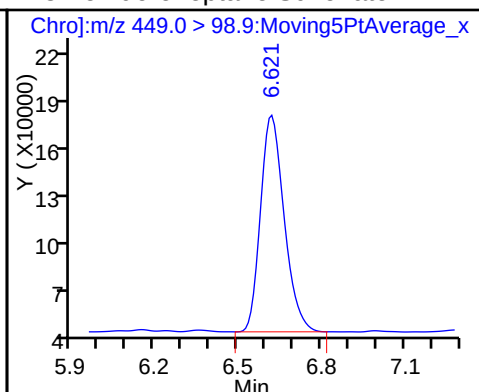
12 Perfluoroheptanesulfonic Acid



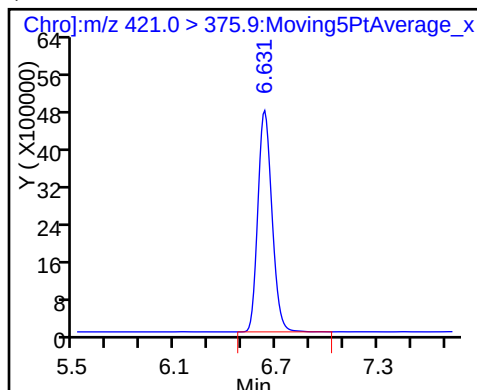
13 Perfluoroheptane Sulfonate



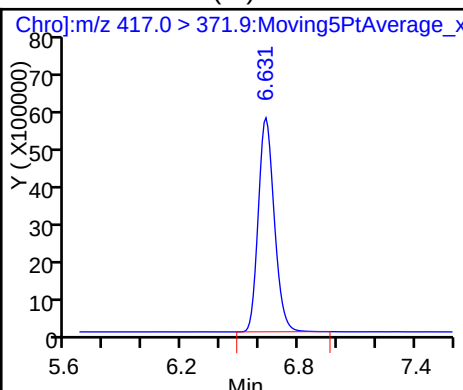
13 Perfluoroheptane Sulfonate



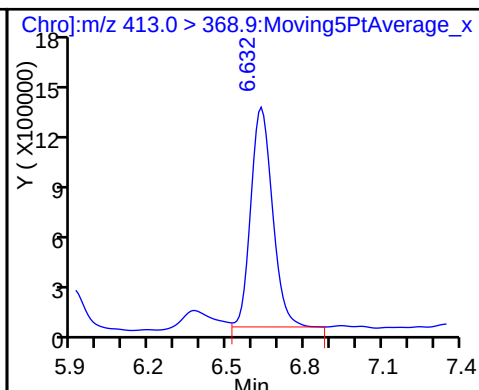
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



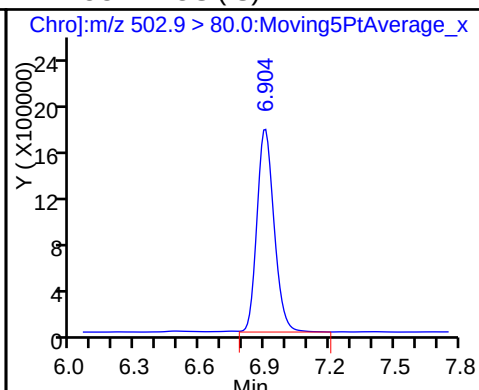
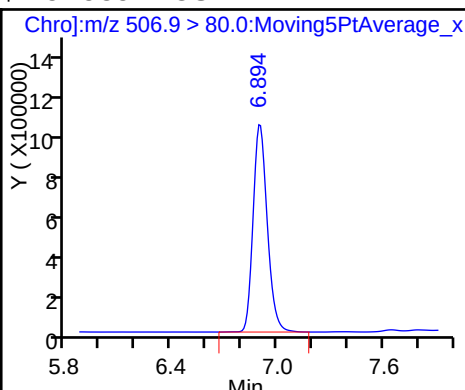
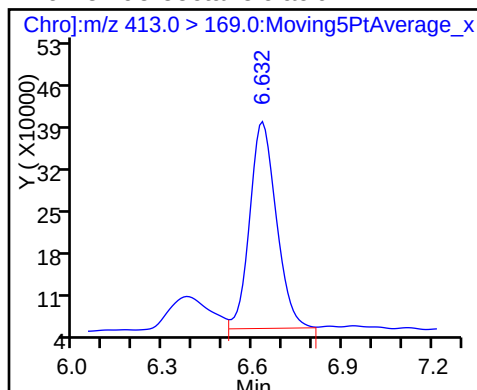
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

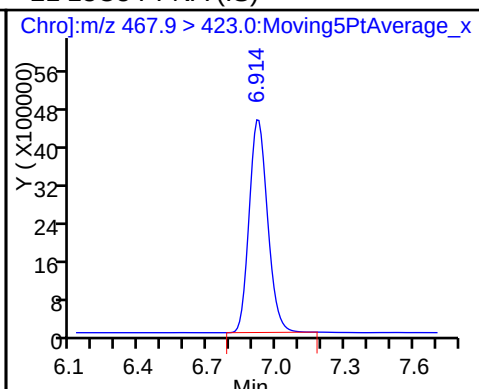
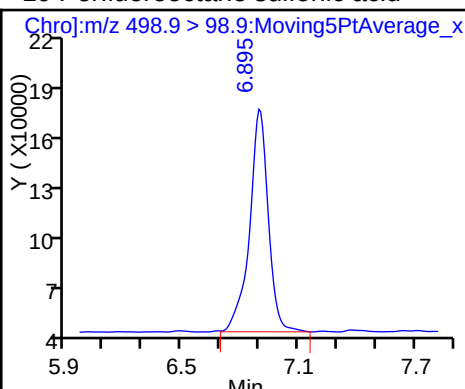
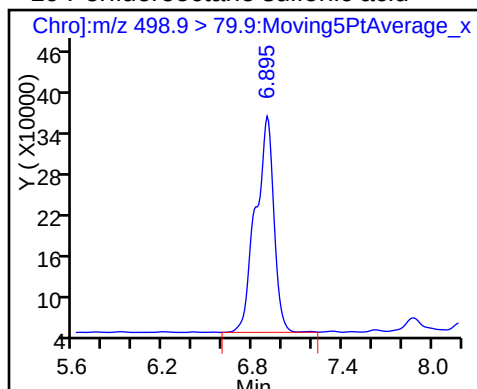
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

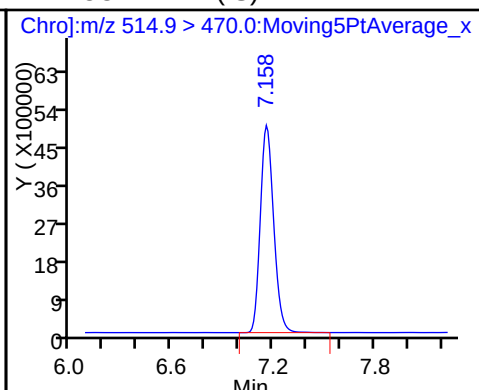
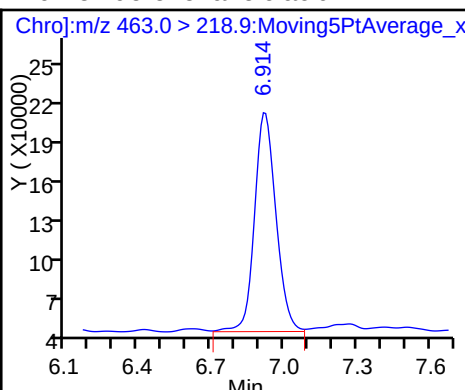
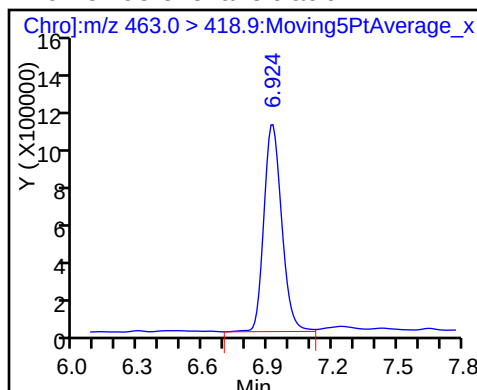
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

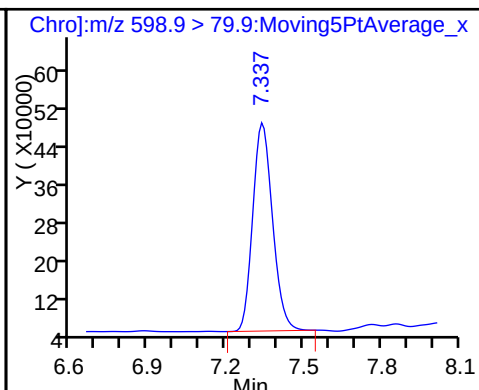
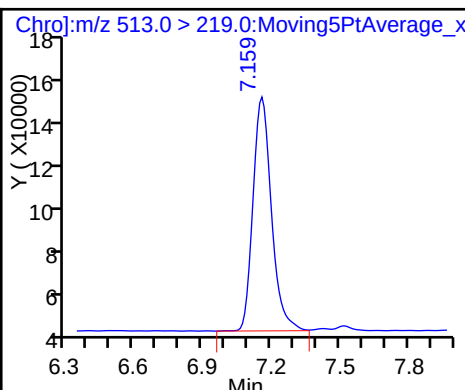
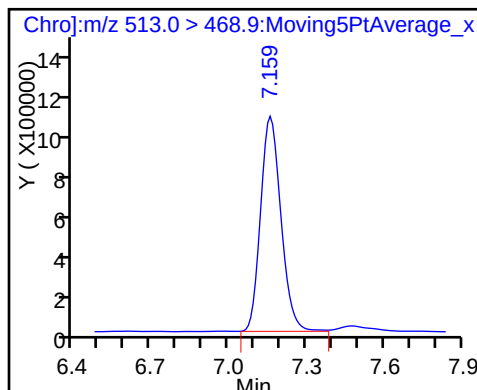
* 22 13C2 PFDA (IS)



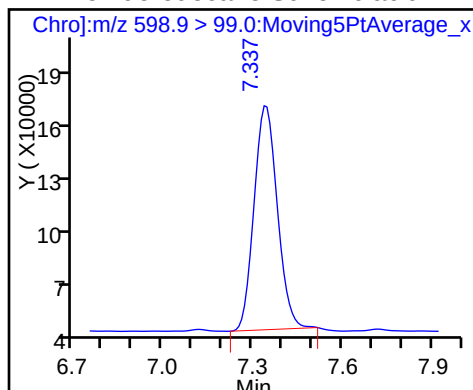
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

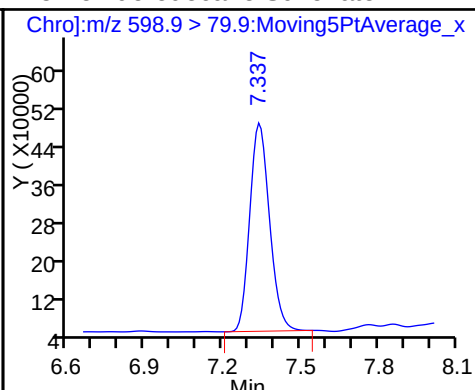
24 Perfluorodecane Sulfonic acid



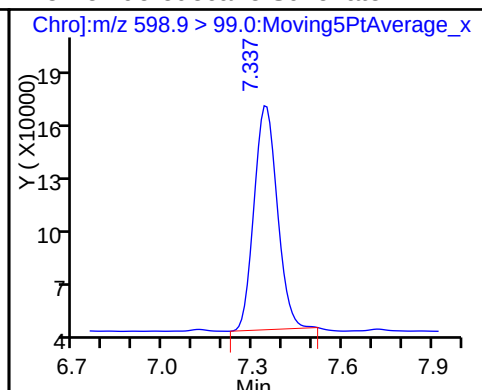
24 Perfluorodecane Sulfonic acid



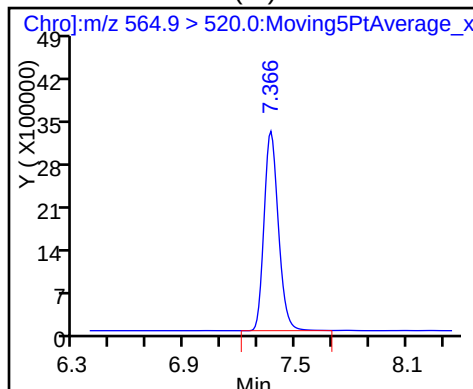
25 Perfluorodecane Sulfonate



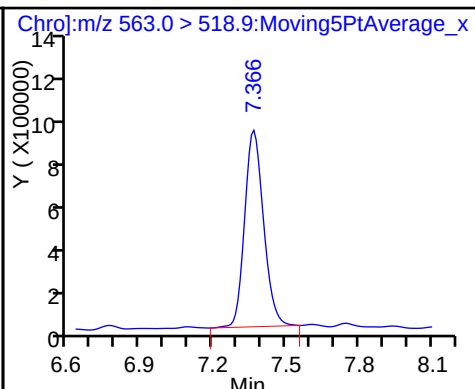
25 Perfluorodecane Sulfonate



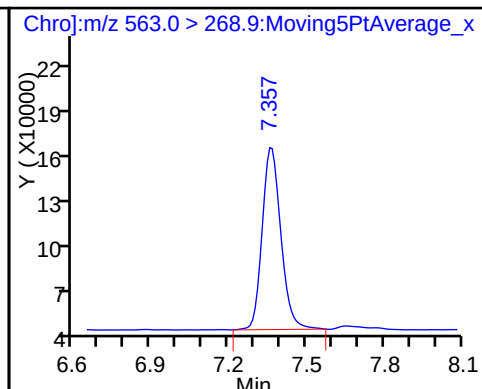
* 26 13C2 PFUnA (IS)



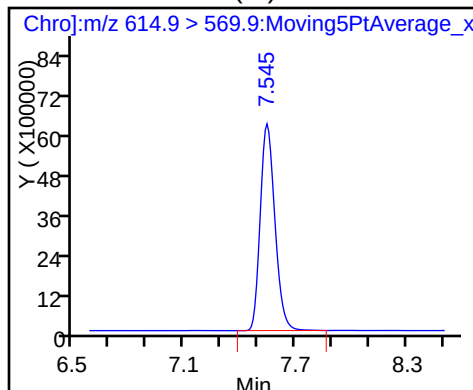
27 Perfluoroundecanoic acid



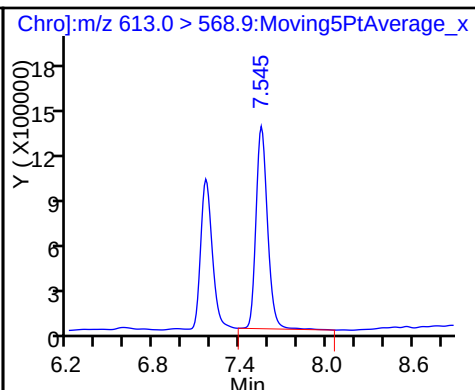
27 Perfluoroundecanoic acid



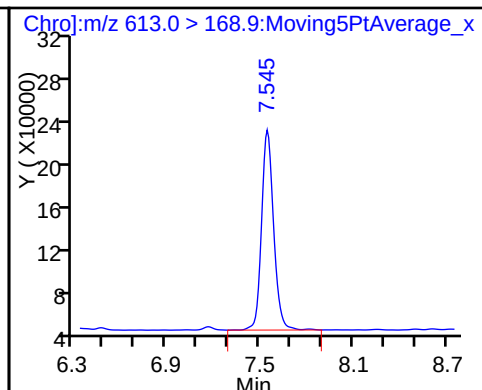
* 28 13C2 PFDaA (IS)



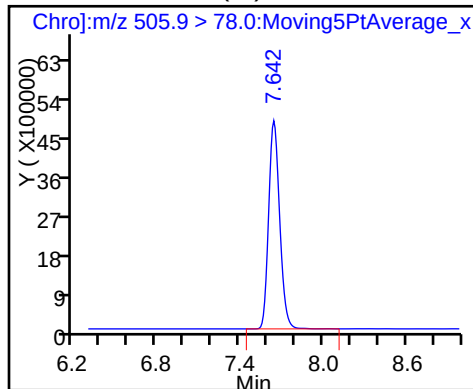
29 Perfluorododecanoic acid



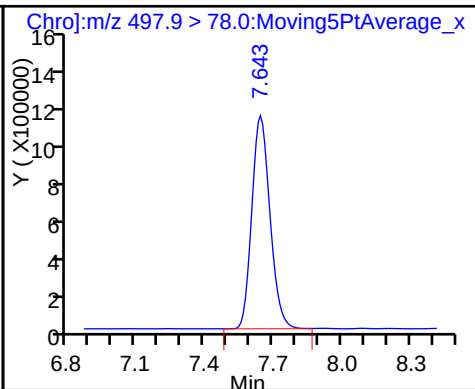
29 Perfluorododecanoic acid



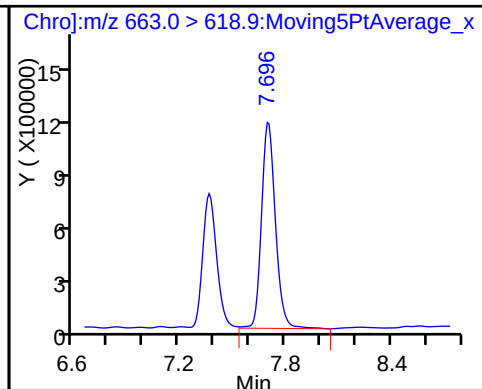
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

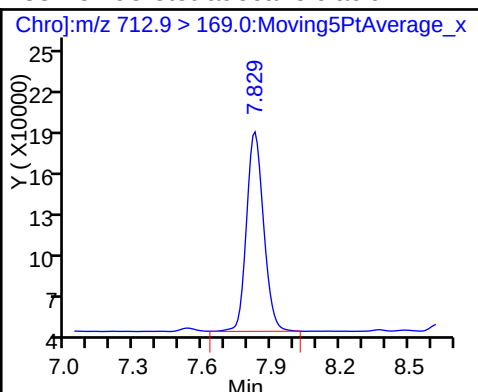
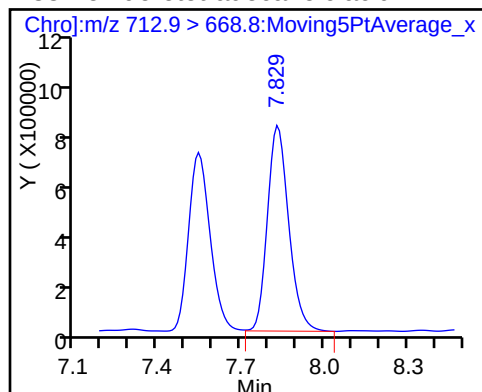


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



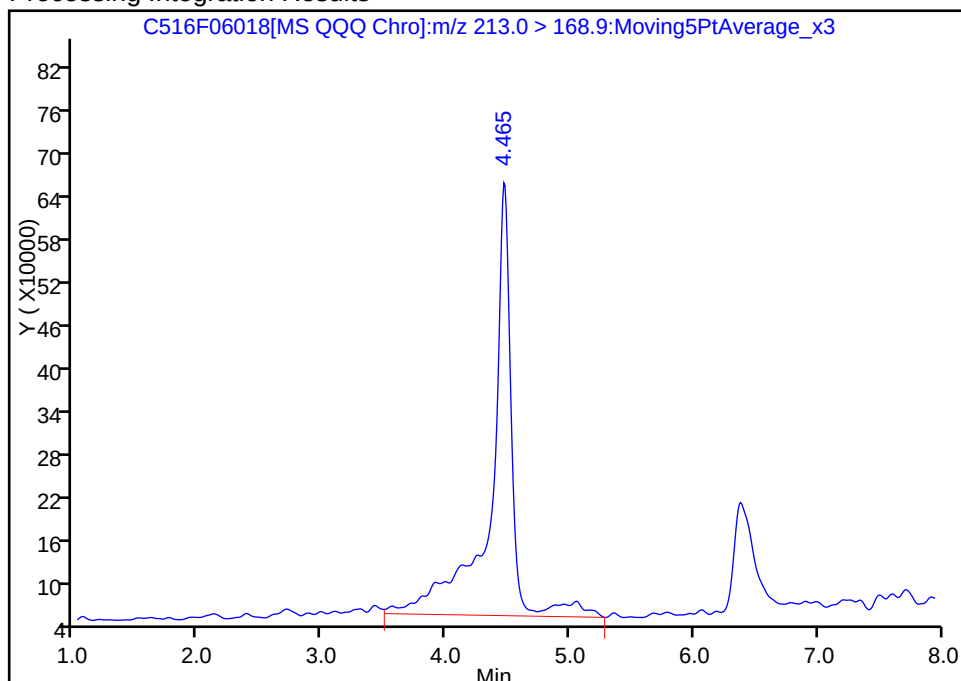
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06018.d
Injection Date: 06-Jun-2016 16:53:00 Instrument ID: LC_LCMS5
Lims ID: ICV
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 13
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

2 Perfluorobutyric acid, CAS: 375-22-4

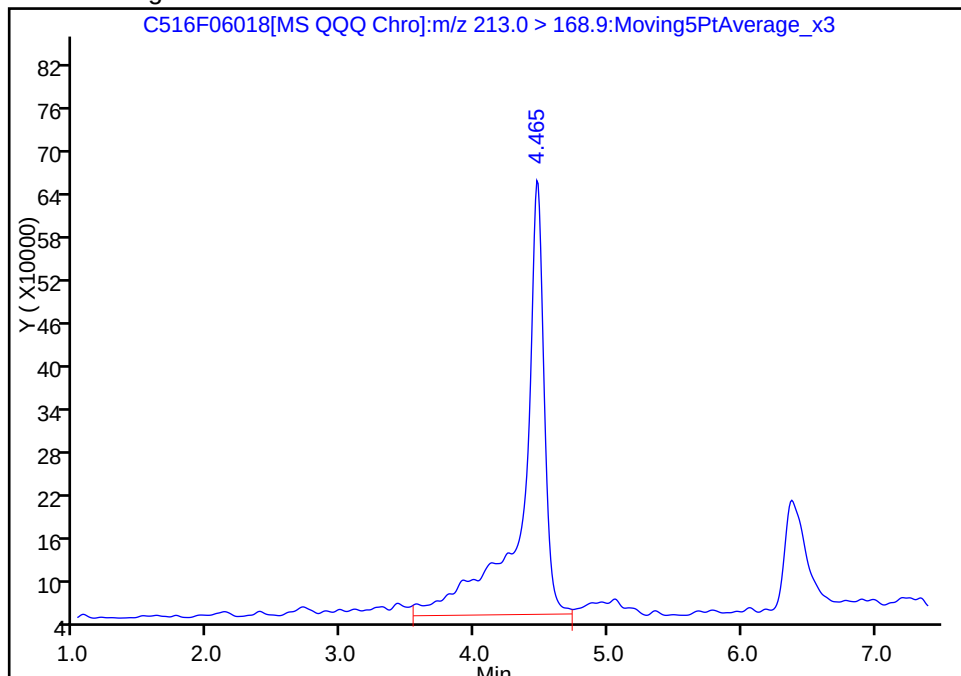
RT: 4.47
Area: 7042596
Amount: 2.053296
Amount Units: ug/L

Processing Integration Results



RT: 4.47
Area: 6838874
Amount: 1.993999
Amount Units: ug/L

Manual Integration Results



Reviewer: meyer, 07-Jun-2016 13:01:54
Audit Action: Manually Integrated
Audit Reason: Baseline

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Lab Sample ID: CCV 280-332595/3 Calibration Date: 07/05/2016 20:29

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516G05045.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.9597		8.95	10.0	-10.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.257		10.7	10.0	6.9	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.479		7.59	8.85	-14.3	30.0
Perfluorobutanesulfonic acid	Lin2		4.479		7.59	8.85	-14.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9327		9.86	10.0	-1.4	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8432		9.69	10.0	-3.1	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.120		10.1	9.45	6.5	30.0
Perfluorohexanesulfonic acid	Lin2		4.120		10.1	9.45	6.5	30.0
Perfluoroheptane Sulfonate	Lin2		1.068		8.39	9.52	-11.8	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.068		8.39	9.52	-11.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.071		10.3	10.0	2.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.100		8.96	9.55	-6.1	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.084		9.66	10.0	-3.4	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9908		9.83	10.0	-1.7	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.093		8.52	9.65	-11.7	30.0
Perfluorodecane Sulfonic acid	Lin2		1.093		8.52	9.65	-11.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.405		9.91	10.0	-0.9	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.015		9.87	10.0	-1.3	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.061		9.77	10.0	-2.3	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8898		9.56	10.0	-4.4	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.7310		12.4	10.0	23.7	30.0
13C8 PFOA	Lin2		0.8498		10.5	10.0	5.1	30.0
13C8 PFOS	Lin2		0.6207		9.71	9.56	1.5	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05045.d
 Lims ID: CCV PFC L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jul-2016 20:29:45 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L6, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 06-Jul-2016 13:27:46 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK018

First Level Reviewer: fiedlerh

Date: 06-Jul-2016 12:46:13

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.096	4.096	0.0		29649144	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.096	4.096	0.0	1.000	28455256	8.95			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.166	5.166	0.0	0.898	23264810	10.7			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.289	5.289	0.0	0.855	9606674	7.59			
298.9 > 98.9	5.289	5.289	0.0	0.855	2989275		3.21(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.289	5.289	0.0	0.855	9606674	7.59			
298.9 > 98.9	5.289	5.289	0.0	0.855	2989275		3.21(2.57-2.57)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.752	5.752	0.0		18505786	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.752	5.752	0.0	1.000	17259415	9.86			
313.0 > 118.6	5.752	5.752	0.0	1.000	493067		35.00(34.05-63.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.187	6.187	0.0		2292835	9.46			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.187	6.187	0.0	0.947	24974706	9.69			
363.0 > 168.9	6.187	6.187	0.0	0.947	6673393		3.74(3.35-6.23)		
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.187	6.187	0.0	1.000	9435842	10.1			
398.9 > 98.9	6.187	6.187	0.0	1.000	3095607		3.05(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.187	6.187	0.0	1.000	9435842	10.1			R
398.9 > 98.9	6.187	6.187	0.0	1.000	3095607		3.05(1.30-2.41)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.526	6.526	0.0	0.960	9437534	8.39			
449.0 > 98.9	6.526	6.526	0.0	0.960	2976285		3.17(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.526	6.526	0.0	0.960	9437534	8.39			
449.0 > 98.9	6.526	6.526	0.0	0.960	2976285		3.17(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.536	6.536	0.0	1.000	25168950	10.5			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.537	6.537	0.0		29618386	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.537	6.537	0.0	1.000	31732105	10.3			
413.0 > 169.0	6.537	6.537	0.0	1.000	9892211		3.21(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.799	6.799	0.0	1.000	5507144	9.71			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.800	6.800	0.0		8872947	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.800	6.800	0.0	1.000	9754307	8.96			R
498.9 > 98.9	6.800	6.800	0.0	1.000	3559608		2.74(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.819	6.819	0.0		21624674	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.820	6.820	0.0	1.000	23437448	9.66			
463.0 > 218.9	6.820	6.820	0.0	1.000	3207528		7.31(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.064	7.064	0.0		23716185	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.064	7.064	0.0	1.000	23497658	9.83			R
513.0 > 219.0	7.064	7.064	0.0	1.000	2334793		10.06(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.243	7.243	0.0	1.065	9788974	8.52			
598.9 > 99.0	7.243	7.243	0.0	1.065	3185790		3.07(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.243	7.243	0.0	1.065	9788974	8.52			
598.9 > 99.0	7.243	7.243	0.0	1.065	3185790		3.07(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.271	7.271	0.0		13895899	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.272	7.272	0.0	1.000	19527232	9.91			R
563.0 > 268.9	7.272	7.272	0.0	1.000	2318671		8.42(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.450	7.450	0.0		30249694	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.451	7.451	0.0	1.000	30688235	9.87			
613.0 > 168.9	7.451	7.451	0.0	1.000	3794570		8.09(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.586	7.586	0.0		25044238	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.587	7.587	0.0	1.000	26563576	9.77			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.602	7.602	0.0	1.020	26915852	9.56			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.734	7.734	0.0	1.038	22112640	12.4			
712.9 > 169.0	7.734	7.734	0.0	1.038	3354064		6.59(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05045.d

Injection Date: 05-Jul-2016 20:29:45

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

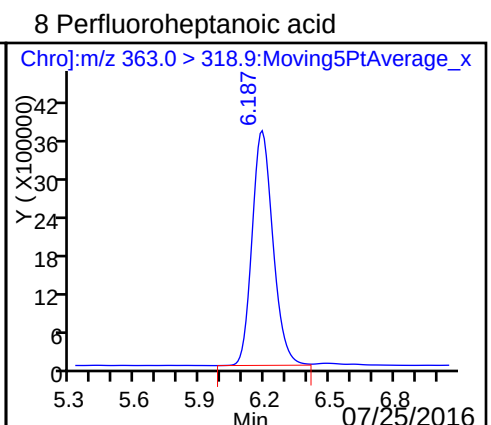
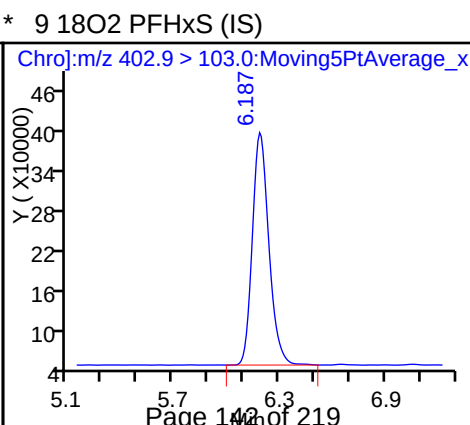
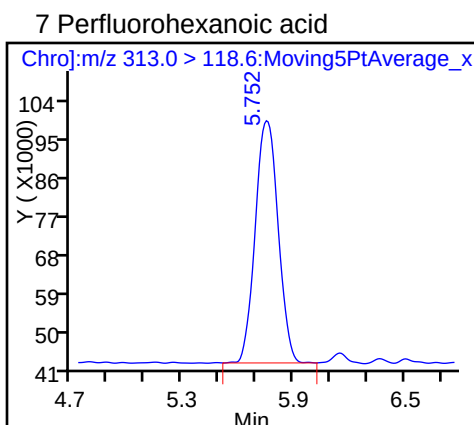
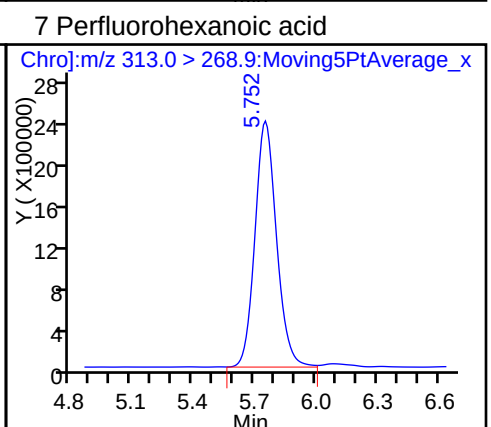
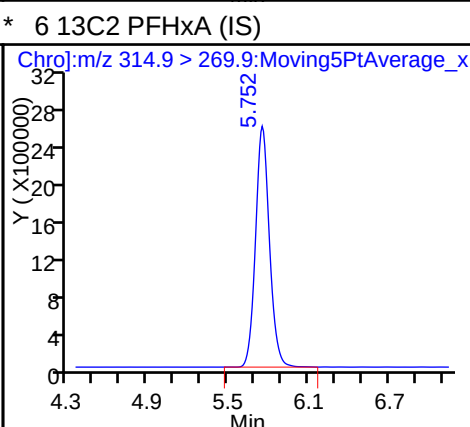
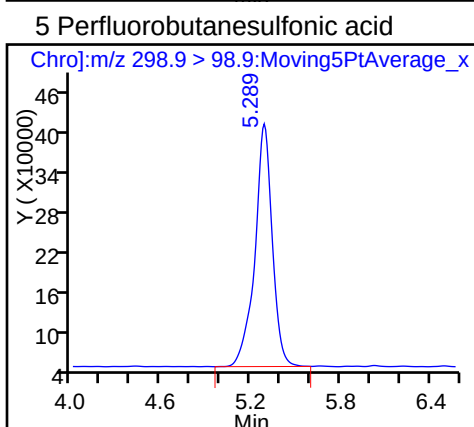
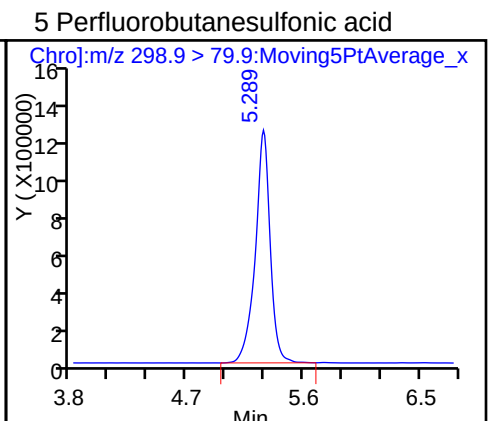
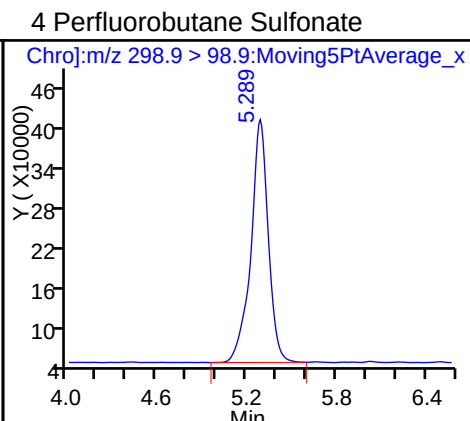
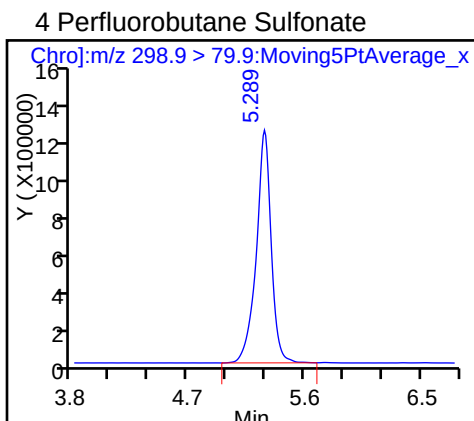
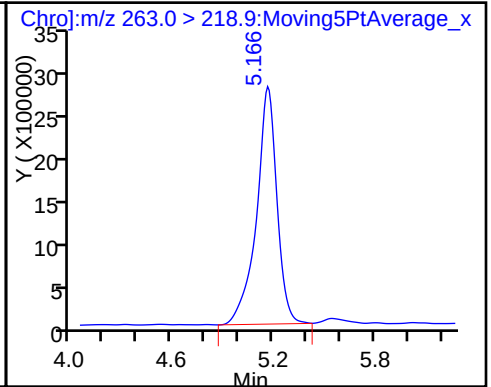
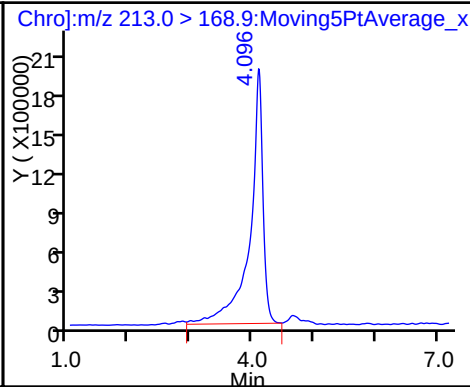
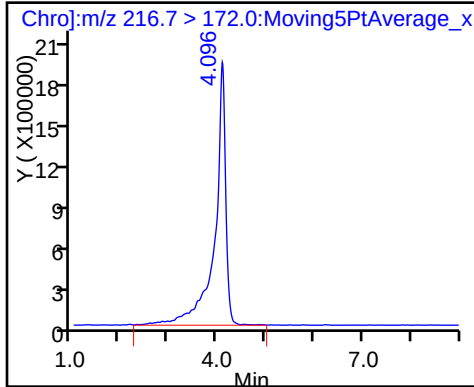
Method: 8321_PFC

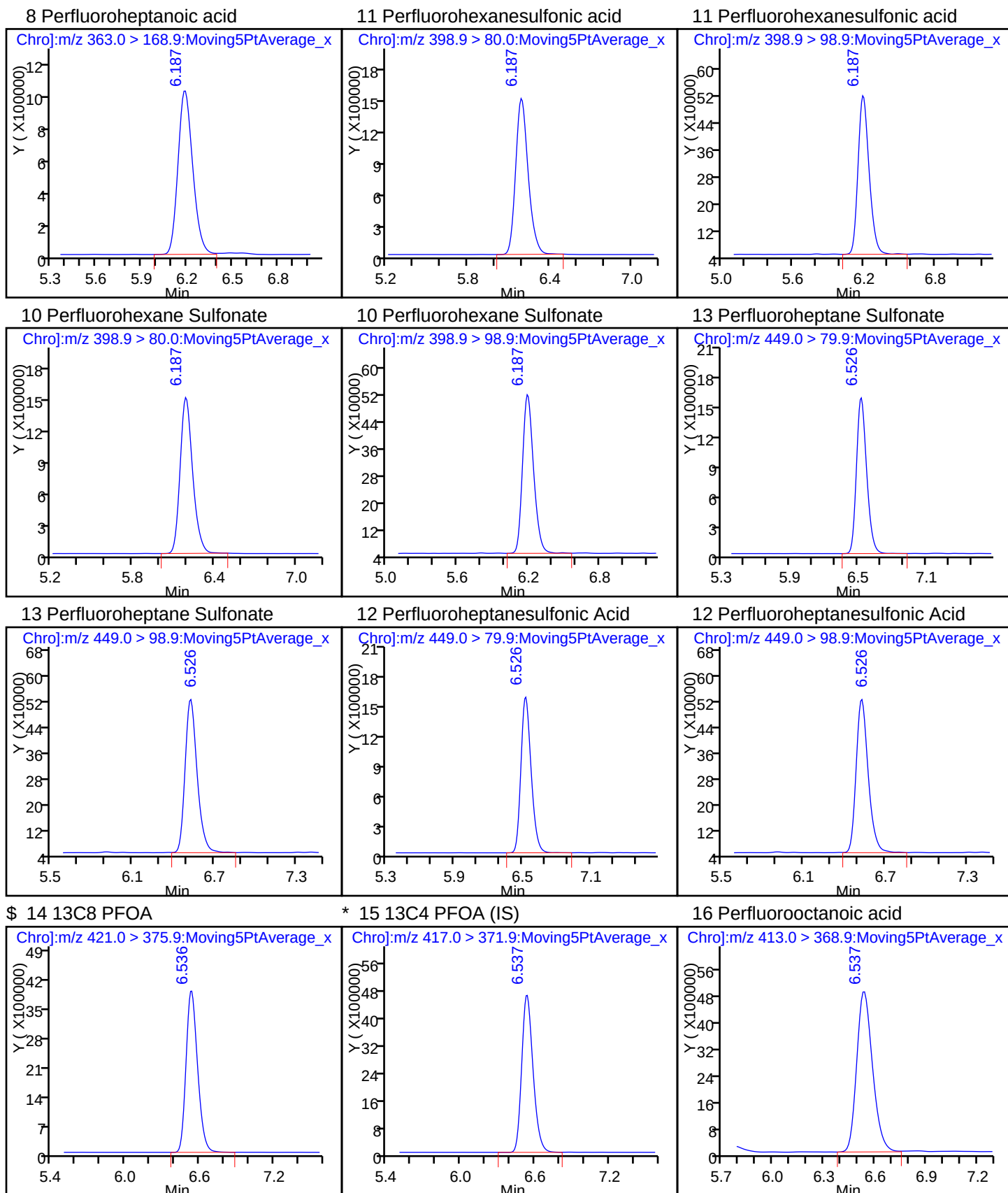
Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

3 Perfluoropentanoic acid

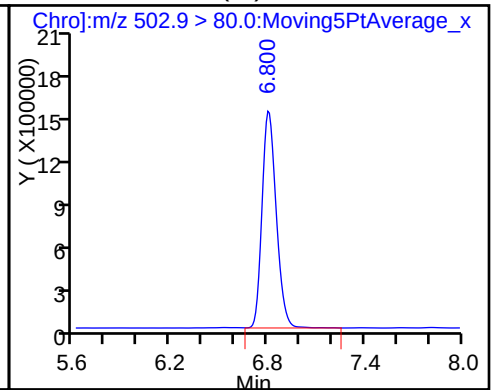
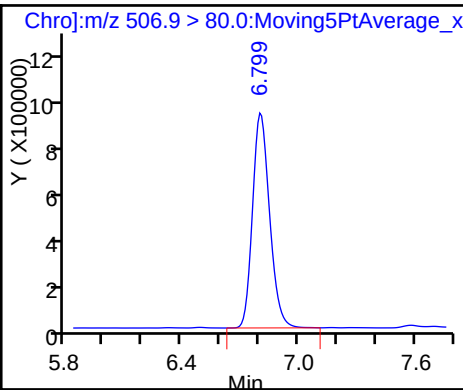
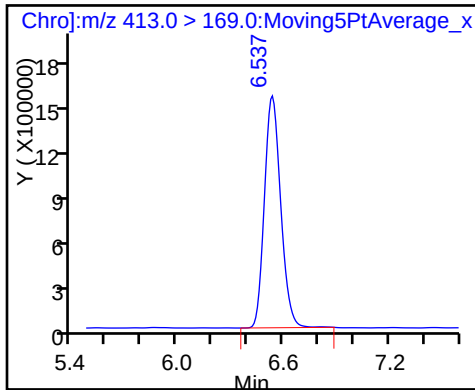




16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

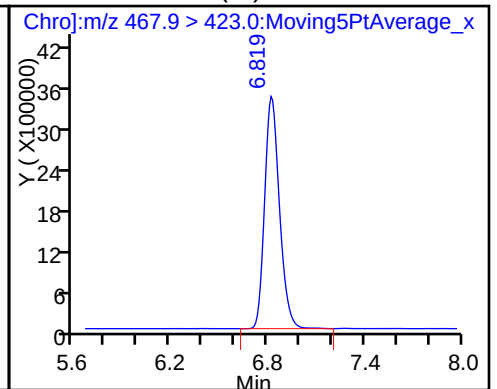
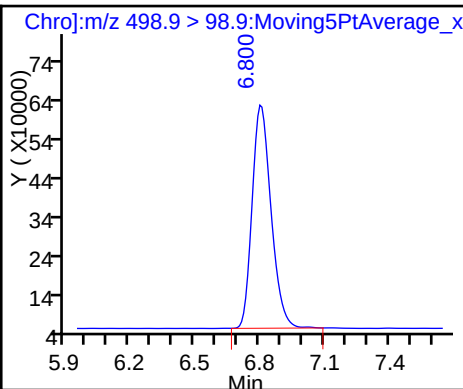
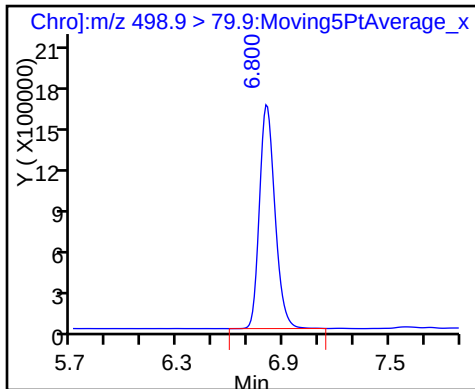
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

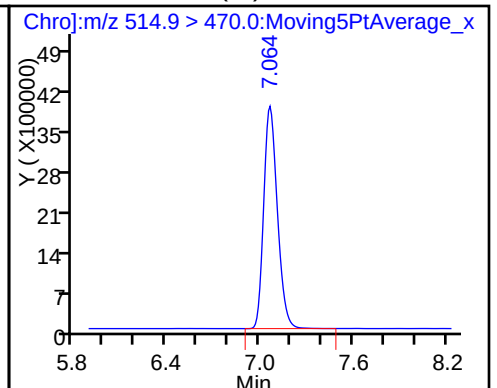
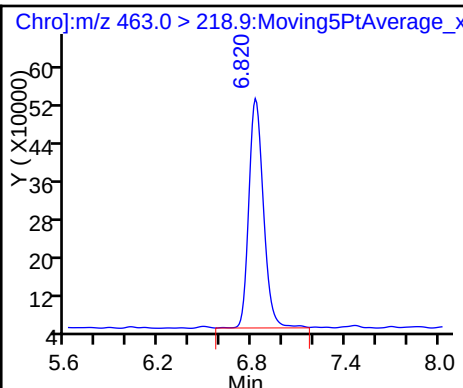
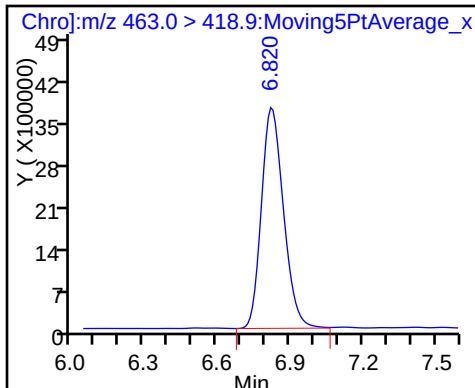
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

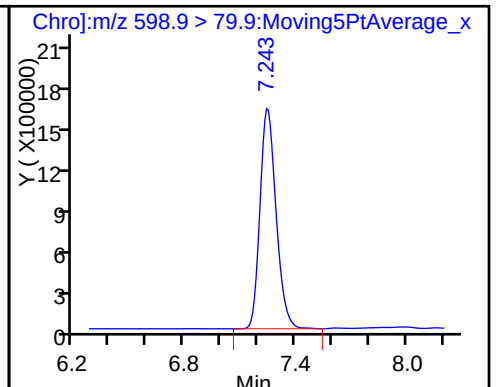
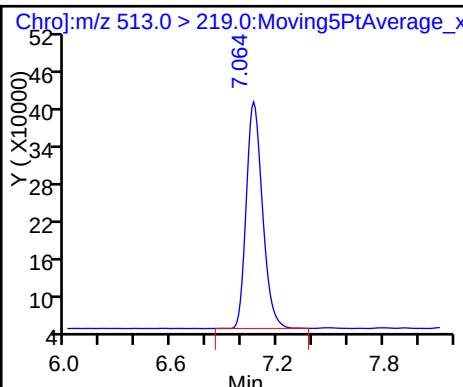
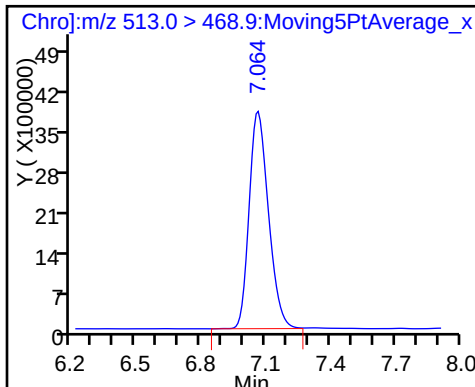
* 22 13C2 PFDA (IS)

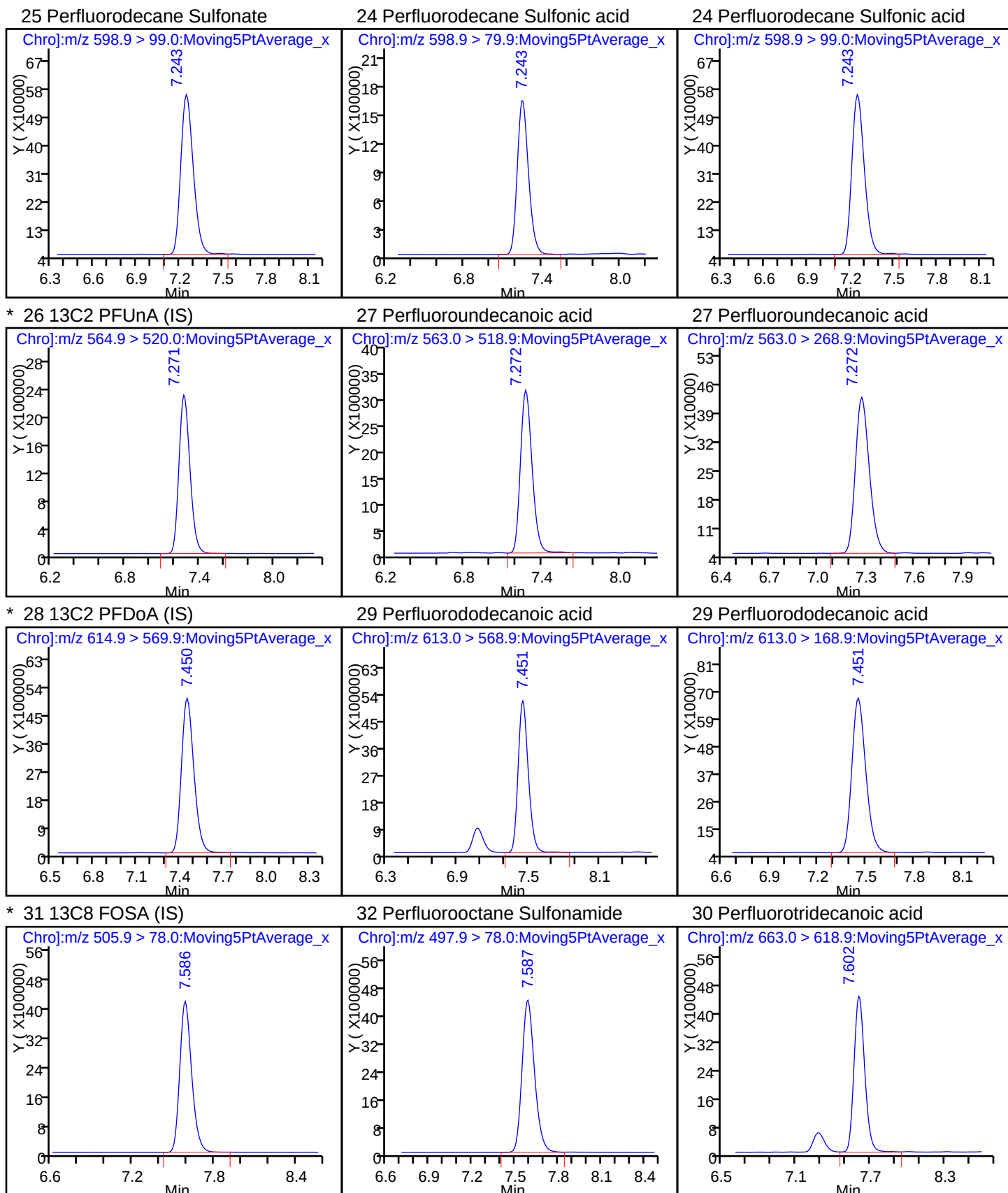


23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

25 Perfluorodecane Sulfonate

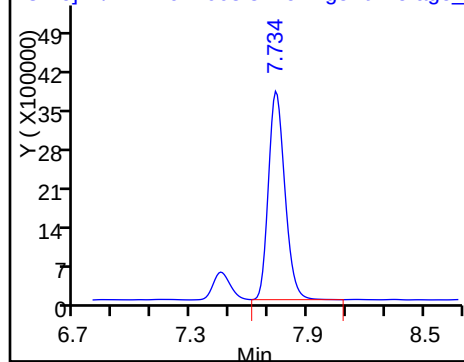




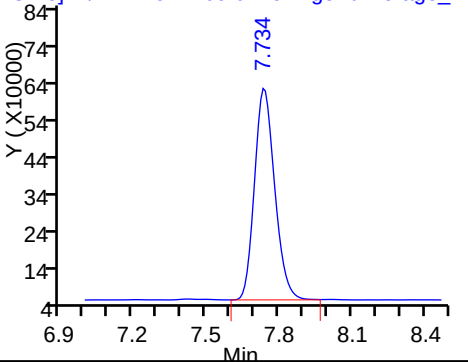
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Lab Sample ID: CCV 280-332595/14 Calibration Date: 07/05/2016 22:45
 Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28
 Lab File ID: PC516G05056.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		0.996		4.65	5.00	-7.1	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.370		5.81	5.00	16.3	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.260		3.61	4.43	-18.3	30.0
Perfluorobutanesulfonic acid	Lin2		4.260		3.61	4.43	-18.3	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		1.025		5.41	5.00	8.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.9291		5.33	5.00	6.5	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.165		5.05	4.73	6.8	30.0
Perfluorohexanesulfonic acid	Lin2		4.165		5.05	4.73	6.8	30.0
Perfluoroheptane Sulfonate	Lin2		1.111		4.37	4.76	-8.2	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.111		4.37	4.76	-8.2	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.143		5.46	5.00	9.1	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.120		4.53	4.78	-5.2	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.069		4.74	5.00	-5.2	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.033		5.11	5.00	2.2	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.149		4.46	4.83	-7.6	30.0
Perfluorodecane Sulfonic acid	Lin2		1.149		4.46	4.83	-7.6	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.430		5.02	5.00	0.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.070		5.18	5.00	3.6	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.126		5.18	5.00	3.6	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9077		4.84	5.00	-3.3	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6613		5.59	5.00	11.8	30.0
13C8 PFOA	Lin2		0.8806		5.42	5.00	8.5	30.0
13C8 PFOS	Lin2		0.6642		5.18	4.78	8.3	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05056.d
 Lims ID: CCV PFC L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 05-Jul-2016 22:45:00 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L5, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jul-2016 09:39:19 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK019

First Level Reviewer: fiedlerh

Date: 06-Jul-2016 13:24:41

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.067	4.067	0.0		28423254	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.068	4.068	0.0	1.000	14159192	4.65			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.147	5.147	0.0	0.899	11679348	5.81			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.260	5.260	0.0	0.854	4721196	3.61			
298.9 > 98.9	5.260	5.260	0.0	0.854	1437699		3.28(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.260	5.260	0.0	0.854	4721196	3.61			
298.9 > 98.9	5.260	5.260	0.0	0.854	1437699		3.28(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.724	0.0	1.000	8739517	5.41			
313.0 > 118.6	5.733	5.724	0.009	1.002	242968		35.97(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.724	0.0		17047727	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.159	0.0	0.948	13766986	5.32			
363.0 > 168.9	6.159	6.159	0.0	0.948	3594541		3.83(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.158	0.0		2369294	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.168	6.168	0.0	1.002	4928850	5.04			RM
398.9 > 98.9	6.168	6.168	0.0	1.002	1598440		3.08(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.168	6.168	0.0	1.002	4928850	5.04			M
398.9 > 98.9	6.168	6.168	0.0	1.002	1603058		3.07(1.85-1.85)		M

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.498	6.498	0.0	0.960	4768685	4.37			
449.0 > 98.9	6.498	6.498	0.0	0.960	1343292		3.55(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.498	6.498	0.0	0.960	4768685	4.37			
449.0 > 98.9	6.498	6.498	0.0	0.960	1343292		3.55(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.498	0.0	1.000	13047493	5.42			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.499	0.0		29633799	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.499	0.0	1.000	16940569	5.46			
413.0 > 169.0	6.499	6.499	0.0	1.000	5611764		3.02(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.771	0.0	1.000	2861715	5.18			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.771	0.0		8616985	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.771	0.0	1.000	4819487	4.53			R
498.9 > 98.9	6.771	6.771	0.0	1.000	1806413		2.67(1.31-2.43)		R
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.791	0.0	1.000	12456285	4.74			
463.0 > 218.9	6.791	6.791	0.0	1.000	1878171		6.63(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		23307949	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.035	0.0		23957658	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.036	7.036	0.0	1.000	12370645	5.11			
513.0 > 219.0	7.036	7.036	0.0	1.000	1133877		10.91(10.49-19.48)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.214	0.0	1.065	4995587	4.46			
598.9 > 99.0	7.214	7.214	0.0	1.065	1616353		3.09(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.214	0.0	1.065	4995587	4.46			
598.9 > 99.0	7.214	7.214	0.0	1.065	1616353		3.09(2.84-2.84)		
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.243	0.0	1.000	10810815	5.02			R
563.0 > 268.9	7.243	7.243	0.0	1.000	1328962		8.13(3.47-6.45)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.243	0.0		15124315	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.422	0.0		31080389	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.422	7.422	0.0	1.000	16626225	5.18			
613.0 > 168.9	7.422	7.422	0.0	1.000	1983532		8.38(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.567	7.567	0.0		25218717	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.568	7.568	0.0	1.000	14196314	5.18			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.573	0.0	1.020	14105556	4.84			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.696	0.0	1.037	10276360	5.59			
712.9 > 169.0	7.696	7.696	0.0	1.037	1853536		5.54(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Review Flags

M - Manually Integrated

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 10.00	Units: uL
PFC-LCS_00078	Amount Added: 10.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05056.d

Injection Date: 05-Jul-2016 22:45:00

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

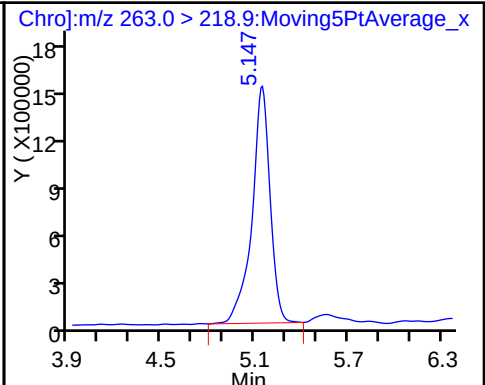
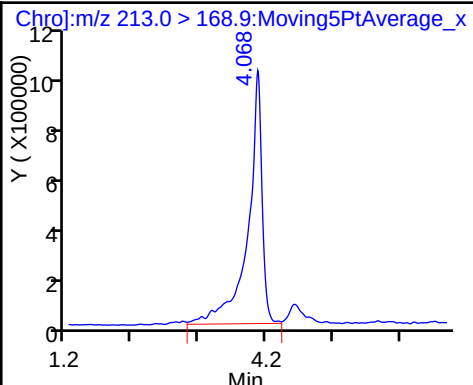
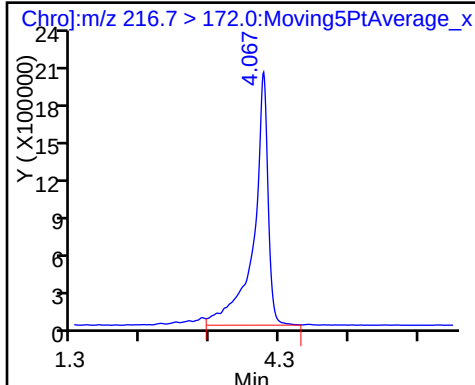
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

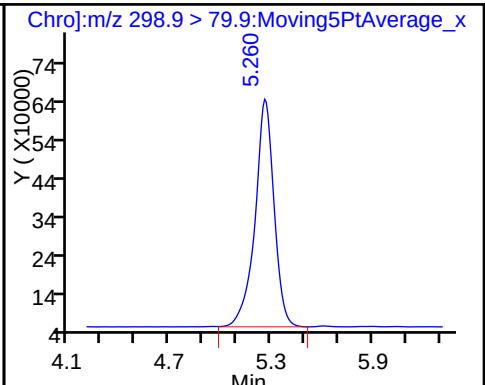
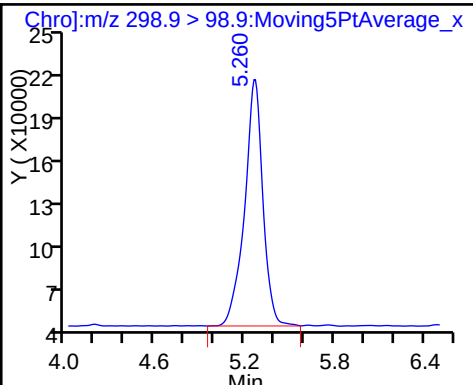
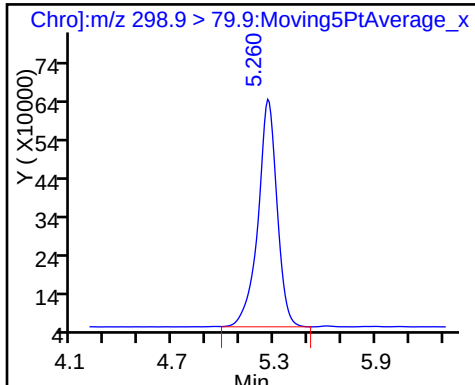
3 Perfluoropentanoic acid



4 Perfluorobutane Sulfonate

4 Perfluorobutane Sulfonate

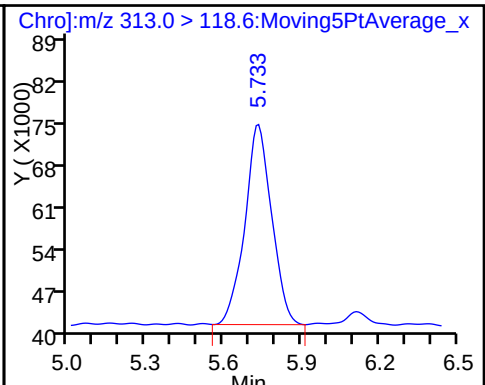
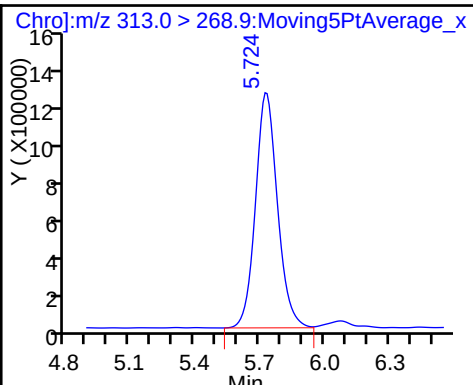
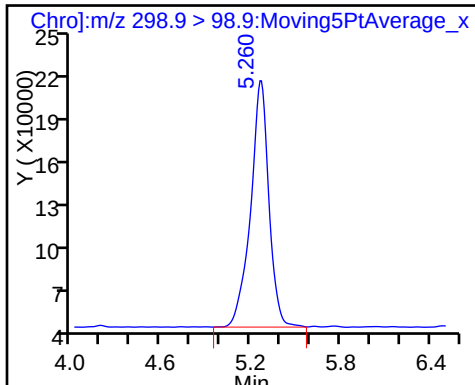
5 Perfluorobutanesulfonic acid



5 Perfluorobutanesulfonic acid

7 Perfluorohexanoic acid

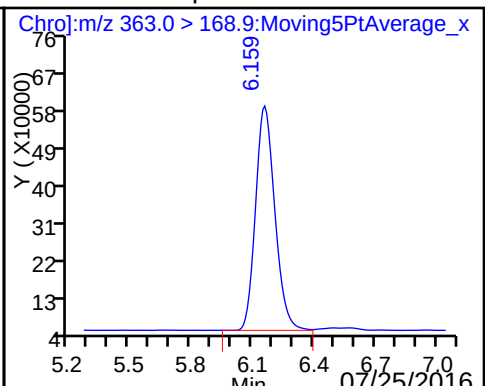
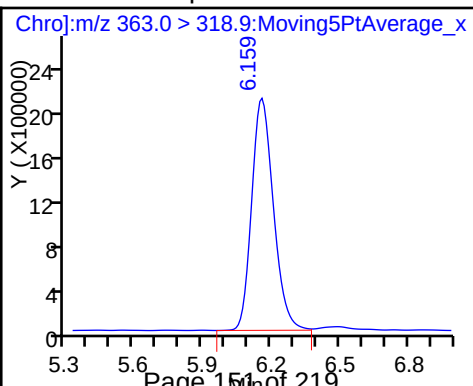
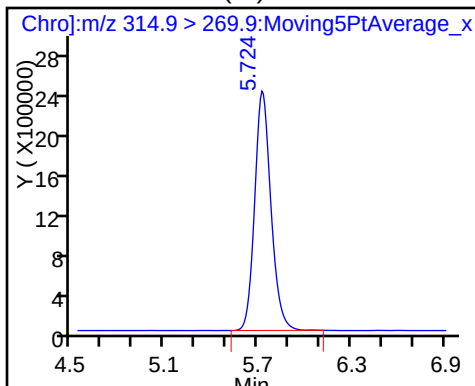
7 Perfluorohexanoic acid



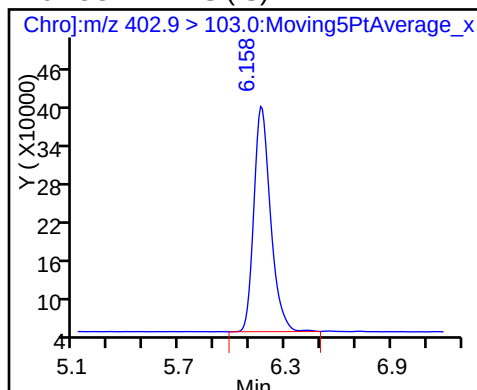
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

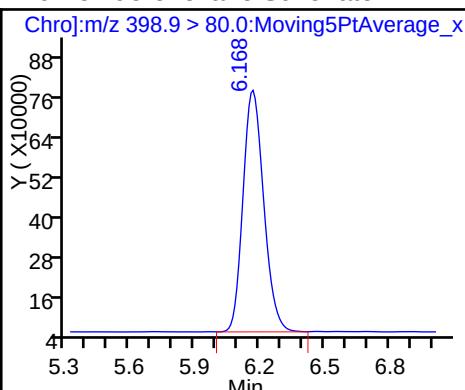
8 Perfluoroheptanoic acid



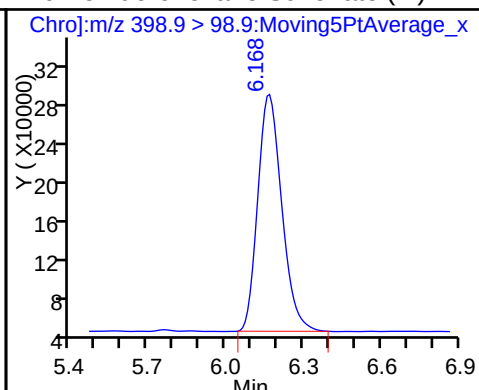
* 9 18O2 PFHxS (IS)



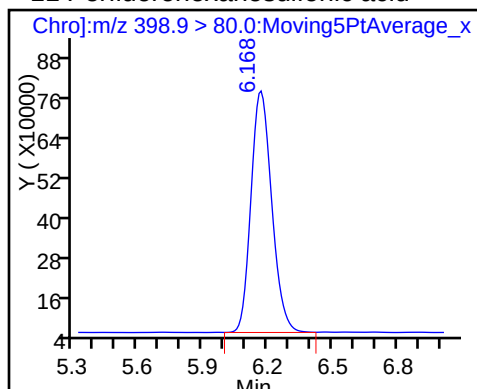
10 Perfluorohexane Sulfonate



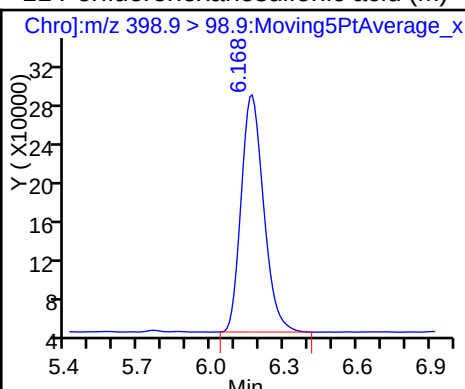
10 Perfluorohexane Sulfonate (M)



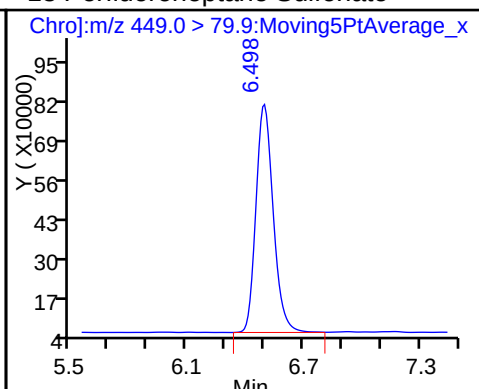
11 Perfluorohexanesulfonic acid



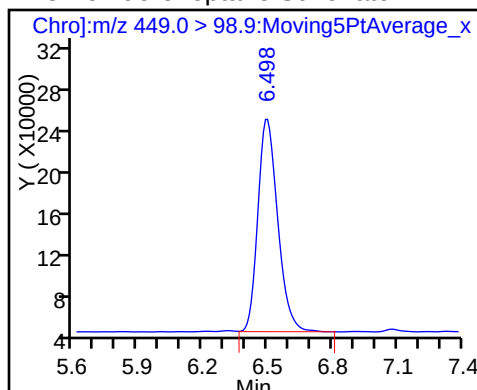
11 Perfluorohexanesulfonic acid (M)



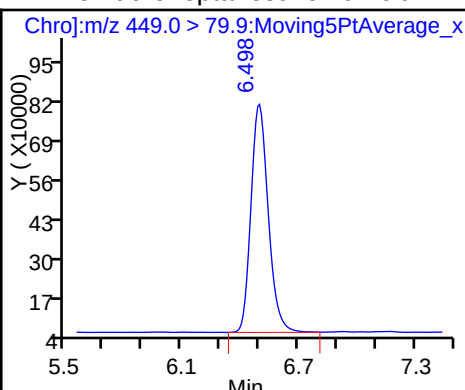
13 Perfluoroheptane Sulfonate



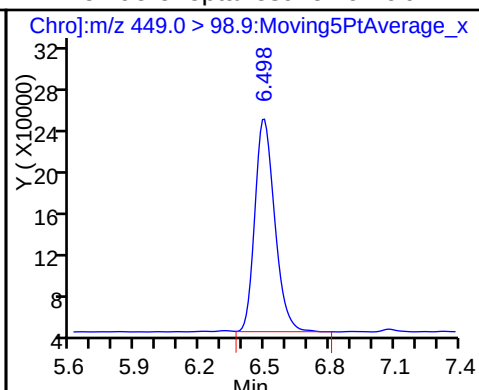
13 Perfluoroheptane Sulfonate



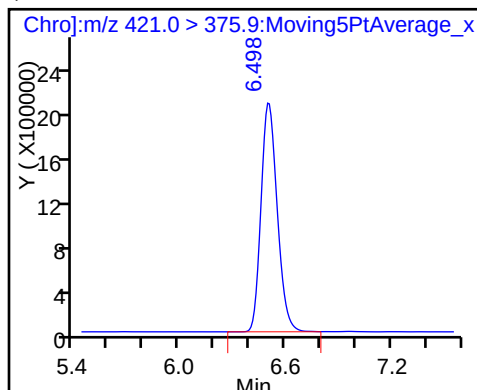
12 Perfluoroheptanesulfonic Acid



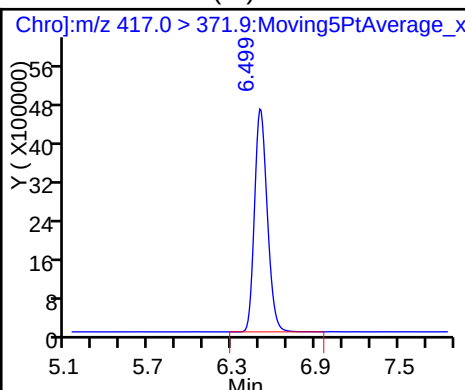
12 Perfluoroheptanesulfonic Acid



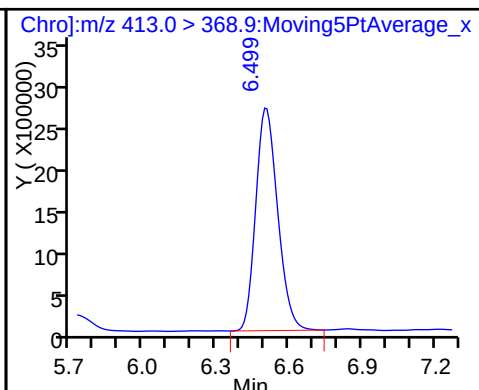
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



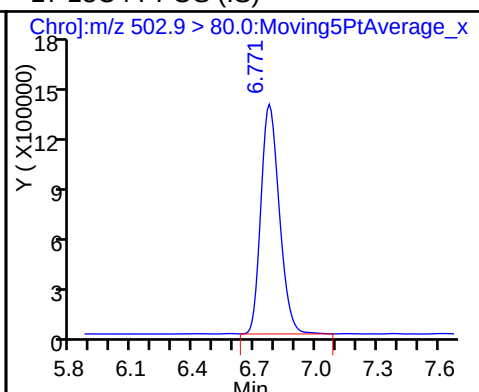
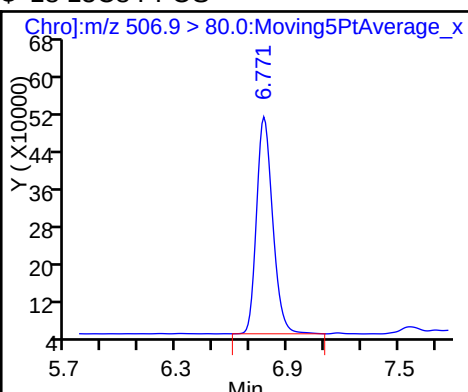
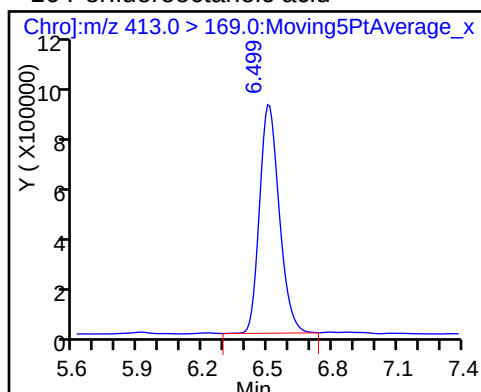
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

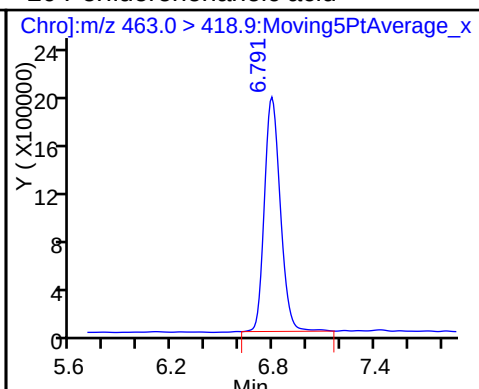
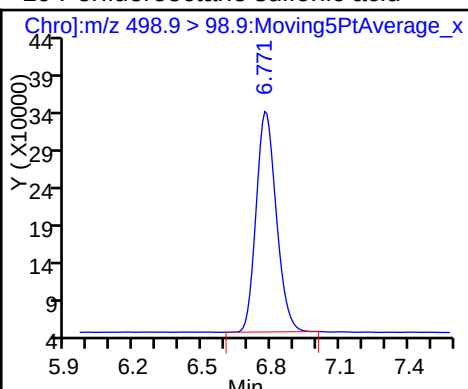
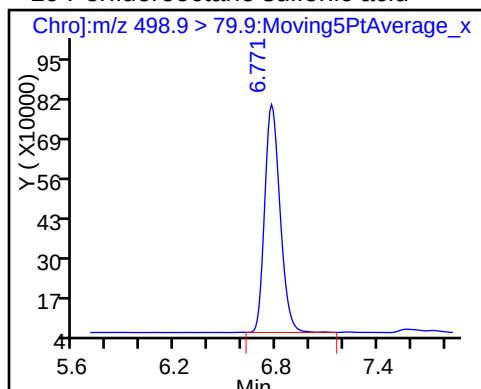
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

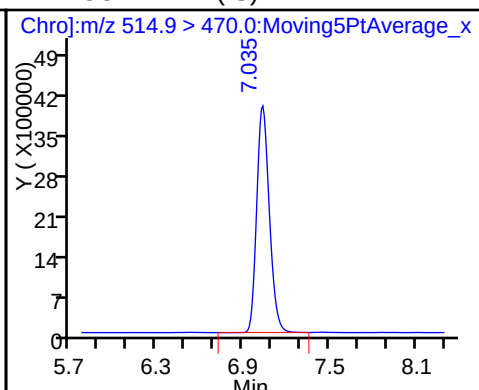
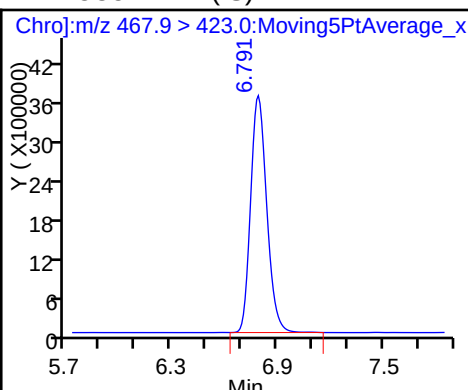
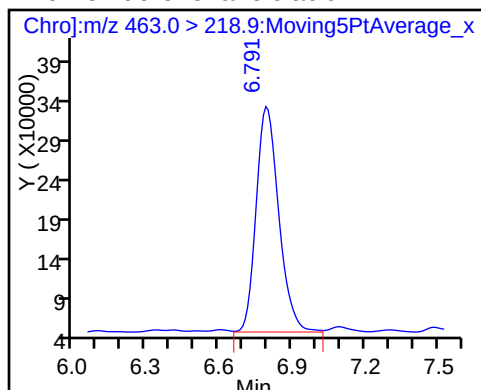
20 Perfluorononanoic acid



20 Perfluorononanoic acid

* 21 13C5 PFNA (IS)

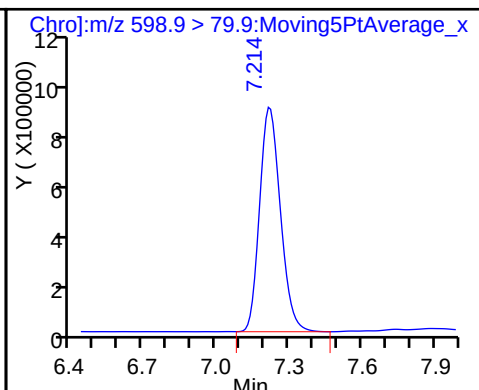
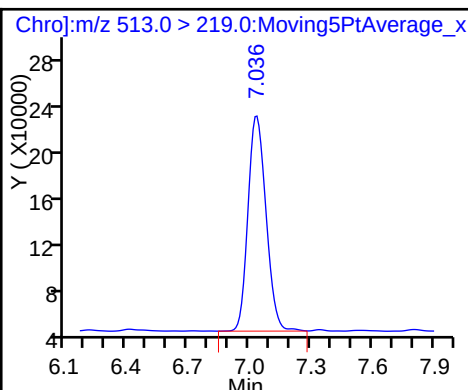
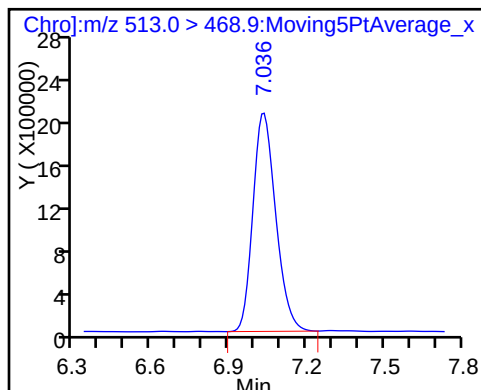
* 22 13C2 PFDA (IS)

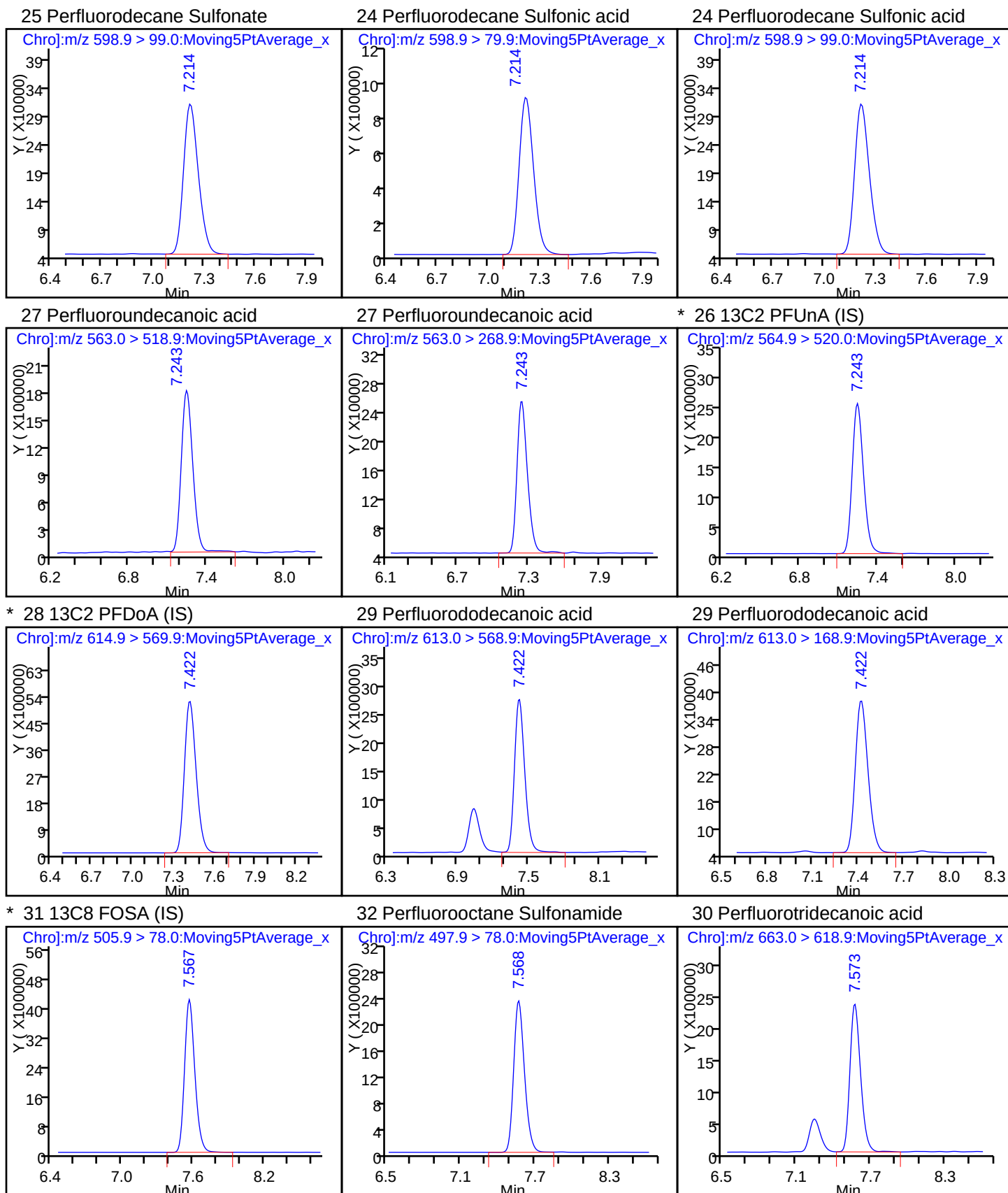


23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

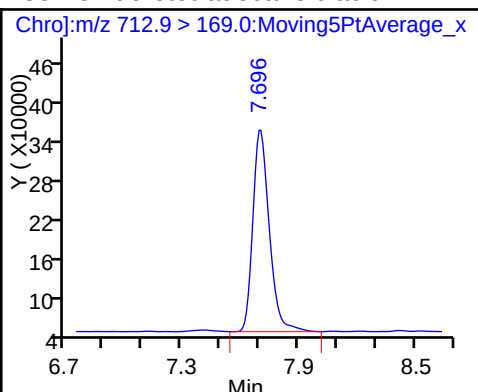
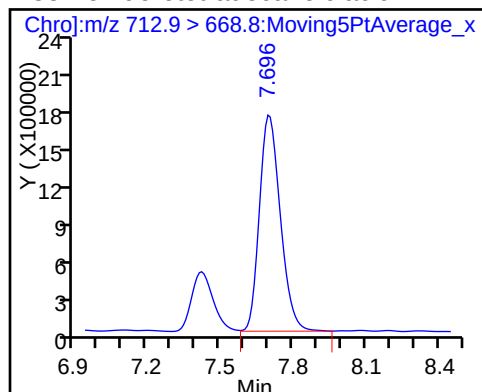
25 Perfluorodecane Sulfonate





33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



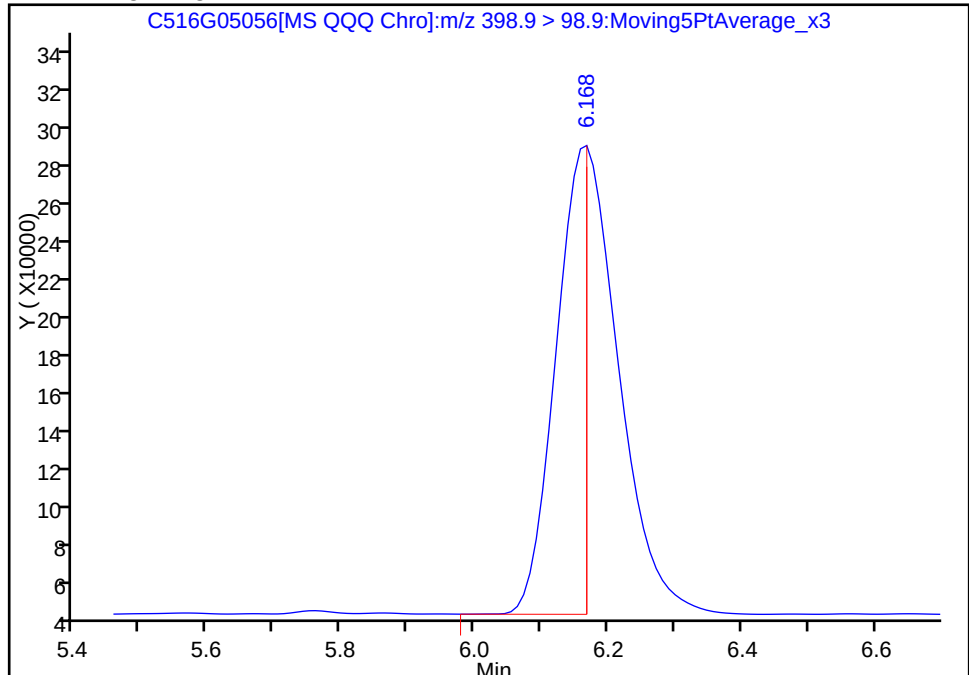
TestAmerica Denver

Data File:	\\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05056.d		
Injection Date:	05-Jul-2016 22:45:00	Instrument ID:	LC_LCMS5
Lims ID:	CCV PFC L5		
Client ID:			
Operator ID:	ACM	ALS Bottle#:	0
Injection Vol:	25.0 ul	Dil. Factor:	1.0000
Method:	8321_PFC	Limit Group:	LC - PFC
Column:		Detector	MS QQQ
		Worklist Smp#:	14

10 Perfluorohexane Sulfonate, CAS: 108427-53-8

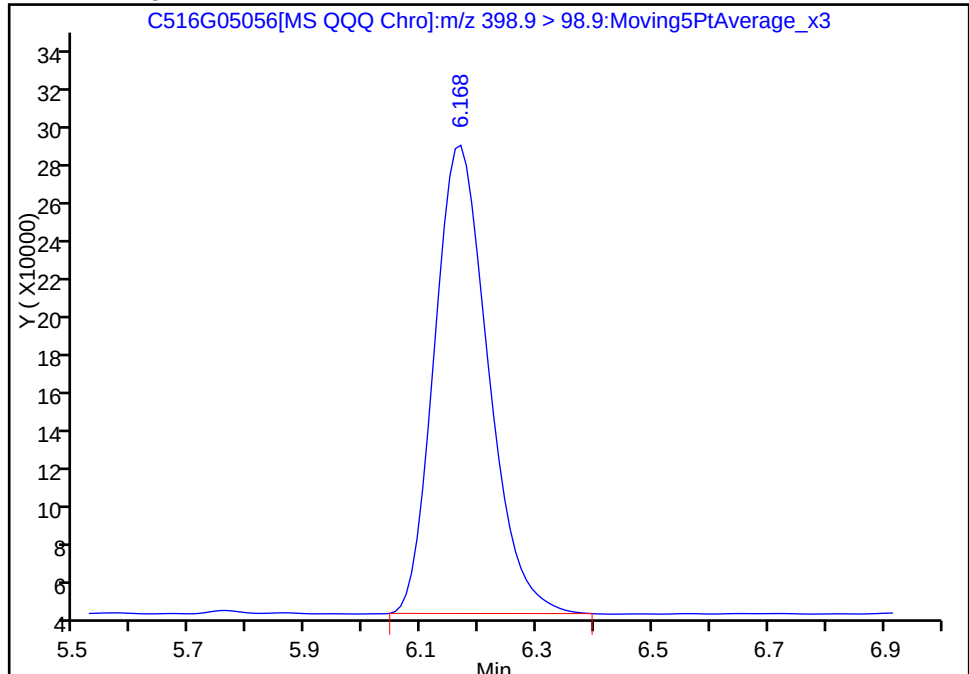
RT: 6.17
Area: 766909
Amount: 5.044577
Amount Units: ug/L

Processing Integration Results



RT: 6.17
Area: 1598440
Amount: 5.044577
Amount Units: ug/L

Manual Integration Results



Reviewer: tinkhams, 07-Jul-2016 09:39:19
Audit Action: Manually Integrated
Audit Reason: Split Peak

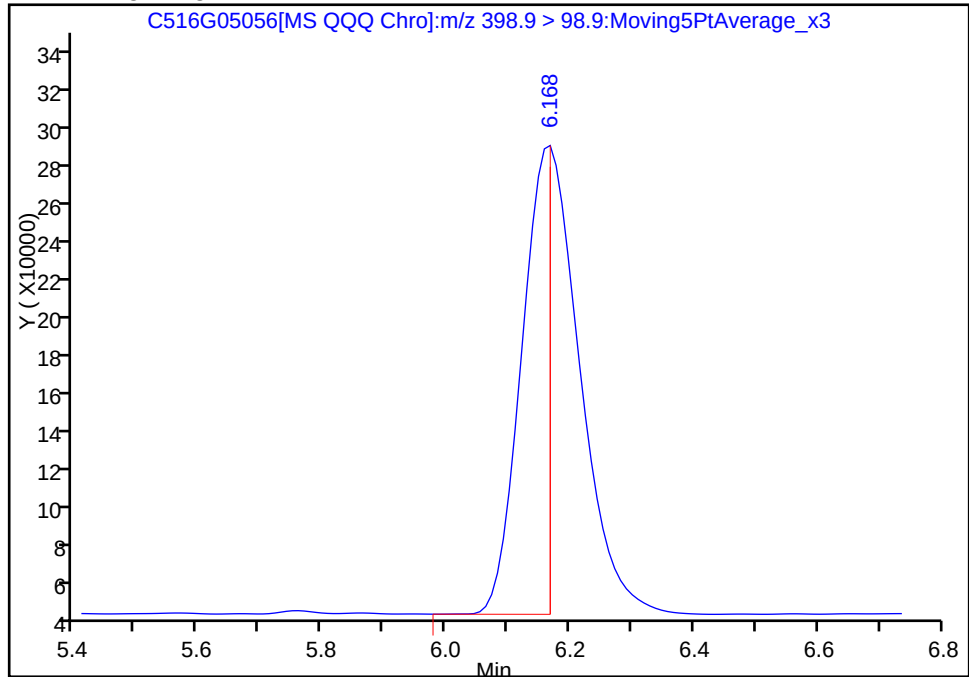
TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05056.d
Injection Date: 05-Jul-2016 22:45:00 Instrument ID: LC_LCMS5
Lims ID: CCV PFC L5
Client ID:
Operator ID: ACM ALS Bottle#: 0 Worklist Smp#: 14
Injection Vol: 25.0 ul Dil. Factor: 1.0000
Method: 8321_PFC Limit Group: LC - PFC
Column: Detector MS QQQ

11 Perfluorohexanesulfonic acid, CAS: 355-46-4

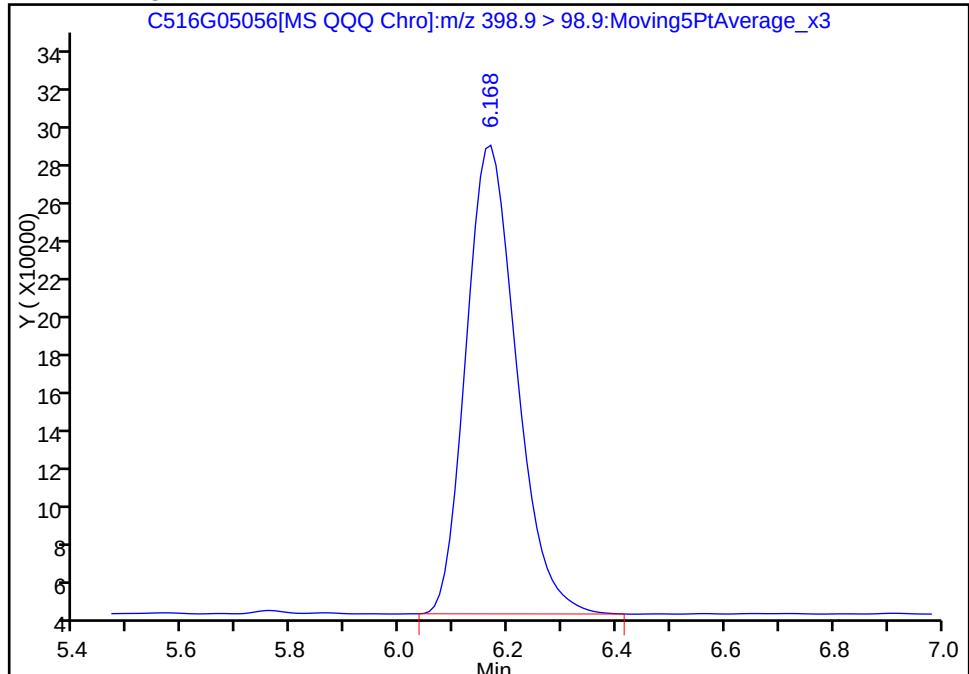
RT: 6.17
Area: 766909
Amount: 5.044577
Amount Units: ug/L

Processing Integration Results



RT: 6.17
Area: 1603058
Amount: 5.044577
Amount Units: ug/L

Manual Integration Results



Reviewer: tinkhams, 07-Jul-2016 09:39:19
Audit Action: Manually Integrated
Audit Reason: Split Peak

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Lab Sample ID: CCV 280-335022/3 Calibration Date: 07/25/2016 12:08
 Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49
 GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28
 Lab File ID: PC516G25008.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.018		9.49	10.0	-5.1	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.230		10.5	10.0	4.5	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.652		7.88	8.85	-10.9	30.0
Perfluorobutanesulfonic acid	Lin2		4.652		7.88	8.85	-10.9	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9711		10.3	10.0	2.7	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.048		9.89	9.45	4.6	30.0
Perfluorohexanesulfonic acid	Lin2		4.048		9.89	9.45	4.6	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8835		10.2	10.0	1.6	30.0
Perfluoroheptane Sulfonate	Lin2		1.060		8.33	9.52	-12.5	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.060		8.33	9.52	-12.5	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.092		10.5	10.0	4.9	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.084		8.83	9.55	-7.6	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.109		9.89	10.0	-1.1	30.0
Perfluorodecanoic acid (PFDA)	Lin2		0.9294		9.22	10.0	-7.8	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.092		8.52	9.65	-11.7	30.0
Perfluorodecane Sulfonic acid	Lin2		1.092		8.52	9.65	-11.7	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.441		10.2	10.0	1.7	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		0.9640		9.38	10.0	-6.2	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.105		10.2	10.0	1.8	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.8415		9.04	10.0	-9.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.5963		10.1	10.0	0.9	30.0
13C8 PFOA	Lin2		0.8052		9.96	10.0	-0.4	30.0
13C8 PFOS	Lin2		0.6113		9.56	9.56	-0.0	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25008.d
 Lims ID: CCV PFC L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 25-Jul-2016 12:08:46 ALS Bottle#: 0 Worklist Smp#: 3
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L6, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 25-Jul-2016 13:41:57 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK025

First Level Reviewer: meyer

Date: 25-Jul-2016 13:38:57

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.067 4.067 0.0 24437404 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.068 4.068 0.0 1.000 24875649 9.49

3 Perfluoropentanoic acid

263.0 > 218.9 5.138 5.138 0.0 0.899 20360801 10.5

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.251 5.251 0.0 0.854 9541354 7.88

298.9 > 98.9 5.251 5.251 0.0 0.854 2961734 3.22(1.80-3.35)

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.251 5.251 0.0 0.854 9541354 7.88

298.9 > 98.9 5.251 5.251 0.0 0.854 2961734 3.22(2.57-2.57)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.714 5.714 0.0 16556682 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.714 5.714 0.0 1.000 16077670 10.3

313.0 > 118.6 5.714 5.714 0.0 1.000 468828 34.29(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.150 6.150 0.0 0.946 21835105 10.2

363.0 > 168.9 6.150 6.150 0.0 0.946 5378476 4.06(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.149 6.149 0.0 2192412 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.149 6.149 0.0 1.000 8865482 9.89

398.9 > 98.9 6.159 6.149 0.010 1.002 2732615 3.24(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.149 6.149 0.0 1.000 8865482 9.89

398.9 > 98.9 6.159 6.149 0.010 1.002 2732615 3.24(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.489	6.489	0.0	0.958	9018765	8.33			
449.0 > 98.9	6.489	6.489	0.0	0.958	2686332		3.36(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.489	6.489	0.0	0.958	9018765	8.33			
449.0 > 98.9	6.489	6.489	0.0	0.958	2686332		3.36(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.498	0.0	1.000	19898921	9.96			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.499	0.0		24713510	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.499	0.0	1.000	26987052	10.5			
413.0 > 169.0	6.499	6.499	0.0	1.000	8778764		3.07(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.771	0.0	1.000	5222618	9.56			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.771	0.0		8543601	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.771	0.0	1.000	9248441	8.83			R
498.9 > 98.9	6.771	6.771	0.0	1.000	3454680		2.68(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.791	0.0		19557631	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.791	0.0	1.000	21694068	9.89			
463.0 > 218.9	6.791	6.791	0.0	1.000	3175474		6.83(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.035	0.0		21891266	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.036	7.036	0.0	1.000	20345296	9.22			R
513.0 > 219.0	7.036	7.036	0.0	1.000	2037361		9.99(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.224	7.224	0.0	1.067	9421130	8.52			
598.9 > 99.0	7.224	7.224	0.0	1.067	3161825		2.98(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.224	7.224	0.0	1.067	9421130	8.52			
598.9 > 99.0	7.224	7.224	0.0	1.067	3161825		2.98(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.243	0.0		12290585	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.243	0.0	1.000	17715170	10.2			R
563.0 > 268.9	7.243	7.243	0.0	1.000	2403851		7.37(3.47-6.45)		R
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.431	7.431	0.0		28183936	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.422	7.422	0.0	0.999	27168631	9.38			
613.0 > 168.9	7.422	7.422	0.0	0.999	3389134		8.02(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.583	7.583	0.0	1.020	23717828	9.04			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.557	0.0		21205180	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.558	0.0	1.000	23428705	10.2			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.715	7.715	0.0	1.038	16806849	10.1			
712.9 > 169.0	7.715	7.715	0.0	1.038	2688877		6.25(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-LCS_00078	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 20.00	Units: uL
PFC-IS_00021	Amount Added: 20.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25008.d

Injection Date: 25-Jul-2016 12:08:46

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L6

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 3

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

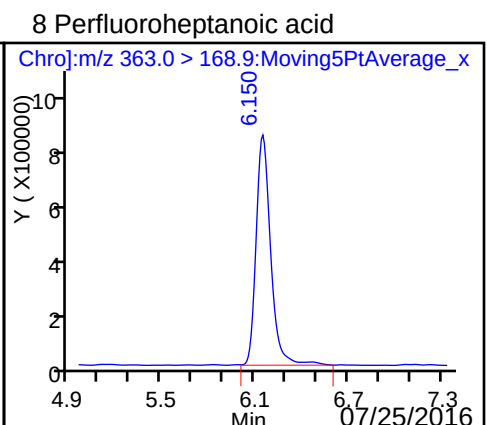
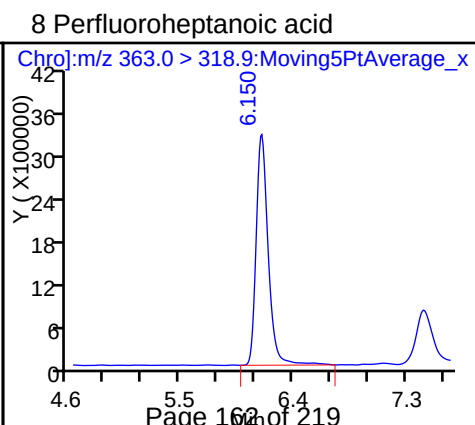
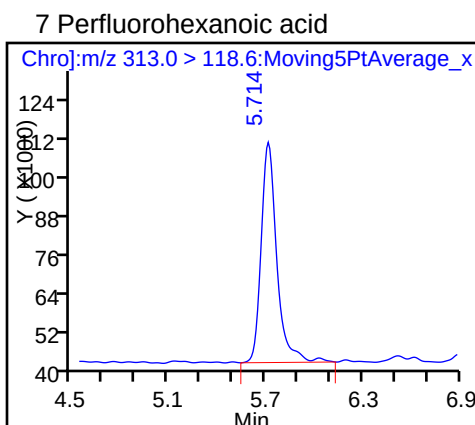
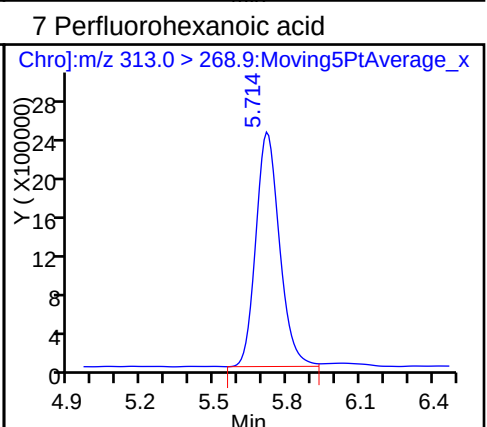
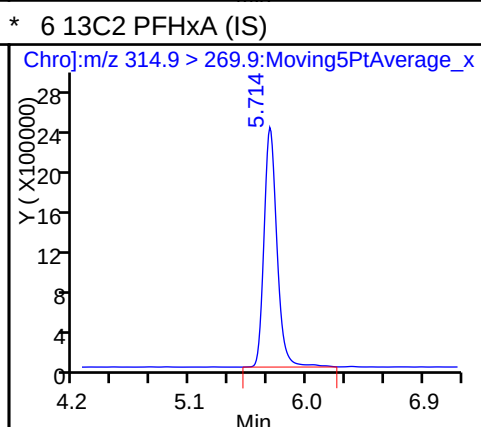
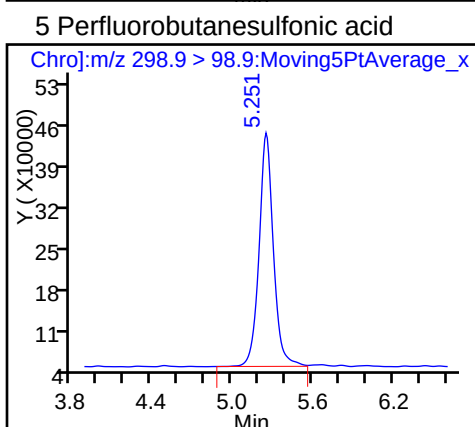
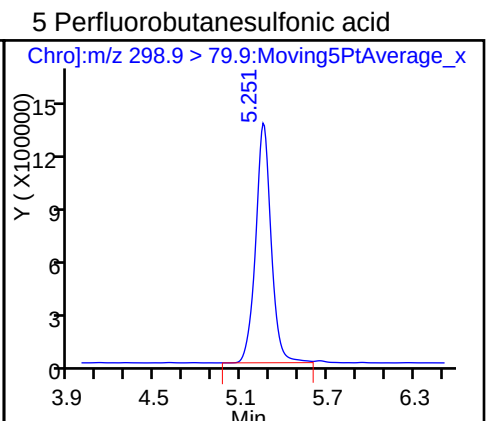
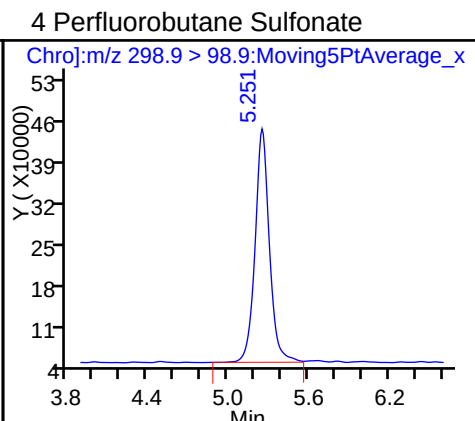
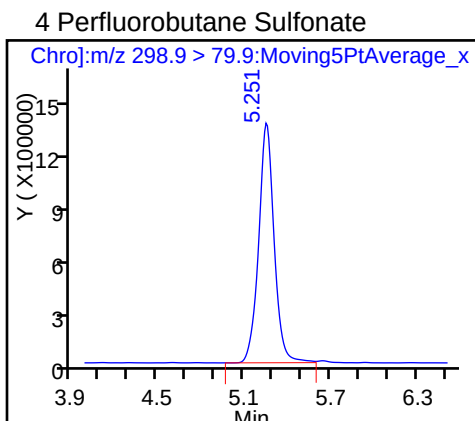
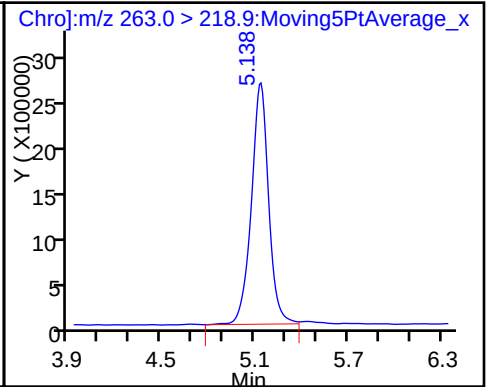
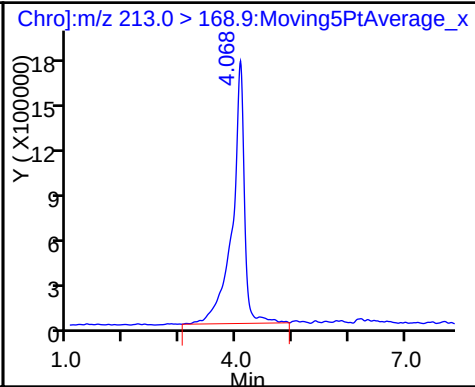
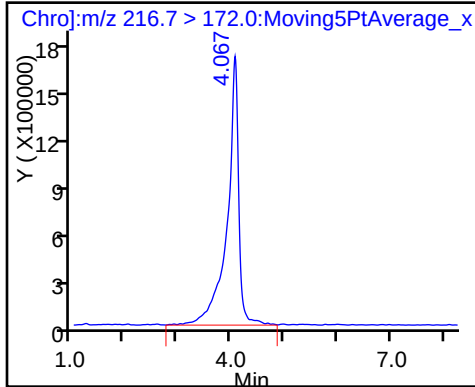
Method: 8321_PFC

Limit Group: LC - PFC

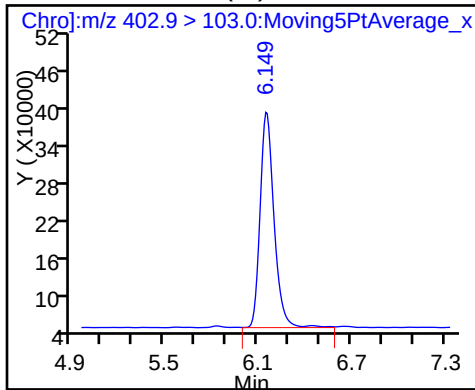
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

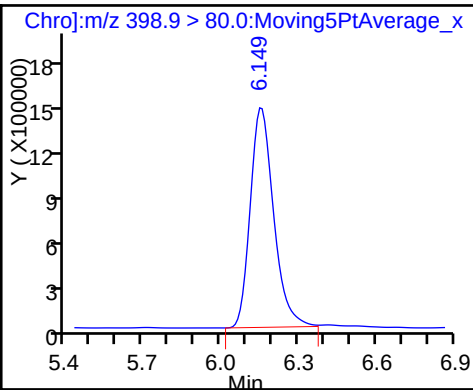
3 Perfluoropentanoic acid



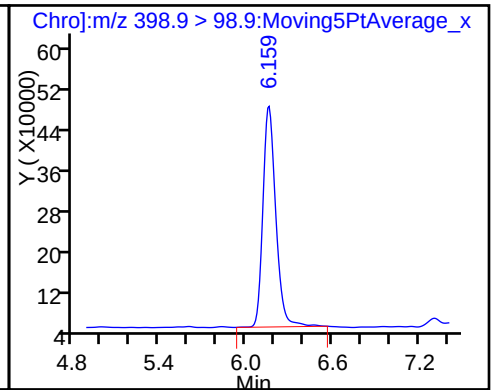
* 9 18O2 PFHxS (IS)



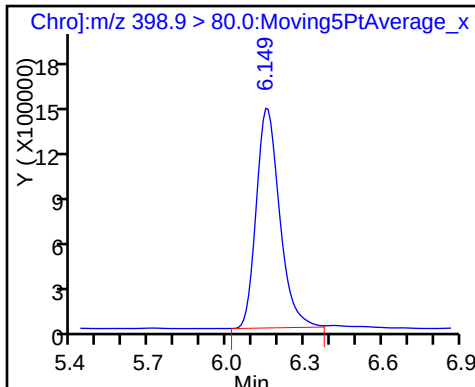
10 Perfluorohexane Sulfonate



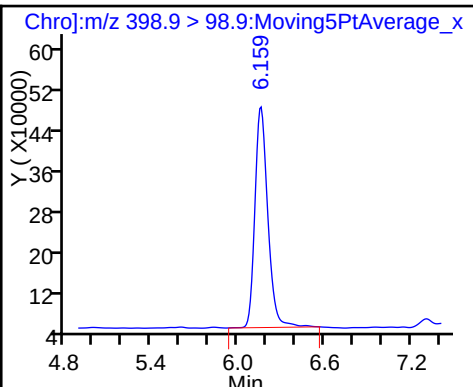
10 Perfluorohexane Sulfonate



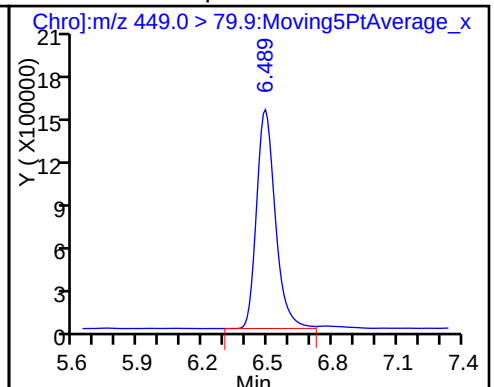
11 Perfluorohexanesulfonic acid



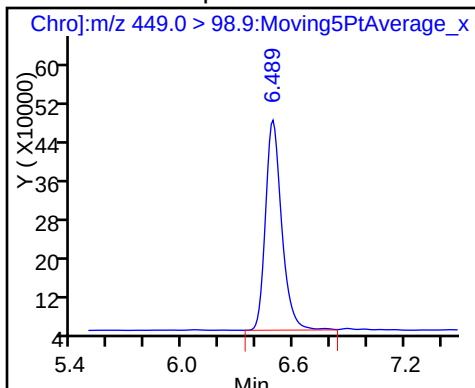
11 Perfluorohexanesulfonic acid



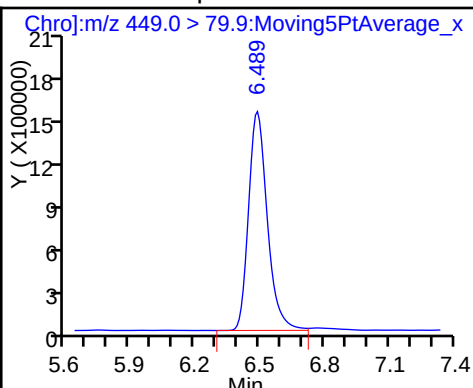
13 Perfluoroheptane Sulfonate



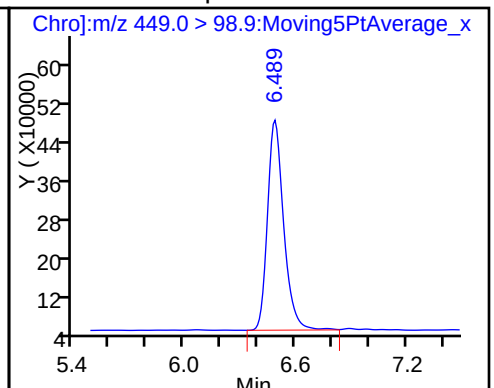
13 Perfluoroheptane Sulfonate



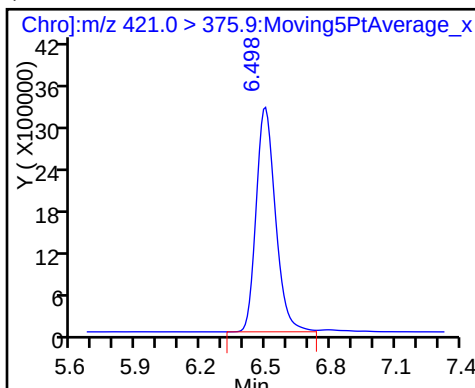
12 Perfluoroheptanesulfonic Acid



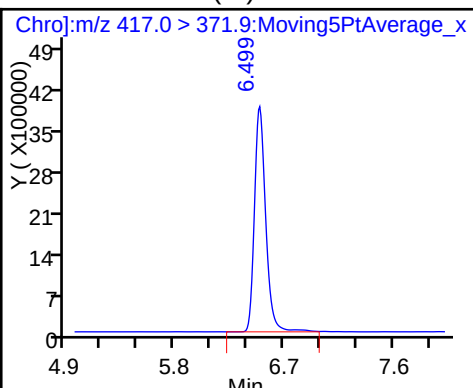
12 Perfluoroheptanesulfonic Acid



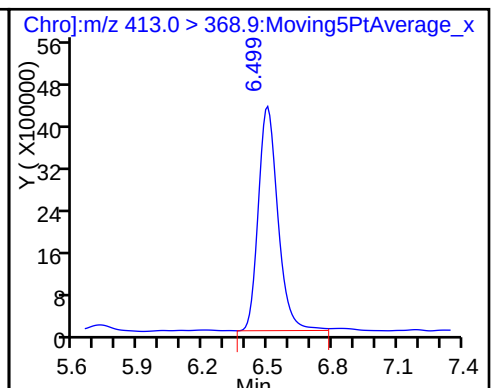
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



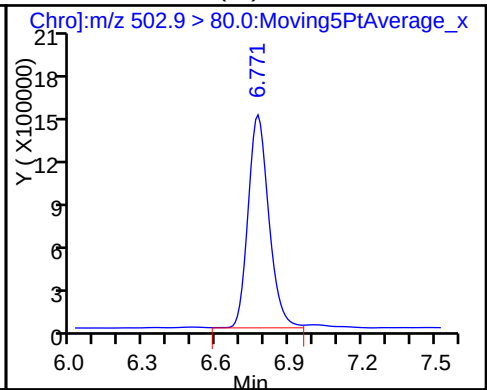
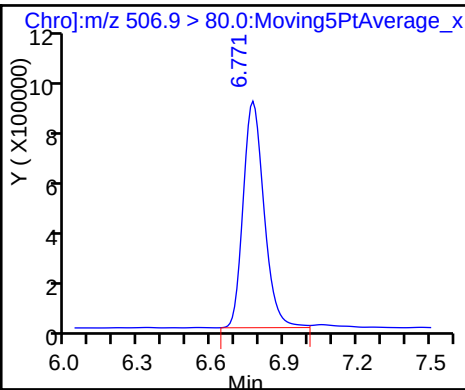
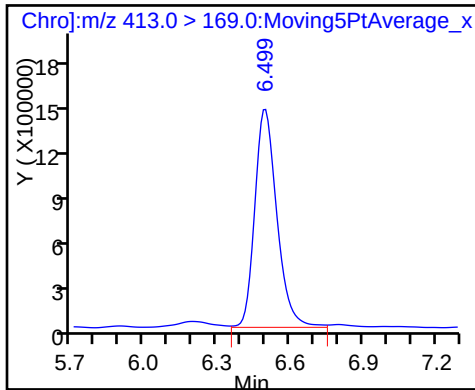
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

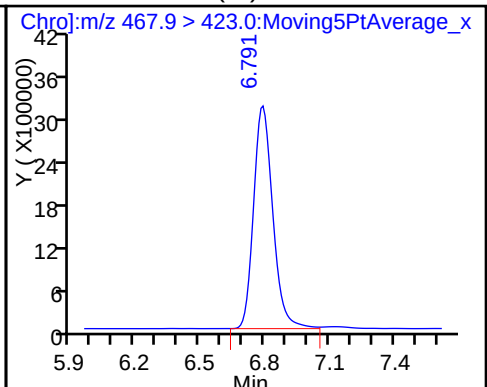
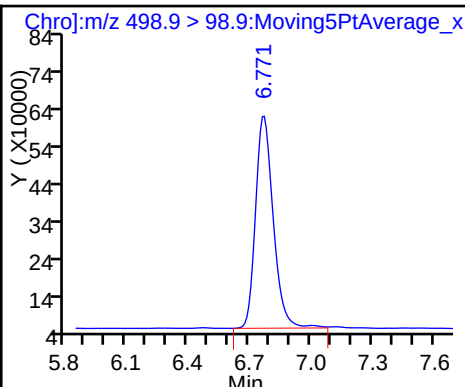
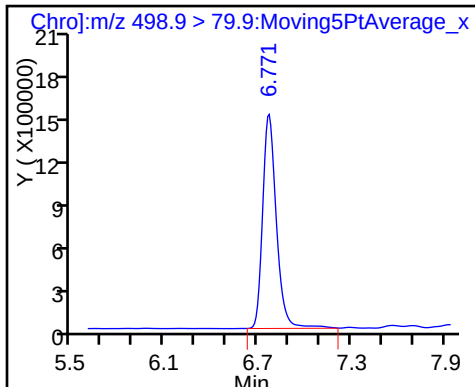
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

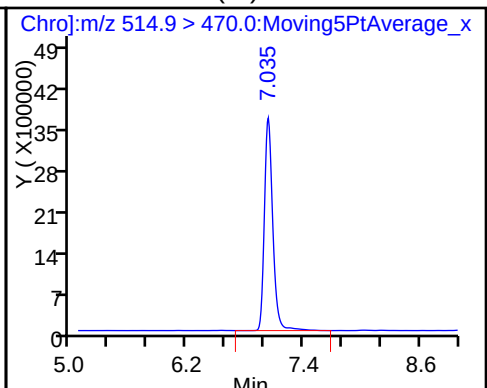
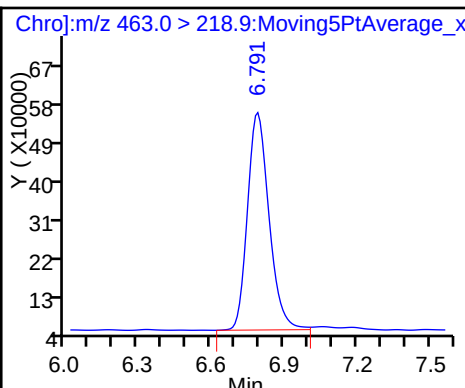
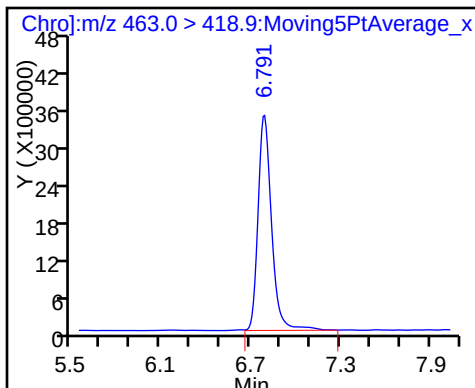
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

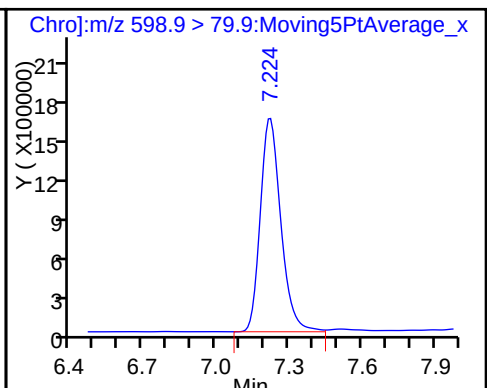
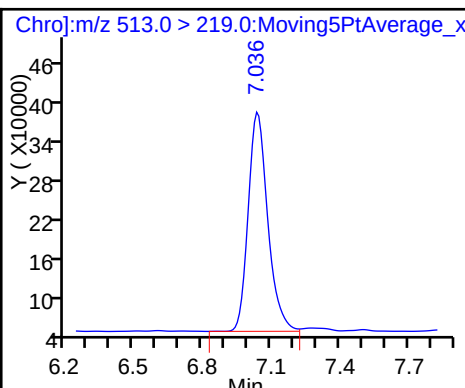
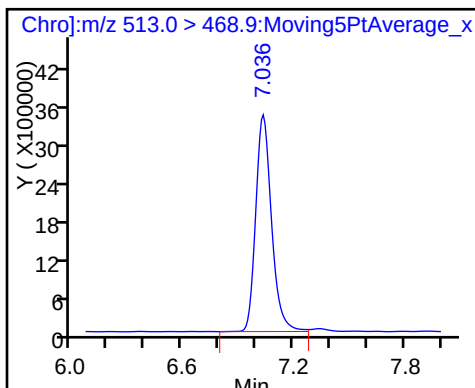
* 22 13C2 PFDA (IS)



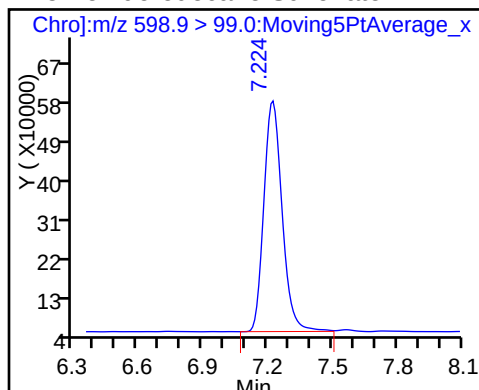
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

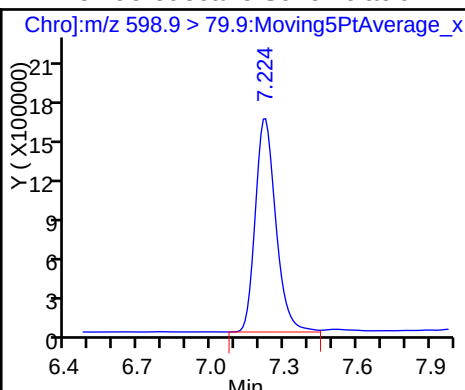
25 Perfluorodecane Sulfonate



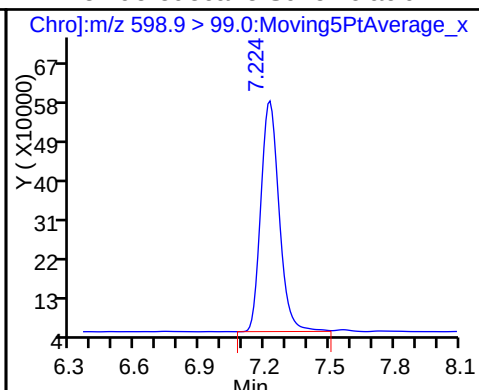
25 Perfluorodecane Sulfonate



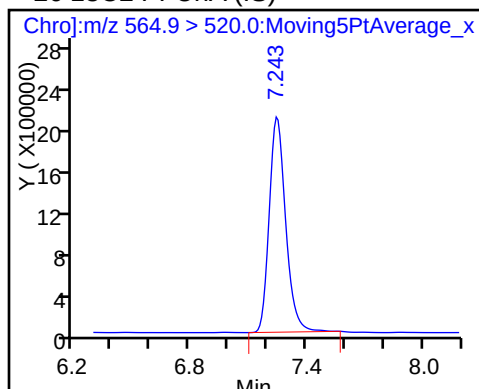
24 Perfluorodecane Sulfonic acid



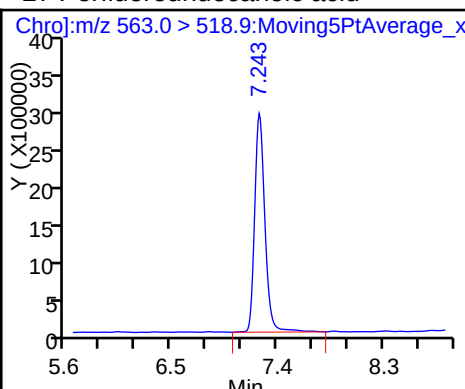
24 Perfluorodecane Sulfonic acid



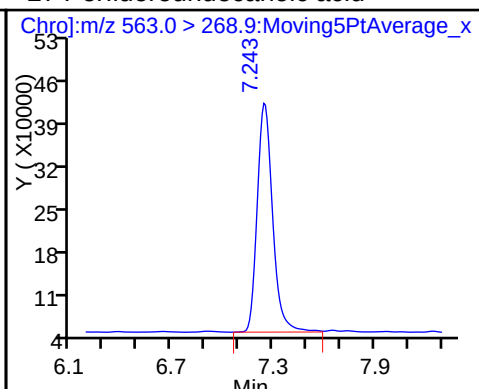
* 26 13C2 PFUnA (IS)



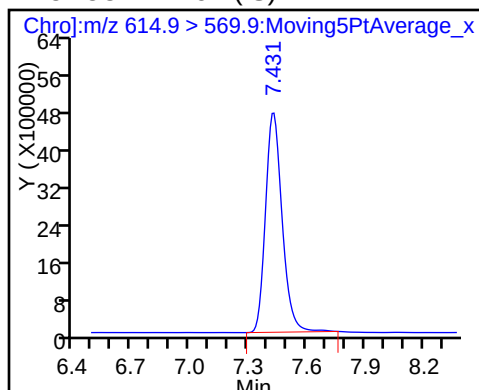
27 Perfluoroundecanoic acid



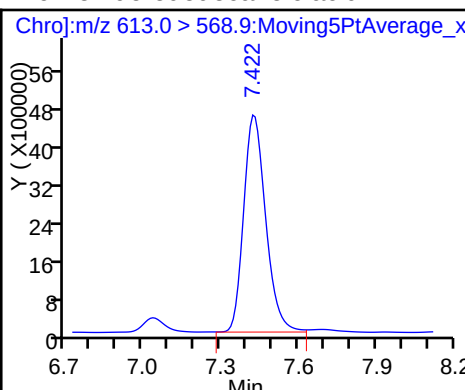
27 Perfluoroundecanoic acid



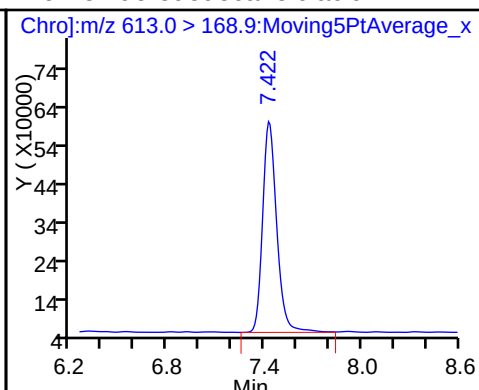
* 28 13C2 PFDaA (IS)



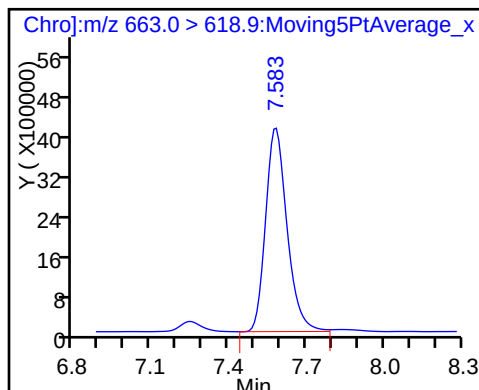
29 Perfluorododecanoic acid



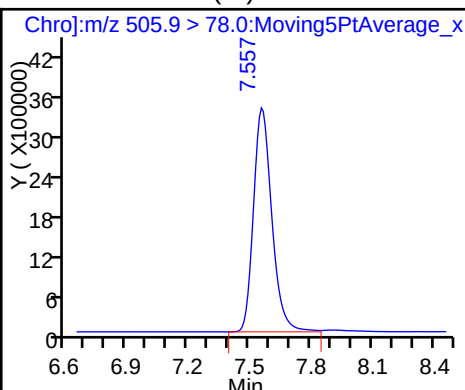
29 Perfluorododecanoic acid



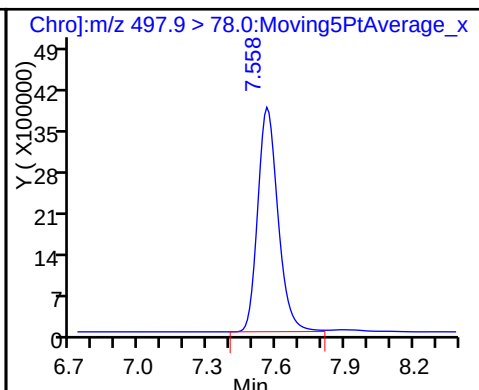
30 Perfluorotridecanoic acid



* 31 13C8 FOSA (IS)



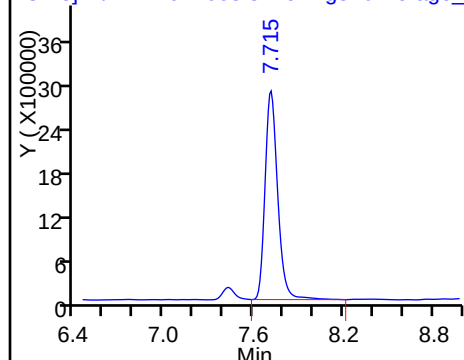
32 Perfluorooctane Sulfonamide



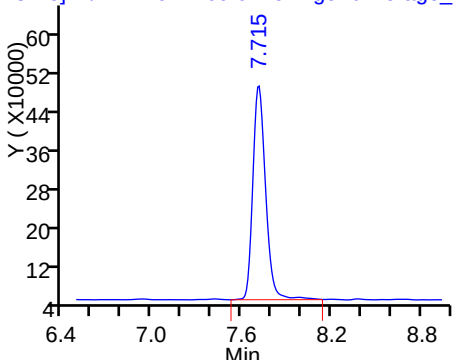
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Lab Sample ID: CCV 280-335022/7 Calibration Date: 07/25/2016 12:58

Instrument ID: LC_LCMS5 Calib Start Date: 06/06/2016 14:49

GC Column: Gemini-NX ID: _____ Calib End Date: 06/06/2016 16:28

Lab File ID: PC516G25012.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Perfluorobutanoic acid (PFBA)	Lin2		1.142		5.33	5.00	6.5	30.0
Perfluoropentanoic acid (PFPA)	Lin2		1.304		5.53	5.00	10.6	30.0
Perfluorobutane Sulfonate (PFBS)	Lin2		4.987		4.23	4.43	-4.4	30.0
Perfluorobutanesulfonic acid	Lin2		4.987		4.23	4.43	-4.4	30.0
Perfluorohexanoic acid (PFHxA)	Lin2		0.9775		5.16	5.00	3.2	30.0
Perfluoroheptanoic acid (PFHpA)	Lin2		0.8631		4.94	5.00	-1.1	30.0
Perfluorohexane Sulfonate (PFHxS)	Lin2		4.365		5.29	4.73	12.0	30.0
Perfluorohexanesulfonic acid	Lin2		4.365		5.29	4.73	12.0	30.0
Perfluoroheptane Sulfonate	Lin2		1.113		4.38	4.76	-8.0	30.0
Perfluoroheptanesulfonic Acid (PFHpS)	Lin2		1.113		4.38	4.76	-8.0	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.134		5.41	5.00	8.2	30.0
Perfluorooctanesulfonic acid (PFOS)	Lin2		1.142		4.62	4.78	-3.3	30.0
Perfluorononanoic acid (PFNA)	Lin2		1.148		5.10	5.00	2.0	30.0
Perfluorodecanoic acid (PFDA)	Lin2		1.029		5.09	5.00	1.8	30.0
Perfluorodecane sulfonate (PFDS)	Lin2		1.140		4.42	4.83	-8.3	30.0
Perfluorodecane Sulfonic acid	Lin2		1.140		4.42	4.83	-8.3	30.0
Perfluoroundecanoic acid (PFUnA)	Lin2		1.486		5.22	5.00	4.3	30.0
Perfluorododecanoic acid (PFDoA)	Lin2		1.153		5.58	5.00	11.7	30.0
Perfluorotridecanoic Acid (PFTriA)	Lin2		0.9476		5.05	5.00	1.1	30.0
Perfluorooctane Sulfonamide (FOSA)	Lin2		1.148		5.28	5.00	5.6	30.0
Perfluorotetradecanoic acid (PFTeA)	Lin2		0.6702		5.67	5.00	13.4	30.0
13C8 PFOA	Lin2		0.9554		5.89	5.00	17.7	30.0
13C8 PFOS	Lin2		0.7073		5.52	4.78	15.4	30.0

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25012.d
 Lims ID: CCV PFC L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 25-Jul-2016 12:58:02 ALS Bottle#: 0 Worklist Smp#: 7
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: CCV PFC L5, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Sublist: chrom-8321_PFC*sub14
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 25-Jul-2016 13:42:06 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK025

First Level Reviewer: meyer

Date: 25-Jul-2016 13:40:24

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.010 4.010 0.0 21262781 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.011 4.011 0.0 1.000 12142558 5.33

3 Perfluoropentanoic acid

263.0 > 218.9 5.090 5.090 0.0 0.897 10646153 5.53

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.222 5.222 0.0 0.855 4821179 4.23

298.9 > 98.9 5.222 5.222 0.0 0.855 1607524 3.00(1.80-3.35)

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.222 5.222 0.0 0.855 4821179 4.23

298.9 > 98.9 5.222 5.222 0.0 0.855 1607524 3.00(2.57-2.57)

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.676 5.676 0.0 16330750 10.0

7 Perfluorohexanoic acid

313.0 > 268.9 5.677 5.677 0.0 1.000 7981989 5.16

313.0 > 118.6 5.677 5.677 0.0 1.000 218348 36.56(34.05-63.23)

8 Perfluoroheptanoic acid

363.0 > 318.9 6.102 6.102 0.0 0.946 10710487 4.94

363.0 > 168.9 6.112 6.102 0.010 0.947 2830337 3.78(3.35-6.23)

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.111 6.111 0.0 2066855 9.46

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.111 6.111 0.0 1.000 4506258 5.29

398.9 > 98.9 6.111 6.111 0.0 1.000 1409088 3.20(1.30-2.41)

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.111 6.111 0.0 1.000 4506258 5.29

398.9 > 98.9 6.111 6.111 0.0 1.000 1409088 3.20(1.85-1.85)

R
R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.451	6.451	0.0	0.959	4628744	4.38			
449.0 > 98.9	6.441	6.451	-0.010	0.958	1467664		3.15(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.451	6.451	0.0	0.959	4628744	4.38			
449.0 > 98.9	6.441	6.451	-0.010	0.958	1467664		3.15(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.451	6.451	0.0	1.000	11855323	5.89			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.451	6.451	0.0		24818653	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.452	6.452	0.0	1.000	14076332	5.41			
413.0 > 169.0	6.452	6.452	0.0	1.000	4851369		2.90(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.723	6.723	0.0	1.000	2953211	5.52			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.724	6.724	0.0		8350642	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.724	6.724	0.0	1.000	4762721	4.62			R
498.9 > 98.9	6.724	6.724	0.0	1.000	1877875		2.54(1.31-2.43)		R
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.744	6.744	0.0		19599336	10.0			
20 Perfluorononanoic acid									
463.0 > 418.9	6.744	6.744	0.0	1.000	11253654	5.10			
463.0 > 218.9	6.744	6.744	0.0	1.000	1480834		7.60(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	6.997	6.997	0.0		20572174	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	6.998	6.998	0.0	1.000	10588094	5.09			R
513.0 > 219.0	6.998	6.998	0.0	1.000	1026461		10.32(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.186	7.186	0.0	1.069	4802662	4.42			
598.9 > 99.0	7.186	7.186	0.0	1.069	1564243		3.07(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.186	7.186	0.0	1.069	4802662	4.42			
598.9 > 99.0	7.186	7.186	0.0	1.069	1564243		3.07(2.84-2.84)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.205	7.205	0.0		12669731	10.0			
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.205	7.205	0.0	1.000	9414122	5.22			R
563.0 > 268.9	7.205	7.205	0.0	1.000	1170690		8.04(3.47-6.45)		R
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.393	7.393	0.0		26622876	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.394	7.394	0.0	1.000	15343804	5.58			
613.0 > 168.9	7.394	7.394	0.0	1.000	1903893		8.06(5.96-11.06)		
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.545	7.545	0.0	1.020	12613698	5.05			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.548	0.0		20066461	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.549	7.549	0.0	1.000	11515406	5.28			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.677	7.677	0.0	1.038	8920949	5.67			
712.9 > 169.0	7.686	7.677	0.009	1.040	1276896		6.99(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

Reagents:

PFC-IS_00021	Amount Added: 20.00	Units: uL
PFC_Surr_00021	Amount Added: 10.00	Units: uL
PFC-LCS_00078	Amount Added: 10.00	Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160725-49149.b\PC516G25012.d

Injection Date: 25-Jul-2016 12:58:02

Instrument ID: LC_LCMS5

Lims ID: CCV PFC L5

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 7

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

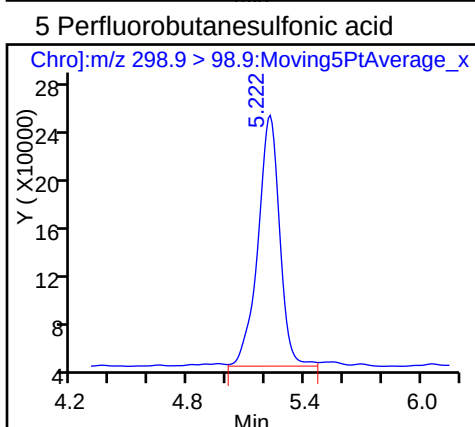
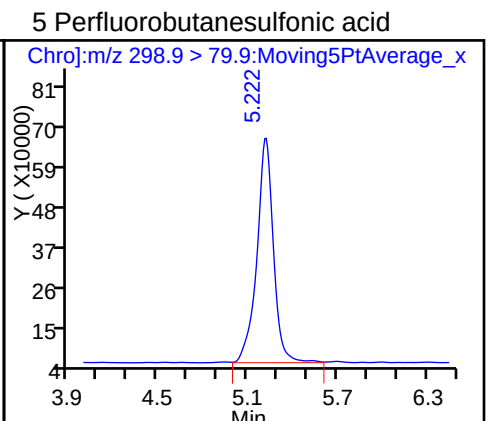
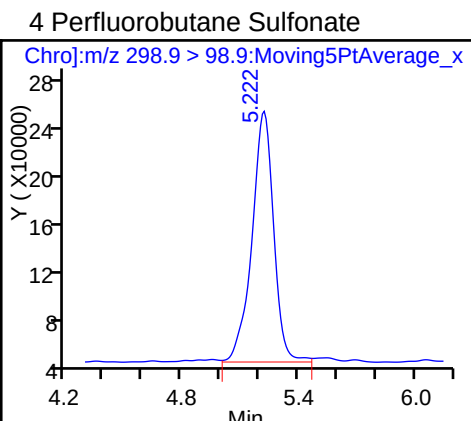
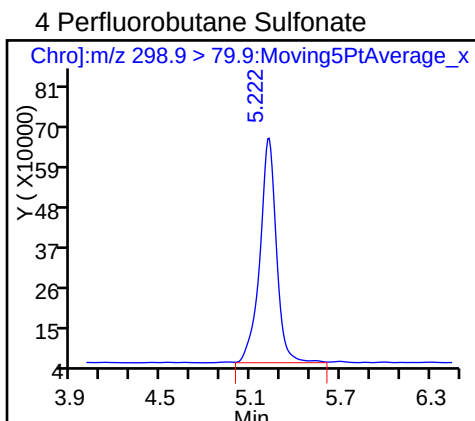
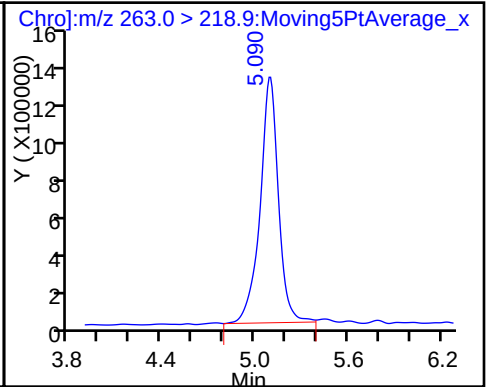
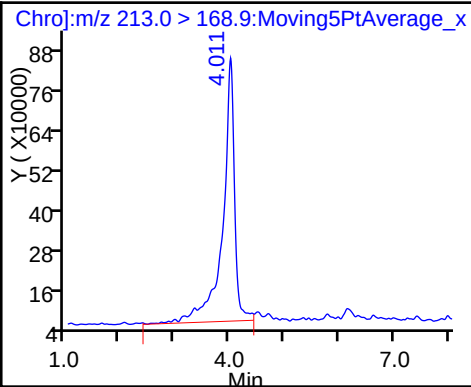
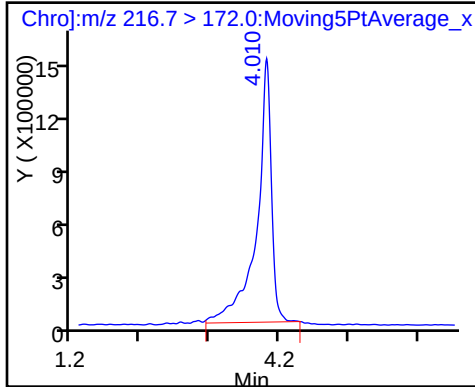
Method: 8321_PFC

Limit Group: LC - PFC

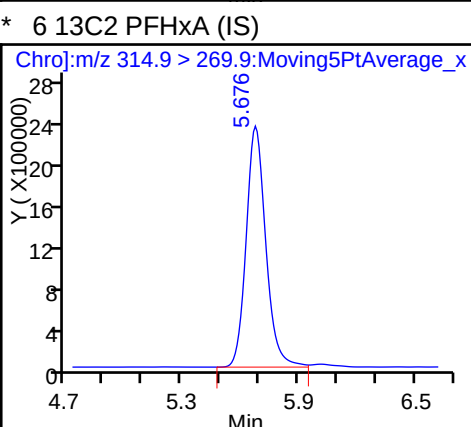
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

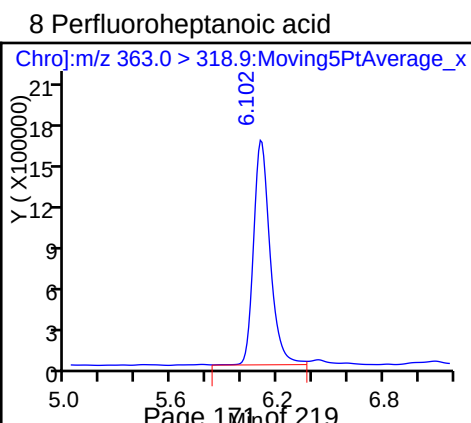
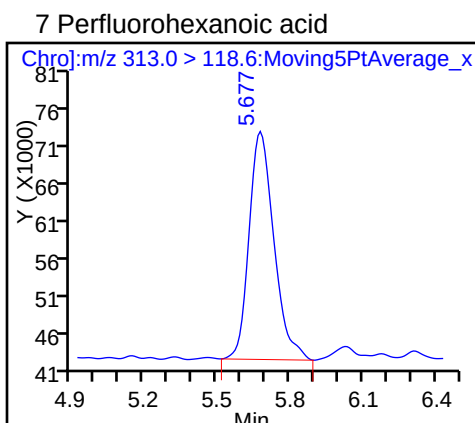
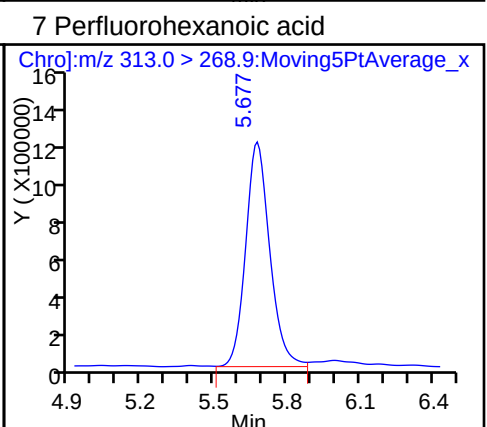
3 Perfluoropentanoic acid



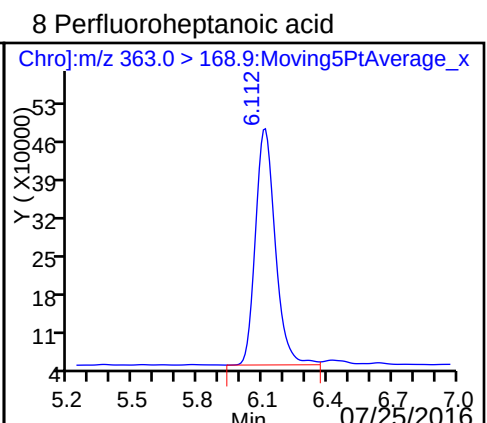
* 6 13C2 PFHxA (IS)



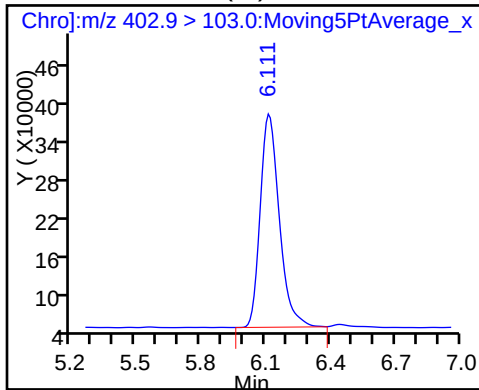
7 Perfluorohexanoic acid



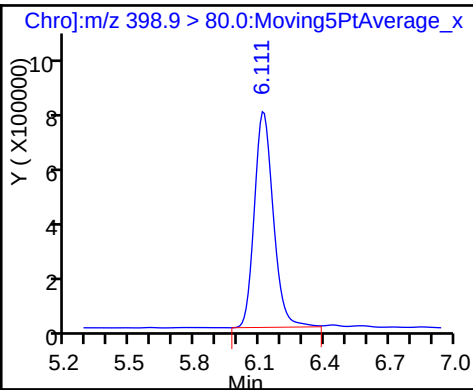
8 Perfluoroheptanoic acid



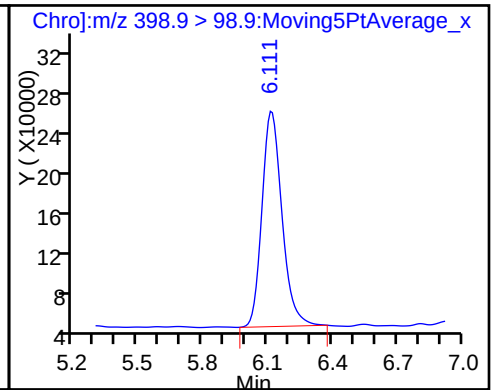
* 9 18O2 PFHxS (IS)



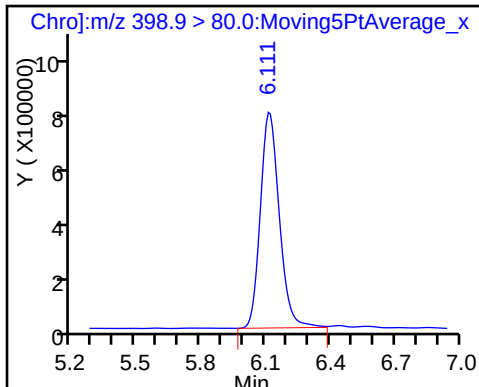
10 Perfluorohexane Sulfonate



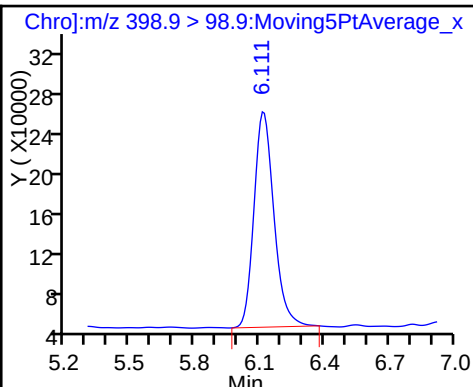
10 Perfluorohexane Sulfonate



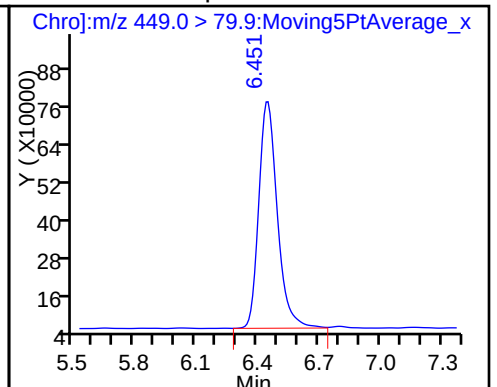
11 Perfluorohexanesulfonic acid



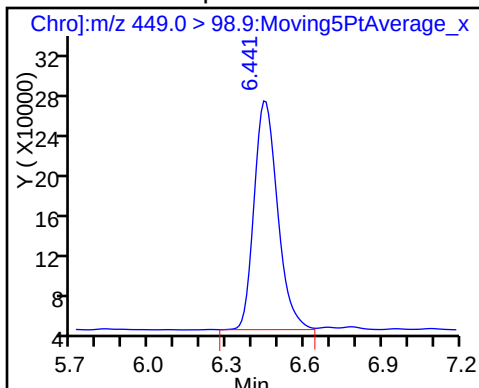
11 Perfluorohexanesulfonic acid



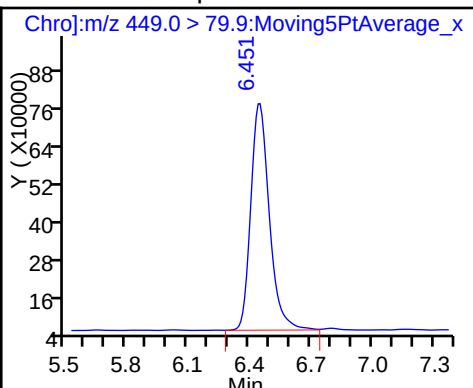
13 Perfluoroheptane Sulfonate



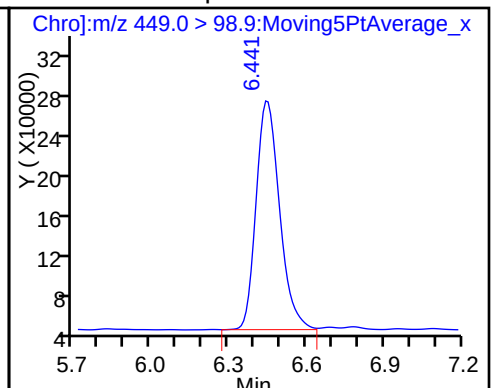
13 Perfluoroheptane Sulfonate



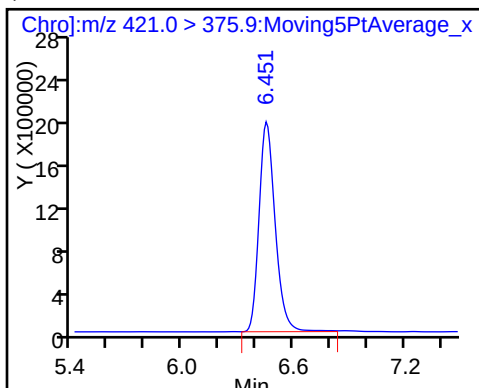
12 Perfluoroheptanesulfonic Acid



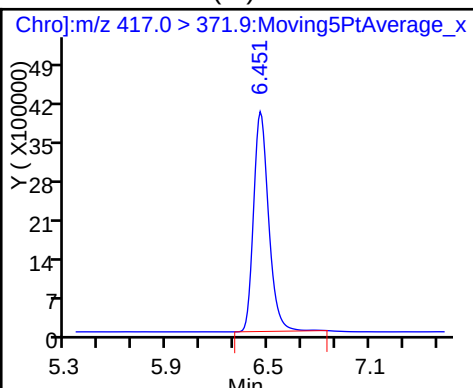
12 Perfluoroheptanesulfonic Acid



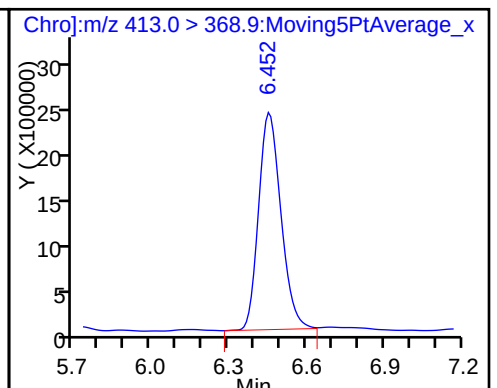
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



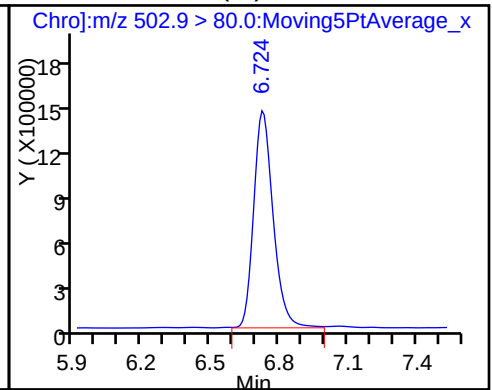
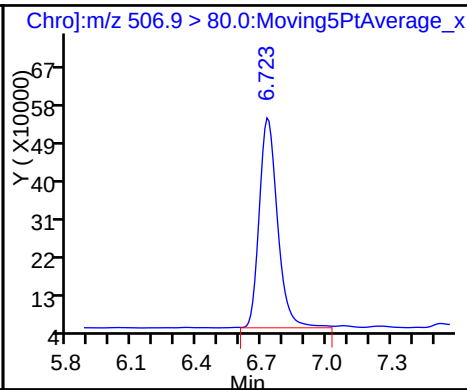
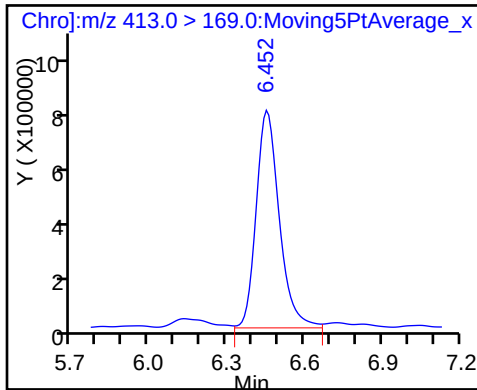
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

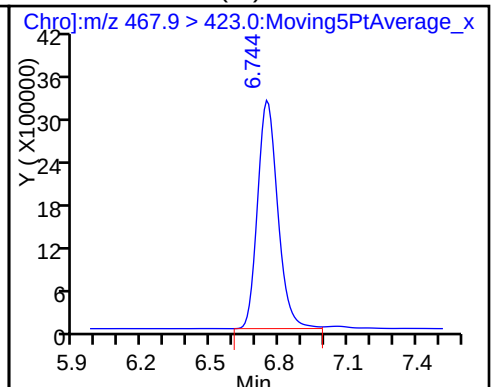
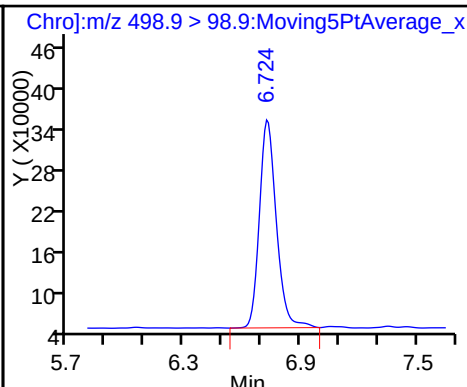
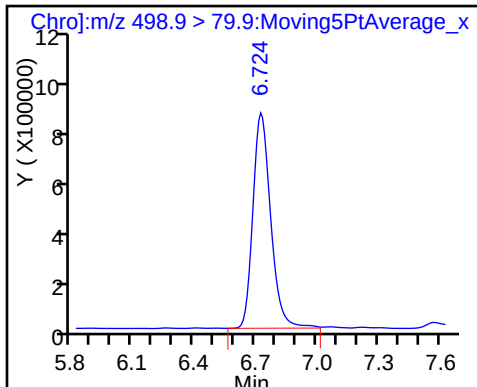
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

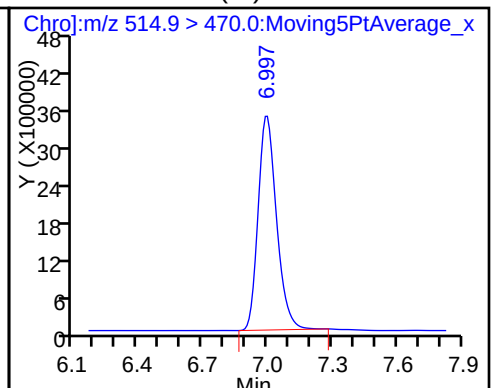
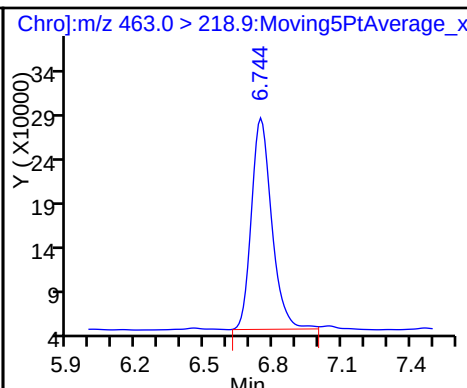
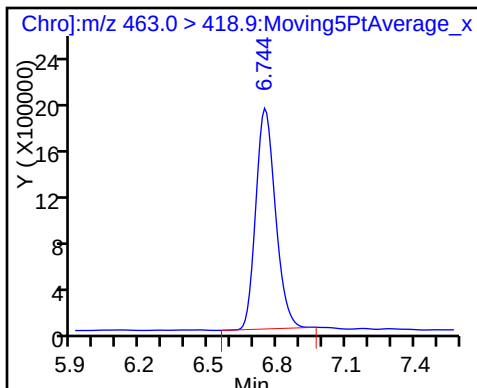
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

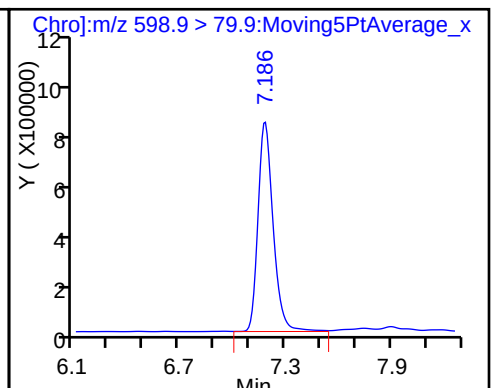
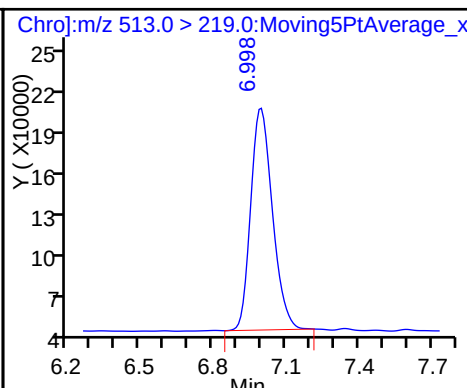
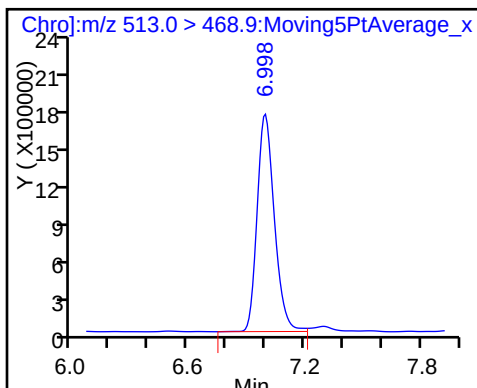
* 22 13C2 PFDA (IS)



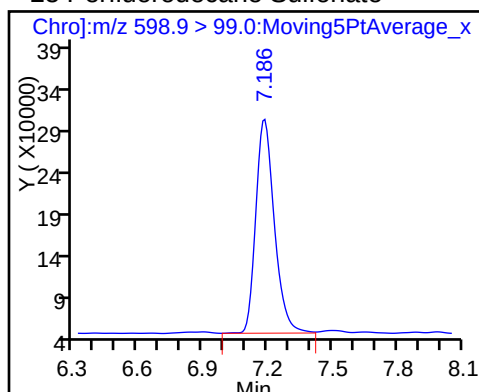
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

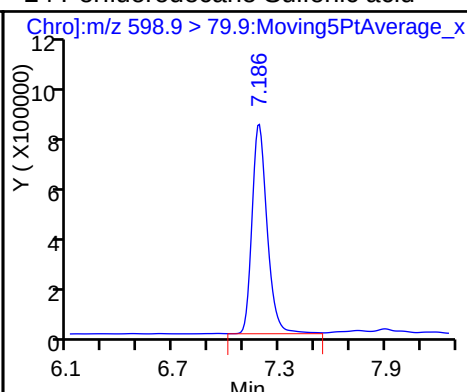
25 Perfluorodecane Sulfonate



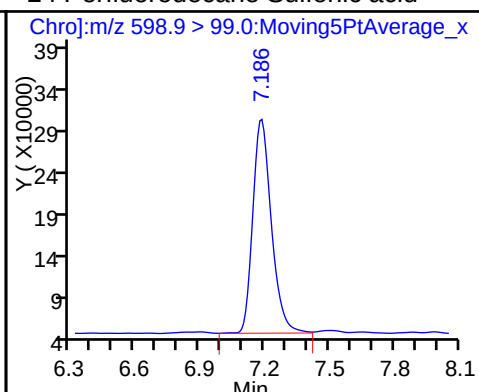
25 Perfluorodecane Sulfonate



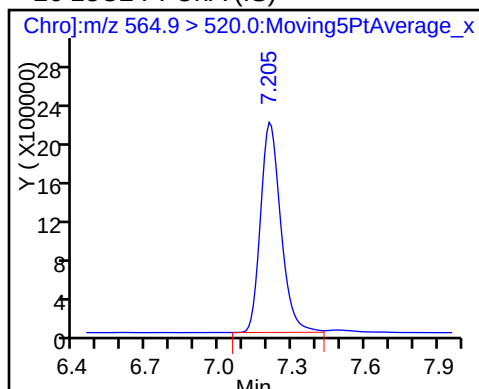
24 Perfluorodecane Sulfonic acid



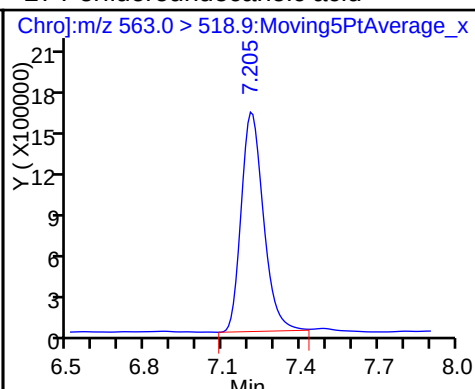
24 Perfluorodecane Sulfonic acid



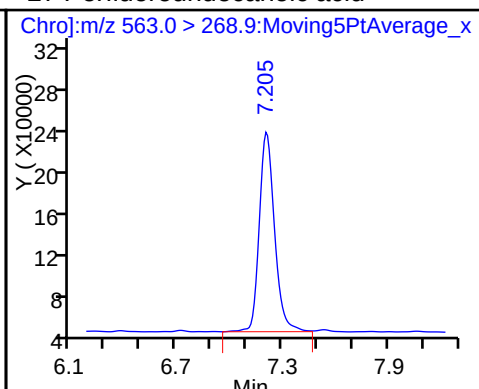
* 26 13C2 PFUnA (IS)



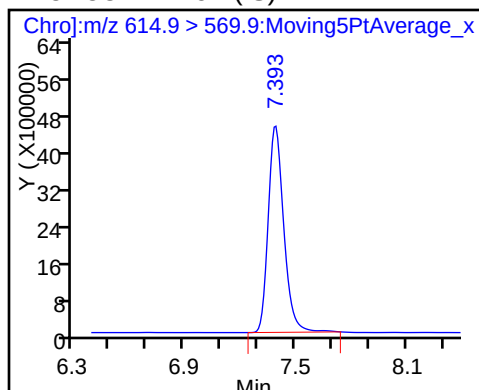
27 Perfluoroundecanoic acid



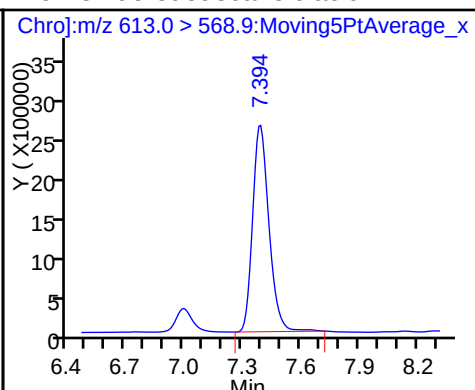
27 Perfluoroundecanoic acid



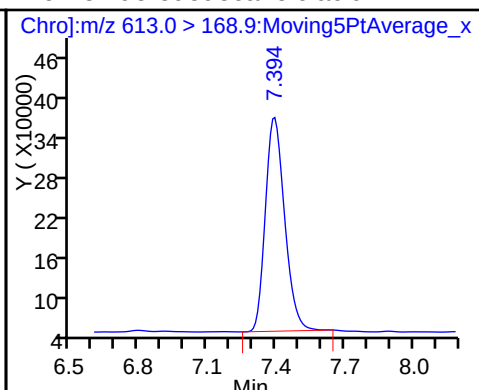
* 28 13C2 PFDaA (IS)



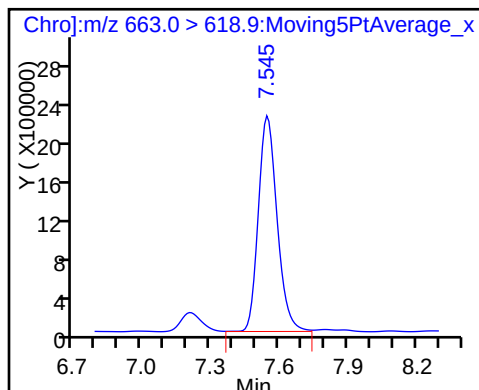
29 Perfluorododecanoic acid



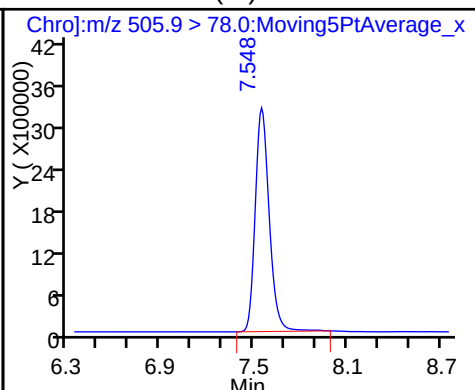
29 Perfluorododecanoic acid



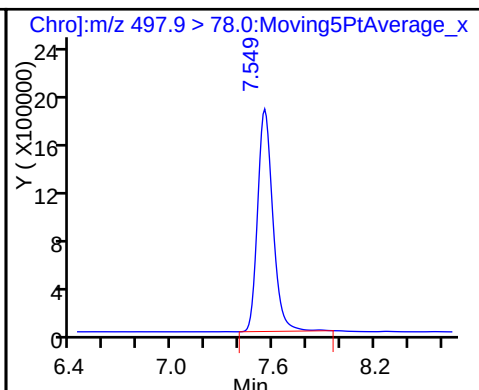
30 Perfluorotridecanoic acid



* 31 13C8 FOSA (IS)

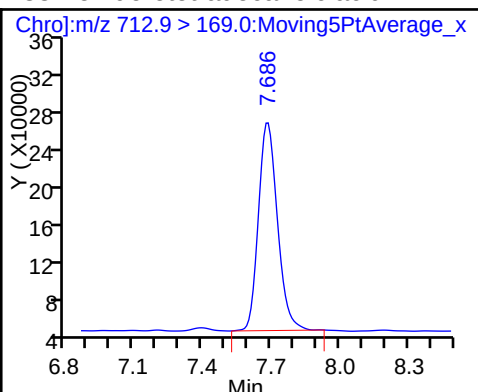
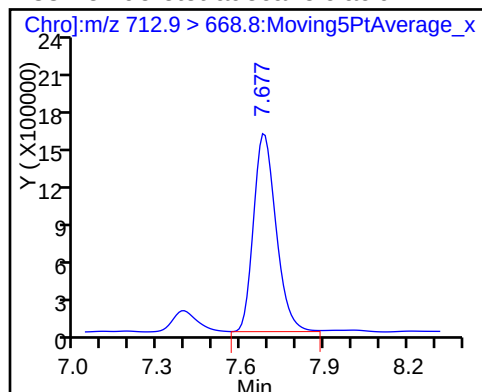


32 Perfluorooctane Sulfonamide



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-85017-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>MB 280-332167/1-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516G05046.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>07/01/2016 11:30</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>07/05/2016 20:42</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332595</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.0082	U	0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.013	U	0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.0070	U	0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.013	U	0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.0098	U	0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	99		60-155
STL01054	13C8 PFOS	95		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05046.d
 Lims ID: MB 280-332167/1-A
 Client ID:
 Sample Type: MB
 Inject. Date: 05-Jul-2016 20:42:03 ALS Bottle#: 0 Worklist Smp#: 4
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: MB 280-332167/1-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 06-Jul-2016 13:27:46 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK018

First Level Reviewer: fiedlerh

Date: 06-Jul-2016 13:04:59

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags

* 1 13C4 PFBA (IS)

216.7 > 172.0 4.020 4.096 -0.076 30848357 10.0

2 Perfluorobutyric acid

213.0 > 168.9 4.096 ND

3 Perfluoropentanoic acid

263.0 > 218.9 5.583 5.166 0.417 0.974 705177 0.2779

4 Perfluorobutane Sulfonate

298.9 > 79.9 5.289 ND

298.9 > 98.9 5.289

5 Perfluorobutanesulfonic acid

298.9 > 79.9 5.289 ND

298.9 > 98.9 5.289

7 Perfluorohexanoic acid

313.0 > 268.9 5.752 ND

313.0 > 118.6 5.752

* 6 13C2 PFHxA (IS)

314.9 > 269.9 5.733 5.752 -0.019 19806843 10.0

8 Perfluoroheptanoic acid

363.0 > 318.9 6.187 ND

363.0 > 168.9 6.187

* 9 18O2 PFHxS (IS)

402.9 > 103.0 6.168 6.187 -0.019 2649797 9.46

11 Perfluorohexanesulfonic acid

398.9 > 80.0 6.187 ND

398.9 > 98.9 6.187

10 Perfluorohexane Sulfonate

398.9 > 80.0 6.187 ND

398.9 > 98.9 6.187

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9		6.526				ND			
449.0 > 98.9		6.526							
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9		6.526				ND			
449.0 > 98.9		6.526							
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.536	-0.038	1.000	24900109	9.93			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.537	-0.038		30997787	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9		6.537				ND			
413.0 > 169.0		6.537							
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.799	-0.028	1.000	5431242	9.11			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.800	-0.029		9324866	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9		6.800				ND			
498.9 > 98.9		6.800							
20 Perfluorononanoic acid									
463.0 > 418.9		6.820				ND			
463.0 > 218.9		6.820							
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.819	-0.028		23983932	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.035	7.064	-0.029		25991890	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9		7.064				ND			
513.0 > 219.0		7.064							
25 Perfluorodecane Sulfonate									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9		7.243				ND			
598.9 > 99.0		7.243							
27 Perfluoroundecanoic acid									
563.0 > 518.9		7.272				ND			
563.0 > 268.9		7.272							
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.271	-0.028		15160140	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.422	7.450	-0.028		27106743	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9		7.451				ND			
613.0 > 168.9		7.451							
* 31 13C8 FOSA (IS)									S
505.9 > 78.0	7.557	7.586	-0.029		1128630	10.0			

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.587	-0.029	1.000	13928	0.1043			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.251	7.602	-0.351	0.977	4018491	1.53			
33 Perfluorotetradecanoic acid									
712.9 > 668.8		7.734				ND			
712.9 > 169.0		7.734							

QC Flag Legend

Processing Flags

ND - Not Detected or Marked ND

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05046.d

Injection Date: 05-Jul-2016 20:42:03

Instrument ID: LC_LCMS5

Lims ID: MB 280-332167/1-A

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 4

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

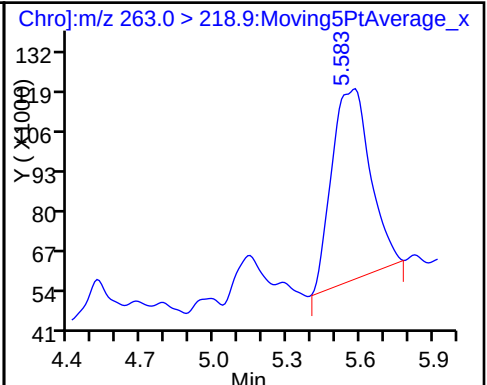
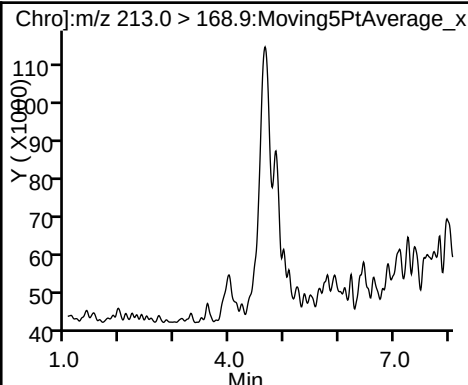
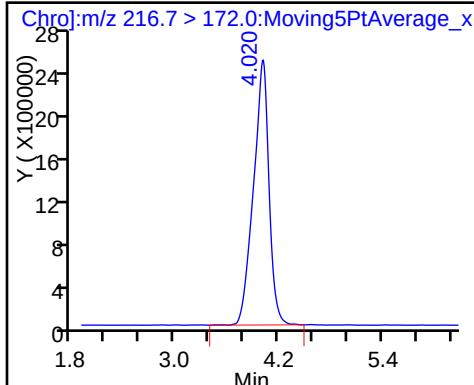
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid (ND)

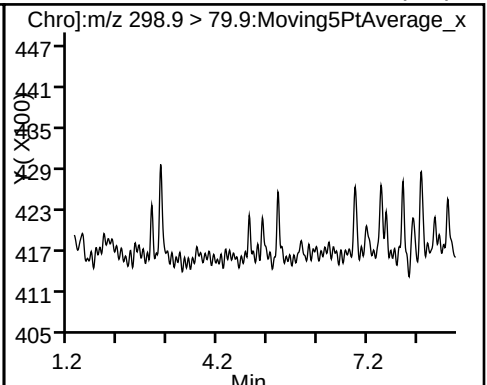
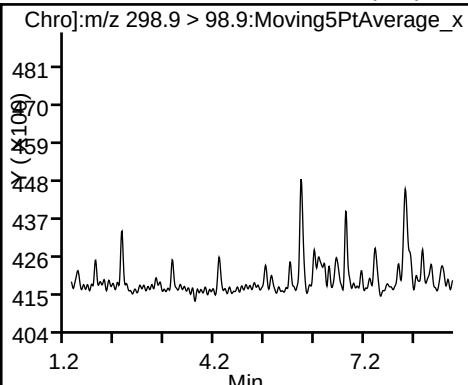
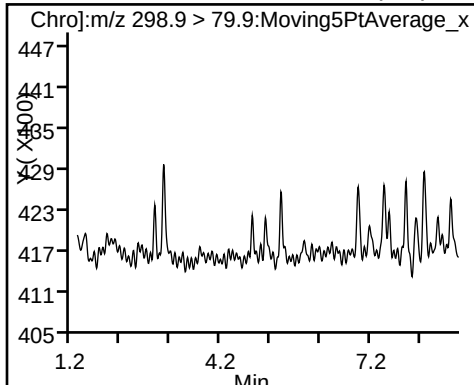
3 Perfluoropentanoic acid



4 Perfluorobutane Sulfonate (ND)

4 Perfluorobutane Sulfonate (ND)

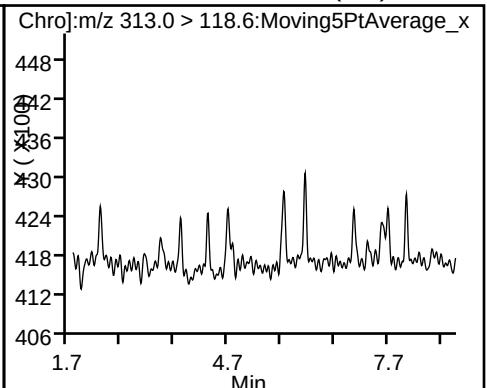
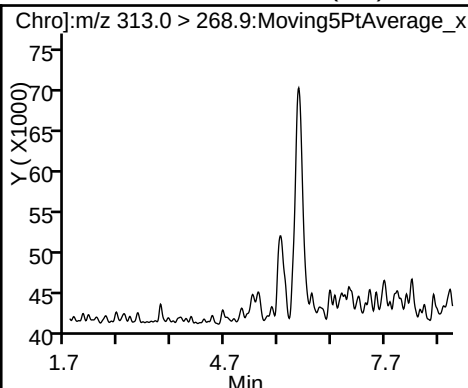
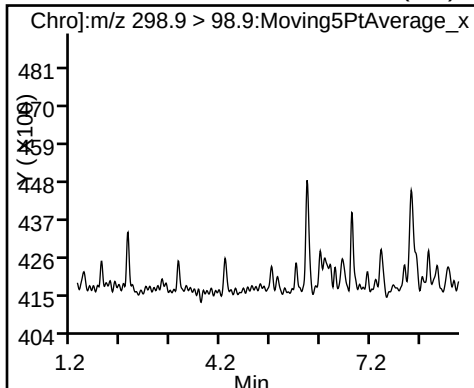
5 Perfluorobutanesulfonic acid (ND)



5 Perfluorobutanesulfonic acid (ND)

7 Perfluorohexanoic acid (ND)

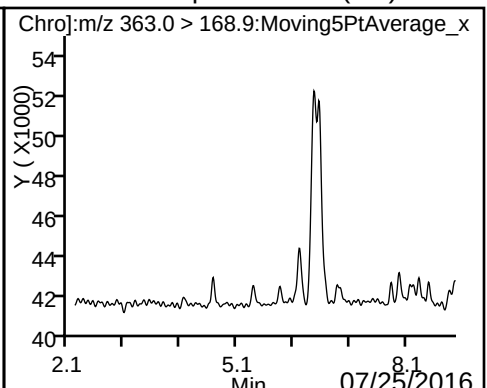
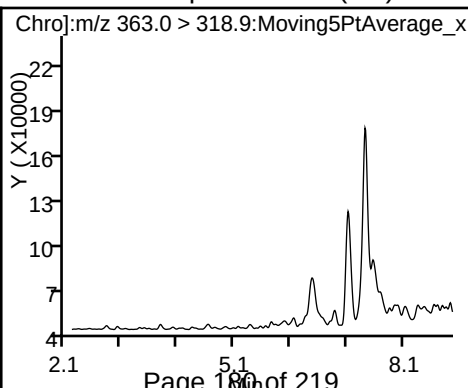
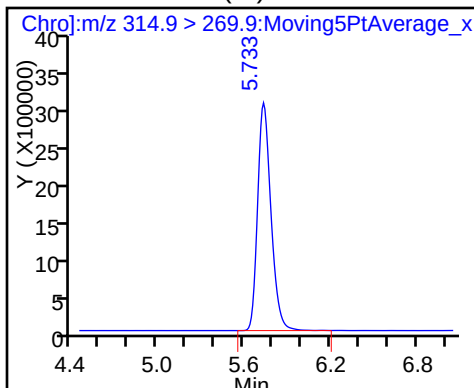
7 Perfluorohexanoic acid (ND)



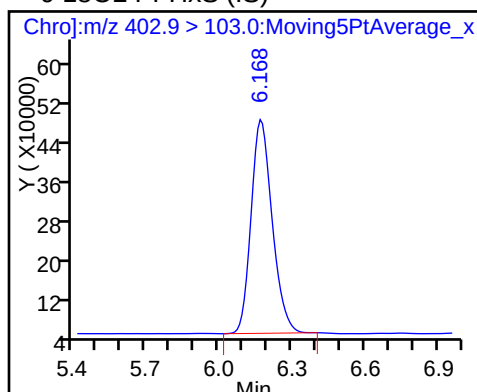
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid (ND)

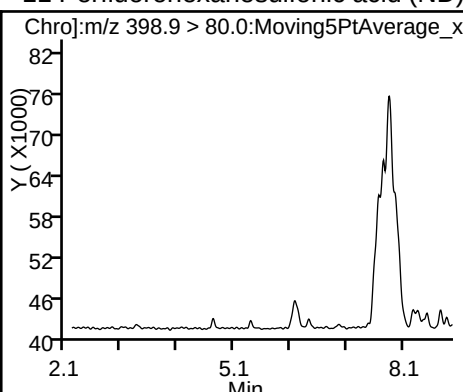
8 Perfluoroheptanoic acid (ND)



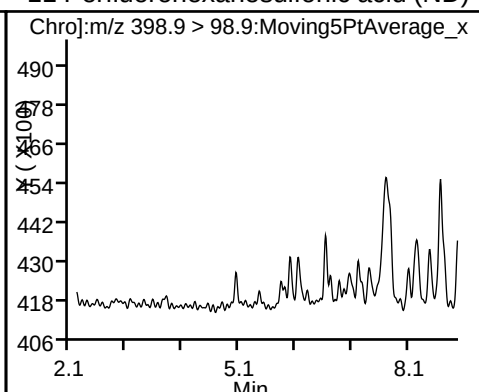
* 9 18O2 PFHxS (IS)



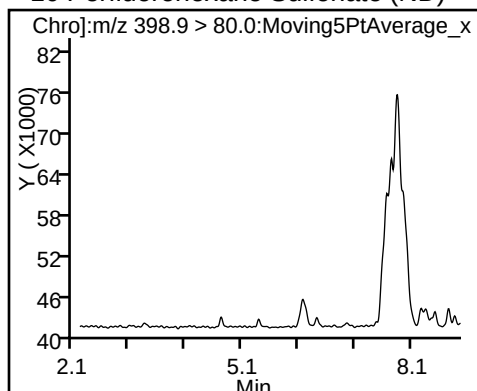
11 Perfluorohexanesulfonic acid (ND)



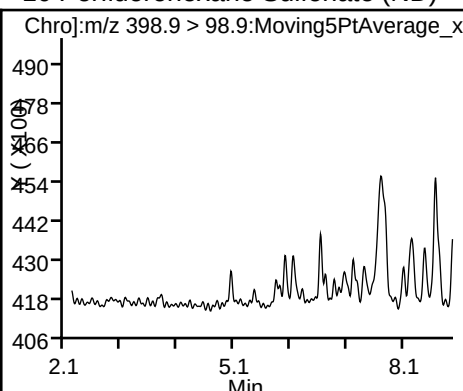
11 Perfluorohexanesulfonic acid (ND)



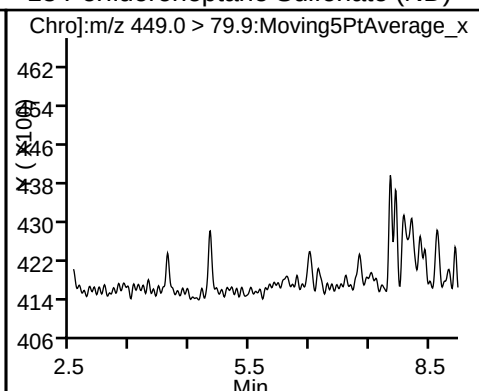
10 Perfluorohexane Sulfonate (ND)



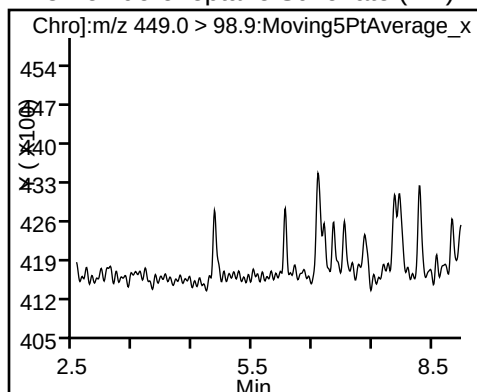
10 Perfluorohexane Sulfonate (ND)



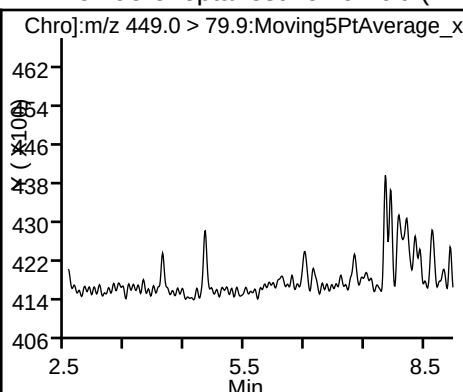
13 Perfluoroheptane Sulfonate (ND)



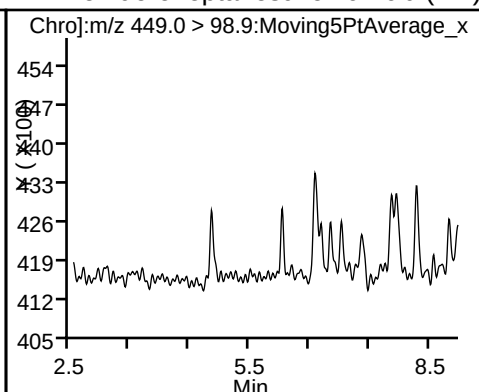
13 Perfluoroheptane Sulfonate (ND)



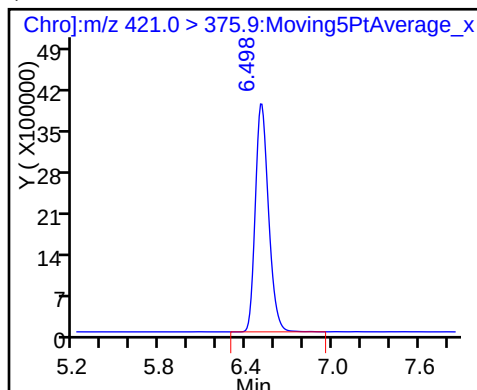
12 Perfluoroheptanesulfonic Acid (ND)



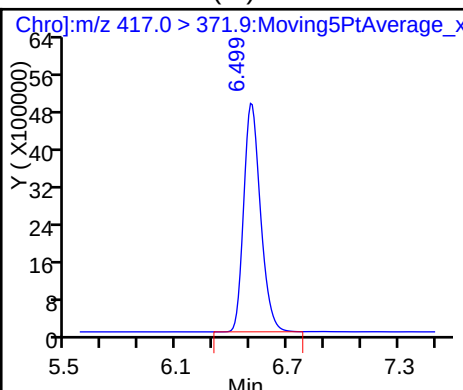
12 Perfluoroheptanesulfonic Acid (ND)



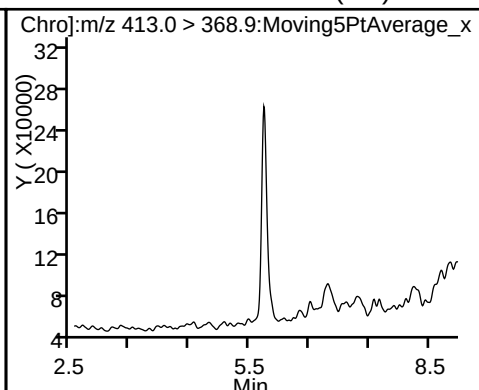
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



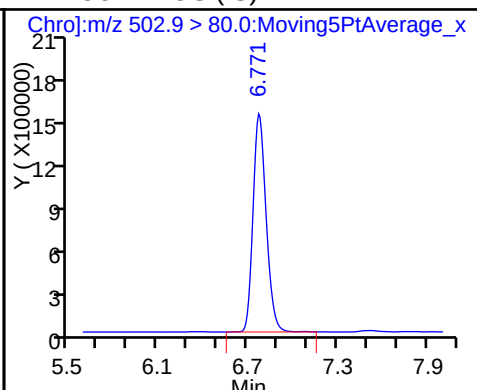
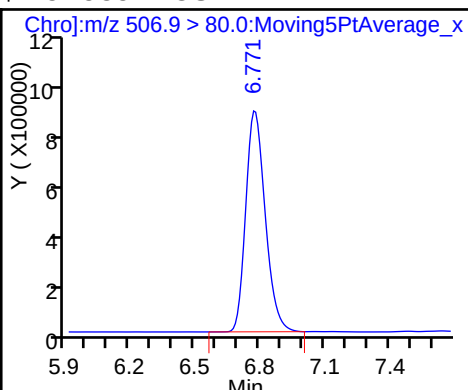
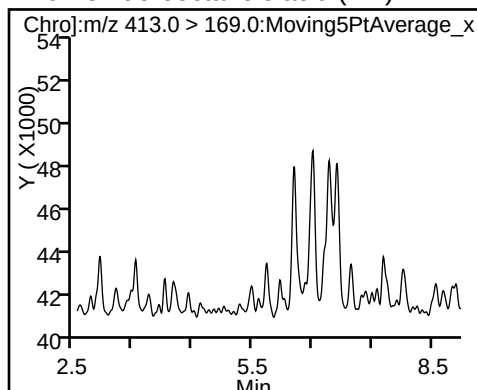
16 Perfluorooctanoic acid (ND)



16 Perfluorooctanoic acid (ND)

\$ 18 13C8 PFOS

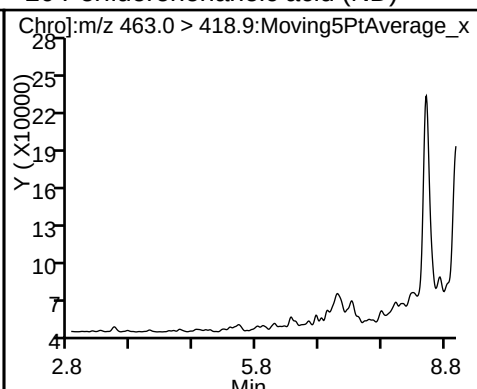
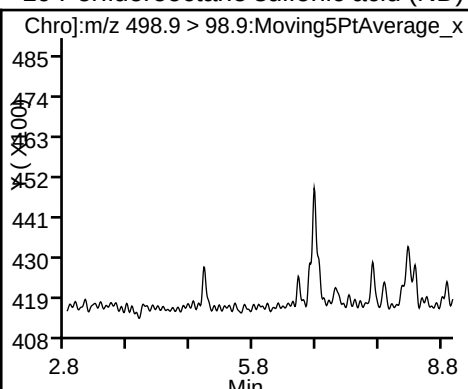
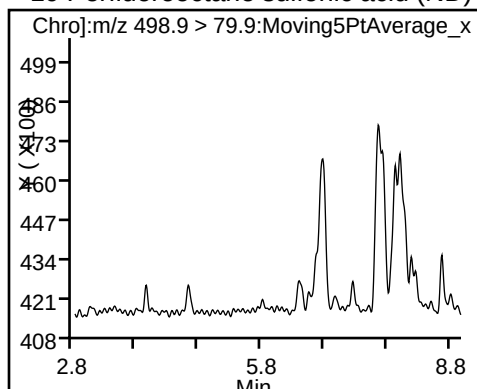
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid (ND)

19 Perfluorooctane sulfonic acid (ND)

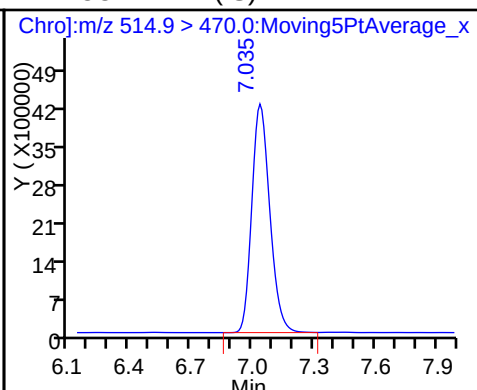
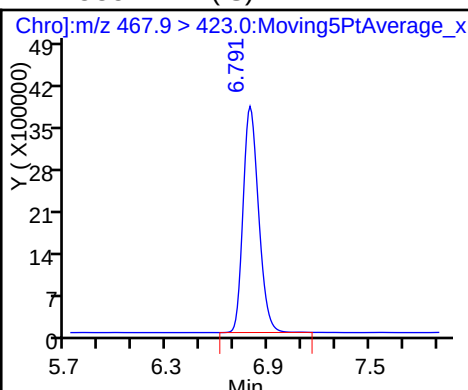
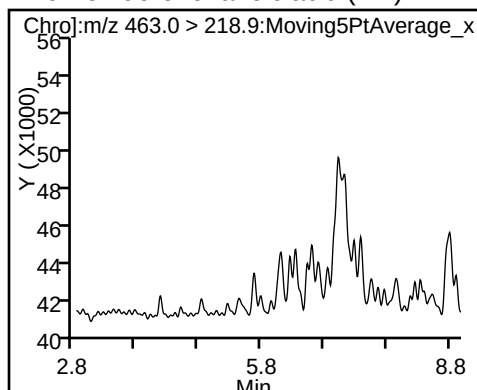
20 Perfluorononanoic acid (ND)



20 Perfluorononanoic acid (ND)

* 21 13C5 PFNA (IS)

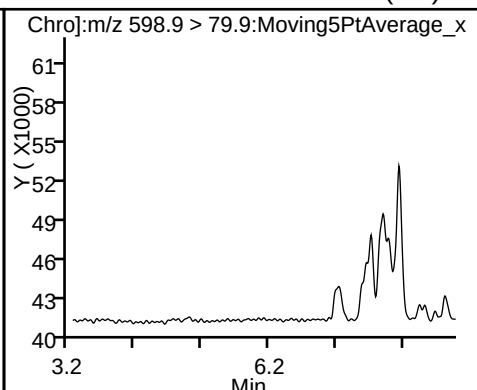
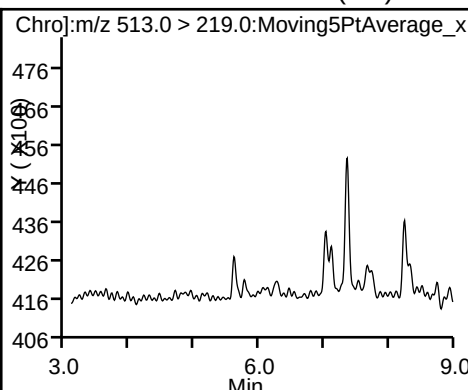
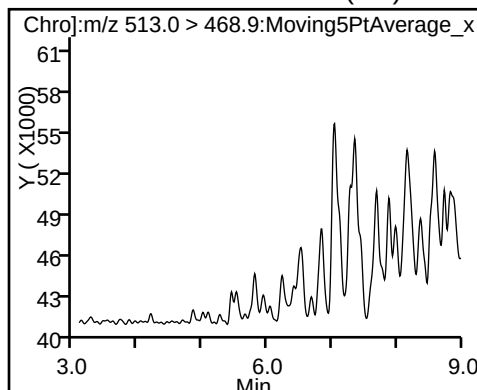
* 22 13C2 PFDA (IS)



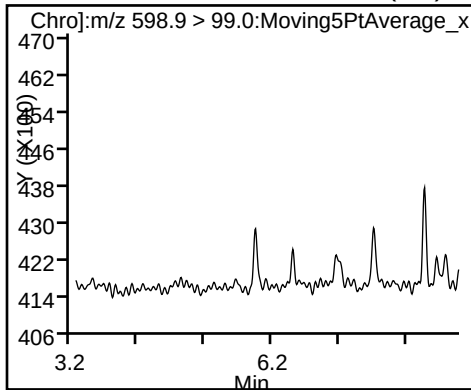
23 Perfluorodecanoic acid (ND)

23 Perfluorodecanoic acid (ND)

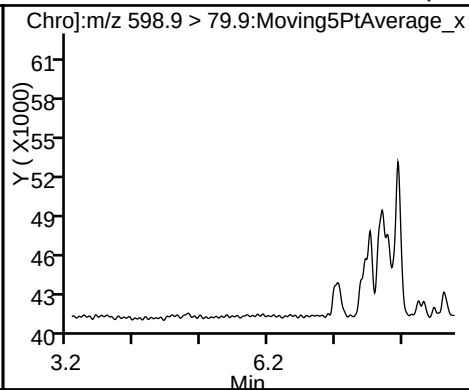
25 Perfluorodecane Sulfonate (ND)



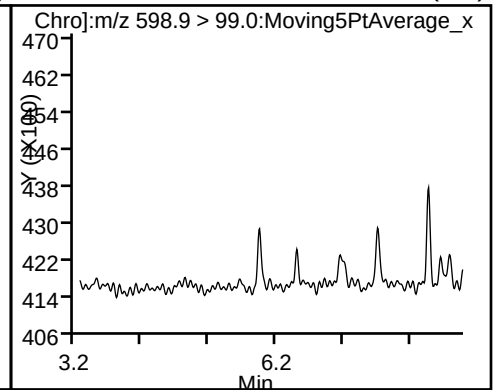
25 Perfluorodecane Sulfonate (ND)



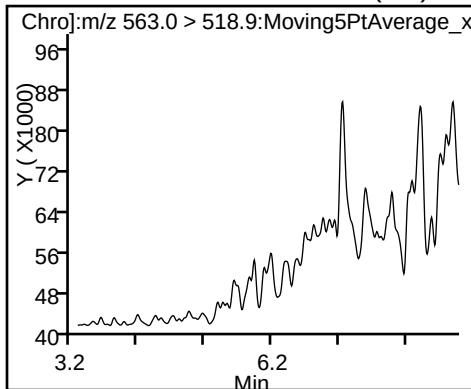
24 Perfluorodecane Sulfonic acid (ND)



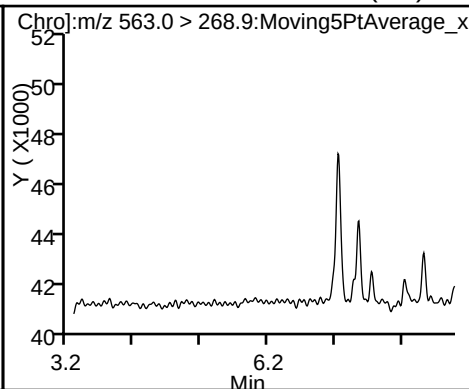
24 Perfluorodecane Sulfonic acid (ND)



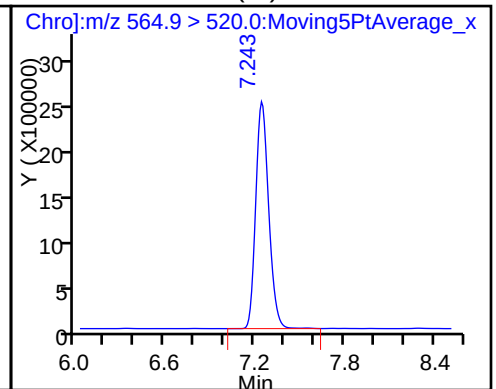
27 Perfluoroundecanoic acid (ND)



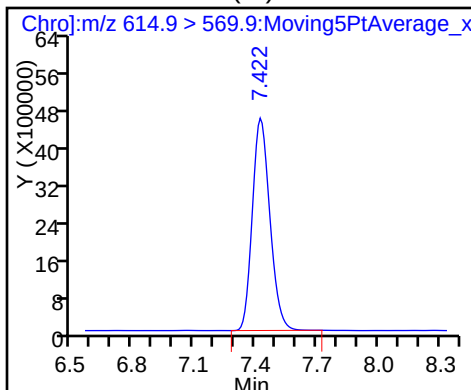
27 Perfluoroundecanoic acid (ND)



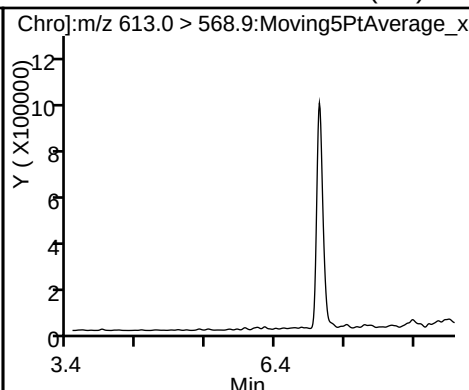
* 26 13C2 PFUnA (IS)



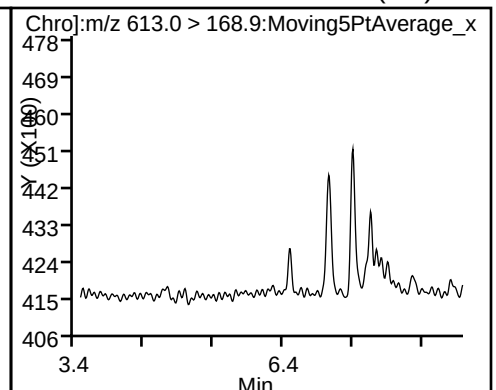
* 28 13C2 PFDaA (IS)



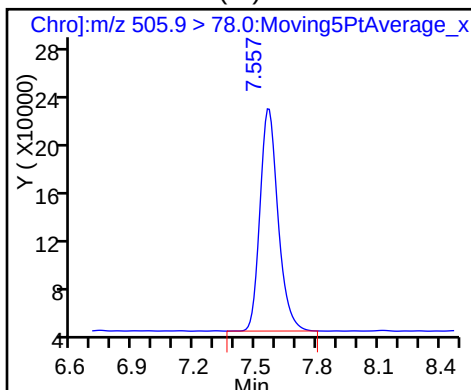
29 Perfluorododecanoic acid (ND)



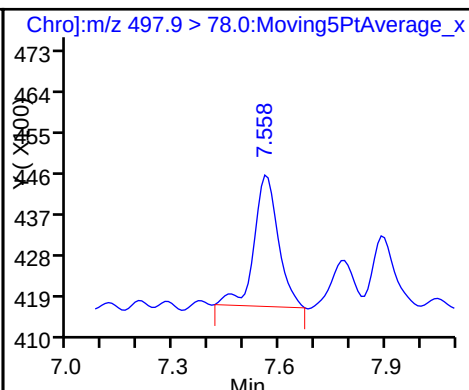
29 Perfluorododecanoic acid (ND)



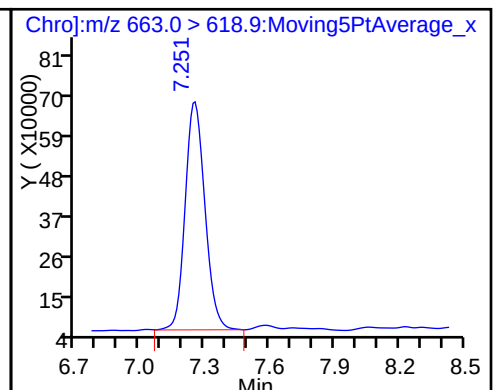
* 31 13C8 FOSA (IS)



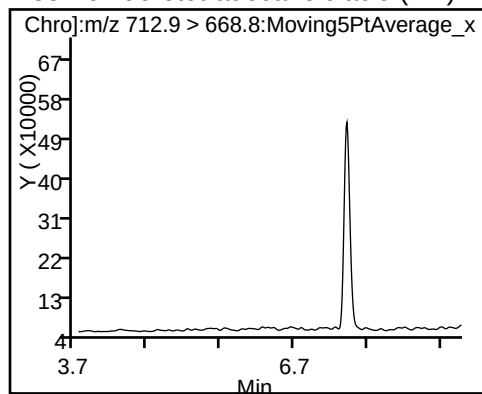
32 Perfluorooctane Sulfonamide



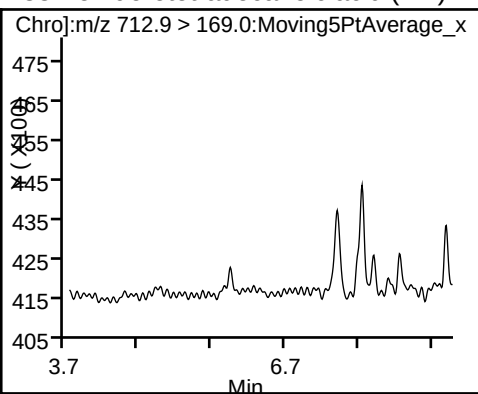
30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid (ND)



33 Perfluorotetradecanoic acid (ND)



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 280-332167/2-A
 Matrix: Water Lab File ID: PC516G05047.d
 Analysis Method: DV-LC-0012 Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/01/2016 11:30
 Sample wt/vol: 250 (mL) Date Analyzed: 07/05/2016 20:54
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 25 (uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 332595 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.132		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.181		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.173		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.176		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.155		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.183		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	99		60-155
STL01054	13C8 PFOS	104		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05047.d
 Lims ID: LCS 280-332167/2-A
 Client ID:
 Sample Type: LCS
 Inject. Date: 05-Jul-2016 20:54:20 ALS Bottle#: 0 Worklist Smp#: 5
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: LCS 280-332167/2-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 06-Jul-2016 13:27:46 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK018

First Level Reviewer: fiedlerh

Date: 06-Jul-2016 13:16:15

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.020	4.096	-0.076		32056566	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.020	4.096	-0.076	1.000	28832670	8.39			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.138	5.166	-0.028	0.898	22810730	9.73			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.260	5.289	-0.029	0.854	9696121	6.61			R
298.9 > 98.9	5.260	5.289	-0.029	0.854	2857339		3.39(1.80-3.35)		R
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.260	5.289	-0.029	0.854	9696121	6.61			
298.9 > 98.9	5.260	5.289	-0.029	0.854	2857339		3.39(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.724	5.752	-0.028	1.000	17266306	9.16			
313.0 > 118.6	5.733	5.752	-0.019	1.002	572507		30.16(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.724	5.752	-0.028		19931308	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.159	6.187	-0.028	0.948	24324340	9.07			
363.0 > 168.9	6.159	6.187	-0.028	0.948	6772661		3.59(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.158	6.187	-0.029		2656225	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.159	6.187	-0.028	1.000	9402711	8.64			
398.9 > 98.9	6.159	6.187	-0.028	1.000	3014222		3.12(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.159	6.187	-0.028	1.000	9402711	8.64			R
398.9 > 98.9	6.159	6.187	-0.028	1.000	3014222		3.12(1.30-2.41)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.489	6.526	-0.037	0.958	8891234	7.43			
449.0 > 98.9	6.489	6.526	-0.037	0.958	2900900		3.06(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.489	6.526	-0.037	0.958	8891234	7.43			
449.0 > 98.9	6.489	6.526	-0.037	0.958	2900900		3.06(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.498	6.536	-0.038	1.000	24757901	9.94			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.499	6.537	-0.038		30809256	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.499	6.537	-0.038	1.000	29459356	9.17			
413.0 > 169.0	6.499	6.537	-0.038	1.000	9446228		3.12(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.771	6.799	-0.028	1.000	5981055	9.91			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.771	6.800	-0.029		9441302	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.771	6.800	-0.029	1.000	9000601	7.76			R
498.9 > 98.9	6.771	6.800	-0.029	1.000	3226708		2.79(1.31-2.43)		R
20 Perfluorononanoic acid									
463.0 > 418.9	6.791	6.820	-0.029	1.000	23194502	8.82			
463.0 > 218.9	6.791	6.820	-0.029	1.000	3774405		6.15(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.791	6.819	-0.028		23436477	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.064	-0.038		25480230	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.026	7.064	-0.038	1.000	22628407	8.81			R
513.0 > 219.0	7.026	7.064	-0.038	1.000	2279200		9.93(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.243	-0.029	1.065	7723207	6.31			
598.9 > 99.0	7.214	7.243	-0.029	1.065	2590221		2.98(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.243	-0.029	1.065	7723207	6.31			
598.9 > 99.0	7.214	7.243	-0.029	1.065	2590221		2.98(2.84-2.84)		
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.243	7.272	-0.029	1.000	19072073	9.48			R
563.0 > 268.9	7.234	7.272	-0.038	0.999	2417938		7.89(3.47-6.45)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.243	7.271	-0.028		14189080	10.0			
* 28 13C2 PFDaA (IS)									
614.9 > 569.9	7.412	7.450	-0.038		25191655	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.451	-0.038	1.000	23703366	9.15			
613.0 > 168.9	7.413	7.451	-0.038	1.000	3174676		7.47(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.557	7.586	-0.029		821839	10.0			S

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05047.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.558	7.587	-0.029	1.000	767663	8.60			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.573	7.602	-0.029	1.022	19500288	8.31			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.705	7.734	-0.029	1.040	13356733	8.97			
712.9 > 169.0	7.705	7.734	-0.029	1.040	2249672		5.94(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05047.d

Injection Date: 05-Jul-2016 20:54:20

Instrument ID: LC_LCMS5

Lims ID: LCS 280-332167/2-A

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 5

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

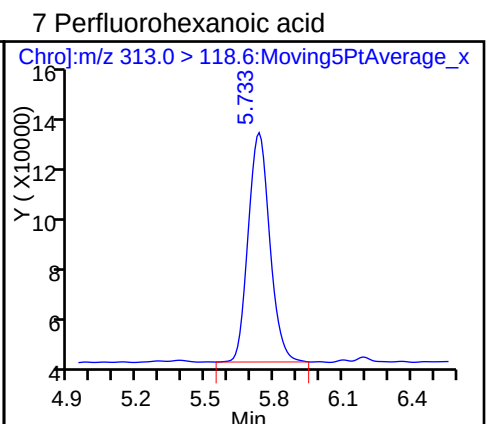
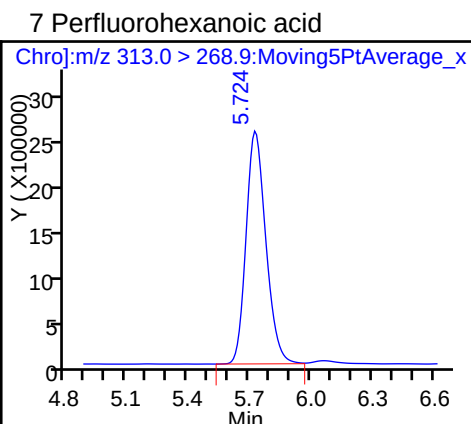
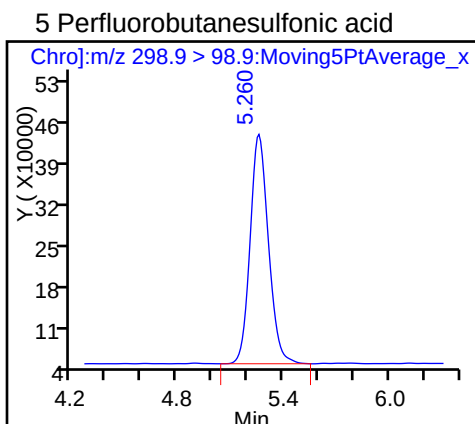
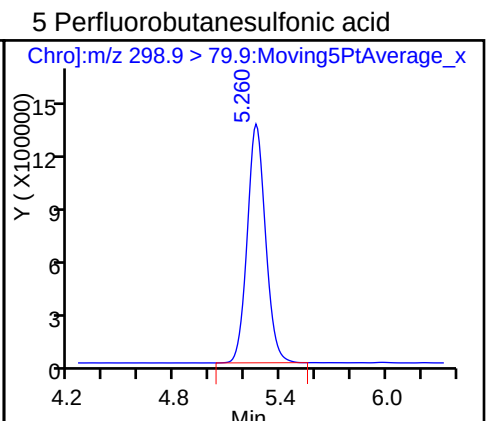
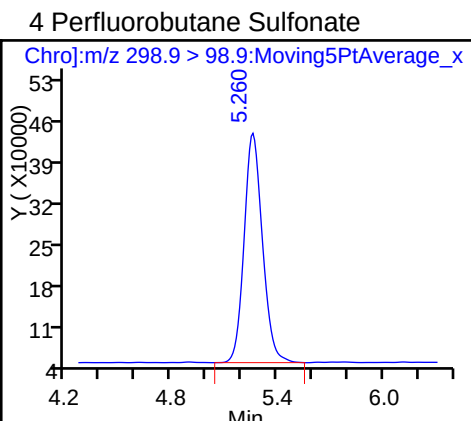
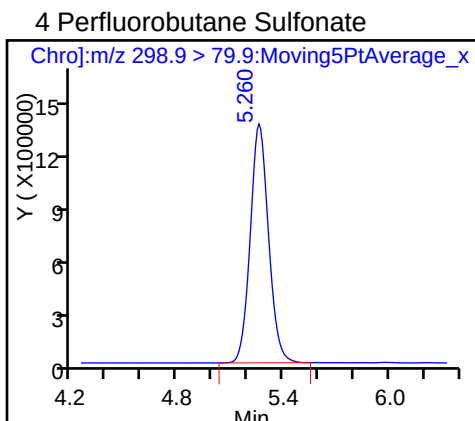
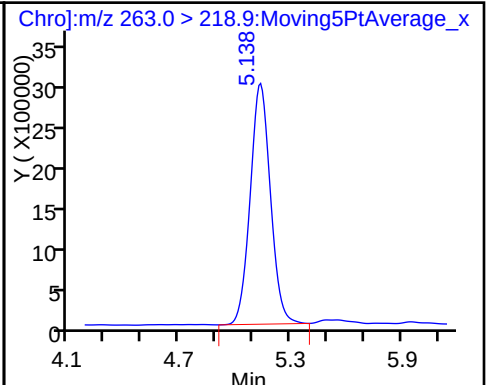
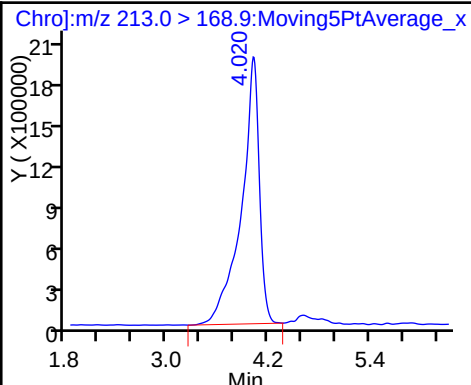
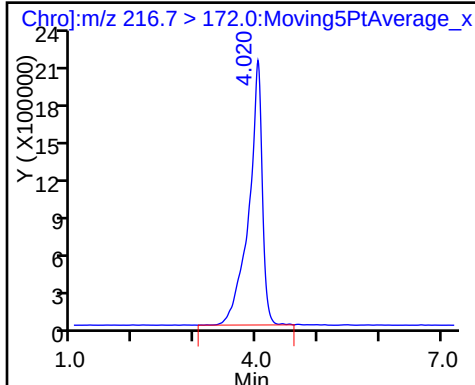
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

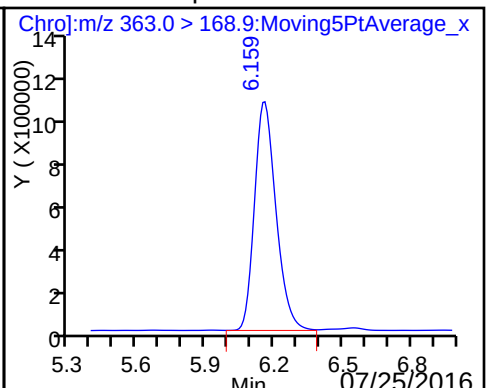
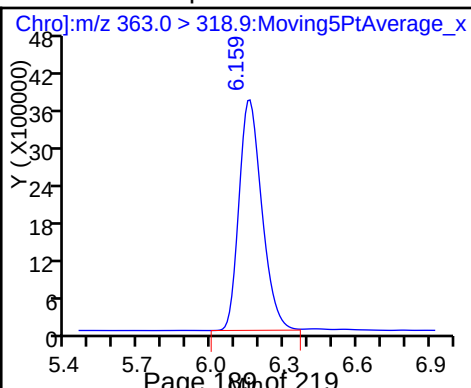
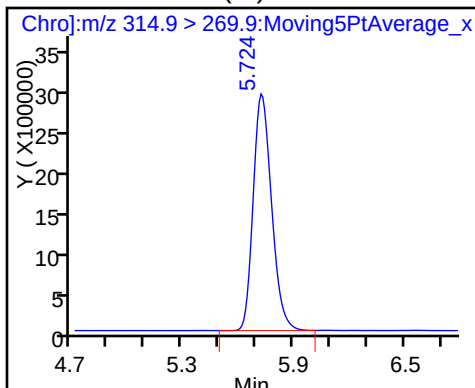
3 Perfluoropentanoic acid



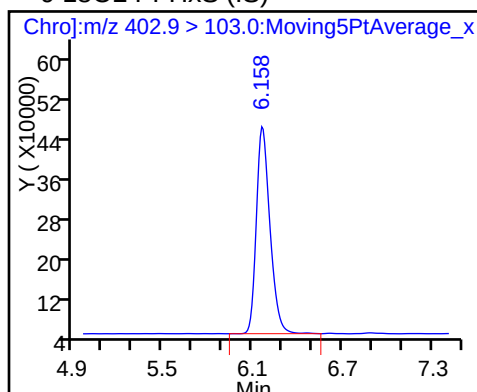
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

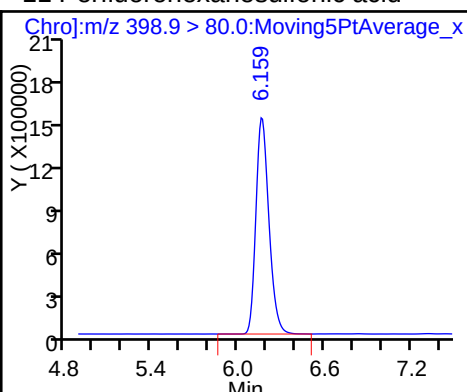
8 Perfluoroheptanoic acid



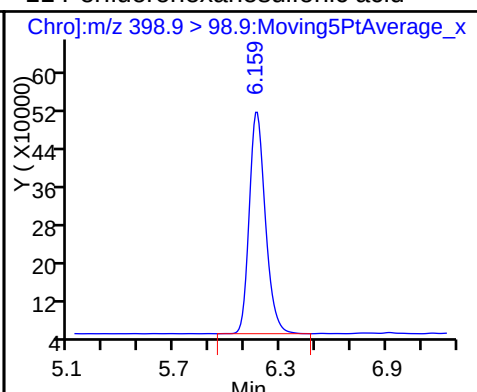
* 9 18O2 PFHxS (IS)



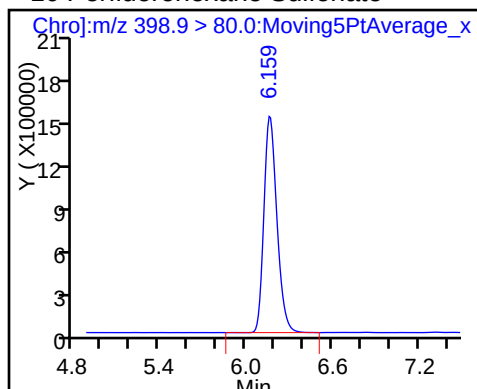
11 Perfluorohexanesulfonic acid



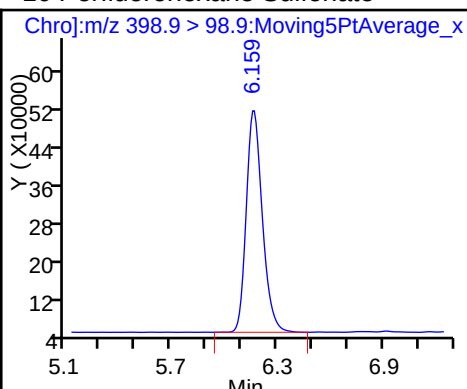
11 Perfluorohexanesulfonic acid



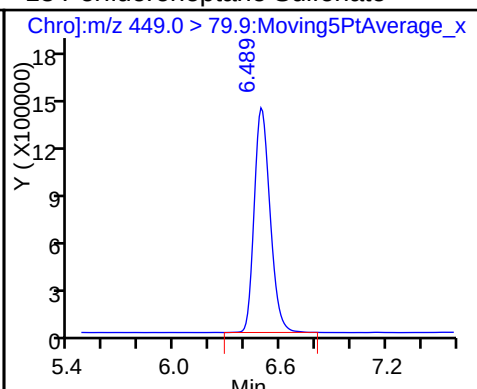
10 Perfluorohexane Sulfonate



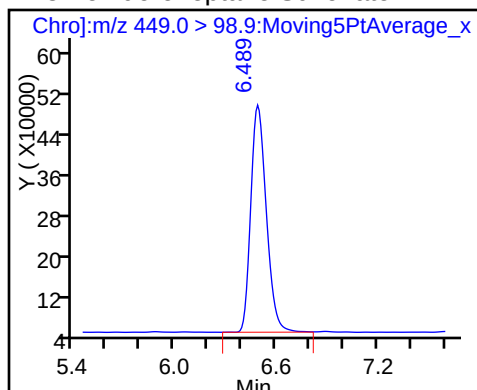
10 Perfluorohexane Sulfonate



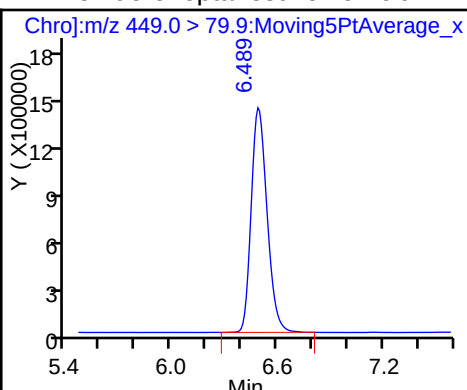
13 Perfluoroheptane Sulfonate



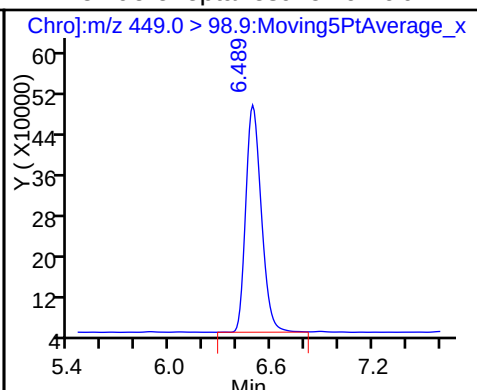
13 Perfluoroheptane Sulfonate



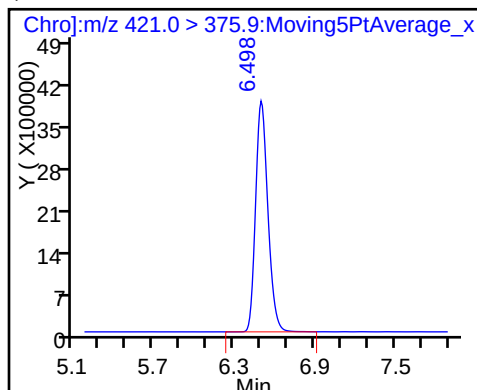
12 Perfluoroheptanesulfonic Acid



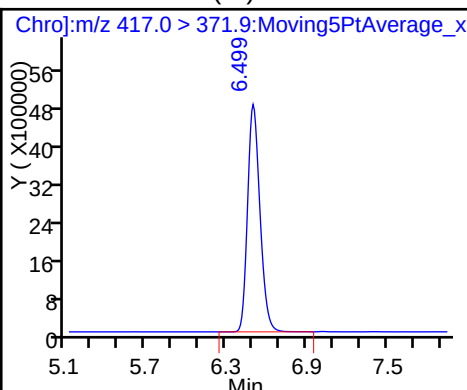
12 Perfluoroheptanesulfonic Acid



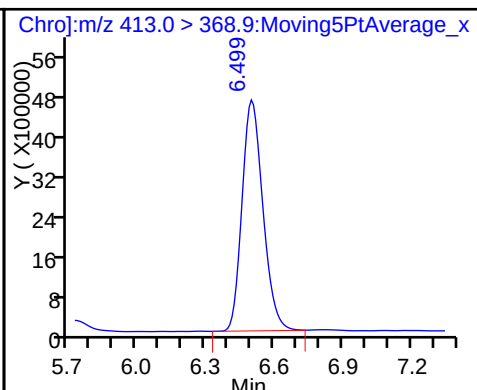
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



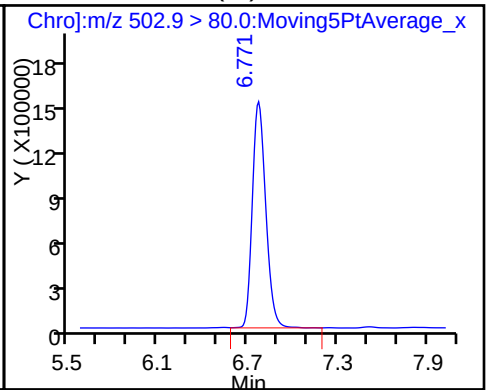
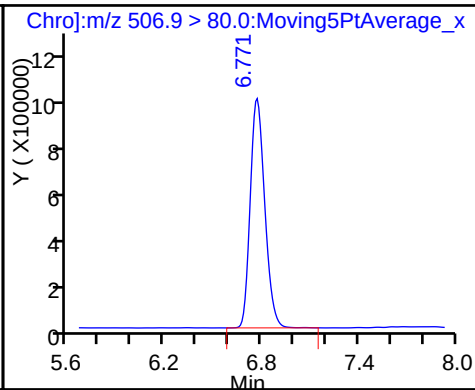
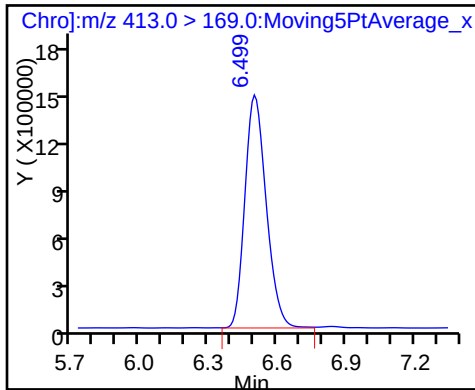
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

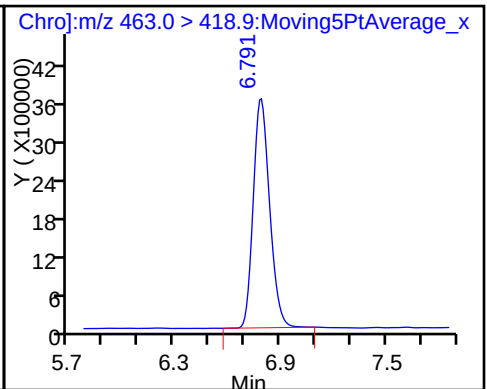
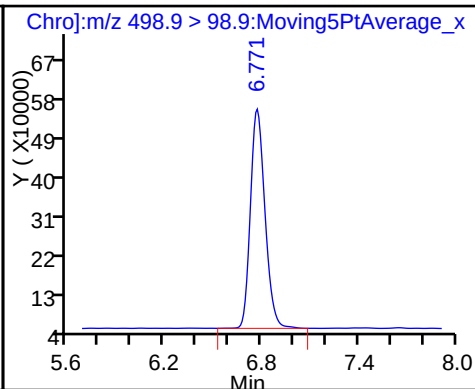
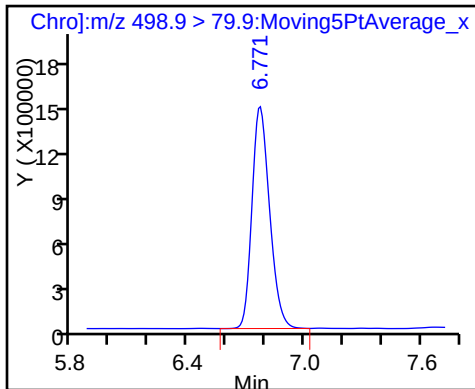
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

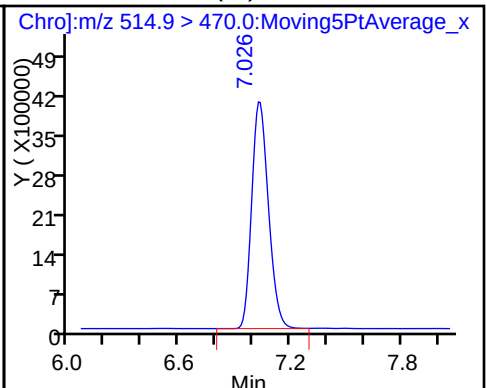
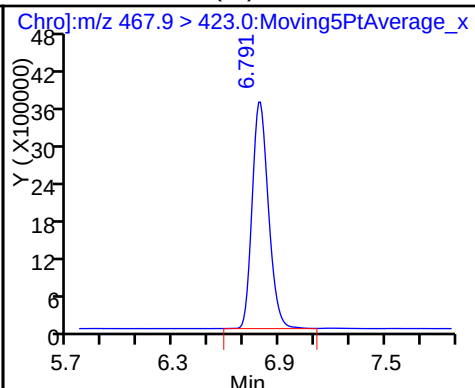
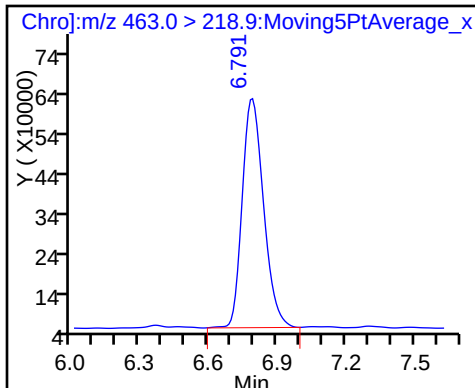
20 Perfluorononanoic acid



20 Perfluorononanoic acid

* 21 13C5 PFNA (IS)

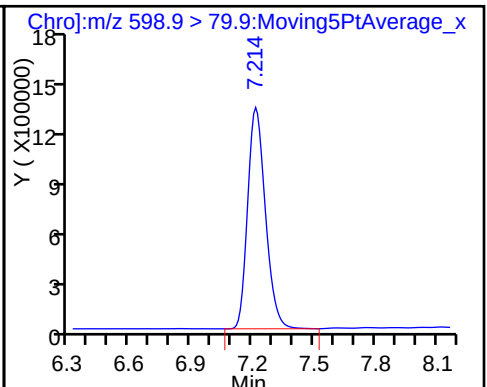
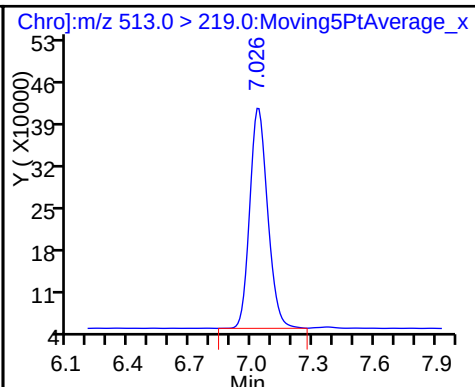
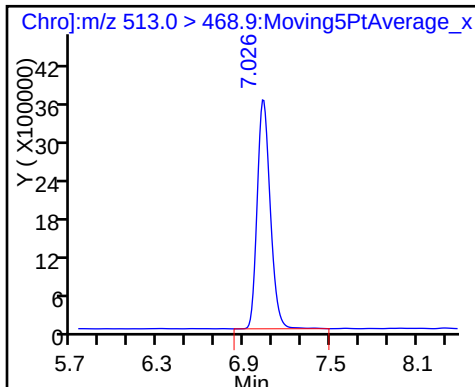
* 22 13C2 PFDA (IS)



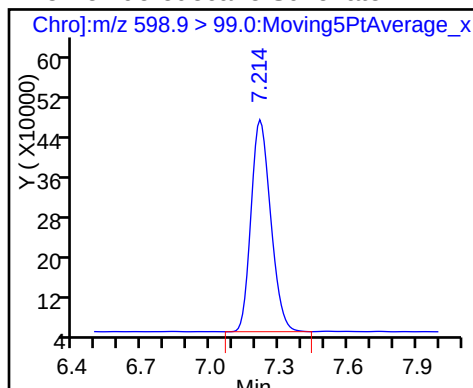
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

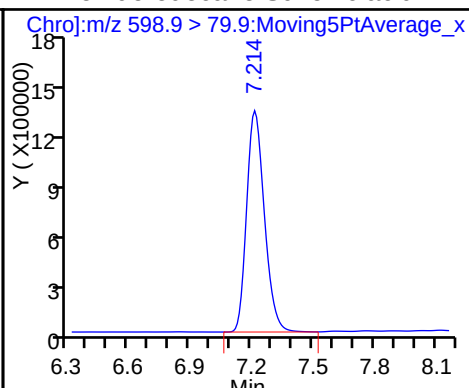
25 Perfluorodecane Sulfonate



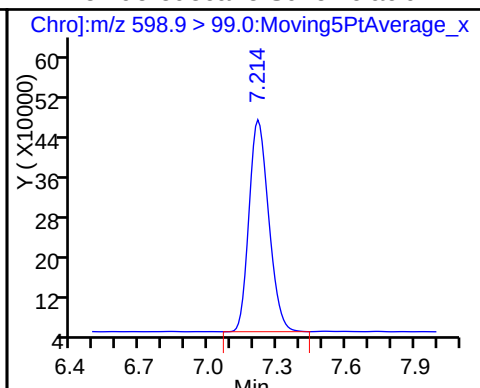
25 Perfluorodecane Sulfonate



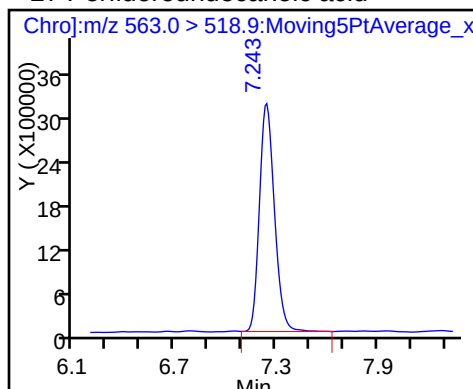
24 Perfluorodecane Sulfonic acid



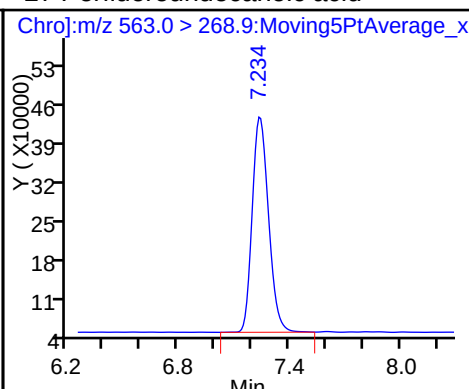
24 Perfluorodecane Sulfonic acid



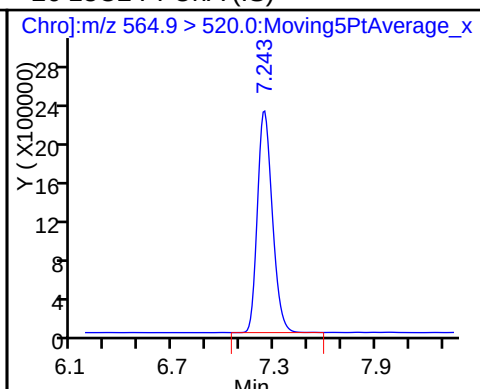
27 Perfluoroundecanoic acid



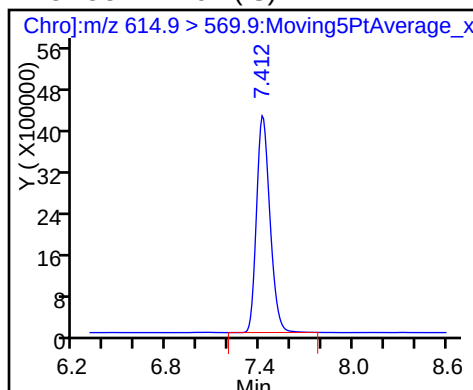
27 Perfluoroundecanoic acid



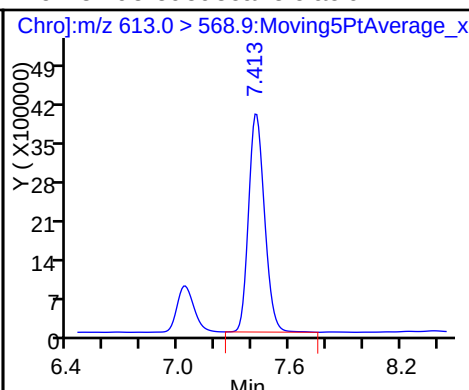
* 26 13C2 PFUnA (IS)



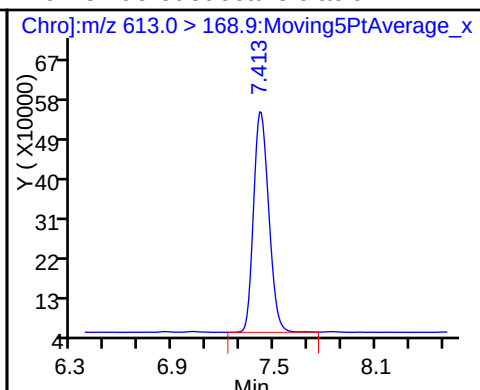
* 28 13C2 PFDaA (IS)



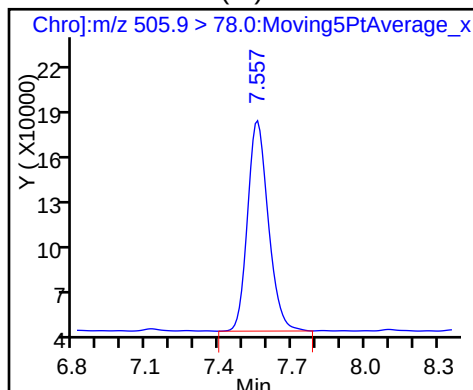
29 Perfluorododecanoic acid



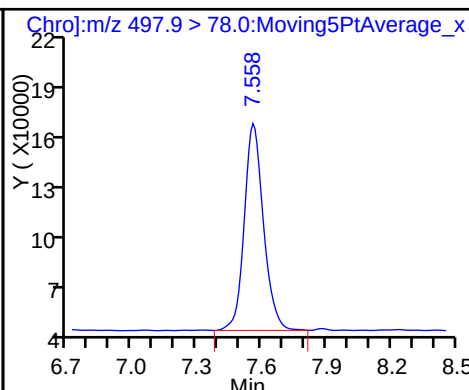
29 Perfluorododecanoic acid



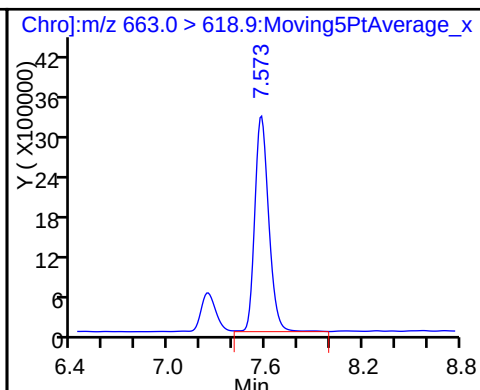
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide



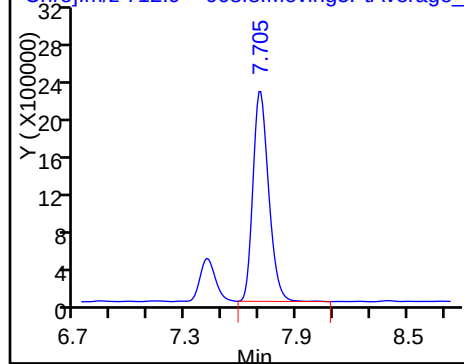
30 Perfluorotridecanoic acid



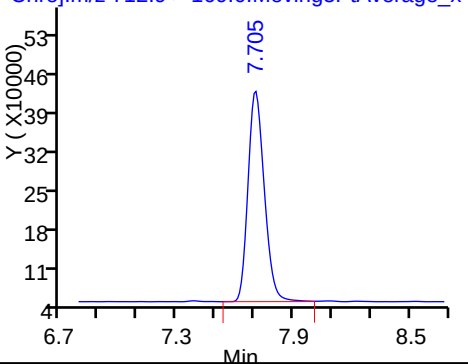
33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid

Chro[m/z 712.9 > 668.8:Moving5PtAverage_x



Chro[m/z 712.9 > 169.0:Moving5PtAverage_x



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-85017-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCSD 280-332167/3-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>PC516G05048.d</u>
Analysis Method: <u>DV-LC-0012</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>07/01/2016 11:30</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>07/05/2016 21:06</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>25 (uL)</u>	GC Column: <u>Gemini-NX</u> ID: _____
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>332595</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.137		0.020	0.0082
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.196		0.030	0.013
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.188		0.030	0.0070
375-95-1	Perfluorononanoic acid (PFNA)	0.180		0.040	0.017
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.171		0.030	0.013
335-67-1	Perfluorooctanoic acid (PFOA)	0.190		0.020	0.0098

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104		60-155
STL01054	13C8 PFOS	102		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05048.d
 Lims ID: LCSD 280-332167/3-A
 Client ID:
 Sample Type: LCSD
 Inject. Date: 05-Jul-2016 21:06:39 ALS Bottle#: 0 Worklist Smp#: 6
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: LCSD 280-332167/3-A, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 06-Jul-2016 13:27:46 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK018

First Level Reviewer: fiedlerh

Date: 06-Jul-2016 13:16:37

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.001	4.096	-0.095		30313779	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	4.001	4.096	-0.095	1.000	27655007	8.51			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.119	5.166	-0.047	0.896	22620086	10.2			
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.241	5.289	-0.048	0.852	8984874	6.84			
298.9 > 98.9	5.251	5.289	-0.038	0.854	2991209		3.00(1.80-3.35)		
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.241	5.289	-0.048	0.852	8984874	6.84			
298.9 > 98.9	5.251	5.289	-0.038	0.854	2991209		3.00(2.57-2.57)		
7 Perfluorohexanoic acid									
313.0 > 268.9	5.705	5.752	-0.047	0.998	16348730	9.19			
313.0 > 118.6	5.705	5.752	-0.047	0.998	473664		34.52(34.05-63.23)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.714	5.752	-0.038		18806550	10.0			
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.140	6.187	-0.047	0.946	24153628	9.80			
363.0 > 168.9	6.140	6.187	-0.047	0.946	6129898		3.94(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.149	6.187	-0.038		2379241	9.46			
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.149	6.187	-0.038	1.000	9138500	9.39			
398.9 > 98.9	6.149	6.187	-0.038	1.000	3041252		3.00(1.85-1.85)		
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.149	6.187	-0.038	1.000	9138500	9.39			R
398.9 > 98.9	6.149	6.187	-0.038	1.000	3041252		3.00(1.30-2.41)		R

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
13 Perfluoroheptane Sulfonate									
449.0 > 79.9	6.479	6.526	-0.047	0.958	8793460	7.60			
449.0 > 98.9	6.479	6.526	-0.047	0.958	2720043		3.23(0.00-0.00)		
12 Perfluoroheptanesulfonic Acid									
449.0 > 79.9	6.479	6.526	-0.047	0.958	8793460	7.60			
449.0 > 98.9	6.479	6.526	-0.047	0.958	2720043		3.23(0.00-0.00)		
\$ 14 13C8 PFOA									
421.0 > 375.9	6.489	6.536	-0.047	1.000	23893105	10.4			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.489	6.537	-0.048		28335779	10.0			
16 Perfluorooctanoic acid									
413.0 > 368.9	6.489	6.537	-0.048	1.000	27992776	9.48			
413.0 > 169.0	6.489	6.537	-0.048	1.000	9106188		3.07(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.761	6.799	-0.038	1.000	5665940	9.70			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.762	6.800	-0.038		9129799	9.56			
19 Perfluorooctane sulfonic acid									
498.9 > 79.9	6.762	6.800	-0.038	1.000	9568847	8.54			R
498.9 > 98.9	6.762	6.800	-0.038	1.000	3385589		2.83(1.31-2.43)		R
20 Perfluorononanoic acid									
463.0 > 418.9	6.782	6.820	-0.038	1.000	22826387	9.00			
463.0 > 218.9	6.782	6.820	-0.038	1.000	3311005		6.89(5.59-10.38)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.782	6.819	-0.037		22589518	10.0			
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.026	7.064	-0.038		24202247	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.026	7.064	-0.038	1.000	23021765	9.44			R
513.0 > 219.0	7.026	7.064	-0.038	1.000	2280038		10.10(10.49-19.48)		R
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.214	7.243	-0.029	1.067	7801101	6.59			
598.9 > 99.0	7.214	7.243	-0.029	1.067	2717792		2.87(1.99-3.69)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.214	7.243	-0.029	1.067	7801101	6.59			
598.9 > 99.0	7.214	7.243	-0.029	1.067	2717792		2.87(2.84-2.84)		
27 Perfluoroundecanoic acid									
563.0 > 518.9	7.234	7.272	-0.038	1.000	17366856	8.52			R
563.0 > 268.9	7.234	7.272	-0.038	1.000	2293682		7.57(3.47-6.45)		R
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.234	7.271	-0.037		14364305	10.0			
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.412	7.450	-0.038		24980179	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.413	7.451	-0.038	1.000	23145122	9.01			
613.0 > 168.9	7.413	7.451	-0.038	1.000	2970703		7.79(5.96-11.06)		
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.548	7.586	-0.038		850579	10.0			S

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05048.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.549	7.587	-0.038	1.000	863567	9.35			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.564	7.602	-0.038	1.020	17510529	7.52			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.696	7.734	-0.038	1.038	13879078	9.40			
712.9 > 169.0	7.696	7.734	-0.038	1.038	2018347		6.88(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160706-48560.b\PC516G05048.d

Injection Date: 05-Jul-2016 21:06:39

Instrument ID: LC_LCMS5

Lims ID: LCSD 280-332167/3-A

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 6

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

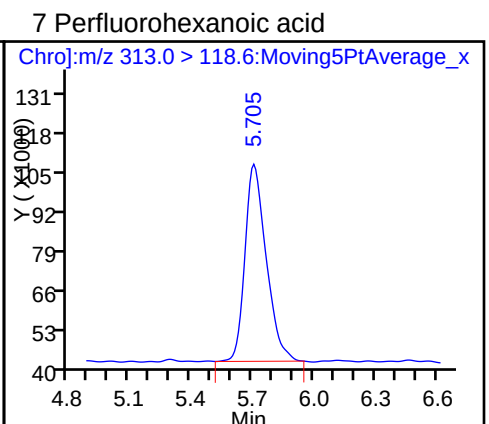
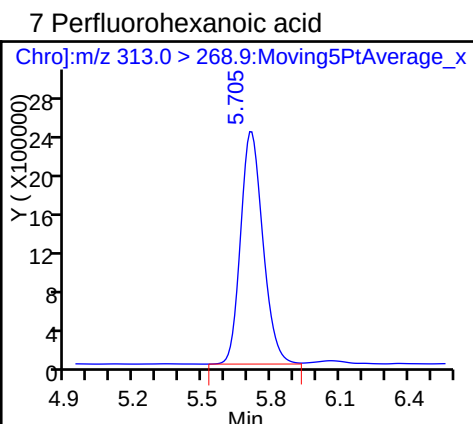
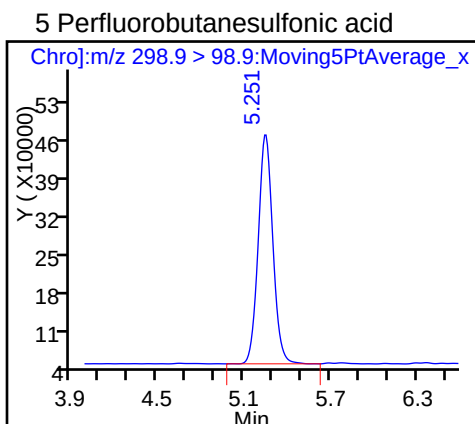
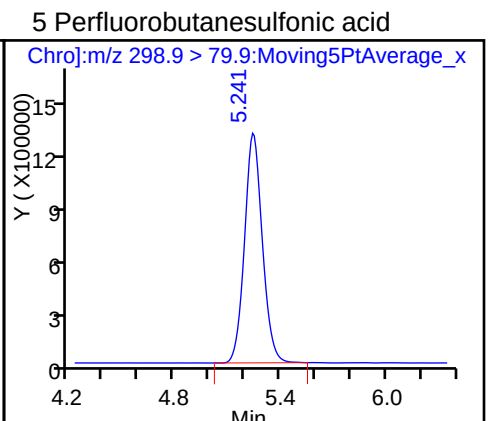
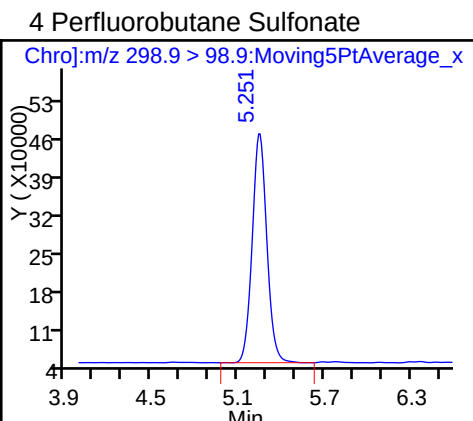
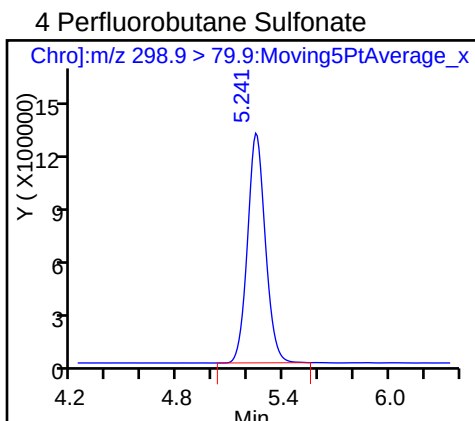
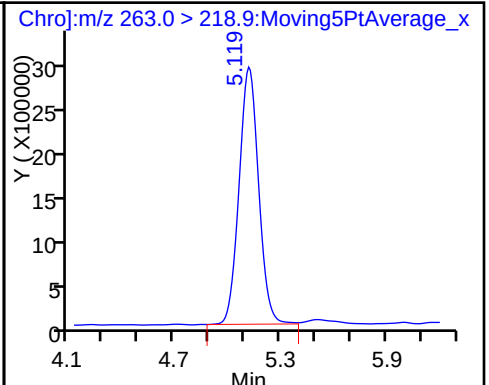
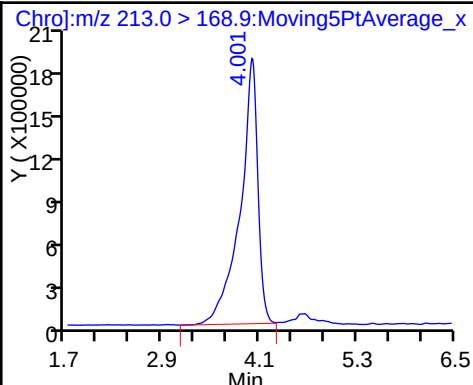
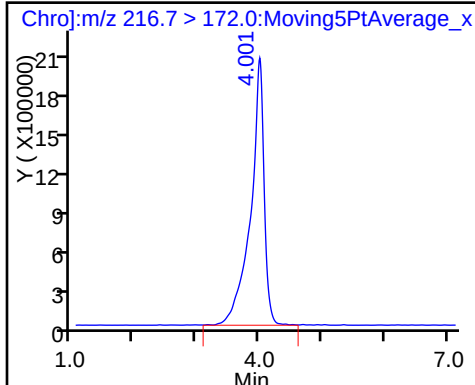
Method: 8321_PFC

Limit Group: LC - PFC

* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

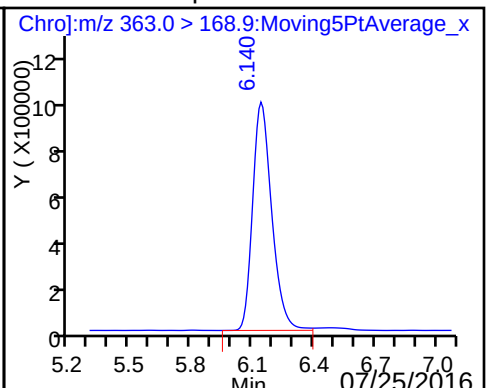
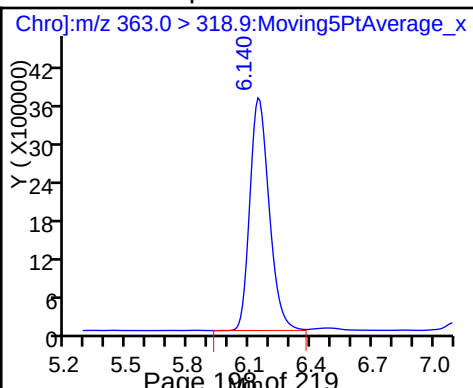
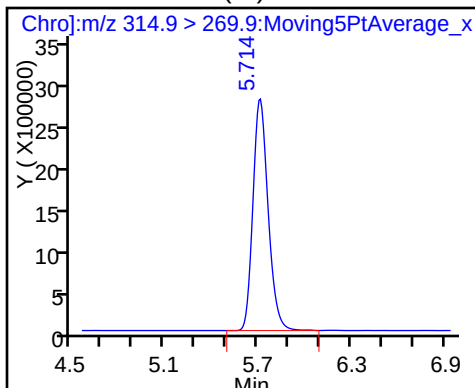
3 Perfluoropentanoic acid



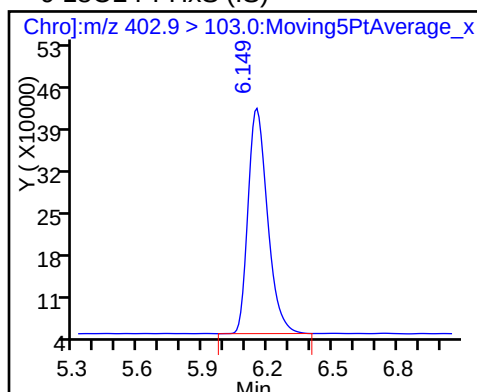
* 6 13C2 PFHxA (IS)

8 Perfluoroheptanoic acid

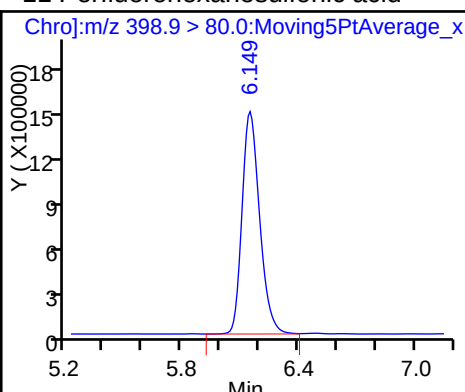
8 Perfluoroheptanoic acid



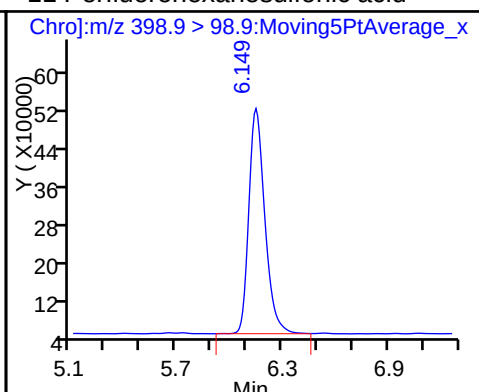
* 9 18O2 PFHxS (IS)



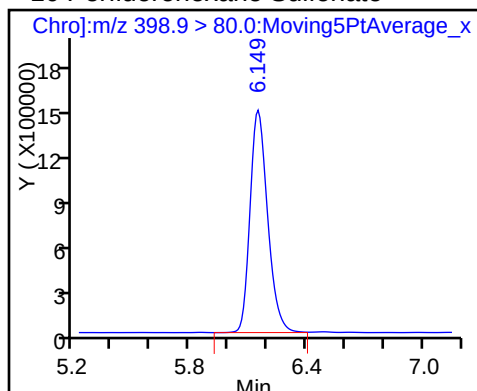
11 Perfluorohexanesulfonic acid



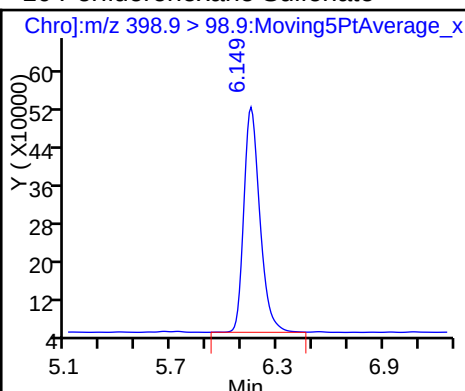
11 Perfluorohexanesulfonic acid



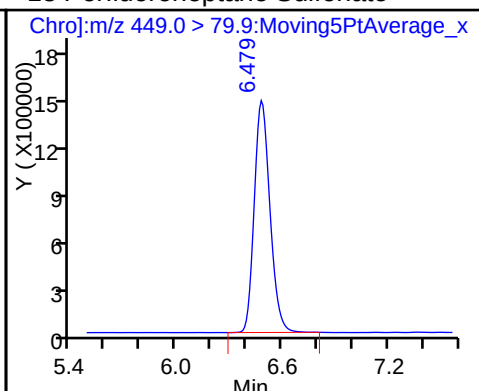
10 Perfluorohexane Sulfonate



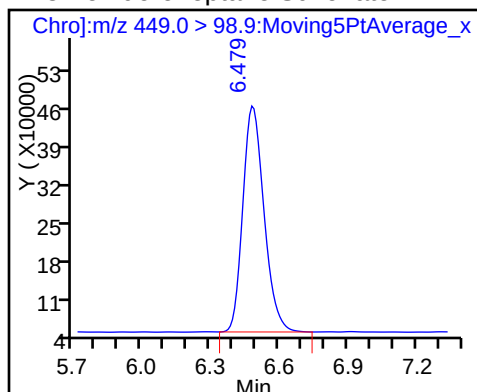
10 Perfluorohexane Sulfonate



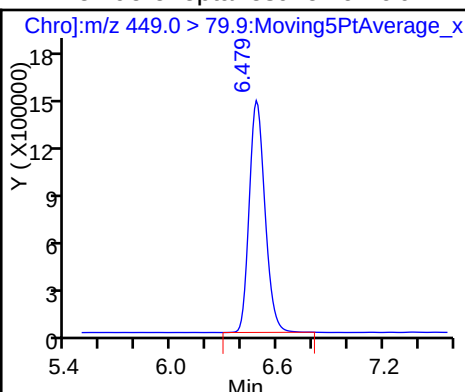
13 Perfluoroheptane Sulfonate



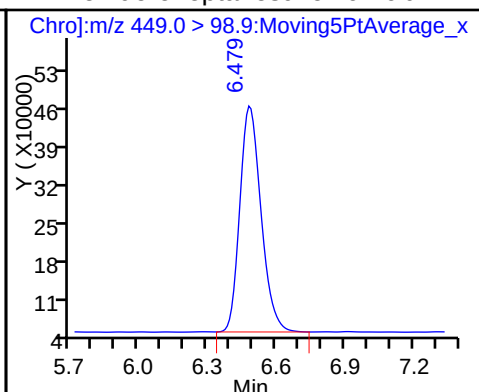
13 Perfluoroheptane Sulfonate



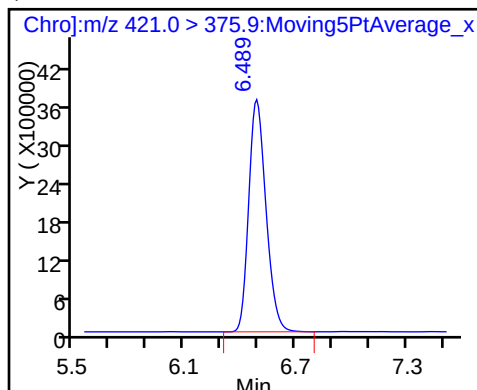
12 Perfluoroheptanesulfonic Acid



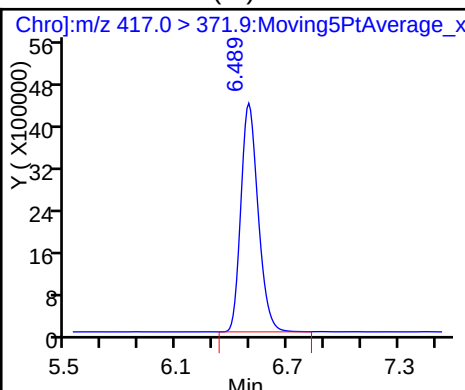
12 Perfluoroheptanesulfonic Acid



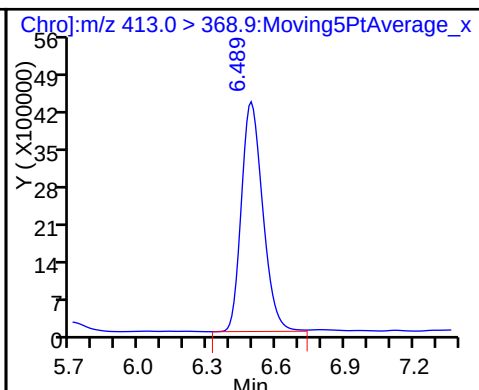
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



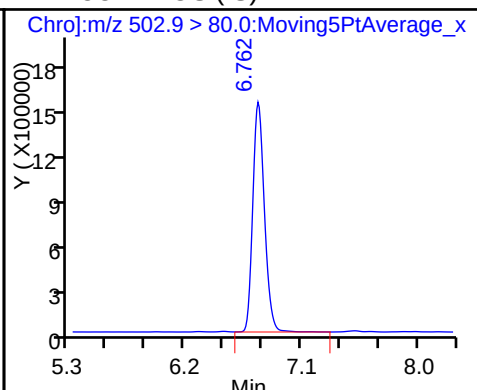
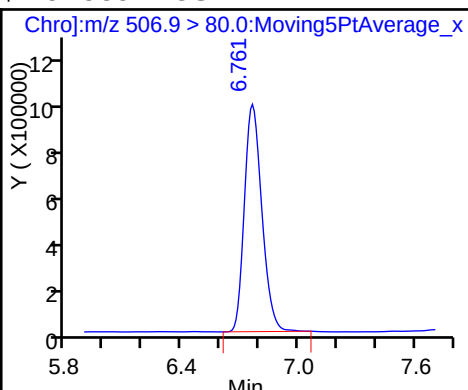
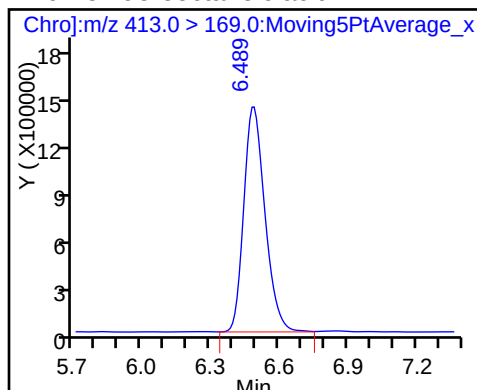
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

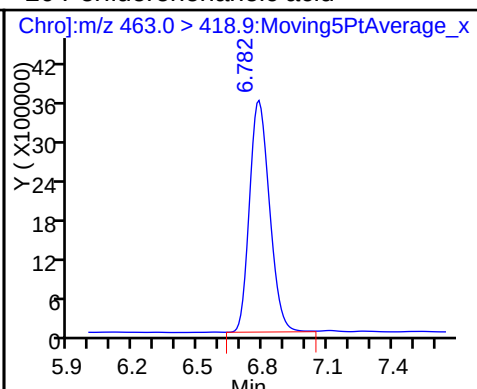
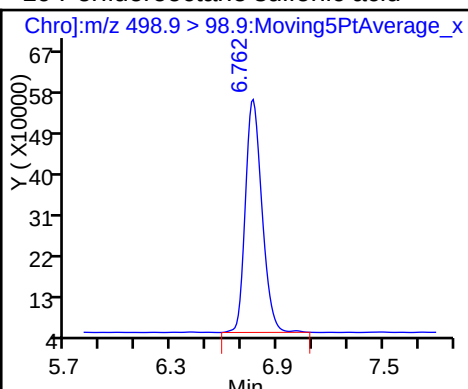
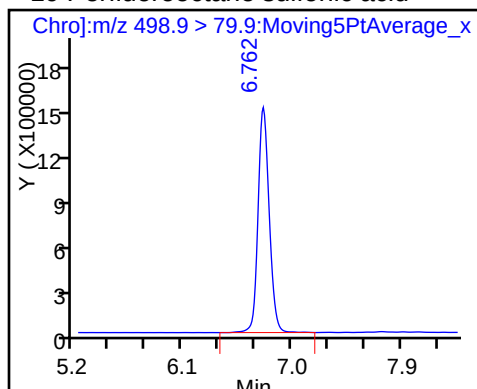
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

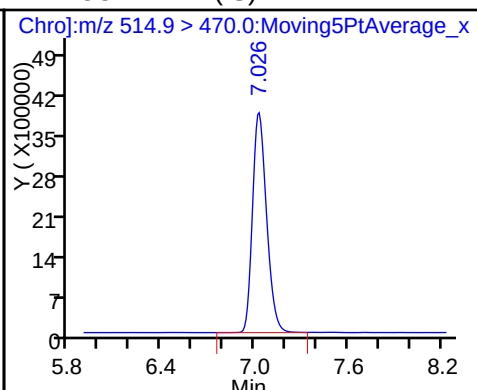
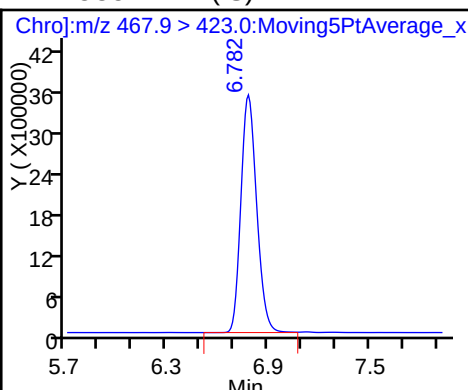
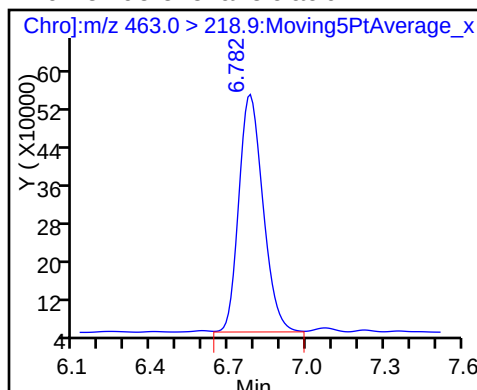
20 Perfluorononanoic acid



20 Perfluorononanoic acid

* 21 13C5 PFNA (IS)

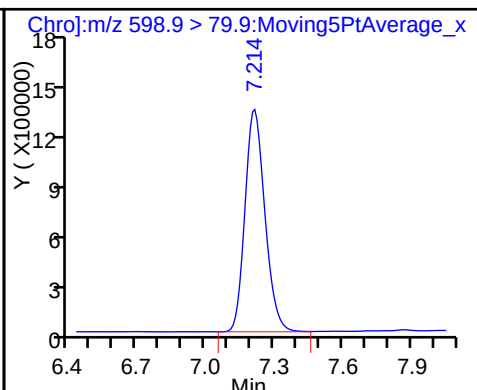
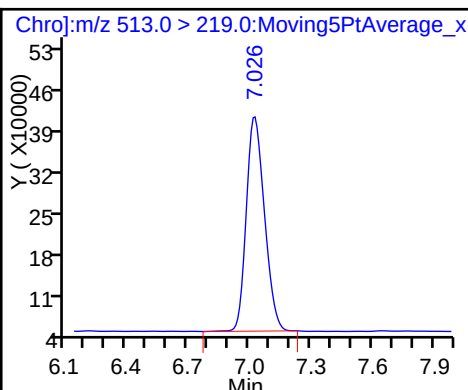
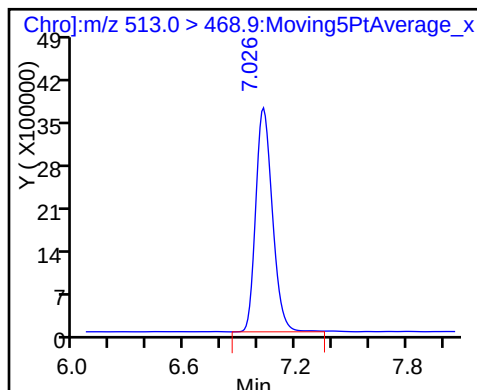
* 22 13C2 PFDA (IS)

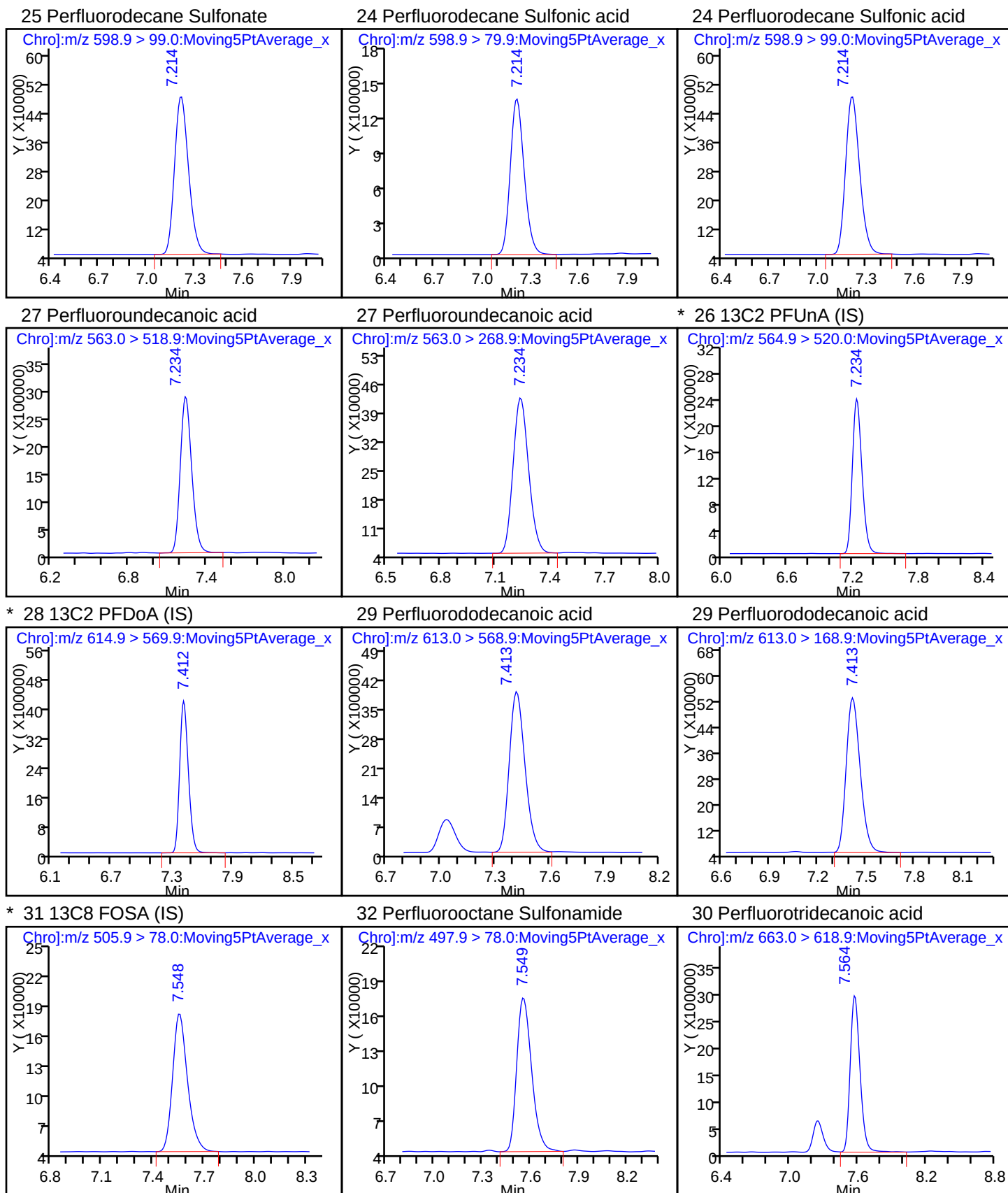


23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

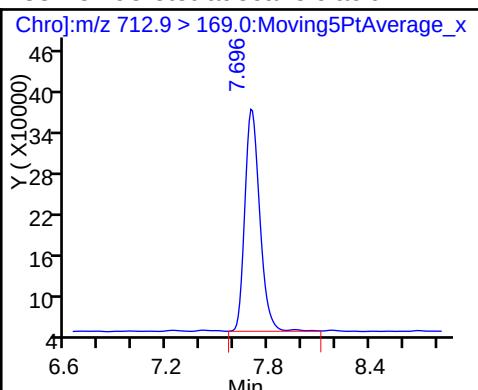
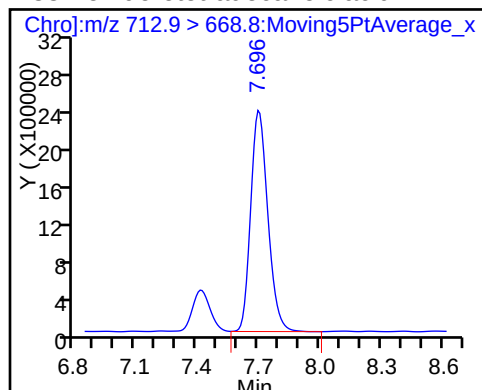
25 Perfluorodecane Sulfonate





33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-85017-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: DLCK 280-328740/14
 Matrix: Water Lab File ID: PC516F06019.d
 Analysis Method: DV-LC-0012 Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1(mL) Date Analyzed: 06/06/2016 17:05
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 25(uL) GC Column: Gemini-NX ID: _____
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 328740 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
29420-43-3	Perfluorobutane Sulfonate (PFBS)	0.419		0.35	0.10
375-85-9	Perfluoroheptanoic acid (PFHpA)	0.433		0.35	0.10
108427-53-8	Perfluorohexane Sulfonate (PFHxS)	0.446		0.35	0.10
375-95-1	Perfluorononanoic acid (PFNA)	0.439		0.35	0.10
1763-23-1	Perfluorooctanesulfonic acid (PFOS)	0.456		0.35	0.10
335-67-1	Perfluorooctanoic acid (PFOA)	0.459		0.35	0.10

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		60-155
STL01054	13C8 PFOS	106		45-130

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d
 Lims ID: DLCK L2
 Client ID:
 Sample Type: QC
 Inject. Date: 06-Jun-2016 17:05:17 ALS Bottle#: 0 Worklist Smp#: 14
 Injection Vol: 25.0 ul Dil. Factor: 1.0000
 Sample Info: DLCK L2, Sample
 Operator ID: ACM Instrument ID: LC_LCMS5
 Method: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\8321_PFC.m
 Limit Group: LC - PFC
 Last Update: 07-Jun-2016 14:09:37 Calib Date: 06-Jun-2016 16:28:22
 Integrator: Picker
 Quant Method: Internal Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06016.d
 Column 1 : Det: MS QQQ
 Process Host: XAWRK003

First Level Reviewer: meyer

Date: 07-Jun-2016 13:03:09

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 1 13C4 PFBA (IS)									
216.7 > 172.0	4.200	4.465	-0.265		20323348	10.0			
2 Perfluorobutyric acid									
213.0 > 168.9	3.850	4.465	-0.615	0.917	1113178	0.5139			
3 Perfluoropentanoic acid									
263.0 > 218.9	5.299	5.336	-0.037	0.899	1426107	0.4894			
5 Perfluorobutanesulfonic acid									
298.9 > 79.9	5.431	5.440	-0.009	0.862	594584	0.4193			
298.9 > 98.9	5.431	5.440	-0.009	0.862	180646		3.29(2.57-2.57)		
4 Perfluorobutane Sulfonate									
298.9 > 79.9	5.431	5.440	-0.009	0.862	594584	0.4193			
298.9 > 98.9	5.431	5.440	-0.009	0.862	180646		3.29(1.80-3.35)		
* 6 13C2 PFHxA (IS)									
314.9 > 269.9	5.894	5.885	0.009		23600887	10.0			
7 Perfluorohexanoic acid									
313.0 > 268.9	5.894	5.885	0.009	1.000	1181623	0.5087			
313.0 > 118.6	5.894	5.885	0.009	1.000	34359		34.39(34.05-63.23)		
8 Perfluoroheptanoic acid									
363.0 > 318.9	6.301	6.292	0.009	0.952	1398910	0.4329			
363.0 > 168.9	6.292	6.292	0.0	0.950	395878		3.53(3.35-6.23)		
* 9 18O2 PFHxS (IS)									
402.9 > 103.0	6.300	6.300	0.0		2616206	9.46			
10 Perfluorohexane Sulfonate									
398.9 > 80.0	6.301	6.291	0.010	1.000	564647	0.4464			R
398.9 > 98.9	6.301	6.291	0.010	1.000	164216		3.44(1.30-2.41)		R
11 Perfluorohexanesulfonic acid									
398.9 > 80.0	6.301	6.291	0.010	1.000	564647	0.4464			
398.9 > 98.9	6.301	6.291	0.010	1.000	164216		3.44(1.85-1.85)		

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
12 Perfluoroheptanesulfonic Acid									7
449.0 > 79.9	6.602	6.621	-0.019	0.960	542028	0.4617			7
449.0 > 98.9	6.612	6.621	-0.009	0.962	184723		2.93(0.00-0.00)		
LOD = 0.4950									
13 Perfluoroheptane Sulfonate									7
449.0 > 79.9	6.602	6.621	-0.019	0.960	542028	0.4617			7
449.0 > 98.9	6.612	6.621	-0.009	0.962	184723		2.93(0.00-0.00)		
LOD = 0.4950									
\$ 14 13C8 PFOA									
421.0 > 375.9	6.612	6.631	-0.019	0.999	1593505	0.5225			
* 15 13C4 PFOA (IS)									
417.0 > 371.9	6.622	6.631	-0.009		34601296	10.0			
16 Perfluorooctanoic acid									R
413.0 > 368.9	6.622	6.632	-0.010	1.000	1900951	0.4594			R
413.0 > 169.0	6.613	6.632	-0.019	0.999	678793		2.80(2.86-5.31)		
\$ 18 13C8 PFOS									
506.9 > 80.0	6.875	6.894	-0.019	1.000	325922	0.5081			
* 17 13C4 PFOS (IS)									
502.9 > 80.0	6.875	6.904	-0.029		9456457	9.56			
19 Perfluorooctane sulfonic acid									R
498.9 > 79.9	6.876	6.895	-0.019	1.000	607496	0.4558			R
498.9 > 98.9	6.876	6.895	-0.019	1.000	150123		4.05(1.31-2.43)		
* 21 13C5 PFNA (IS)									
467.9 > 423.0	6.895	6.914	-0.019		27571989	10.0			
20 Perfluorononanoic acid									R
463.0 > 418.9	6.895	6.924	-0.029	1.000	1486714	0.4391			R
463.0 > 218.9	6.905	6.924	-0.019	1.001	299965		4.96(5.59-10.38)		
* 22 13C2 PFDA (IS)									
514.9 > 470.0	7.130	7.158	-0.028		28251355	10.0			
23 Perfluorodecanoic acid									
513.0 > 468.9	7.130	7.159	-0.029	1.000	1495646	0.4925			
513.0 > 219.0	7.121	7.159	-0.038	0.999	132217		11.31(10.49-19.48)		
24 Perfluorodecane Sulfonic acid									
598.9 > 79.9	7.309	7.337	-0.028	1.063	616888	0.4672			
598.9 > 99.0	7.318	7.337	-0.019	1.064	183519		3.36(2.84-2.84)		
25 Perfluorodecane Sulfonate									
598.9 > 79.9	7.309	7.337	-0.028	1.063	616888	0.4672			
598.9 > 99.0	7.318	7.337	-0.019	1.064	183519		3.36(1.99-3.69)		
* 26 13C2 PFUnA (IS)									
564.9 > 520.0	7.338	7.366	-0.028		17474457	10.0			
27 Perfluoroundecanoic acid									R
563.0 > 518.9	7.338	7.366	-0.028	1.000	1500233	0.5558			R
563.0 > 268.9	7.329	7.366	-0.038	0.999	174090		8.62(3.47-6.45)		
* 28 13C2 PFDoA (IS)									
614.9 > 569.9	7.507	7.545	-0.038		35228011	10.0			
29 Perfluorododecanoic acid									
613.0 > 568.9	7.507	7.545	-0.038	1.000	1831822	0.4508			
613.0 > 168.9	7.517	7.545	-0.028	1.001	218636		8.38(5.96-11.06)		

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d

Signal	RT	ADJ RT	DLT RT	REL RT	Response	Amount ug/L	Ratio(Limits)	S/N	Flags
* 31 13C8 FOSA (IS)									
505.9 > 78.0	7.605	7.642	-0.037		27255655	10.0			
32 Perfluorooctane Sulfonamide									
497.9 > 78.0	7.605	7.643	-0.038	1.000	1552508	0.5157			
30 Perfluorotridecanoic acid									
663.0 > 618.9	7.658	7.696	-0.038	1.020	1763710	0.4613			
33 Perfluorotetradecanoic acid									
712.9 > 668.8	7.791	7.829	-0.038	1.038	1138690	0.5403			
712.9 > 169.0	7.791	7.829	-0.038	1.038	261736		4.35(8.28-8.28)		

QC Flag Legend

Processing Flags

R - Failed Signal Ratio Test

7 - Failed Limit of Detection

Reagents:

PFC_CAL_stock_00033

Amount Added: 25.00

Units: uL

PFC-IS_00021

Amount Added: 20.00

Units: uL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS5\20160607-47603.b\PC516F06019.d

Injection Date: 06-Jun-2016 17:05:17

Instrument ID: LC_LCMS5

Lims ID: DLCK L2

Client ID:

Operator ID: ACM

ALS Bottle#: 0

Worklist Smp#: 14

Injection Vol: 25.0 ul

Dil. Factor: 1.0000

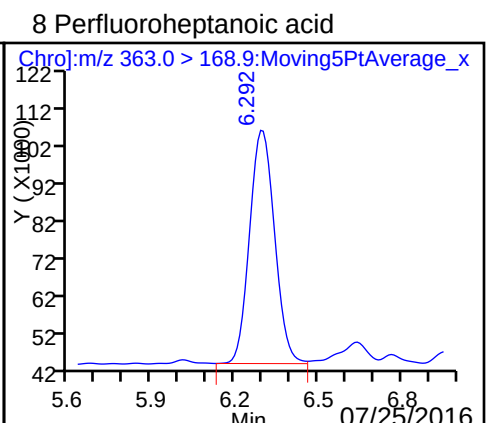
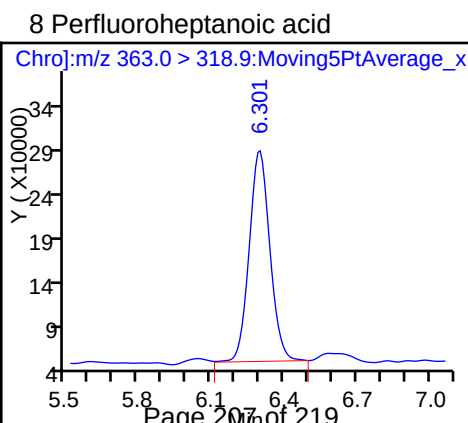
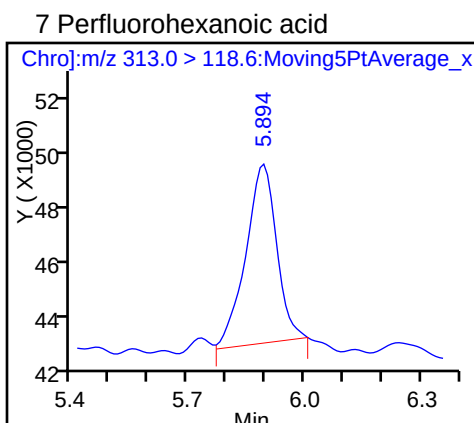
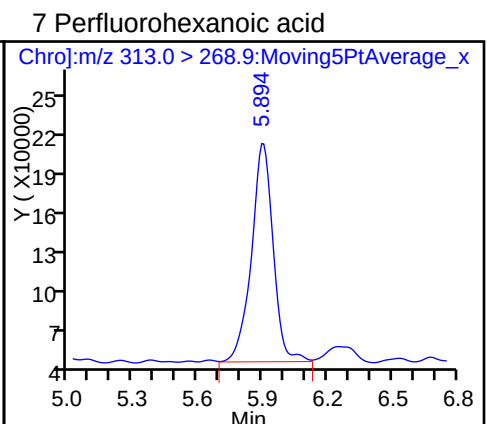
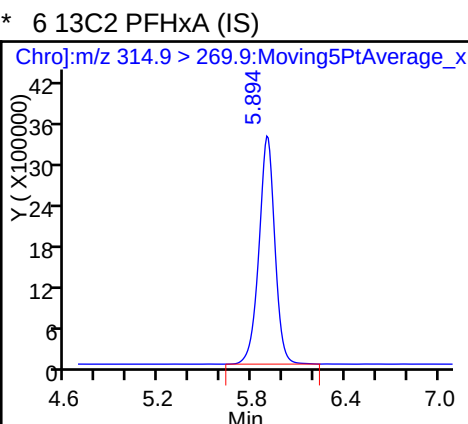
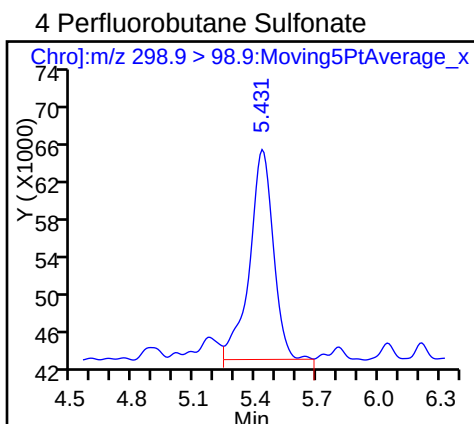
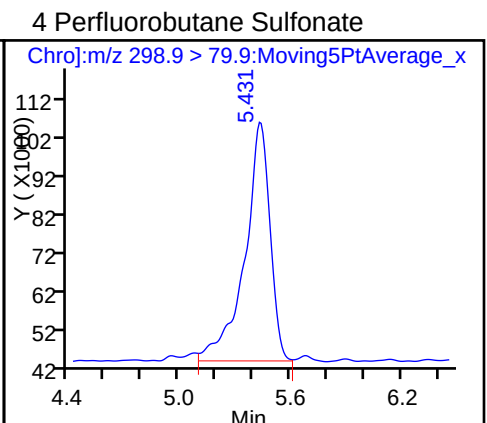
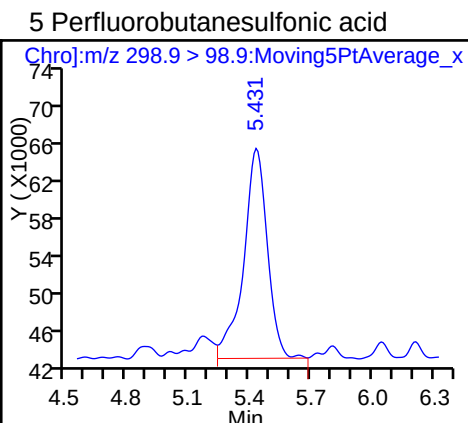
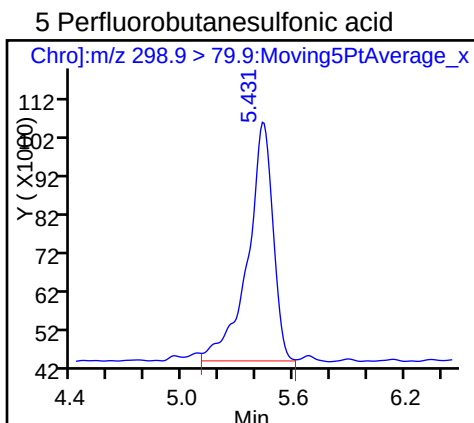
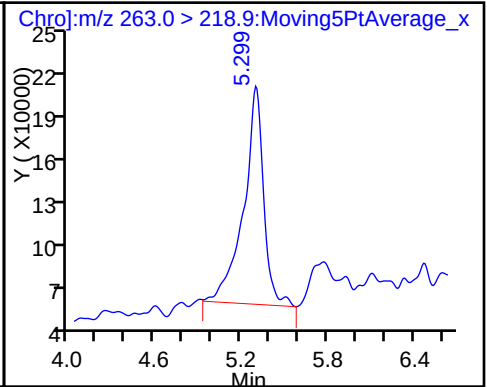
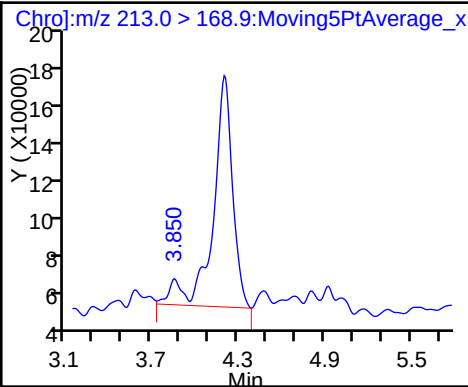
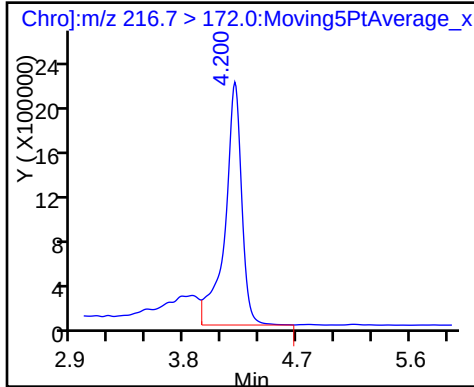
Method: 8321_PFC

Limit Group: LC - PFC

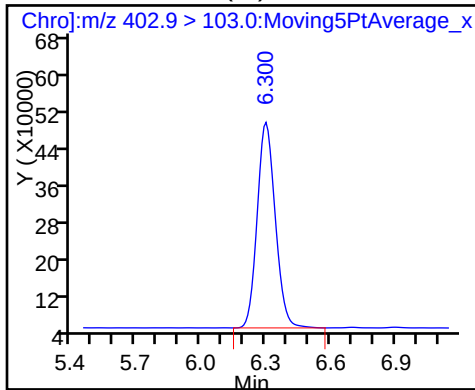
* 1 13C4 PFBA (IS)

2 Perfluorobutyric acid

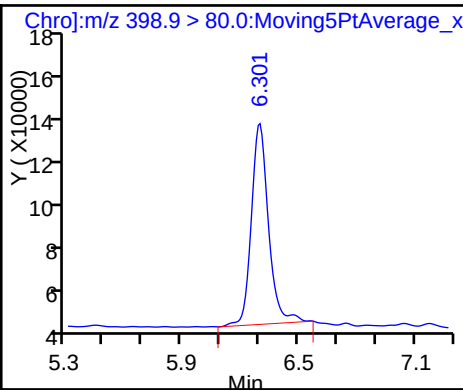
3 Perfluoropentanoic acid



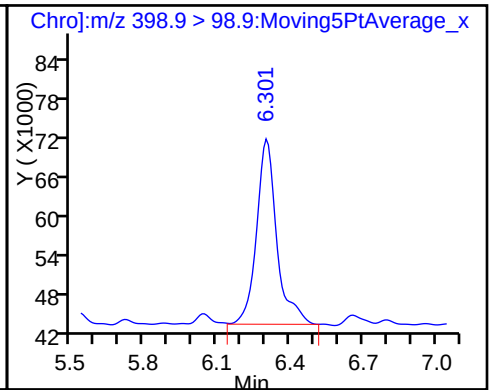
* 9 18O2 PFHxS (IS)



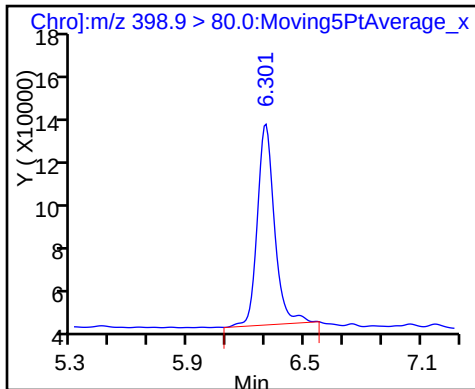
10 Perfluorohexane Sulfonate



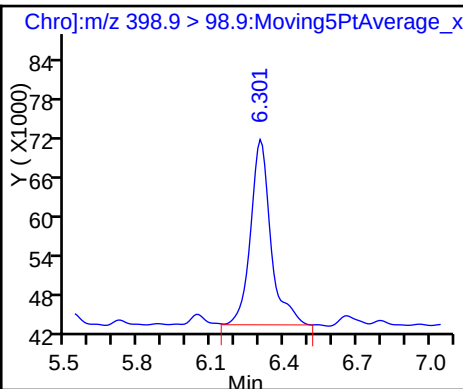
10 Perfluorohexane Sulfonate



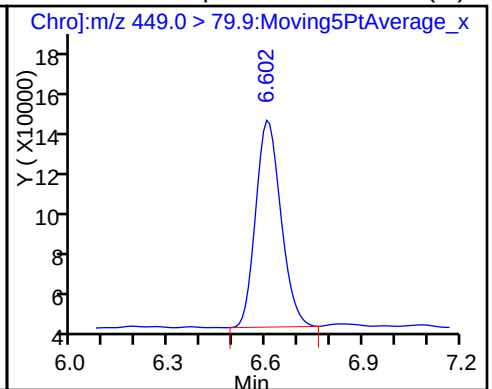
11 Perfluorohexanesulfonic acid



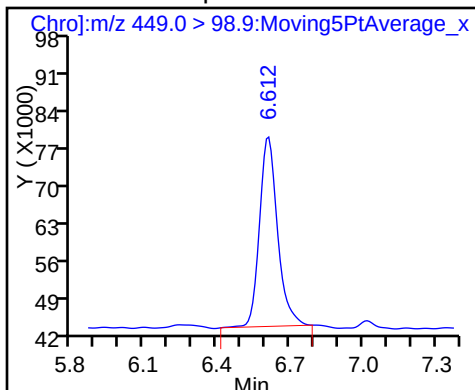
11 Perfluorohexanesulfonic acid



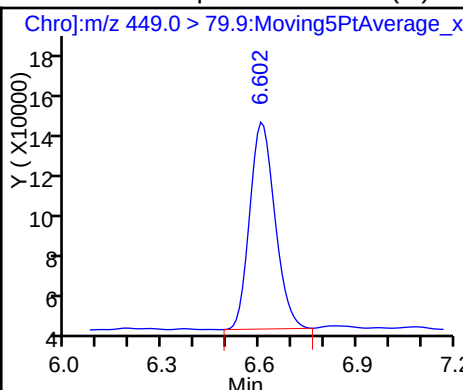
12 Perfluoroheptanesulfonic Acid (M)



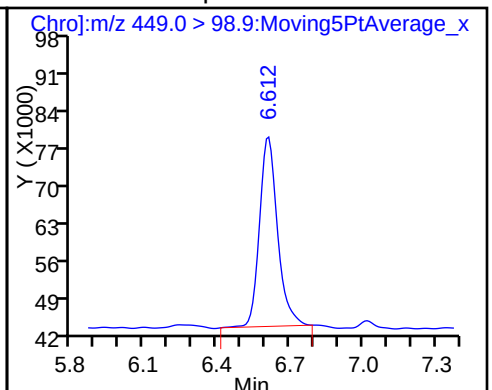
12 Perfluoroheptanesulfonic Acid



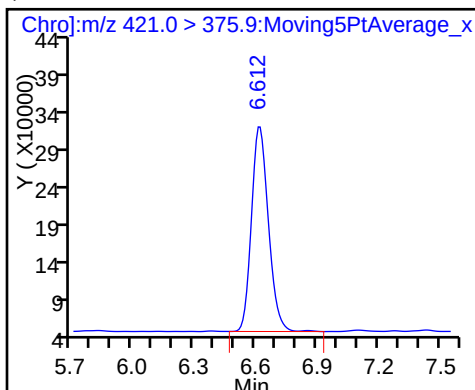
13 Perfluoroheptane Sulfonate (M)



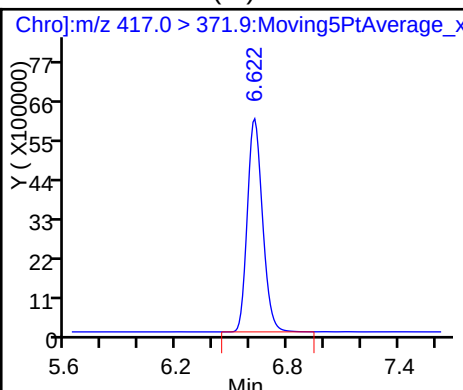
13 Perfluoroheptane Sulfonate



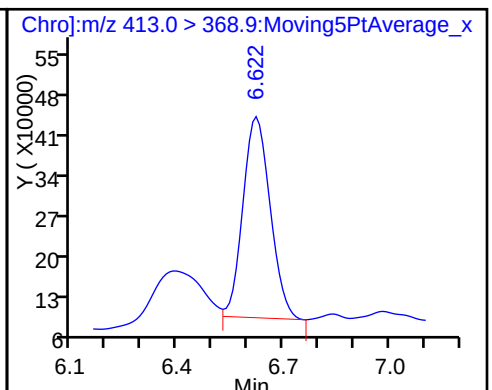
\$ 14 13C8 PFOA



* 15 13C4 PFOA (IS)



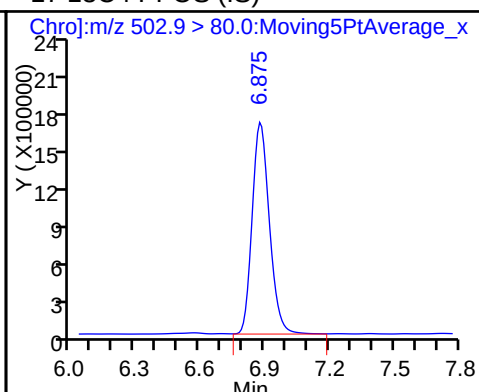
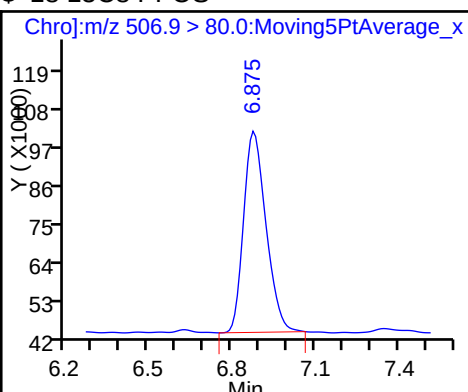
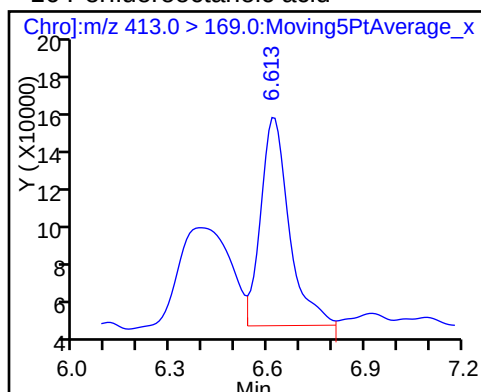
16 Perfluorooctanoic acid



16 Perfluorooctanoic acid

\$ 18 13C8 PFOS

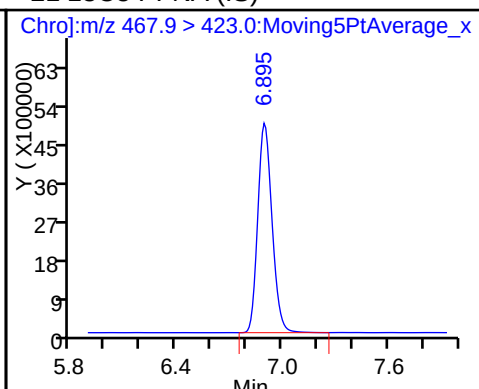
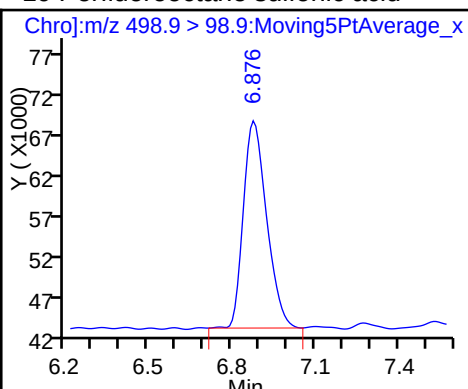
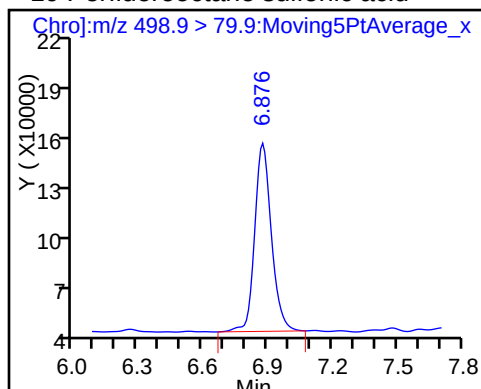
* 17 13C4 PFOS (IS)



19 Perfluorooctane sulfonic acid

19 Perfluorooctane sulfonic acid

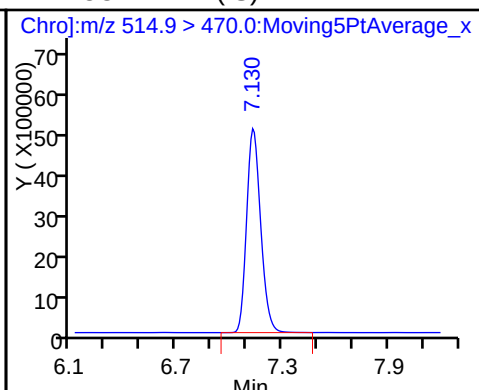
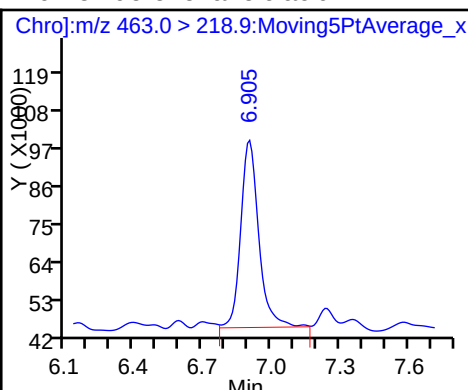
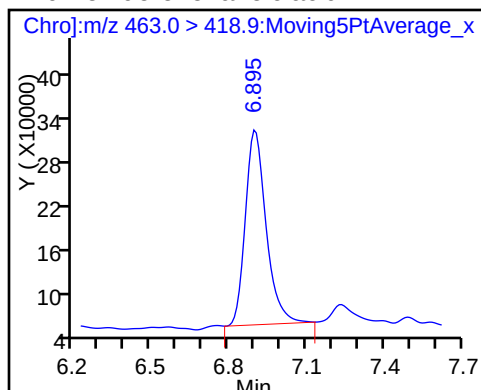
* 21 13C5 PFNA (IS)



20 Perfluorononanoic acid

20 Perfluorononanoic acid

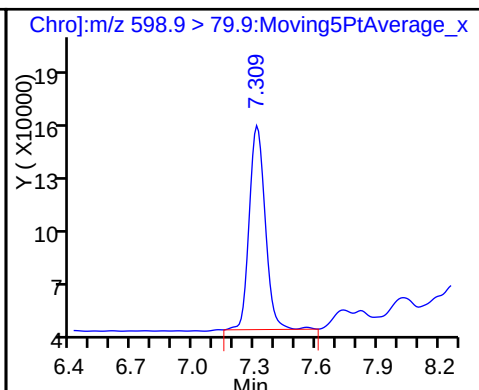
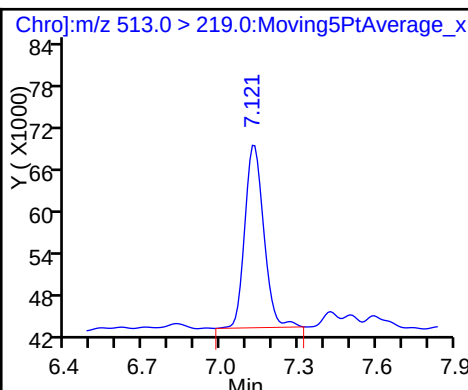
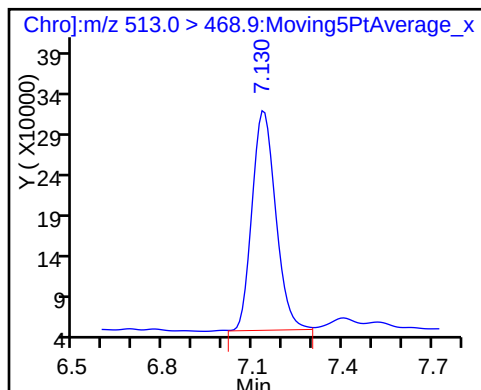
* 22 13C2 PFDA (IS)



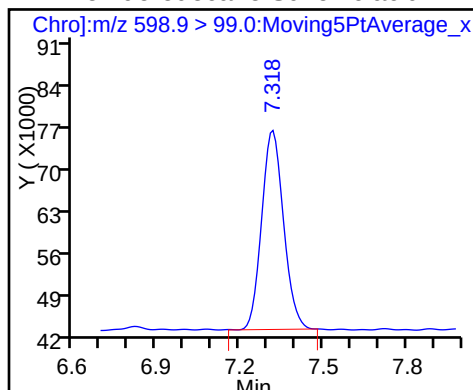
23 Perfluorodecanoic acid

23 Perfluorodecanoic acid

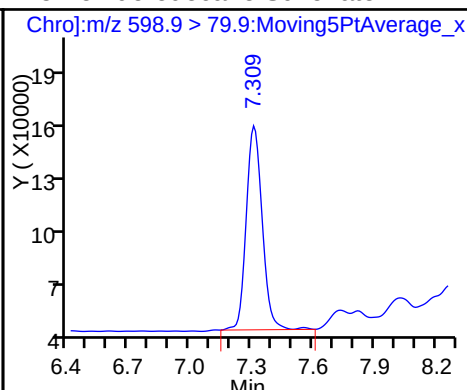
24 Perfluorodecane Sulfonic acid



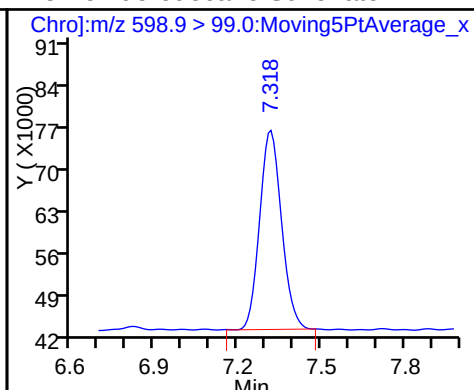
24 Perfluorodecane Sulfonic acid



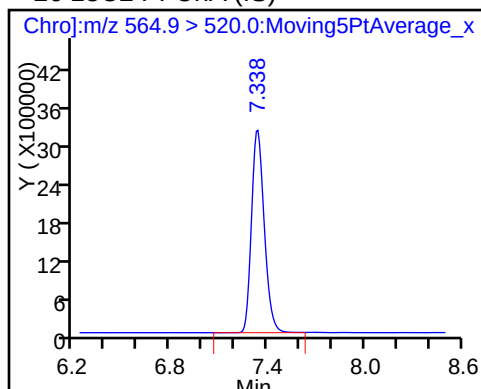
25 Perfluorodecane Sulfonate



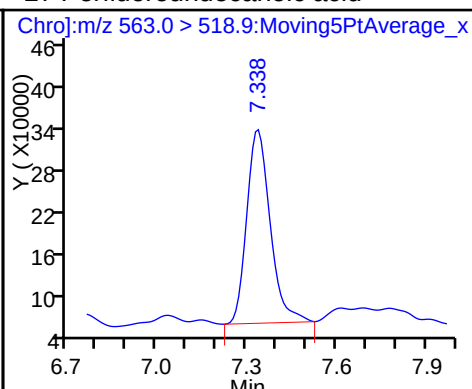
25 Perfluorodecane Sulfonate



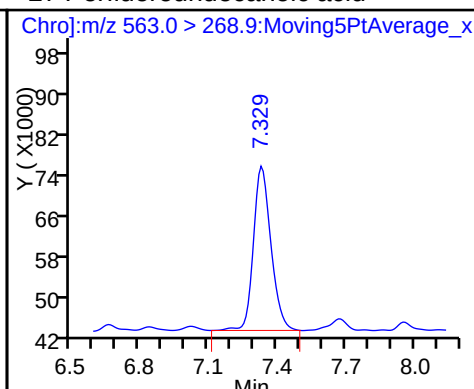
* 26 13C2 PFUnA (IS)



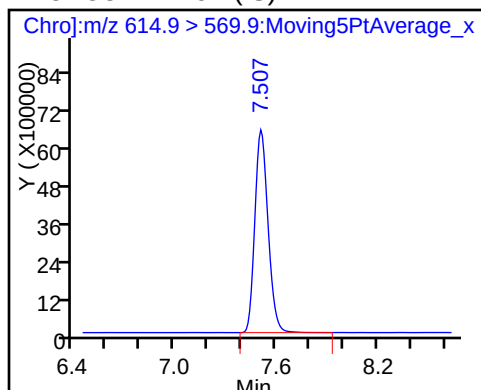
27 Perfluoroundecanoic acid



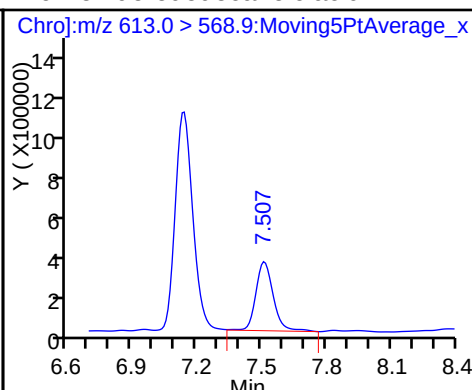
27 Perfluoroundecanoic acid



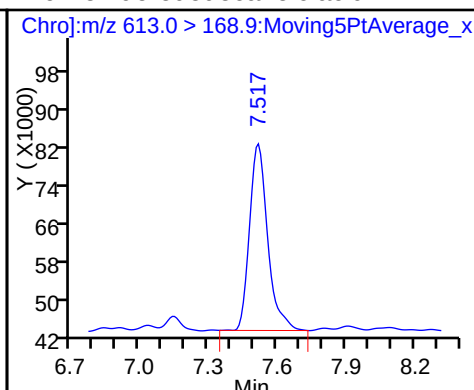
* 28 13C2 PFDaA (IS)



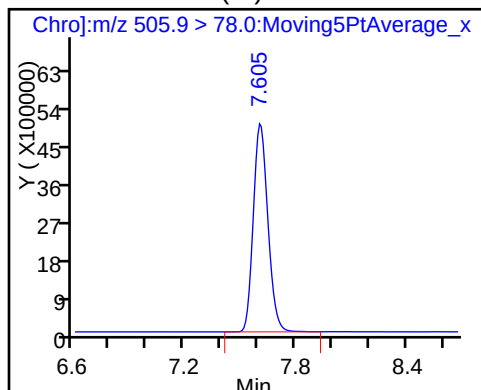
29 Perfluorododecanoic acid



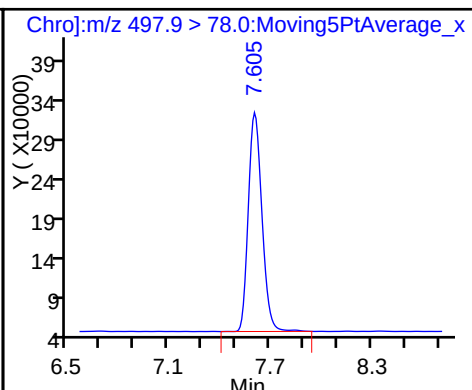
29 Perfluorododecanoic acid



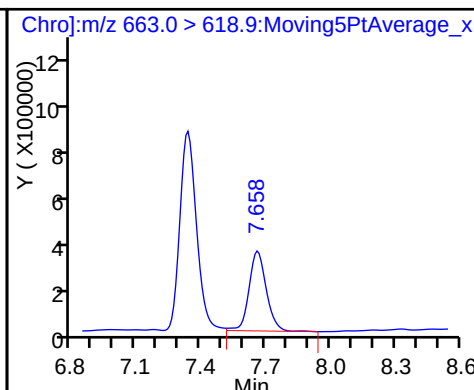
* 31 13C8 FOSA (IS)



32 Perfluorooctane Sulfonamide

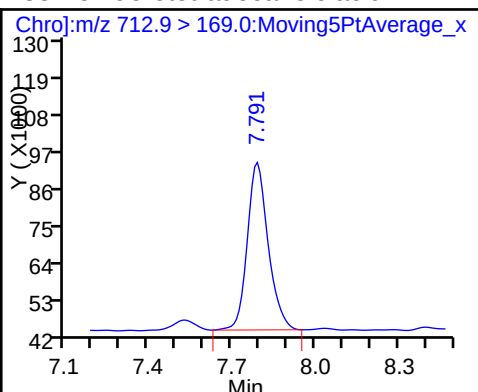
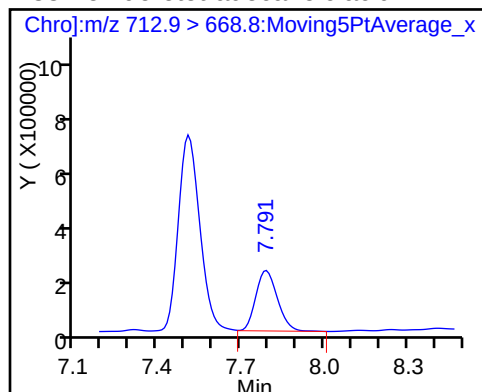


30 Perfluorotridecanoic acid



33 Perfluorotetradecanoic acid

33 Perfluorotetradecanoic acid



LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica DenverJob No.: 280-85017-1

SDG No.: _____

Instrument ID: LC_LCMS5Start Date: 06/06/2016 14:49Analysis Batch Number: 328740End Date: 06/06/2016 19:20

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-328740/3 IC		06/06/2016 14:49	1	PC516F06008.d	Gemini-NX
STD0005 280-328740/4 IC		06/06/2016 15:02	1	PC516F06009.d	Gemini-NX
STD0010 280-328740/5 IC		06/06/2016 15:14	1	PC516F06010.d	Gemini-NX
STD0020 280-328740/6 ICISAV		06/06/2016 15:26	1	PC516F06011.d	Gemini-NX
STD0050 280-328740/7 IC		06/06/2016 15:39	1	PC516F06012.d	Gemini-NX
STD0100 280-328740/8 IC		06/06/2016 15:51	1	PC516F06013.d	Gemini-NX
STD0200 280-328740/9 IC		06/06/2016 16:03	1	PC516F06014.d	Gemini-NX
STD0500 280-328740/10 IC		06/06/2016 16:16	1	PC516F06015.d	Gemini-NX
STD1250 280-328740/11 IC		06/06/2016 16:28	1	PC516F06016.d	Gemini-NX
ICB 280-328740/12		06/06/2016 16:40	1	PC516F06017.d	Gemini-NX
ICV 280-328740/13		06/06/2016 16:53	1	PC516F06018.d	Gemini-NX
DLCK 280-328740/14		06/06/2016 17:05	1	PC516F06019.d	Gemini-NX
ZZZZZ		06/06/2016 17:17	1		Gemini-NX
ZZZZZ		06/06/2016 17:29	1		Gemini-NX
ZZZZZ		06/06/2016 17:42	1		Gemini-NX
ZZZZZ		06/06/2016 17:54	1		Gemini-NX
ZZZZZ		06/06/2016 18:06	1		Gemini-NX
ZZZZZ		06/06/2016 18:19	1		Gemini-NX
ZZZZZ		06/06/2016 18:31	1		Gemini-NX
ZZZZZ		06/06/2016 18:43	1		Gemini-NX
ZZZZZ		06/06/2016 18:56	1		Gemini-NX
ZZZZZ		06/06/2016 19:08	1		Gemini-NX
CCV 280-328740/25		06/06/2016 19:20	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Instrument ID: LC_LCMS5 Start Date: 07/05/2016 20:29Analysis Batch Number: 332595 End Date: 07/05/2016 23:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-332595/3		07/05/2016 20:29	1	PC516G05045.d	Gemini-NX
MB 280-332167/1-A		07/05/2016 20:42	1	PC516G05046.d	Gemini-NX
LCS 280-332167/2-A		07/05/2016 20:54	1	PC516G05047.d	Gemini-NX
LCSD 280-332167/3-A		07/05/2016 21:06	1	PC516G05048.d	Gemini-NX
ZZZZZ		07/05/2016 21:18	1		Gemini-NX
ZZZZZ		07/05/2016 21:31	1		Gemini-NX
ZZZZZ		07/05/2016 21:43	1		Gemini-NX
ZZZZZ		07/05/2016 21:55	1		Gemini-NX
ZZZZZ		07/05/2016 22:08	1		Gemini-NX
ZZZZZ		07/05/2016 22:20	1		Gemini-NX
ZZZZZ		07/05/2016 22:32	1		Gemini-NX
CCV 280-332595/14		07/05/2016 22:45	1	PC516G05056.d	Gemini-NX
ZZZZZ		07/05/2016 22:57	1		Gemini-NX
ZZZZZ		07/05/2016 23:09	1		Gemini-NX
CCV 280-332595/17		07/05/2016 23:21	1		Gemini-NX

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Instrument ID: LC_LCMS5 Start Date: 07/25/2016 12:08Analysis Batch Number: 335022 End Date: 07/25/2016 12:58

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-335022/3		07/25/2016 12:08	1	PC516G25008.d	Gemini-NX
280-85017-1		07/25/2016 12:21	1	PC516G25009.d	Gemini-NX
280-85017-2		07/25/2016 12:33	1	PC516G25010.d	Gemini-NX
280-85017-3		07/25/2016 12:45	1	PC516G25011.d	Gemini-NX
CCV 280-335022/7		07/25/2016 12:58	1	PC516G25012.d	Gemini-NX

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Batch Number: 332167 Batch Start Date: 07/01/16 11:30 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 07/01/16 15:10

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	PFC-LCS 00081	PFC_Surr&IS 00023
MB 280-332167/1		3535, DV-LC-0012				250 mL	5 mL		0.1 mL
LCS 280-332167/2		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-332167/3		3535, DV-LC-0012				250 mL	5 mL	0.1 mL	0.1 mL
280-85017-B-1	FB-3	3535, DV-LC-0012	T	273.0 g	27.1 g	245.9 mL	5 mL		0.1 mL
280-85017-B-2	TE#5	3535, DV-LC-0012	T			130.5 mL	5 mL		0.0522 mL
280-85017-B-3	ANGOF-001	3535, DV-LC-0012	T			253.2 mL	5 mL		0.1 mL

Lab Sample ID	Client Sample ID	Method Chain	Basis	AnalysisComment					
MB 280-332167/1		3535, DV-LC-0012							
LCS 280-332167/2		3535, DV-LC-0012							
LCSD 280-332167/3		3535, DV-LC-0012							
280-85017-B-1	FB-3	3535, DV-LC-0012	T						
280-85017-B-2	TE#5	3535, DV-LC-0012	T	Decant Vi: 250.2 Ve: 130.5					
280-85017-B-3	ANGOF-001	3535, DV-LC-0012	T	Decant					

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.

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-85017-1

SDG No.: _____

Batch Number: 332167 Batch Start Date: 07/01/16 11:30 Batch Analyst: Knauf, James RBatch Method: 3535 Batch End Date: 07/01/16 15:10

Batch Notes	
Acid ID	2% Formic Aci_00092
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewed by: JK S/S: YJC (Trainee: YJC)
First End time	7.1.16 1310
H2O ID	HPLC_Water_00640
Pipette ID	M, SPE-1
Reagent ID	10% Ammonium Hydroxide
Reagent Lot Number	10% NH4OH_00071
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	Phenomenex Strata X-AW
Solid Phase Extraction Disk ID	S308-0064
First Start time	7.1.16 1150

Basis	Basis Description
T	Total/NA

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.

Shipping and Receiving Documents

Chain of Custody Record

Client Information Client Contact: Ms. Melissa LaMacchia Company: HDR Inc Address: 1 International Blvd, 10th Floor City: Mahwah State/Zip: NJ, 07495 Phone: 845-735-8300 (Tel) Email: Melissa.LaMacchia@hdrinc.com Project Name: Stewart International Airport (PFAS) Site: ANG		Lab PM: Nayyar, Sapna E-Mail: sapna.nayyar@testamericainc.com Phone: 914-588-8530 Sample: John P. Kwik 'Safeguard' Due Date Requested: 15 TAT Requested (days): PO #: Purchase Order not required WO #: Project #: 32008244 SSOW#:		Carrier Tracking No(s): 320-11782-2662.4 Page: Page 4 of 11 Job #:	
Analysis Requested Analysis Requested:		Preservation Codes: A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other: M - Hexane N - None O - AsNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecalhydrate U - Acetone V - MCAA W - ph 4-5 Z - other (specify)			
Sample Identification FB-3 TE#5 ANGOE-phi1		Sample Date: 6/28/16 Sample Time: 1055 Sample Type (C=Comp, G=grab): C Matrix (W=water, S=solid, O=oil, BT=Tissue, A=Air): Water	Field Filtered Sample (Yes/No): Performance/MSD/IN/5/0/No PC: IDA - PFAS, UCMR List	Total Number of Containers: 2 2 2 2	Special Instructions/Note: 280-85017 Chain of Custody
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify) NYSDEC Cat B					
Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months					
Special Instructions/QC Requirements:					
Empty Kit Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i> Relinquished by: <i>[Signature]</i>		Method of Shipment: HOE Date/Time: 6/28/16 1355 Date/Time: 6/28/16 1355 Date/Time: 6/28/16 1355 Date/Time: 6/28/16 1355			
Custody Seals Intact: ☒ Yes ☐ No Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.3 (R5-0.10) (AW 29.1) (u16)			

Login Sample Receipt Checklist

Client: HDR Inc

Job Number: 280-85017-1

Login Number: 85017

List Source: TestAmerica Denver

List Number: 1

Creator: Muniz, Ashley T

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