NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Combined Level 2 and Level 4 Laboratory Report, and Data Validation Report, SDG K1700284

Naval Air Station Whidbey Island
Oak Harbor, Washington

June 2019

ALS Environmental
ALS Group USA, Corp
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January 24, 2017

Analytical Report for Service Request No: K1700284

Janet Wodjesnki
Private Parties
84 E Morris Rd
Coupeville, WA 98239

RE: Janet Wodjenski / Heart's Rest Assn.

Dear Janet,

Enclosed are the results of the sample(s) submitted to our laboratory January 10, 2017
For your reference, these analyses have been assigned our service request number **K1700284.**

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3350. You may also contact me via email at Kelley.Lovejoy@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Kelley Lovejoy

Kelley Lovejoy
Project Manager

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Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
E	The result is an estimate amount because the value exceeded the instrument calibration range.
J	The result is an estimated value.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.
H	The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

#	The control limit criteria is not applicable. See case narrative.
J	The result is an estimated value.
E	The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
M	The duplicate injection precision was not met.
N	The Matrix Spike sample recovery is not within control limits. See case narrative.
S	The reported value was determined by the Method of Standard Additions (MSA).
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
W	The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
i	The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
X	See case narrative.
+	The correlation coefficient for the MSA is less than 0.995.
Q	See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

*	The result is an outlier. See case narrative.
#	The control limit criteria is not applicable. See case narrative.
A	A tentatively identified compound, a suspected aldol-condensation product.
B	The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
C	The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
D	The reported result is from a dilution.
E	The result is an estimated value.
J	The result is an estimated value.
N	The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
P	The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
U	The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL. *DOD-QSM 4.2 definition* : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
i	The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
X	See case narrative.
Q	See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

F	The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
L	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
H	The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
O	The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
Y	The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
Z	The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEC UST	http://dec.alaska.gov/applications/eh/ehllabreports/USTLabs.aspx	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L14-51
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	Not available	-
ISO 17025	http://www.pjlabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/portal/DIVISIONS/PublicParticipationandPermitSupport/LouisianaLaboratoryAccreditationProgram.aspx	03016
Maine DHS	Not available	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Montana DPHHS	http://www.dphhs.mt.gov/publichealth/	CERT0047
Nevada DEP	http://ndep.nv.gov/bsdw/labservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/oqa/	WA005
North Carolina DWQ	http://www.dwqlab.org/	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/envserv/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	http://www.epa.gov/region8/water/dwhome/wyomingdi.html	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.
Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/anlayte is offered by that state.

Case Narrative

ALS Environmental—Kelso Laboratory
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Phone (360)577-7222 Fax (360)636-1068
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ALS ENVIRONMENTAL

Client:	Private Parties	**Service Request No.:**	K1700284
Project:	Janet Wodjenski	**Date Received:**	1-10-17
Sample Matrix:	Water		

Case Narrative

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier I data deliverables. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two water samples were received for analysis at ALS Environmental on 1-10-17. The samples were received in good condition and consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4ºC upon receipt at the laboratory.

Perfluorinated Sulfonic Acids and Perfluorinated Carboxylic Acids by 537

Surrogate Exceptions:

The control criteria were exceeded for Perfluoro-n-[1,2-13C2]decanoic acid in DCS KQ1700299-02. The associated matrix spike recoveries of target compounds were in control, indicating the analysis was in control. The surrogate outlier was flagged accordingly. No further corrective action was appropriate.

Sample Notes and Discussion:

Insufficient sample volume was received to perform a Matrix Spike/Matrix Spike Duplicate (MS/MSD). A Laboratory Control Sample/Duplicate Laboratory Control Sample (LCS/DLCS) was analyzed and reported in lieu of the MS/MSD for these samples.

No other anomalies associated with the analysis of these samples were observed.

Approved by Kelley Lovejoy

Chain of Custody

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ALS Environmental

CHAIN OF CUSTODY
75974

001

SR# K1700284

COC Set____of____

COC#__________

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Project Name: Heart's Rest Assn	Project Number:
Project Manager: Janet Wodjenski	
Company: Property Owner	
Address: 84 E Morris Rd	
Phone #: 360-678-6636	email: dajwo73@gmail.com
Sampler Signature: Janet Wodjenski	Sampler Printed Name: Janet Wodjenski

CLIENT SAMPLE ID	LABID	SAMPLING Date	SAMPLING Time	Matrix	NUMBER OF CONTAINERS	14D 537 / PerfAlkylAcids	1	2	3	4	5	Remarks
1. Tapwater		1-9-17		H_2O	2	✓						
2.												
3.												
4.												
5.												
6.												
7.												
8.												
9.												
10.												

Report Requirements

___ I. Routine Report: Method Blank, Surrogate, as required

___ II. Report Dup., MS, MSD as required

___ III. CLP Like Summary (no raw data)

X IV. Data Validation Report

___ V. EDD

Invoice Information

P.O.#__________

Bill To: J. Wodjenski
POB 805
Coupeville WA 98239

Turnaround Requirements

____ 24 hr. ____ 48 hr.
____ 5 Day
X Standard

Requested Report Date

Circle which metals are to be analyzed

Total Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Dissolved Metals: Al As Sb Ba Be B Ca Cd Co Cr Cu Fe Pb Mg Mn Mo Ni K Ag Na Se Sr Tl Sn V Zn Hg

Special Instructions/Comments:

*Indicate State Hydrocarbon Procedure: AK CA WI Northwest Other_____(Circle One)

Relinquished By:	Received By:	Relinquished By:	Received By:	Relinquished By:	Received By:
Signature: Janet Wodjenski	Signature: K Smith	Signature	Signature	Signature	Signature
Printed Name: Janet Wodjenski	Printed Name: K Smith	Printed Name	Printed Name	Printed Name	Printed Name
Firm	Firm: ALS	Firm	Firm	Firm	Firm
Date/Time: 1-9-17 10 AM	Date/Time: 1/10/17 0930	Date/Time	Date/Time	Date/Time	Date/Time

PC Kelley

Cooler Receipt and Preservation Form

Client Janet Wodjanski Service Request ~~K16~~ K1700284

Received: 1/10/17 Opened: 1/10/17 By: TO Unloaded: 1/10/17 By: TO

1. Samples were received via? *Mail* *Fed Ex* *UPS* *DHL* *PDX* *Courier* *Hand Delivered*
2. Samples were received in: (circle) *Cooler* *Box* *Envelope* *Other* _____ *NA*
3. Were custody seals on coolers? NA Y N If yes, how many and where? 1, Front 1, Side
   If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Raw Cooler Temp	Corrected Cooler Temp	Raw Temp Blank	Corrected Temp Blank	Corr. Factor	Thermometer ID	Cooler/COC ID NA	Tracking Number NA	Filed
.0	-.1	4.8	4.7	-.1	375		6447 9282 6100	

4. Packing material: *Inserts* *Baggies* *Bubble Wrap* *Gel Packs* *Wet Ice* *Dry Ice* *Sleeves* _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Did all bottles arrive in good condition (unbroken)? *Indicate in the table below.* NA Y N
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? *Indicate major discrepancies in the table on page 2.* NA ~~Y~~ N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (*see SMO GEN SOP*) received at the appropriate pH? *Indicate in the table below* NA Y N
11. Were VOA vials received without headspace? *Indicate in the table below.* NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: Rec'd 1 field blank not listed on the COC

Page ____ *of* ____

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

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www.alsglobal.com

Analytical Report

Client:	Private Parties	**Service Request:**	K1700284
Project:	Janet Wodjenski/Heart's Rest Assn.	**Date Collected:**	01/09/17
Sample Matrix:	Water	**Date Received:**	01/10/17 09:30
Sample Name:	Tap Water	**Units:**	ng/L
Lab Code:	K1700284-001	**Basis:**	NA

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
Prep Method: Method

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	4.81	1	01/16/17 02:08	1/12/17	
Perfluorooctanoic Acid	ND U	4.81	1	01/16/17 02:08	1/12/17	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	107	70 - 130	01/16/17 02:08	
Perfluoro-n-[1,2-13C2] decanoic acid	100	70 - 130	01/16/17 02:08	

Analytical Report

Client:	Private Parties	**Service Request:**	K1700284
Project:	Janet Wodjenski/Heart's Rest Assn.	**Date Collected:**	NA
Sample Matrix:	Water	**Date Received:**	NA
Sample Name:	Method Blank	**Units:**	ng/L
Lab Code:	KQ1700299-03	**Basis:**	NA

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
Prep Method: Method

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	5.00	1	01/16/17 01:40	1/12/17	
Perfluorooctanoic Acid	ND U	5.00	1	01/16/17 01:40	1/12/17	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	100	70 - 130	01/16/17 01:40	
Perfluoro-n-[1,2-13C2] decanoic acid	91	70 - 130	01/16/17 01:40	

Client: Private Parties **Service Request:** K1700284
Project: Janet Wodjenski/Heart's Rest Assn.
Sample Matrix: Water

SURROGATE RECOVERY SUMMARY

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
Extraction Method: Method

Sample Name	Lab Code	Perfluoro-n-[1,2-13C2] hexanoic acid 70 - 130	Perfluoro-n-[1,2-13C2] decanoic acid 70 - 130
Tap Water	K1700284-001	107	100
Lab Control Sample	KQ1700299-01	101	94
Duplicate Lab Control Sample	KQ1700299-02	78	63 *
Method Blank	KQ1700299-03	100	91

Client: Private Parties **Service Request:** K1700284
Project: Janet Wodjenski/Heart's Rest Assn. **Date Analyzed:** 1/16/17 01:31

Internal Standard Area and RT Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

File ID: 011517\3014.wiff **Lab Code:** KQ1700456-01
Instrument ID: K-LCMS-02 **Analysis Lot:** 531093
Analytical Method: 537 **Signal ID:** 1

		Perfluoro-n-[1,2-13C2]octanoic acid		Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	
		Area	**RT**	**Area**	**RT**
	Results ==>	1,104,229	4.47	2,513,626	4.96
	Upper Limit ==>	1,545,920	5.47	3,519,077	5.96
	Lower Limit ==>	772,960	3.47	1,759,538	3.96
	ICAL Result ==>				
Associated Analyses					
Method Blank	KQ1700299-03	1,004,796	4.47	2,161,990	4.97
Lab Control Sample	KQ1700299-01	996,418	4.47	2,237,922	4.96
Tap Water	K1700284-001	906,968	4.47	2,056,906	4.96

Results flagged with an asterisk (*) indicate values outside control criteria.

Client: Private Parties **Service Request:** K1700284
Project: Janet Wodjenski/Heart's Rest Assn. **Date Analyzed:** 1/16/17 10:54

Internal Standard Area and RT Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

File ID: 011517\3024.wiff **Lab Code:** KQ1700456-04
Instrument ID: K-LCMS-02 **Analysis Lot:** 531093
Analytical Method: 537 **Signal ID:** 1

		Perfluoro-n-[1,2-13C2]octanoic acid		Sodium perfluoro-1-[1,2,3,4-13C4] octanesulfonate	
		Area	**RT**	**Area**	**RT**
	Results ==>	968,386	4.47	2,428,986	4.96
	Upper Limit ==>	1,355,741	5.47	3,400,581	5.96
	Lower Limit ==>	677,870	3.47	1,700,290	3.96
	ICAL Result ==>				
Associated Analyses					
Duplicate Lab Control Sample	KQ1700299-02	884,342	4.48	2,165,549	4.97

Results flagged with an asterisk (*) indicate values outside control criteria.

Client:	Private Parties	**Service Request:**	K1700284
Project:	Janet Wodjenski/Heart's Rest Assn.	**Date Analyzed:**	01/16/17
Sample Matrix:	Water	**Date Extracted:**	01/12/17

Duplicate Lab Control Sample Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method:	537	**Units:**	ng/L
Prep Method:	Method	**Basis:**	NA
		Analysis Lot:	531093

	Lab Control Sample KQ1700299-01			Duplicate Lab Control Sample KQ1700299-02					
Analyte Name	**Result**	**Spike Amount**	**% Rec**	**Result**	**Spike Amount**	**% Rec**	**% Rec Limits**	**RPD**	**RPD Limit**
Perfluorooctanoic Acid	7.42	5.00	148	6.78	5.00	136	50-150	8	50
Perfluorooctylsulfonic Acid	6.20	5.00	124	5.99	5.00	120	50-150	3	50

Client: Private Parties **Service Request:**K1700284
Project: Janet Wodjenski/Heart's Rest Assn. **Date Analyzed:**01/16/17 01:40
Sample Matrix: Water **Date Extracted:**01/12/17

Method Blank Summary

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Sample Name: Method Blank **Instrument ID:**K-LCMS-02
Lab Code: KQ1700299-03 **File ID:**011517\3015.wiff

Analysis Method: 537 **Analysis Lot:**531093
Prep Method: Method **Extraction Lot:**279494

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1700299-01	011517\3016.wiff	01/16/17 01:50
Tap Water	K1700284-001	011517\3018.wiff	01/16/17 02:08
Duplicate Lab Control Sample	KQ1700299-02	011517\3027.wiff	01/16/17 11:44

Client: Private Parties **Service Request:**K1700284
Project: Janet Wodjenski/Heart's Rest Assn. **Date Analyzed:**01/16/17 01:50
Sample Matrix: Water **Date Extracted:**01/12/17

Lab Control Sample Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Sample Name: Lab Control Sample **Instrument ID:**K-LCMS-02
Lab Code: KQ1700299-01 **File ID:**011517\3016.wiff

Analysis Method: 537 **Analysis Lot:**531093
Prep Method: Method **Extraction Lot:**279494

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1700299-03	011517\3015.wiff	01/16/17 01:40
Tap Water	K1700284-001	011517\3018.wiff	01/16/17 02:08
Duplicate Lab Control Sample	KQ1700299-02	011517\3027.wiff	01/16/17 11:44

Client: Private Parties **Service Request:** K1700284
Project: Janet Wodjenski **Calibration Date:** 1/15/2017

Initial Calibration Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Calibration ID: KC1700002 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1700002-01	537 LL CAL 0.50 ppb	011517\3002.wiff	01/15/2017 23:42
02	KC1700002-02	537 LL CAL 1.25 ppb	011517\3003.wiff	01/15/2017 23:51
03	KC1700002-03	537 LL CAL 2.50 ppb	011517\3004.wiff	01/16/2017 00:01
04	KC1700002-04	537 LL CAL 5.0 ppb	011517\3005.wiff	01/16/2017 00:10
05	KC1700002-05	537 LL CAL 10.0 ppb	011517\3006.wiff	01/16/2017 00:19
06	KC1700002-06	537 LL CAL 25.0 ppb	011517\3007.wiff	01/16/2017 00:28
07	KC1700002-07	537 LL CAL 50.0 ppb	011517\3008.wiff	01/16/2017 00:37

Analyte

Perfluorooctylsulfonic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
02	1.25	1.038	03	2.50	0.8733	04	5.00	1.15	05	10.0	1.109
06	25.0	1.048	07	50.0	0.9926						

Perfluorooctanoic Acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	0.500	0.8717	02	1.25	1.156	03	2.50	0.9042	04	5.00	1.122
05	10.0	1.113	06	25.0	1.074	07	50.0	0.9734			

Perfluoro-n-[1,2-13C2] hexanoic acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.0	0.6939	02	10.0	0.6714	03	10.0	0.6671	04	10.0	0.6497
05	10.0	0.6645	06	10.0	0.6692	07	10.0	0.6257			

Perfluoro-n-[1,2-13C2] decanoic acid

#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.0	1.221	02	10.0	1.215	03	10.0	1.203	04	10.0	1.152
05	10.0	1.198	06	10.0	1.183	07	10.0	1.122			

		Calibration Evaluation				Calibration Evaluation	
Analyte Name	**Compound Type**	**Fit Type**	**Eval**	**Eval Result**	**Control Criteria**	**Average RRF**	**Minimum RRF**
Perfluorooctylsulfonic Acid	**TRG**	**Average RF**	**% RSD**	**9.3**	≤	**1.035**	
Perfluorooctanoic Acid	**TRG**	**Average RF**	**% RSD**	**11.0**	≤	**1.031**	
Perfluoro-n-[1,2-13C2] hexanoic acid	**SURR**	**Average RF**	**% RSD**	**3.2**	≤	**0.6631**	
Perfluoro-n-[1,2-13C2] decanoic acid	**SURR**	**Average RF**	**% RSD**	**3.0**	≤	**1.185**	

Client: Private Parties **Service Request:** K1700284
Project: Janet Wodjenski **Calibration Date:** 1/15/2017

Initial Calibration Verification Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Calibration ID: KC1700002 **Signal ID:** 1
Instrument ID: K-LCMS-02

#	Lab Code	Sample Name	File Location	Aquisition Date
08	KC1700002-08	537 LL ICV 10.0 ppb	011517\3010.wiff	01/16/2017 00:55

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	9.55	9.69	1.035	1.050	1.42	±30	Average RF
Perfluorooctanoic Acid	10.0	10.4	1.031	1.071	3.88	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.8	0.663	0.716	7.95	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.9	1.185	1.287	8.62	±30	Average RF

Client: Private Parties
Project: Janet Wodjenski/Heart's Rest Assn.

Service Request: K1700284
Date Analyzed: 01/16/17 01:31

Continuing Calibration Verification (CCV) Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
File ID: 011517\3014.wiff

Calibration Date: 1/15/2017 12:00:00 AM
Calibration ID: KC1700002
Analysis Lot: 531093
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	1.25	1.25	1.035	1.036	0.1	NA	±30	Average RF
Perfluorooctanoic Acid	1.25	1.43	1.031	1.176	14.1	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.1	0.663	0.667	0.6	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	9.79	1.185	1.160	-2.1	NA	±30	Average RF

Client: Private Parties
Project: Janet Wodjenski/Heart's Rest Assn.

Service Request: K1700284
Date Analyzed: 01/16/17 02:26

Continuing Calibration Verification (CCV) Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
File ID: 011517\3020.wiff

Calibration Date: 1/15/2017 12:00:00 AM
Calibration ID: KC1700002
Analysis Lot: 531093
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	5.00	5.46	1.035	1.130	9.2	NA	±30	Average RF
Perfluorooctanoic Acid	5.00	5.78	1.031	1.191	15.5	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.1	0.663	0.668	0.7	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.1	1.185	1.195	0.9	NA	±30	Average RF

Client: Private Parties
Project: Janet Wodjenski/Heart's Rest Assn.

Service Request: K1700284
Date Analyzed: 01/16/17 10:54

Continuing Calibration Verification (CCV) Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
File ID: 011517\3024.wiff

Calibration Date: 1/15/2017 12:00:00 AM
Calibration ID: KC1700002
Analysis Lot: 531093
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	1.25	1.31	1.035	1.085	4.8	NA	±30	Average RF
Perfluorooctanoic Acid	1.25	1.28	1.031	1.057	2.5	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.6	0.663	0.706	6.4	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	9.72	1.185	1.152	-2.8	NA	±30	Average RF

Client: Private Parties
Project: Janet Wodjenski/Heart's Rest Assn.

Service Request: K1700284
Date Analyzed: 01/16/17 11:53

Continuing Calibration Verification (CCV) Summary
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
File ID: 011517\3028.wiff

Calibration Date: 1/15/2017 12:00:00 AM
Calibration ID: KC1700002
Analysis Lot: 531093
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	10.0	11.1	1.035	1.149	11.0	NA	±30	Average RF
Perfluorooctanoic Acid	10.0	11.5	1.031	1.182	14.7	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.8	0.663	0.718	8.3	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	9.99	1.185	1.184	-0.1	NA	±30	Average RF

Client: Private Parties **Service Request:**K1700284
Project: Janet Wodjenski/Heart's Rest Assn.

Analysis Run Log
Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537 **Analysis Lot:**531093
Instrument ID:K-LCMS-02

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
011517\3014.wiff	Continuing Calibration Verification	KQ1700456-01	1/16/2017	01:31:52	
011517\3015.wiff	Method Blank	KQ1700299-03	1/16/2017	01:40:58	
011517\3016.wiff	Lab Control Sample	KQ1700299-01	1/16/2017	01:50:05	
011517\3017.wiff	Duplicate Lab Control Sample	KQ1700299-02	1/16/2017	01:59:10	
011517\3018.wiff	Tap Water	K1700284-001	1/16/2017	02:08:16	
011517\3020.wiff	Continuing Calibration Verification	KQ1700456-02	1/16/2017	02:26:28	
011517\3022.wiff	ZZZZZZZ	ZZZZZZZ	1/16/2017	10:27:12	
011517\3024.wiff	Continuing Calibration Verification	KQ1700456-04	1/16/2017	10:54:05	
011517\3026.wiff	ZZZZZZZ	ZZZZZZZ	1/16/2017	11:12:15	
011517\3027.wiff	Duplicate Lab Control Sample	KQ1700299-02	1/16/2017	11:44:53	
011517\3028.wiff	Continuing Calibration Verification	KQ1700456-05	1/16/2017	11:53:55	

Prep Summary Report

Client: Private Parties **Service Request:**K1700284
Project: Janet Wodjenski/Heart's Rest Assn.
Sample Matrix: Water

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Prep Method: Method **Extraction Lot:**279494
Analytical Method: 537

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
Tap Water	K1700284-001	1/9/17	1/10/17	260.0000	1 mL	
Lab Control Sample	KQ1700299-01	NA	NA	250.0000	1 mL	
Duplicate Lab Control Sample	KQ1700299-02	NA	NA	250.0000	1 mL	
Method Blank	KQ1700299-03	NA	NA	250.0000	1 mL	

Raw Data

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

Project	Ewan's Projects\EPA 537		
Data File	011517\3018.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	K1700284-001	Injection Volume	1
Acquisition Date	1/16/2017 2:08:16 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	21	Weight to Volume	0.00

target analytes < MRL, field blank not needed

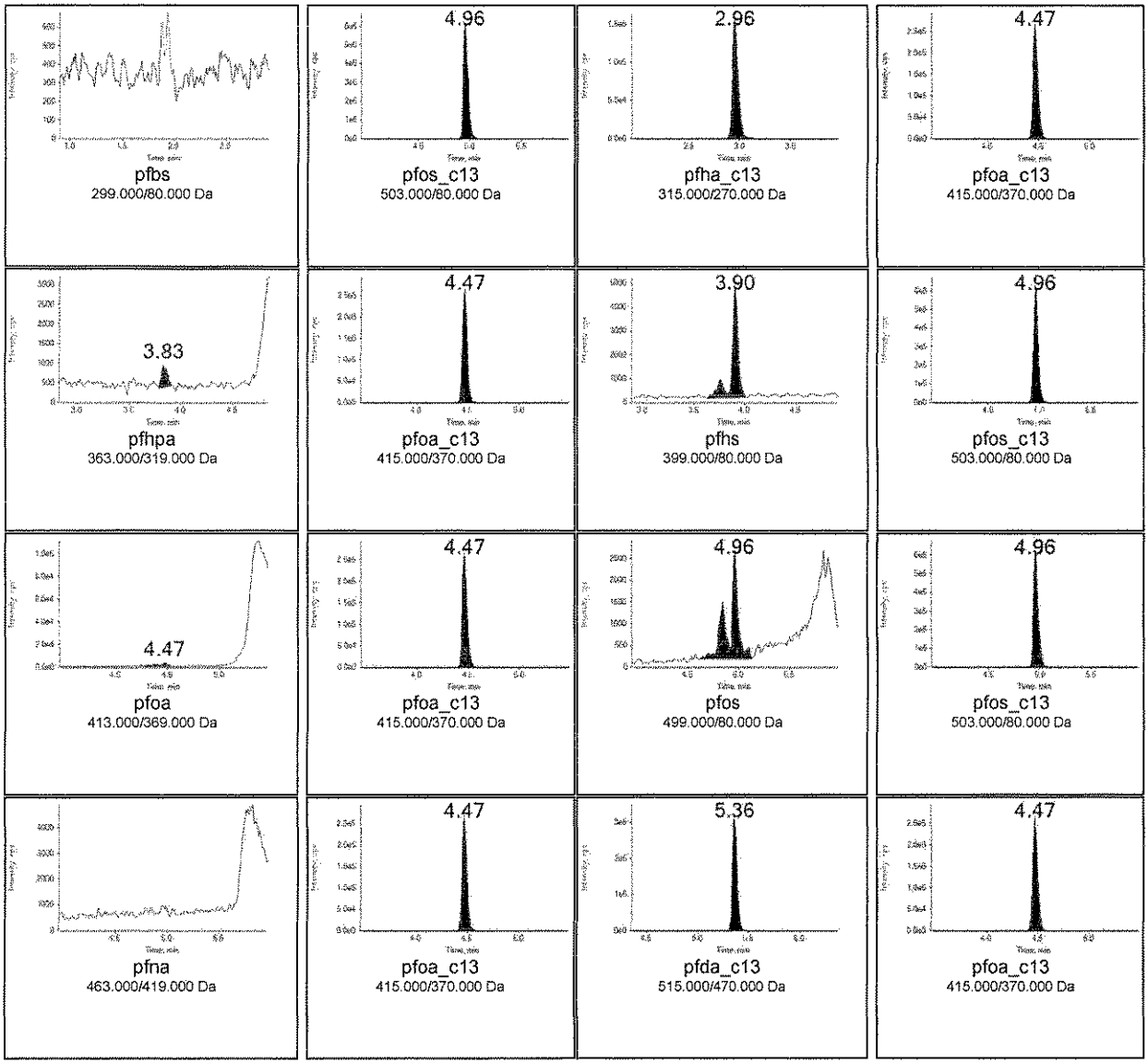
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2056906	0.00	0	N/A	No
pfha_c13	pfoa_c13	906968	2.96	642797	10.69	No
pfhpa	pfoa_c13	906968	3.83	2322	0.03	No
pfhs	pfos_c13	2056906	3.90	22357	0.24	No
pfoa	pfoa_c13	906968	4.47	23376	0.25	No
pfos	pfos_c13	2056906	4.96	17255	0.24	No
pfna	pfoa_c13	906968	0.00	0	N/A	No
pfda_c13	pfoa_c13	906968	5.36	1074722	10.00	No

1/17/17

Quantitative Peak Review

K1700284-001



☐ Before ☒ After

all target analytes < 1/3 MRL in method blank

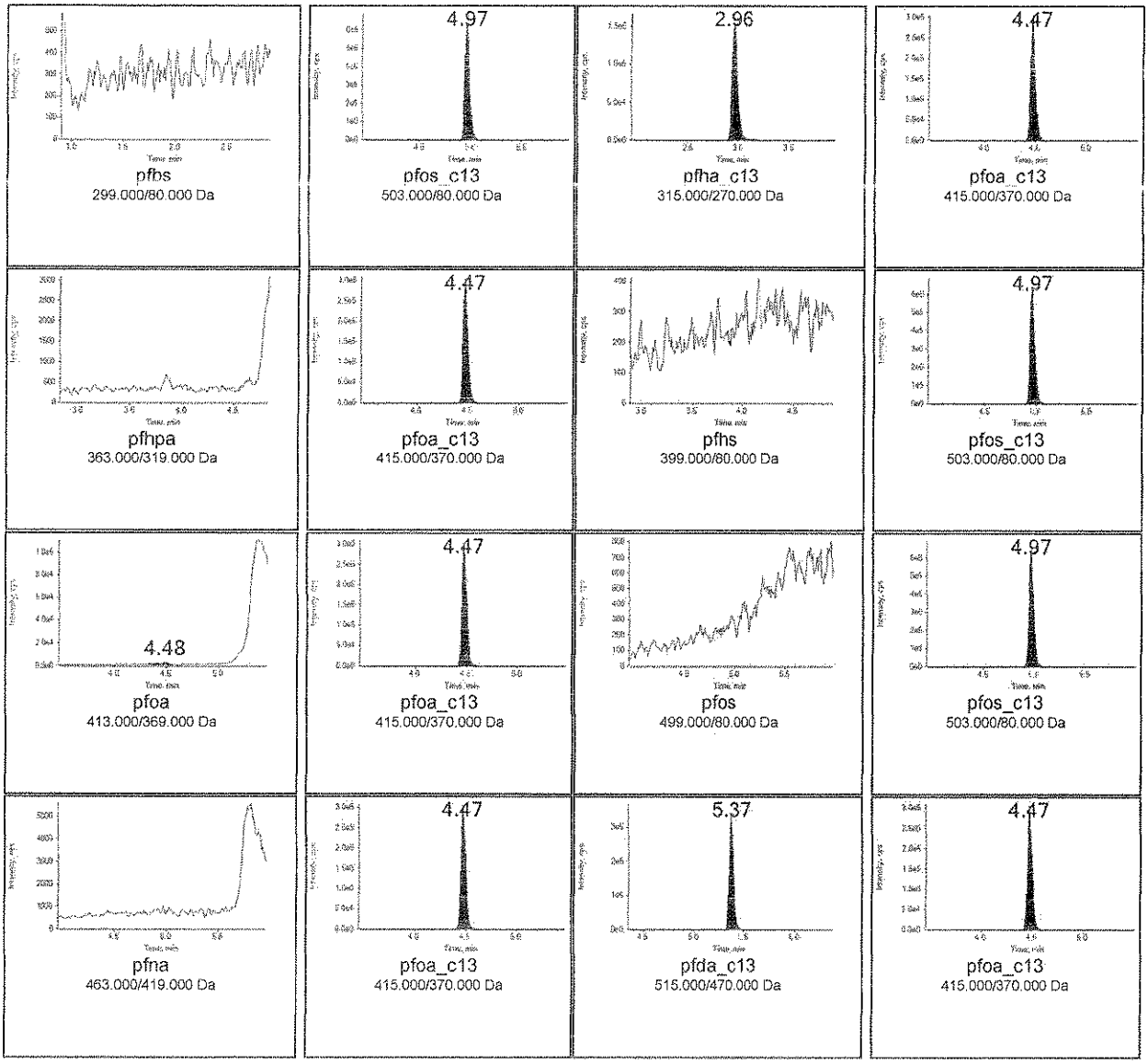
Project	Ewan's Projects\EPA 537		
Data File	011517\3015.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	KQ1700299-03	Injection Volume	1
Acquisition Date	1/16/2017 1:40:58 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	18	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2161990	0.00	0	N/A	No
pfha_c13	pfoa_c13	1004796	2.96	663405	9.96	No
pfhpa	pfoa_c13	1004796	0.00	0	N/A	No
pfhs	pfos_c13	2161990	0.00	0	N/A	No
pfoa	pfoa_c13	1004796	4.46	18352	0.18	No
pfos	pfos_c13	2161990	0.00	0	N/A	No
pfna	pfoa_c13	1004796	0.00	0	N/A	No
pfda_c13	pfoa_c13	1004796	5.37	1083419	9.10	No

Quantitative Peak Review

KQ1700299-03



☐ Before ☐ After

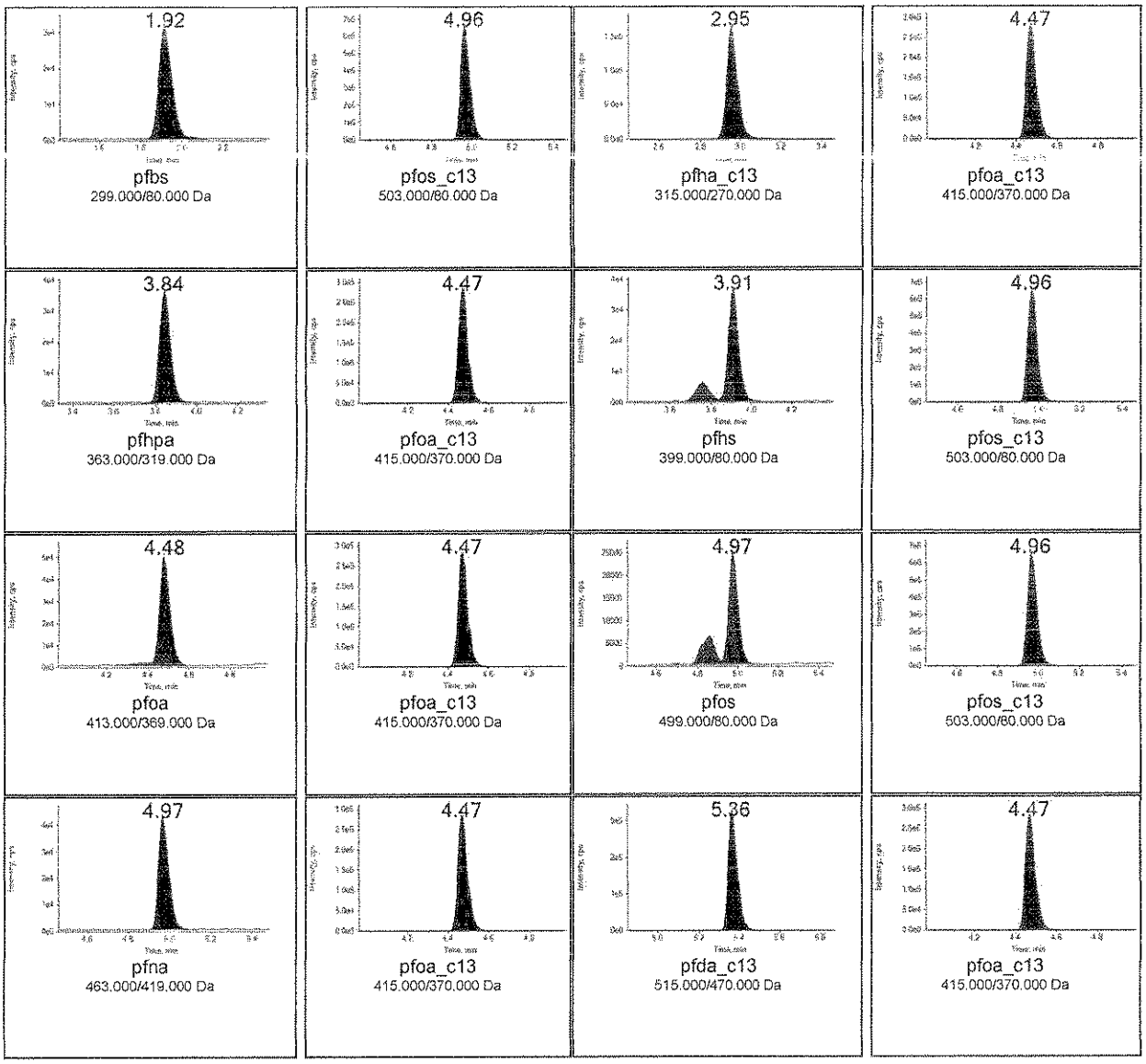
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3016.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	KQ1700299-01	Injection Vial	19
Acquisition Date	1/16/2017 1:50:05 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	LCS	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.92 (1.91)	pfos_c13	2237922	146332	1.25	1.66	133	No
pfha_c13	2.95 (2.96)	pfoa_c13	996418	665640	10.00	10.07	101	No
pfhpa	3.84 (3.84)	pfoa_c13	996418	141742	1.25	1.72	137	No
pfhs	3.91 (3.91)	pfos_c13	2237922	172627	1.25	1.70	136	No
pfoa	4.48 (4.47)	pfoa_c13	996418	190642	1.25	1.86	149	No
pfos	4.97 (4.97)	pfos_c13	2237922	119687	1.25	1.55	124	No
pfna	4.97 (4.97)	pfoa_c13	996418	156684	1.25	1.62	130	No
pfda_c13	5.36 (5.36)	pfoa_c13	996418	1111117	10.00	9.41	94	No

Quantitative Peak Review

KQ1700299-01



☐ Before ☒ After

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3027.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	KQ1700299-02	Injection Vial	24
Acquisition Date	1/16/2017 11:44:53 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	DLCS	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

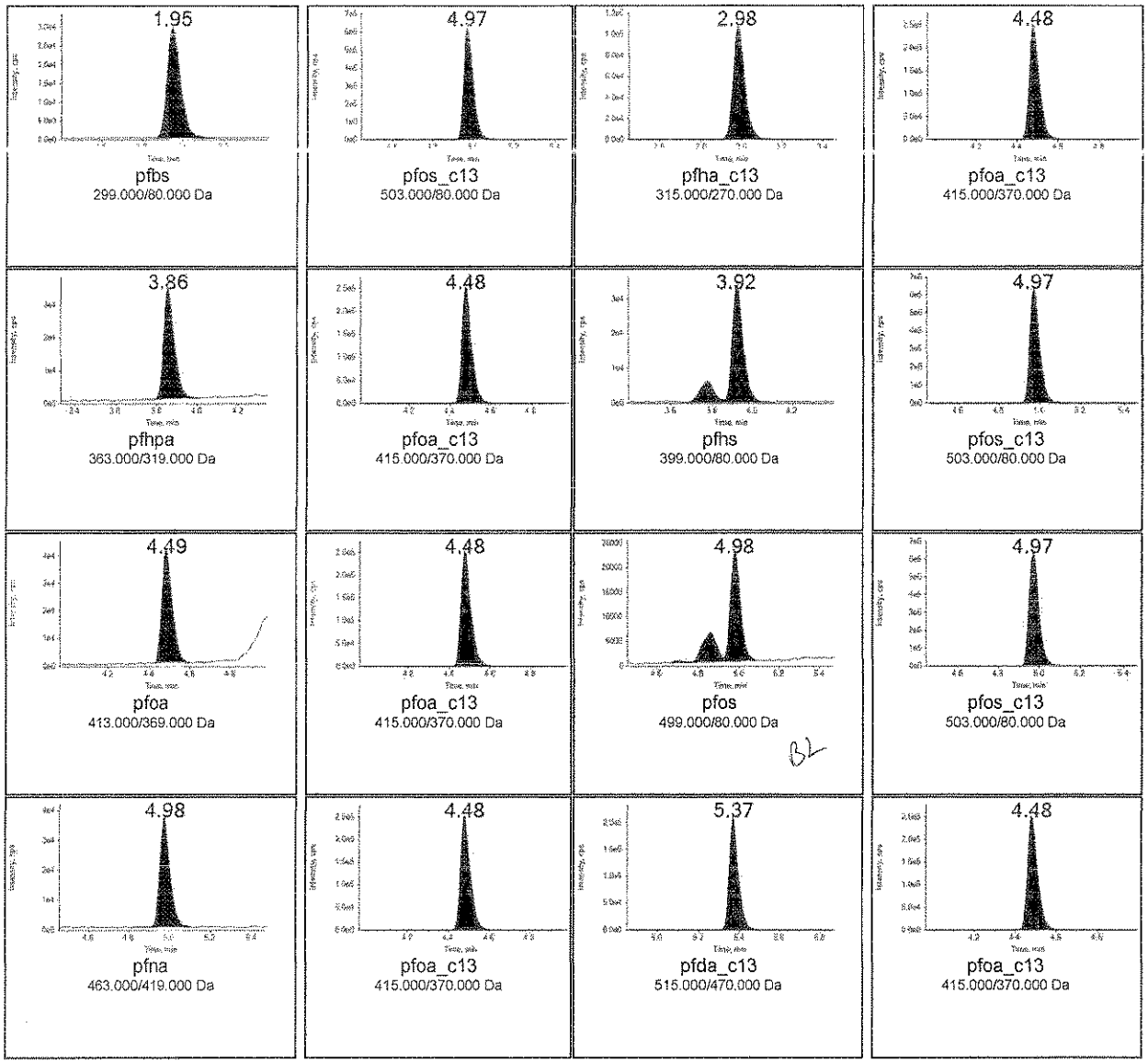
Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.95 (1.92)	pfos_c13	2165549	139191	1.25	1.63	130	No
pfha_c13	2.98 (2.96)	pfoa_c13	884342	458553	10.00	7.82	78	No
pfhpa	3.86 (3.85)	pfoa_c13	884342	129773	1.25	1.77	142	No
pfhs	3.92 (3.91)	pfos_c13	2165549	161330	1.25	1.64	131	No
pfoa	4.49 (4.48)	pfoa_c13	884342	154554	1.25	1.70	136	No
pfos	4.98 (4.98)	pfos_c13	2165549	111926	1.25	1.50	120	Yes
pfna	4.98 (4.98)	pfoa_c13	884342	137265	1.25	1.60	128	No
pfda_c13	5.37 (5.37)	pfoa_c13	884342	664161	10.00	6.34	63	No

SURFAILING QC

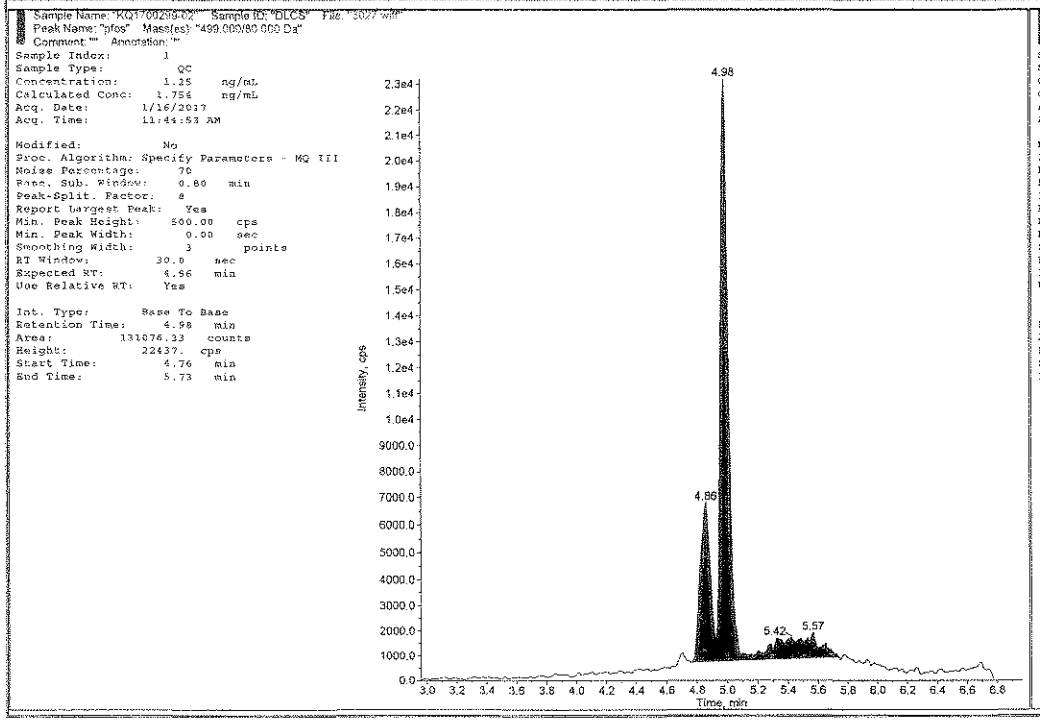
Quantitative Peak Review

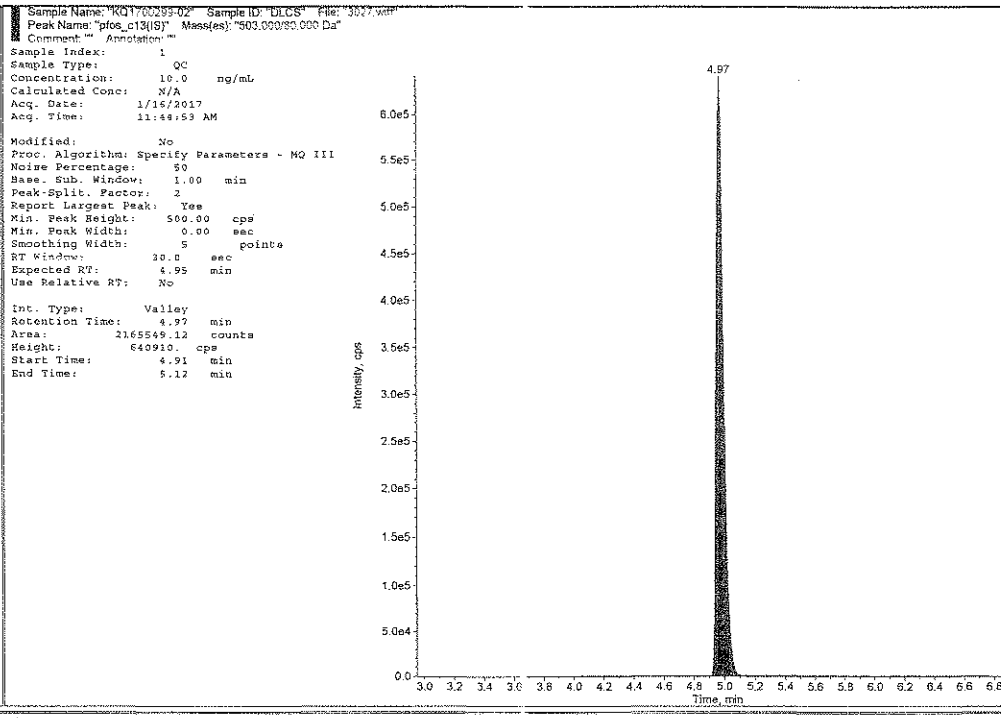
KQ1700299-02



☐ Before ☒ After

	File Name	Sample Name	Sam ple ID	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	IS Peak Height (cps)
13	011517\3013.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2398091.79	719160.
14	011517\3014.wiff	537 LL CCV 1.25 p	16-O	Quality Control	pfos	108502.48	1.25	2513626.38	750090.
15	011517\3015.wiff	KQ1700299-03	MB	Unknown	pfos	0.00	N/A	2161989.55	653680.
16	011517\3016.wiff	KQ1700299-01	LCS	Quality Control	pfos	119686.89	1.25	2237921.53	666710.
17	011517\3017.wiff	KQ1700299-02	DLC	Quality Control	pfos	116942.16	1.25	1957483.67	604870.
18	011517\3018.wiff	K1700284-001		Unknown	pfos	17255.48	N/A	2056906.23	631250.
19	011517\3019.wiff	K1700284-002		Unknown	pfos	0.00	N/A	2227110.49	666800.
20	011517\3020.wiff	537 LL CCV 5.0 pp	16-O	Quality Control	pfos	431647.53	5.00	2291908.11	701130.
21	011517\3021.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2465747.95	755180.
22	011517\3022.wiff	537 LL CCV 5.0 pp	16-O	Quality Control	pfos	416092.35	5.00	2225650.87	680340.
23	011517\3023.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2396214.27	735910.
24	011517\3024.wiff	537 LL CCV 1.25 p	16-O	Quality Control	pfos	109790.34	1.25	2428986.14	723170.
25	011517\3025.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2369275.44	708110.
26	011517\3026.wiff	K1700284-002		Unknown	pfos	0.00	N/A	2275444.15	665690.
27	011517\3027.wiff	KQ1700299-02	DLC	Quality Control	pfos	131076.33	1.25	2165549.12	640910.
28	011517\3028.wiff	537 LL CCV 10.0 p	16-O	Quality Control	pfos	858489.72	10.0	2241894.22	679740.





Results Path: \\NAKLSW7014\LCMS02\Analyst Data\Projects\Ewan's Projects\EPA 537\Results\011517_LL.rdb

*Manual Integration: Before

Printing Date: Tuesday, January 17, 2017

By: Liz Domreis

ALS Environmental

ICAL ID: KC1700002

Cal. Std. exp: 05/14/17

2nd Review:

Injection Log

LCMS02 - API 5000

LIMS ID: 531093

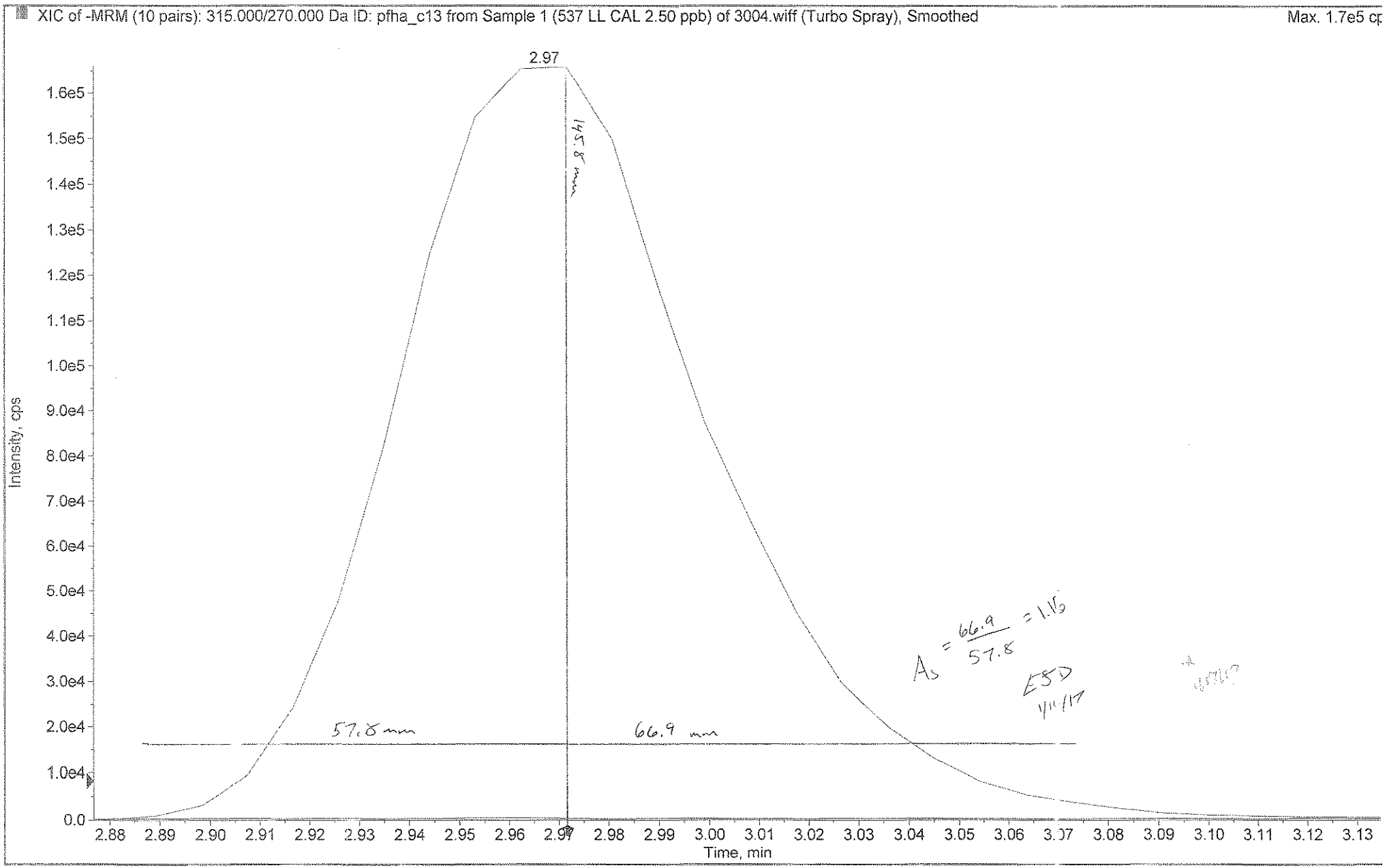
Column: Kinetex 2.6u XB-C18 100A 75x4.6mm s/n H16-268191

Mobile Phases A: 5mM Ammonium Acetate in H2O (16-OLC-02-25J) B: 5mM Ammonium Acetate in MeOH (16-OLC-02-25K)

Project Folder: Ewan's Projects\EPA 537

	Sample Name		File Name	Acquisition Method	Dilution	R	Comments
1	537 IB	16-OLC-02-25I	011517\3001.wiff	EPA 537.dam	1	x	
2	537 LL CAL 0.50 ppb	16-OLC-02-25A	011517\3002.wiff	EPA 537.dam	1	x	
3	537 LL CAL 1.25 ppb	16-OLC-02-25B	011517\3003.wiff	EPA 537.dam	1	x	
4	537 LL CAL 2.50 ppb	16-OLC-02-25C	011517\3004.wiff	EPA 537.dam	1	x	
5	537 LL CAL 5.0 ppb	16-OLC-02-25D	011517\3005.wiff	EPA 537.dam	1	x	
6	537 LL CAL 10.0 ppb	16-OLC-02-25E	011517\3006.wiff	EPA 537.dam	1	x	
7	537 LL CAL 25.0 ppb	16-OLC-02-25F	011517\3007.wiff	EPA 537.dam	1	x	
8	537 LL CAL 50.0 ppb	16-OLC-02-25G	011517\3008.wiff	EPA 537.dam	1	x	
9	537 IB	16-OLC-02-25I	011517\3009.wiff	EPA 537.dam	1	x	
10	537 LL ICV 10.0 ppb	16-OLC-02-25H	011517\3010.wiff	EPA 537.dam	1	x	
11	537 IB	16-OLC-02-25I	011517\3011.wiff	EPA 537.dam	1	x	
12	20 ppb technical PFOA	16-OLC-01-59F	011517\3012.wiff	EPA 537.dam	1	x	
13	537 IB	16-OLC-02-25I	011517\3013.wiff	EPA 537.dam	1	x	
14	537 LL CCV 1.25 ppb	16-OLC-02-25B	011517\3014.wiff	EPA 537.dam	1	x	
15	KQ1700299-03	MB	011517\3015.wiff	EPA 537.dam	1	x	
16	KQ1700299-01	LCS	011517\3016.wiff	EPA 537.dam	1	x	
17	KQ1700299-02	DLCS	011517\3017.wiff	EPA 537.dam	1	x	PFOA recovery high, see re-injection. **Merge data**, surrogate fails low in 2nd injec
18	K1700284-001		011517\3018.wiff	EPA 537.dam	1	x	
19	K1700284-002		011517\3019.wiff	EPA 537.dam	1		NR FB not needed, surrogate failure (low), re-injection confirms, narrate data suspect
20	537 LL CCV 5.0 ppb	16-OLC-02-25D	011517\3020.wiff	EPA 537.dam	1	x	
21	537 IB	16-OLC-02-25I	011517\3021.wiff	EPA 537.dam	1	x	
22	537 LL CCV 5.0 ppb	16-OLC-02-25D	011517\3022.wiff	EPA 537.dam	1	x	CCV passes, confirms validity and symmetry check of ICAL for re-analyses
23	537 IB	16-OLC-02-25I	011517\3023.wiff	EPA 537.dam	1	x	
24	537 LL CCV 1.25 ppb	16-OLC-02-25B	011517\3024.wiff	EPA 537.dam	1	x	
25	537 IB	16-OLC-02-25I	011517\3025.wiff	EPA 537.dam	1	x	
26	K1700284-002		011517\3026.wiff	EPA 537.dam	1		NR, field blank not needed (surrogate fails low, re-inject confirms, narrate suspect)
27	KQ1700299-02	DLCS	011517\3027.wiff	EPA 537.dam	1	x	Re-injection, PFOA within criteria. **Merge data**, surrogate fails low in 2nd inject
28	537 LL CCV 10.0 ppb	16-OLC-02-25E	011517\3028.wiff	EPA 537.dam	1	x	
29	537 IB	16-OLC-02-25I	011517\3029.wiff	EPA 537.dam	1	x	
30				EPA 537.dam	1	x	

537 low level CAL



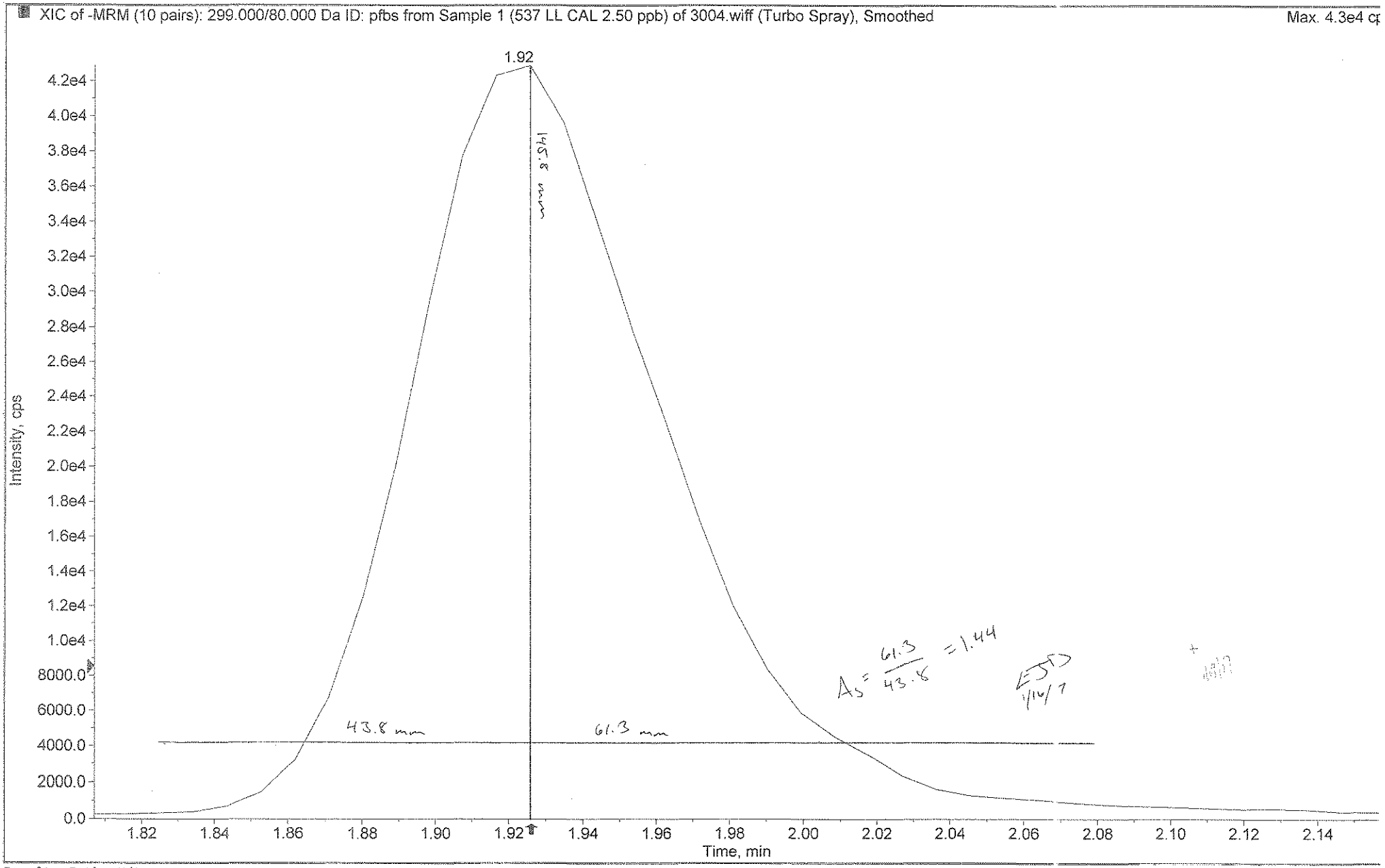
$A_D = \frac{66.9}{57.8} = 1.16$

ESD 1/16/17

Results Path: N/A

*Manual Integration: Before
Printing Date: Monday, January 16, 2017

537 low level CAL



Results Path: N/A

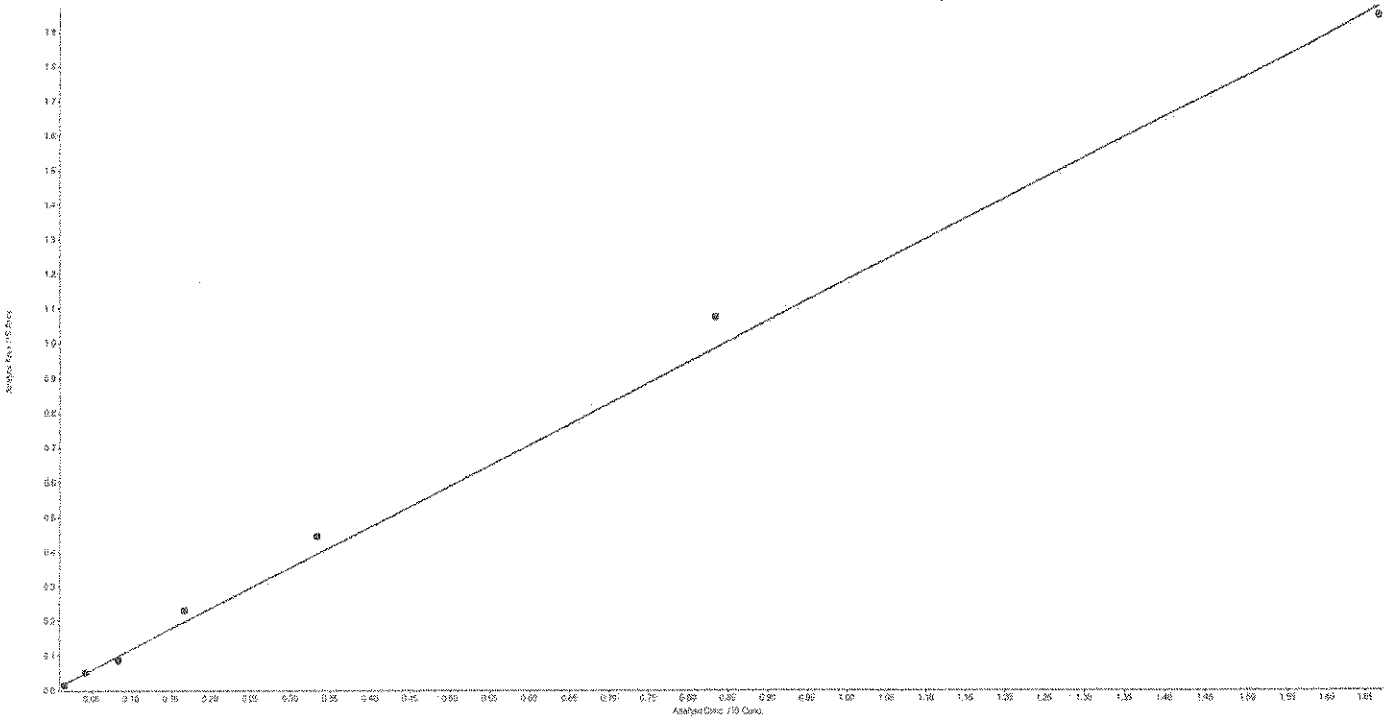
*Manual Integration: Before
Printing Date: Monday, January 16, 2017

Analyte Name: pfbs
Internal Standard: pfos_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 1.18 x (std. dev. = 0.19)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	1	0.36	72	NaN	NaN
1.25	1	1.31	105	NaN	NaN
2.5	1	2.16	86	NaN	NaN
5	1	5.84	117	NaN	NaN
10	1	11.30	113	NaN	NaN
25	1	27.24	109	NaN	NaN
50	1	49.32	99	NaN	NaN



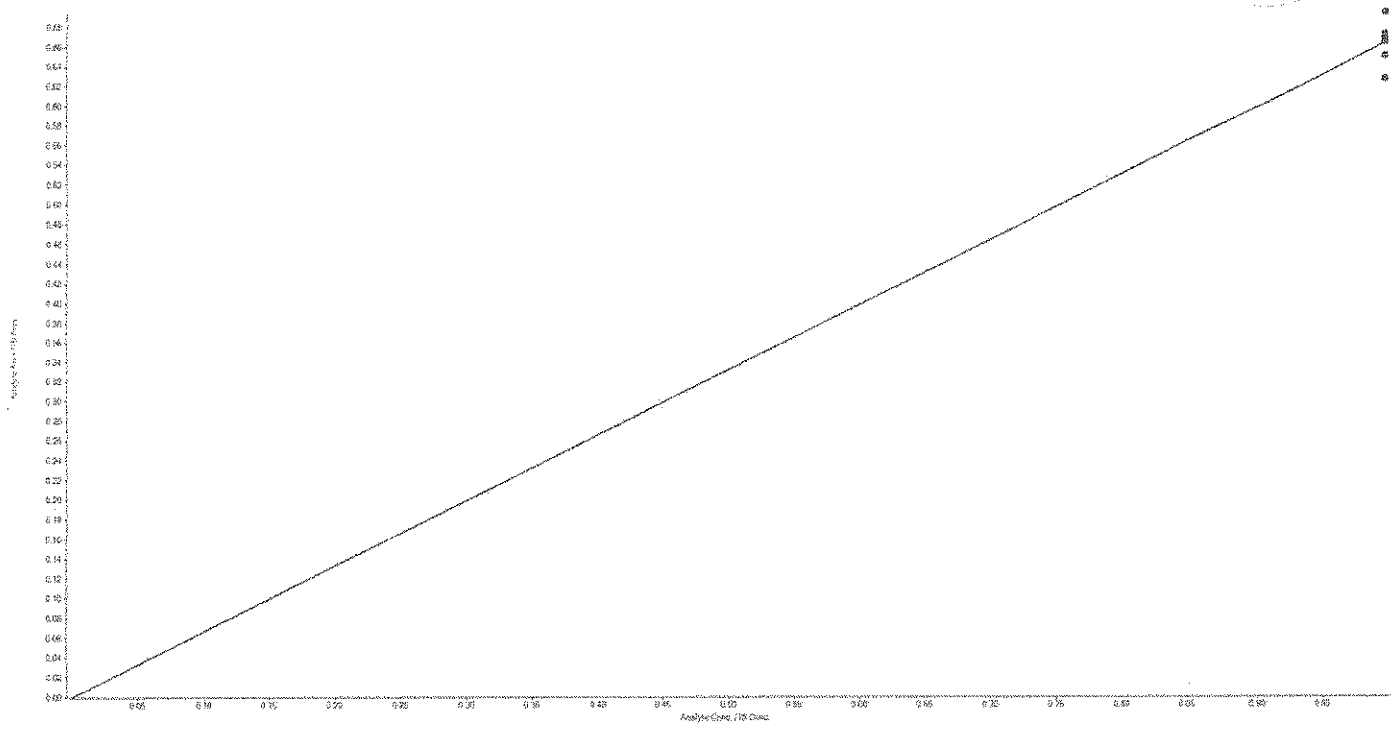
1/17/17

Analyte Name: pfha_c13
Internal Standard: pfoa_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 0.663 x (std. dev. = 0.021)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
10	7	10.00	100	0.32	3.2

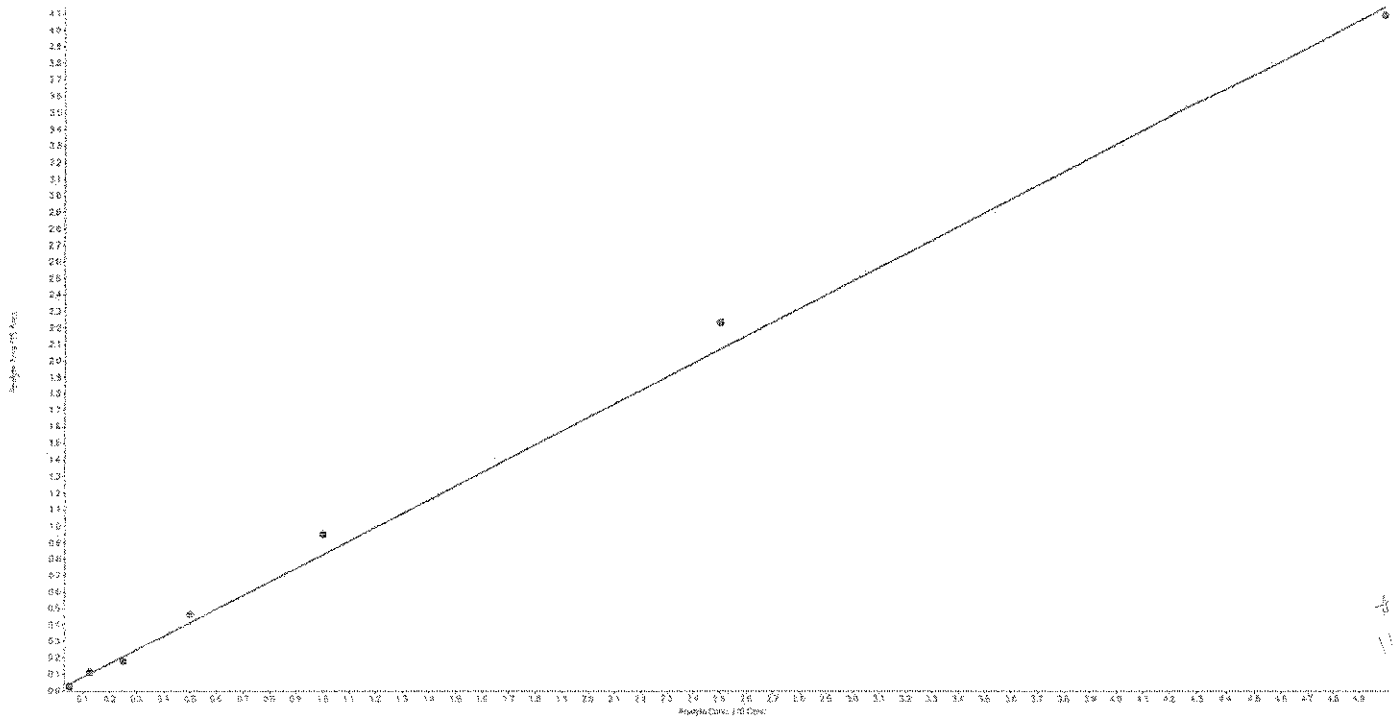


Analyte Name: pfhpa
Internal Standard: pfoa_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 0.828 x (std. dev. = 0.135)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	1	0.35	70	NaN	NaN
1.25	1	1.37	110	NaN	NaN
2.5	1	2.16	86	NaN	NaN
5	1	5.61	112	NaN	NaN
10	1	11.48	115	NaN	NaN
25	1	26.96	108	NaN	NaN
50	1	49.38	99	NaN	NaN

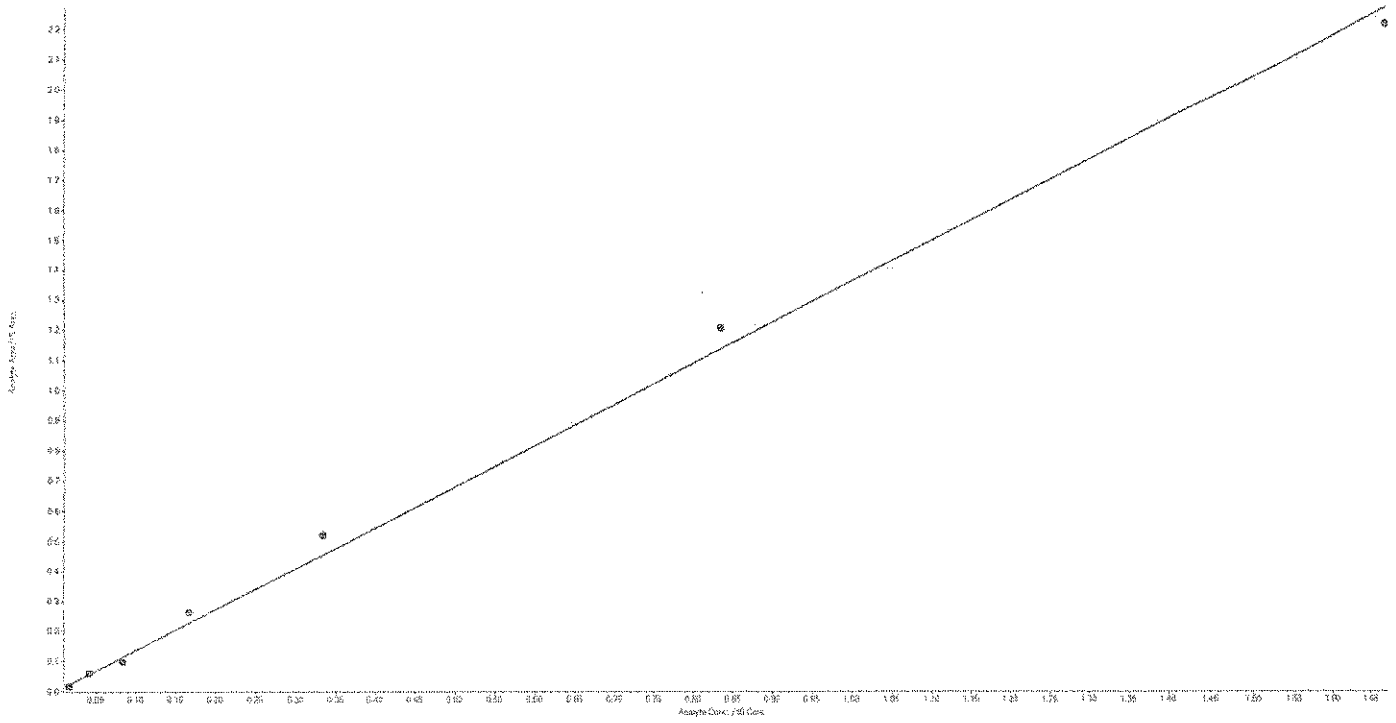


Analyte Name: pfhs
Internal Standard: pfos_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 1.36 x (std. dev. = 0.207)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	1	0.37	75	NaN	NaN
1.25	1	1.32	106	NaN	NaN
2.5	1	2.15	86	NaN	NaN
5	1	5.78	116	NaN	NaN
10	1	11.47	115	NaN	NaN
25	1	26.52	106	NaN	NaN
50	1	48.81	98	NaN	NaN



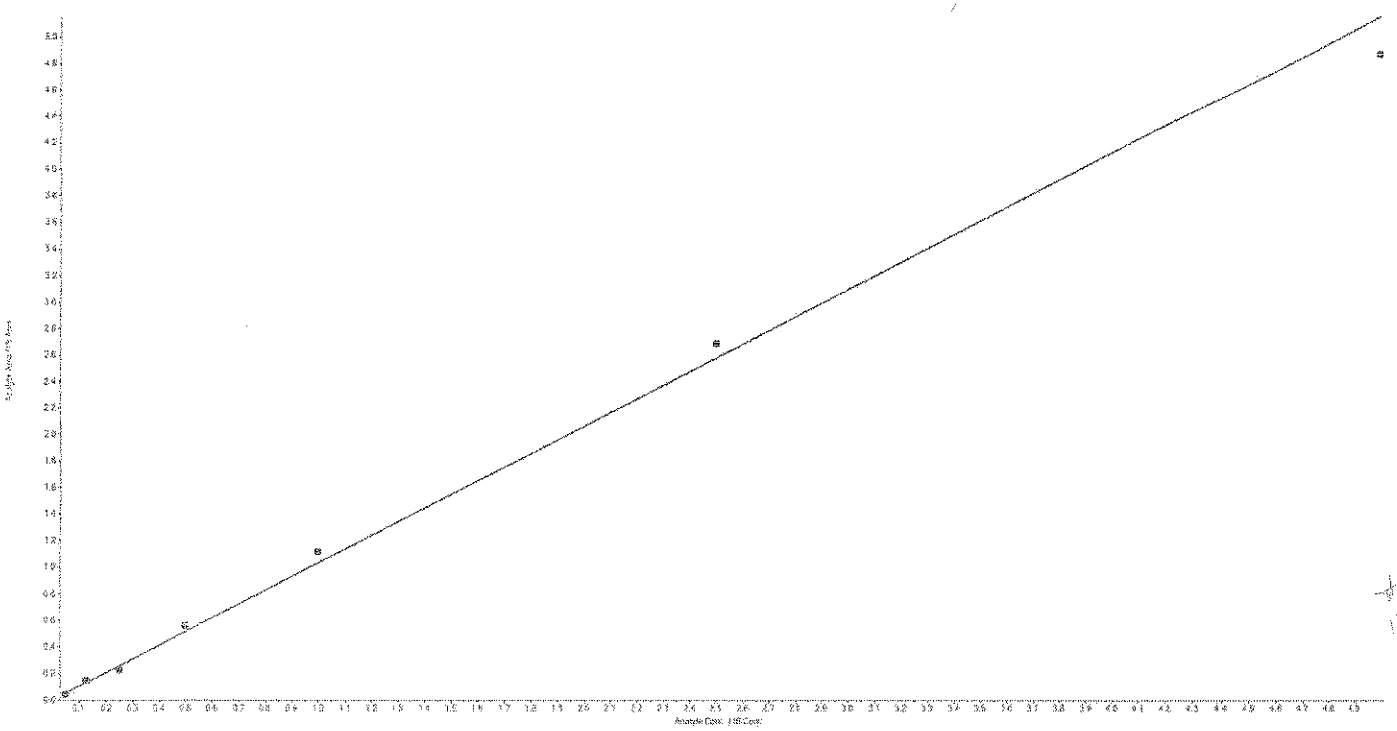
1/17/17

Analyte Name: pfoa
Internal Standard: pfoa_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 1.03 x (std. dev. = 0.113)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	1	0.42	85	NaN	NaN
1.25	1	1.40	112	NaN	NaN
2.5	1	2.19	88	NaN	NaN
5	1	5.45	109	NaN	NaN
10	1	10.80	108	NaN	NaN
25	1	26.06	104	NaN	NaN
50	1	47.22	94	NaN	NaN

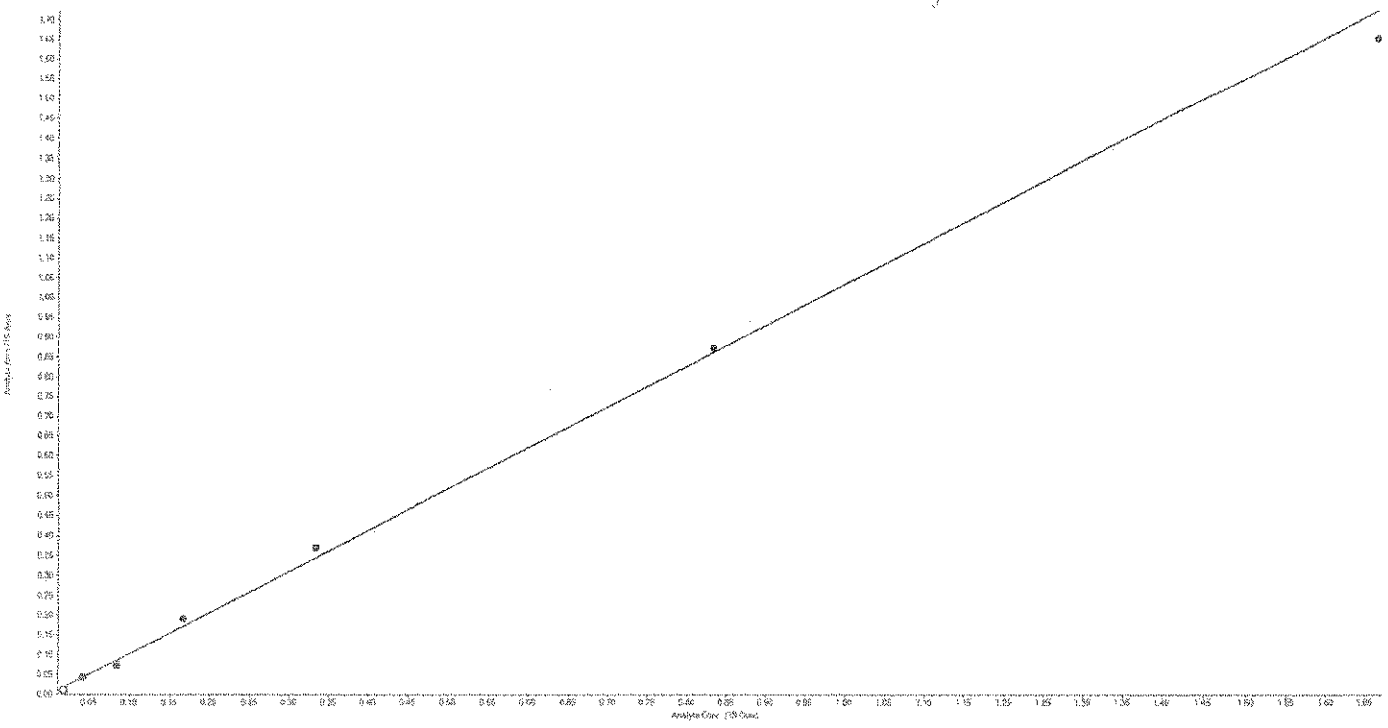


Analyte Name: pfos
Internal Standard: pfos_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 1.03 x (std. dev. = 0.0967)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
1.25	1	1.25	100	NaN	NaN
2.5	1	2.11	84	NaN	NaN
5	1	5.55	111	NaN	NaN
10	1	10.71	107	NaN	NaN
25	1	25.31	101	NaN	NaN
50	1	47.95	96	NaN	NaN

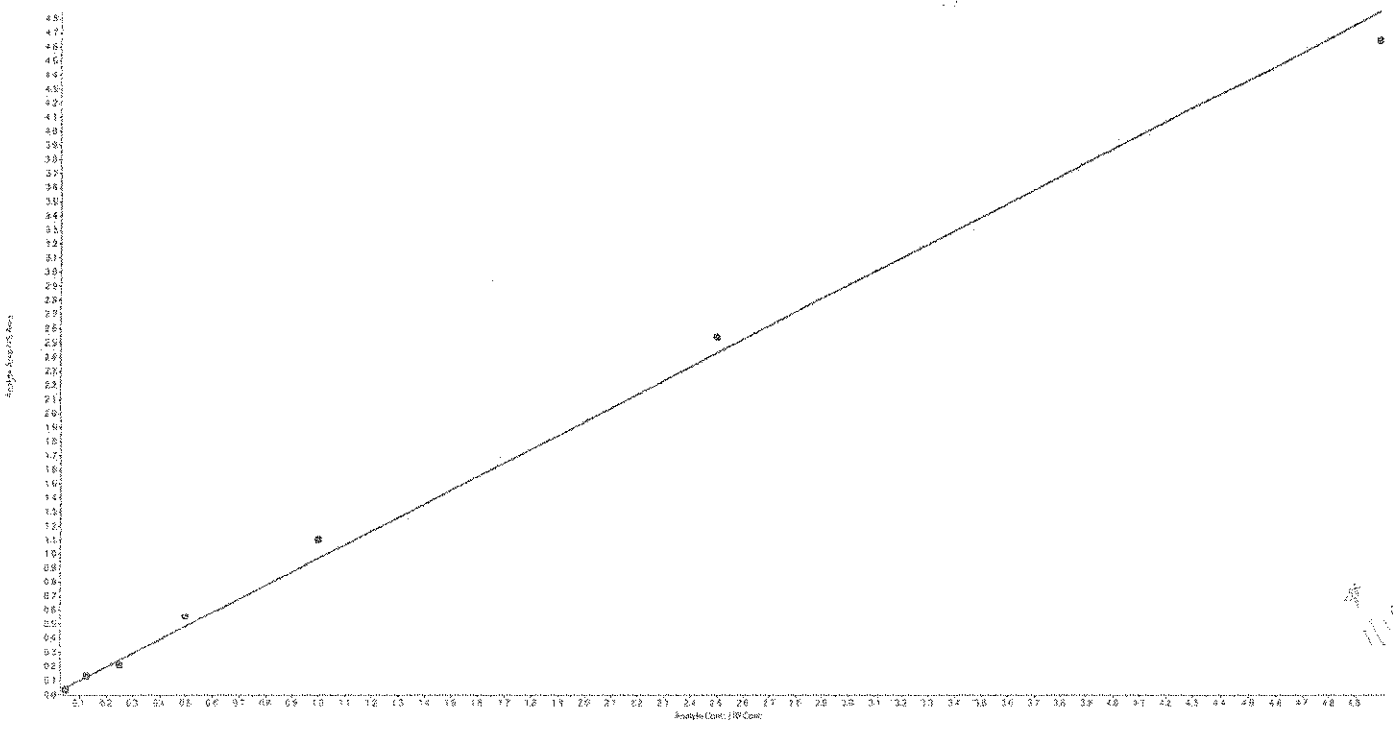


Analyte Name: pfna
Internal Standard: pfoa_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 0.97 x (std. dev. = 0.15)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
0.5	1	0.37	73	NaN	NaN
1.25	1	1.38	110	NaN	NaN
2.5	1	2.18	87	NaN	NaN
5	1	5.76	115	NaN	NaN
10	1	11.40	114	NaN	NaN
25	1	26.17	105	NaN	NaN
50	1	47.91	96	NaN	NaN



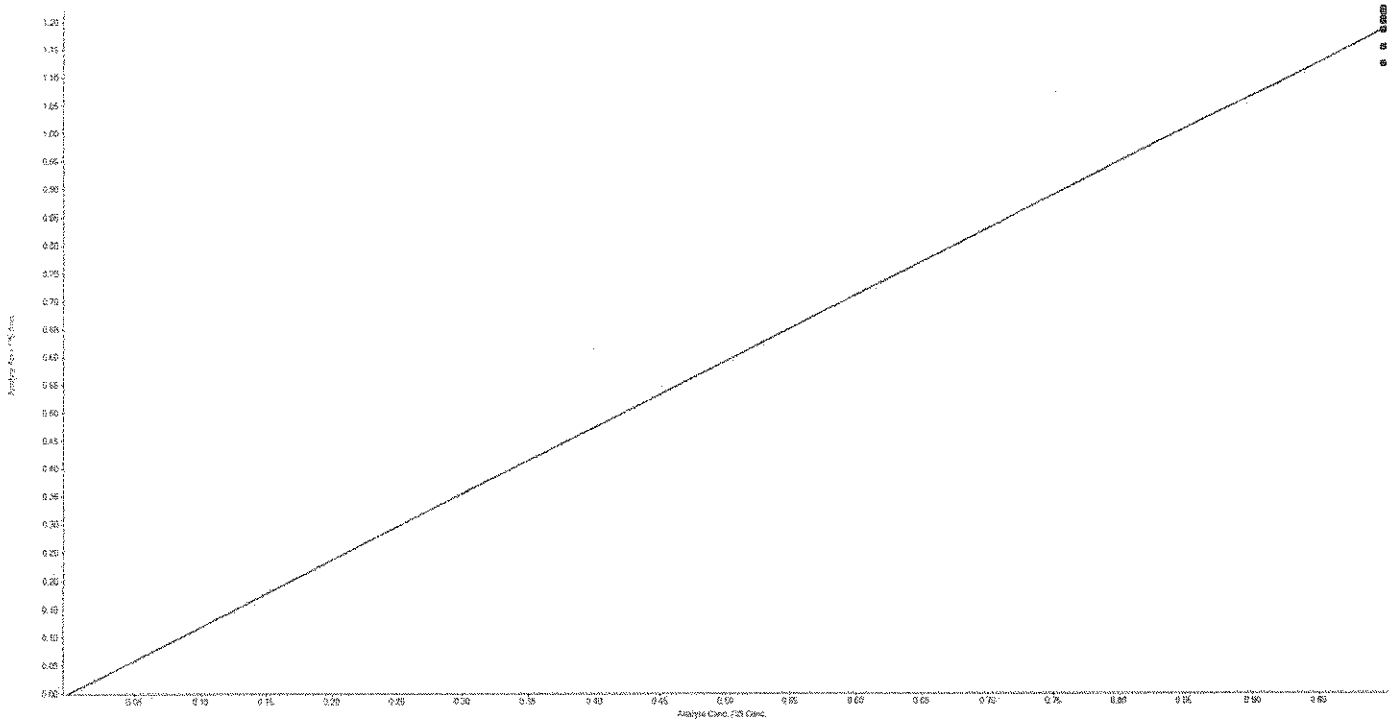
ESD

Analyte Name: pfda_c13
Internal Standard: pfoa_c13

Data File	011517\3001.wiff	Result Table	011517_LL.rdb
Acquisition Date	1/15/2017 11:33:45 PM	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Project	Ewan's Projects\EPA 537		

Regression Equation: y = 1.18 x (std. dev. = 0.0358)

Exp Conc (ng/mL)	# of Values	Mean Calc Conc (ng/mL)	% Accuracy	STD	%CV
10	7	10.00	100	0.30	3.0



1/17/17

Project	Ewan's Projects\EPA 537
Data File	011517\3001.wiff
Result Table	011517_LL.rdb
Instrument Name	LCMS02

all target analytes < 1/3 MRL in instrument blank

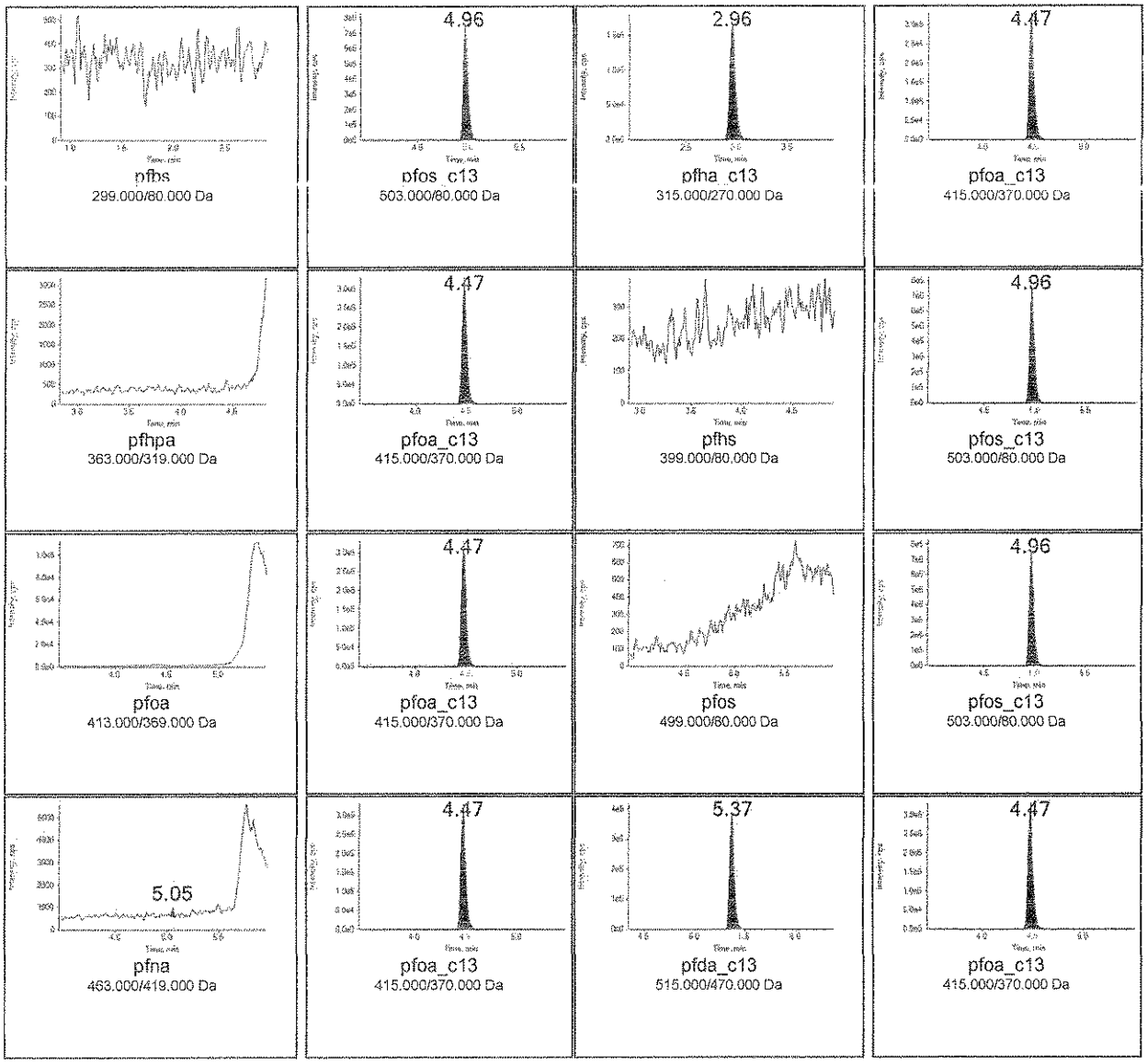
Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/15/2017 11:33:45 PM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (pg/mL)	Modified?
pfbs	pfos_c13	2484752	0.00	0	N/A	No
pfha_c13	pfoa_c13	1116838	2.96	708610	9.57	No
pfhpa	pfoa_c13	1116838	0.00	0	N/A	No
pfhs	pfos_c13	2484752	0.00	0	N/A	No
pfoa	pfoa_c13	1116838	0.00	0	N/A	No
pfos	pfos_c13	2484752	0.00	0	N/A	No
pfna	pfoa_c13	1116838	5.05	594	0.01	No
pfda_c13	pfoa_c13	1116838	5.37	1282569	9.69	No

Quantitative Peak Review

537 IB



☐ Before ☐ After

LSD

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3002.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 0.50 ppb	Injection Vial	61
Acquisition Date	1/15/2017 11:42:50 PM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25A	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

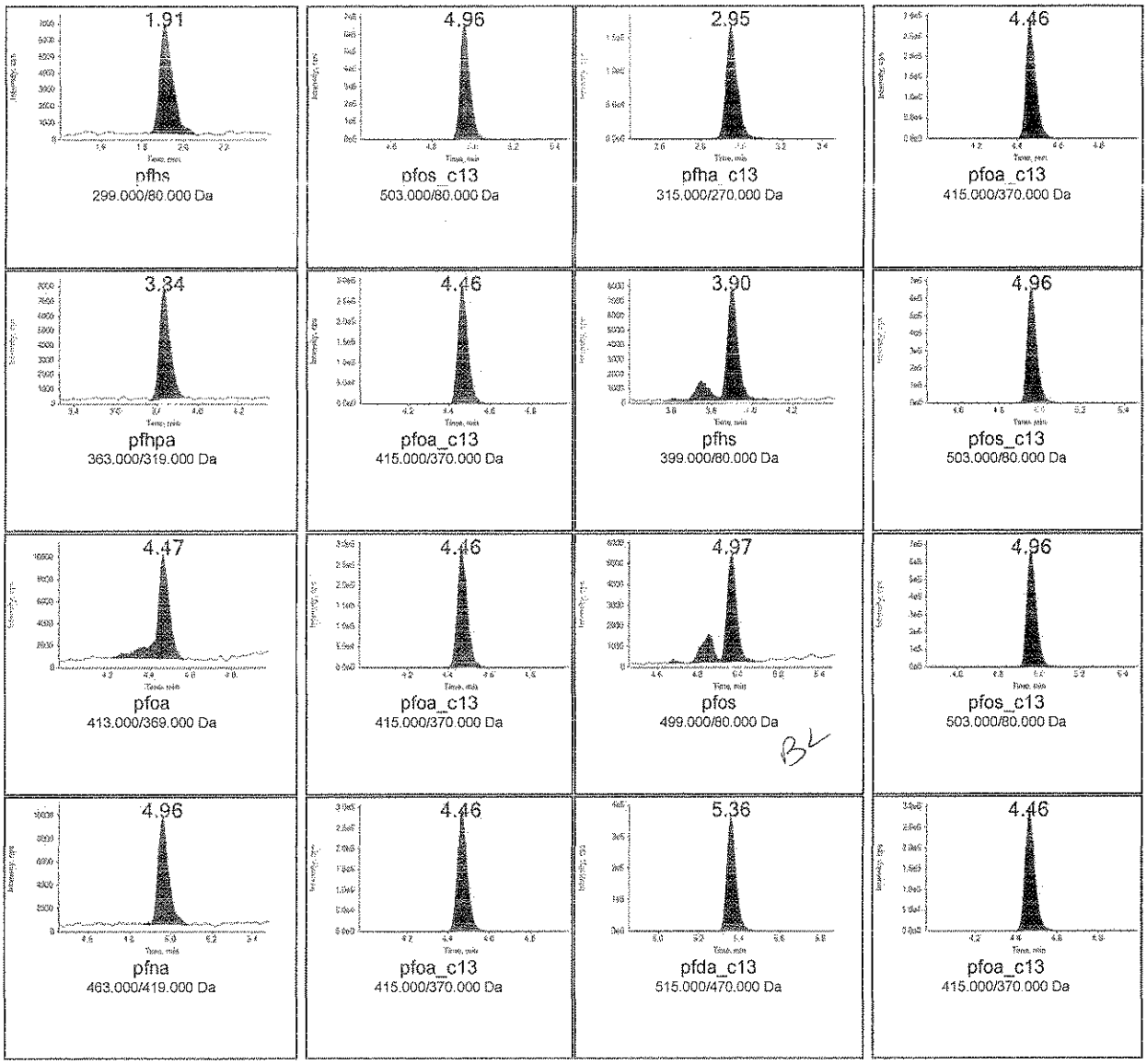
Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2193242	30921	0.50	0.36	72	No
pfha_c13	2.95 (2.95)	pfoa_c13	986503	684542	10.00	10.47	105	No
pfhpa	3.84 (3.83)	pfoa_c13	986503	28719	0.50	0.35	70	No
pfhs	3.90 (3.90)	pfos_c13	2193242	37167	0.50	0.37	75	No
pfoa	4.47 (4.46)	pfoa_c13	986503	42998	0.50	0.42	85	No
pfos	4.97 (4.97)	pfos_c13	2193242	25191	0.50	0.33	67	Yes
pfna	4.96 (4.96)	pfoa_c13	986503	35073	0.50	0.37	73	No
pfda_c13	5.36 (5.35)	pfoa_c13	986503	1204555	10.00	10.31	103	No

exclude

1/17/17

Quantitative Peak Review

537 LL CAL 0.50 ppb



☐ Before ☒ After

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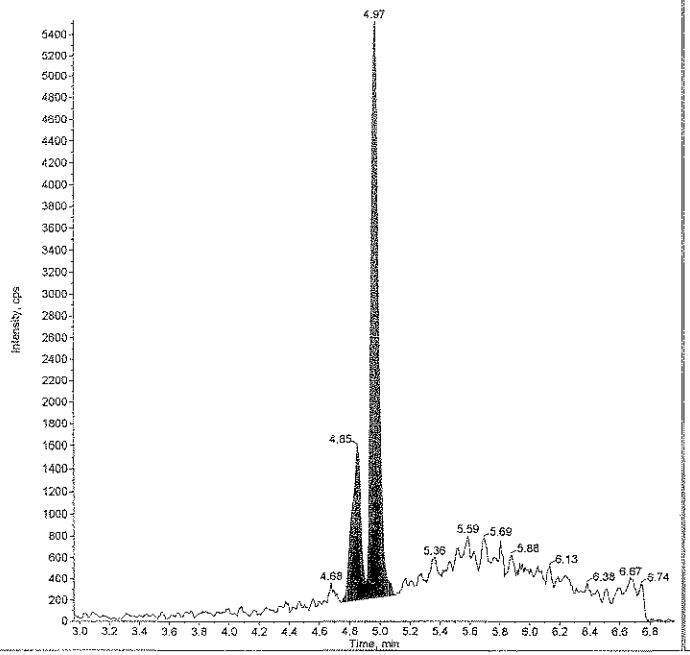
	File Name	Sample Name	Sample ID	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	IS Peak Height (cps)
1	011517\3001.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2484751.78	756160.
2	011517\3002.wiff	537 LL CAL 0.50 p	16-O	Standard	pfos	24631.80	0.500	2193241.68	662890.
3	011517\3003.wiff	537 LL CAL 1.25 p	16-O	Standard	pfos	108848.63	1.25	2517030.37	782550.
4	011517\3004.wiff	537 LL CAL 2.50 p	16-O	Standard	pfos	178300.01	2.50	2450070.27	748150.
5	011517\3005.wiff	537 LL CAL 5.0 pp	16-O	Standard	pfos	431563.48	5.00	2252030.15	665340.
6	011517\3006.wiff	537 LL CAL 10.0 p	16-O	Standard	pfos	848121.88	10.0	2295138.17	679950.
7	011517\3007.wiff	537 LL CAL 25.0 p	16-O	Standard	pfos	2147981.96	25.0	2460079.62	738290.
8	011517\3008.wiff	537 LL CAL 50.0 p	16-O	Standard	pfos	4162155.19	50.0	2515879.68	775240.
9	011517\3009.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2459363.50	737530.
10	011517\3010.wiff	537 LL ICV 10.0 pp	16-O	Quality Control	pfos	758247.13	9.55	2269233.49	693430.
11	011517\3011.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2428345.36	739250.
12	011517\3012.wiff	20 ppb technical P	16-O	Unknown	pfos	0.00	N/A	0.00	0.0000
13	011517\3013.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2398091.79	719160.
14	011517\3014.wiff	537 LL CCV 1.25 p	16-O	Quality Control	pfos	108502.48	1.25	2513626.38	750090.
15	011517\3015.wiff	KQ1700299-03	MB	Unknown	pfos	0.00	N/A	2161989.55	653680.
16	011517\3016.wiff	KQ1700299-01	LCS	Quality Control	pfos	119686.89	1.25	2237921.53	666710.

Sample Name: "537 LL CAL 0.50 ppb" Sample ID: "16-OLC-02-25A" File: "3002.wiff"
Peak Name: "pfos" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:       1
Sample Type:      Standard
Concentration:      0.500     ng/mL
Calculated Conc:    0.526     ng/mL
Acq. Date:        1/15/2017
Acq. Time:        11:42:50 PM

Modified:             No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:     70
Base. Sub. Window:     0.80    min
Peak-Split. Factor:    8
Report Largest Peak:   Yes
Min. Peak Height:    500.00    cps
Min. Peak Width:       0.00    sec
Smoothing Width:          3        points
RT Window:          30.0     sec
Expected RT:         4.96    min
Use Relative RT:     Yes

Int. Type:        Base To Base
Retention Time:      4.97    min
Area:           24631.80    counts
Height:          5339.0     cps
Start Time:          4.75    min
End Time:            5.10    min
```

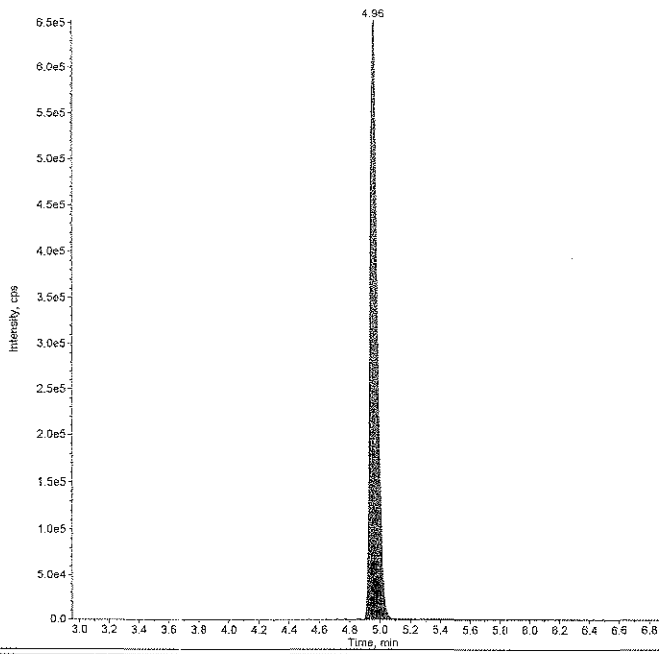


Sample Name: "537 LL CAL 0.50 ppb" Sample ID: "16-OLC-02-25A" File: "3002.wiff"
Peak Name: "pfos_c13(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:       1
Sample Type:      Standard
Concentration:     10.0     ng/mL
Calculated Conc:    N/A
Acq. Date:        1/15/2017
Acq. Time:        11:42:50 PM

Modified:             No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:     50
Base. Sub. Window:     1.00    min
Peak-Split. Factor:    2
Report Largest Peak:   Yes
Min. Peak Height:    500.00    cps
Min. Peak Width:       0.00    sec
Smoothing Width:          5        points
RT Window:          30.0     sec
Expected RT:         4.95    min
Use Relative RT:     No

Int. Type:        Valley
Retention Time:      4.96    min
Area:         2193241.68    counts
Height:        662890.     cps
Start Time:          4.90    min
End Time:            5.13    min
```



Results Path: \\NAKLSW7014\LCMS02\Analyst Data\Projects\Ewan's Projects\EPA 537\Results\011517_LL.rdb

*Manual Integration: Before

Printing Date: Tuesday, January 17, 2017

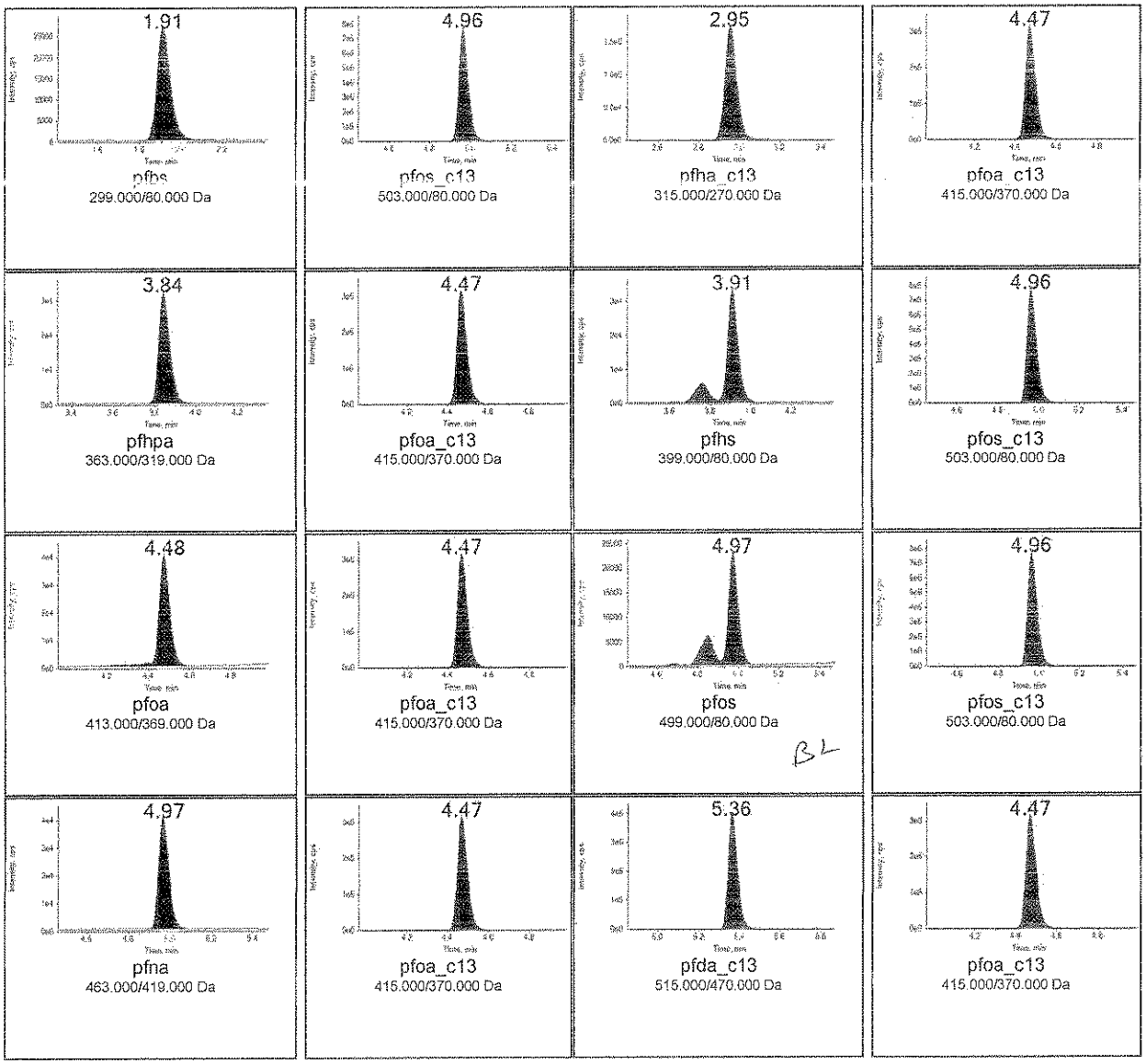
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3003.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 1.25 ppb	Injection Vial	62
Acquisition Date	1/15/2017 11:51:54 PM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25B	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2517030	129809	1.25	1.31	105	No
pfha_c13	2.95 (2.95)	pfoa_c13	1099557	738288	10.00	10.13	101	No
pfhpa	3.84 (3.84)	pfoa_c13	1099557	124932	1.25	1.37	110	No
pfhs	3.91 (3.91)	pfos_c13	2517030	150859	1.25	1.32	106	No
pfoa	4.48 (4.47)	pfoa_c13	1099557	158836	1.25	1.40	112	No
pfos	4.97 (4.97)	pfos_c13	2517030	108849	1.25	1.25	100	Yes
pfna	4.97 (4.96)	pfoa_c13	1099557	146625	1.25	1.38	110	No
pfda_c13	5.36 (5.36)	pfoa_c13	1099557	1335930	10.00	10.25	103	No

Quantitative Peak Review

537 LL CAL 1.25 ppb



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☐ Before ☒ After

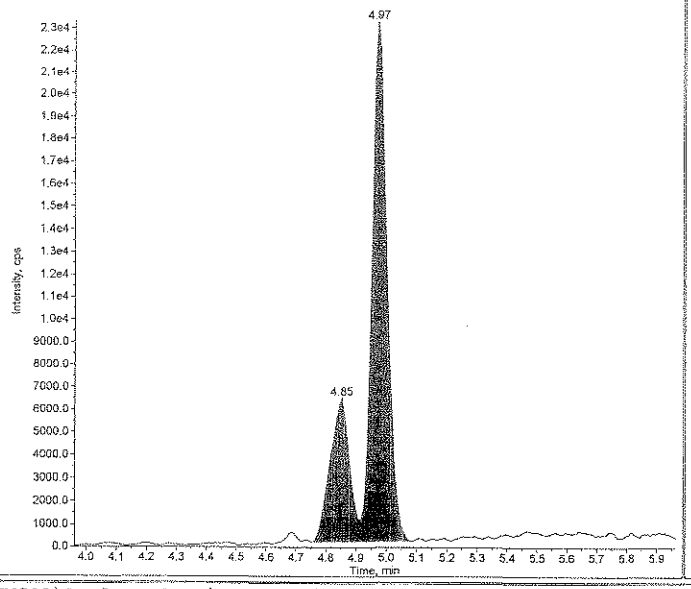
1/17/17

	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	S Peak Area (counts)	Calculated Concentration (ng/mL)
1	011517\3001.wiff	537 IB	Unknown	pfos	0.0000	N/A	2484800.	No Peak
2	011517\3002.wiff	537 LL CAL 0.50 p	Standard	pfos	24632.	0.500	2193200.	0.326
3	011517\3003.wiff	537 LL CAL 1.25 p	Standard	pfos	107580.	1.25	2517000.	1.24
4	011517\3004.wiff	537 LL CAL 2.50 p	Standard	pfos	178300.	2.50	2450100.	2.11
5	011517\3005.wiff	537 LL CAL 5.0 pp	Standard	pfos	431560.	5.00	2252000.	5.57
6	011517\3006.wiff	537 LL CAL 10.0 p	Standard	pfos	848120.	10.0	2295100.	10.7
7	011517\3007.wiff	537 LL CAL 25.0 p	Standard	pfos	2148000.	25.0	2460100.	25.4
8	011517\3008.wiff	537 LL CAL 50.0 p	Standard	pfos	4162200.	50.0	2515900.	48.0
9	011517\3009.wiff	537 IB	Unknown	pfos	0.0000	N/A	2459400.	No Peak
10	011517\3010.wiff	537 LL ICV 10.0 pp	Quality Control	pfos	758250.	9.55	2269200.	9.70
11	011517\3011.wiff	537 IB	Unknown	pfos	0.0000	N/A	2428300.	No Peak
12	011517\3012.wiff	20 ppb technical P	Unknown	pfos	0.0000	N/A	0.0000	#DIV/0!
13	011517\3013.wiff	537 IB	Unknown	pfos	0.0000	N/A	2398100.	No Peak
14	011517\3014.wiff	537 LL CCV 1.25 p	Quality Control	pfos	105810.	1.25	2513600.	1.22

Sample Name: "537 LL CAL 1.25 ppb" Sample ID: "16-OLC-02-25b" File: "3003.wiff"
Peak Name: "pfos" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""
Sample Index: 1
Sample Type: Standard
Concentration: 1.25 ng/mL
Calculated Conc: 1.24 ng/mL
Acq. Date: 1/15/2017
Acq. Time: 11:51:54 PM

Modified: No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage: 70
Base. Sub. Window: 0.80 min
Peak-Split. Factor: 8
Report Largest Peak: Yes
Min. Peak Height: 500.00 cps
Min. Peak Width: 0.00 sec
Smoothing Width: 3 points
RT Window: 30.0 sec
Expected RT: 4.96 min
Use Relative RT: Yes

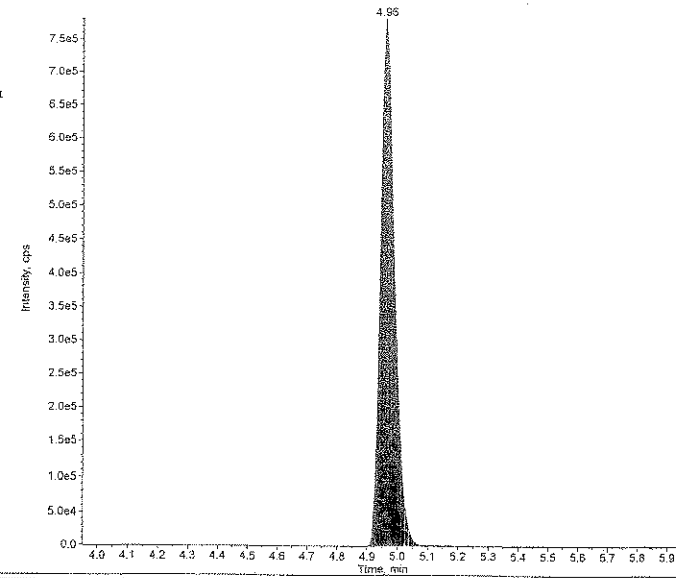
Int. Type: Base To Base
Retention Time: 4.97 min
Area: 107580. counts
Height: 23108. cps
Start Time: 4.75 min
End Time: 5.08 min



Sample Name: "537 LL CAL 1.25 ppb" Sample ID: "16-OLC-02-25b" File: "3003.wiff"
Peak Name: "pfos_c13(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""
Sample Index: 1
Sample Type: Standard
Concentration: 10.0 ng/mL
Calculated Conc: N/A
Acq. Date: 1/15/2017
Acq. Time: 11:51:54 PM

Modified: No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage: 50
Base. Sub. Window: 1.00 min
Peak-Split. Factor: 2
Report Largest Peak: Yes
Min. Peak Height: 500.00 cps
Min. Peak Width: 0.00 sec
Smoothing Width: 5 points
RT Window: 30.0 sec
Expected RT: 4.95 min
Use Relative RT: No

Int. Type: Valley
Retention Time: 4.96 min
Area: 2517000. counts
Height: 782580. cps
Start Time: 4.90 min
End Time: 5.15 min



Results Path: \\NAKLSW7014\LCMS02\Analyst Data\Projects\Ewan's Projects\EPA 537\Results\011517_LL.rdb

*Manual Integration: Before
Printing Date: Monday, January 16, 2017

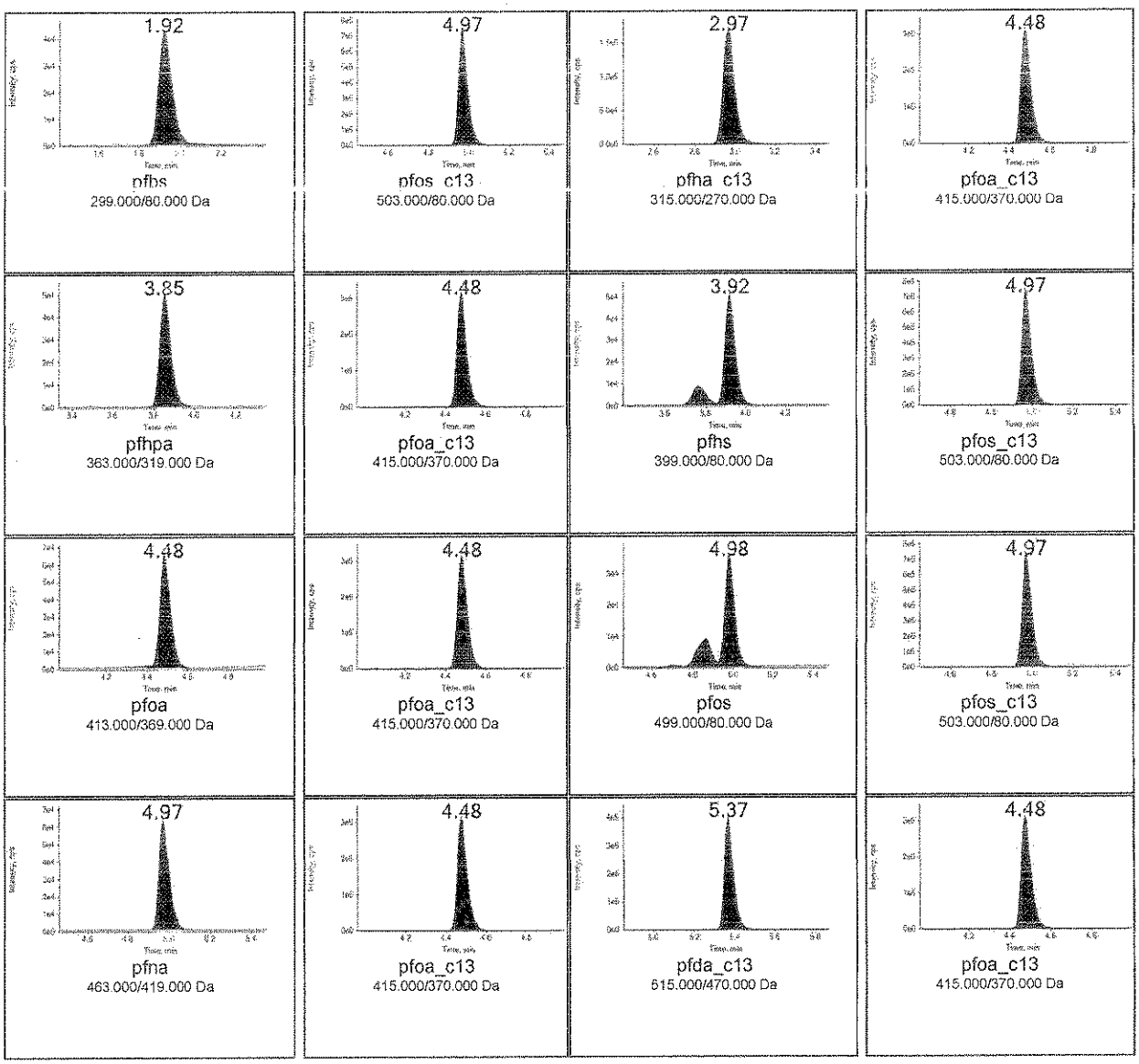
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3004.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 2.50 ppb	Injection Vial	63
Acquisition Date	1/16/2017 12:01:00 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25C	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.92 (1.91)	pfos_c13	2450070	208555	2.50	2.16	86	No
pfha_c13	2.97 (2.96)	pfoa_c13	1104425	736782	10.00	10.06	101	No
pfhpa	3.85 (3.84)	pfoa_c13	1104425	197356	2.50	2.16	86	No
pfhs	3.92 (3.91)	pfos_c13	2450070	238820	2.50	2.15	86	No
pfoa	4.48 (4.48)	pfoa_c13	1104425	249650	2.50	2.19	88	No
pfos	4.98 (4.98)	pfos_c13	2450070	178300	2.50	2.11	84	No
pfna	4.97 (4.97)	pfoa_c13	1104425	233032	2.50	2.18	87	No
pfda_c13	5.37 (5.37)	pfoa_c13	1104425	1328346	10.00	10.15	102	No

Quantitative Peak Review

537 LL CAL 2.50 ppb



☐ Before ☐ After

EST

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3005.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 5.0 ppb	Injection Vial	64
Acquisition Date	1/16/2017 12:10:07 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25D	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

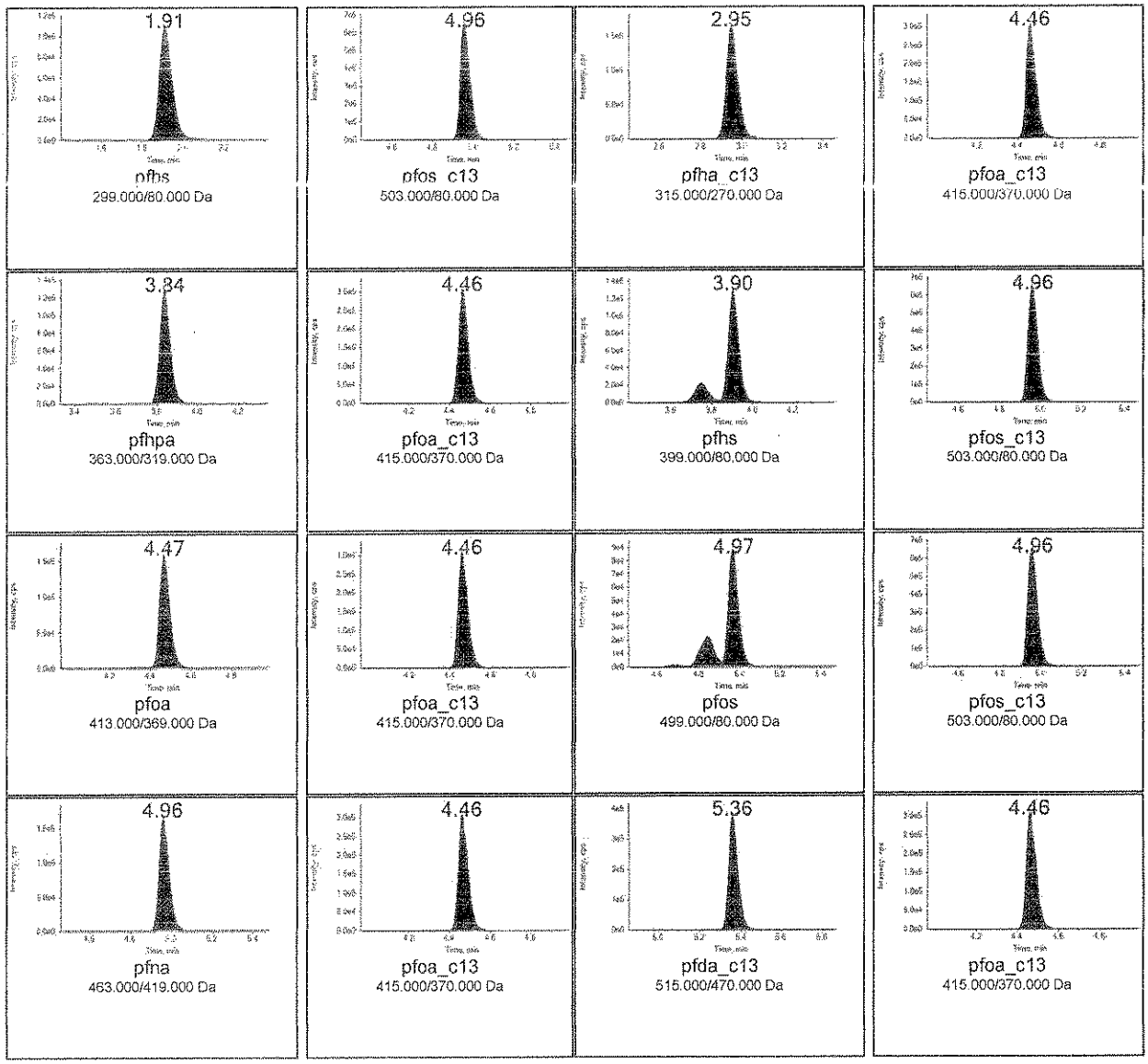
Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2252030	518857	5.00	5.84	117	No
pfha_c13	2.95 (2.95)	pfoa_c13	1051287	683071	10.00	9.80	98	No
pfhpa	3.84 (3.83)	pfoa_c13	1051287	488009	5.00	5.61	112	No
pfhs	3.90 (3.90)	pfos_c13	2252030	591742	5.00	5.78	116	No
pfoa	4.47 (4.46)	pfoa_c13	1051287	589969	5.00	5.45	109	No
pfos	4.97 (4.97)	pfos_c13	2252030	431563	5.00	5.56	111	No
pfna	4.96 (4.96)	pfoa_c13	1051287	587144	5.00	5.76	115	No
pfda_c13	5.36 (5.35)	pfoa_c13	1051287	1211155	10.00	9.72	97	No

1/17/17

Quantitative Peak Review

537 LL CAL 5.0 ppb



☐ Before ☒ After

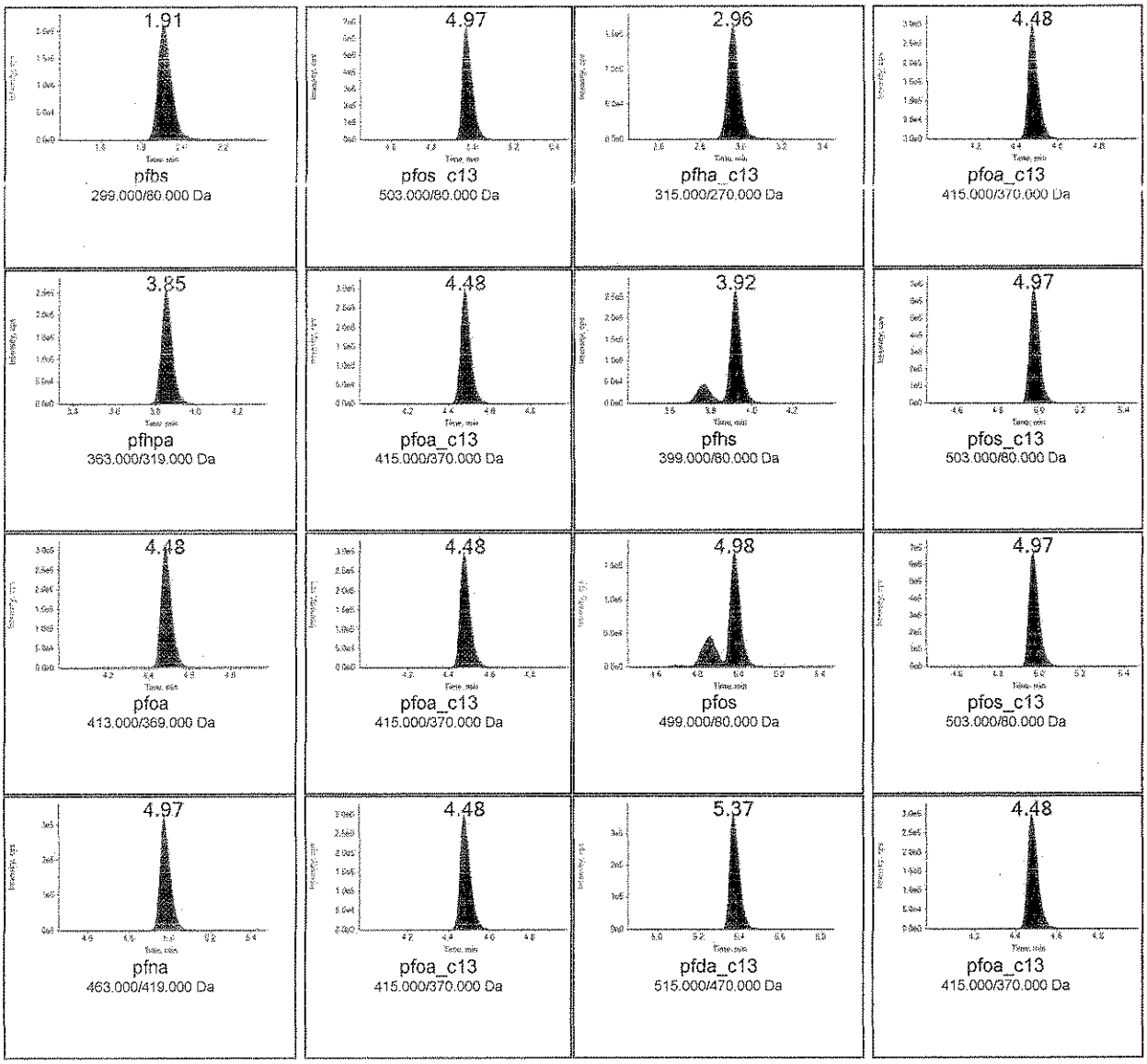
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3006.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 10.0 ppb	Injection Vial	65
Acquisition Date	1/16/2017 12:19:11 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25E	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2295138	1022847	10.00	11.30	113	No
pfha_c13	2.96 (2.96)	pfoa_c13	1030964	685091	10.00	10.02	100	No
pfhpa	3.85 (3.84)	pfoa_c13	1030964	980294	10.00	11.48	115	No
pfhs	3.92 (3.91)	pfos_c13	2295138	1195454	10.00	11.47	115	No
pfoa	4.48 (4.48)	pfoa_c13	1030964	1147430	10.00	10.80	108	No
pfos	4.98 (4.98)	pfos_c13	2295138	848122	10.00	10.71	107	No
pfna	4.97 (4.97)	pfoa_c13	1030964	1139323	10.00	11.40	114	No
pfda_c13	5.37 (5.37)	pfoa_c13	1030964	1234930	10.00	10.11	101	No

Quantitative Peak Review

537 LL CAL 10.0 ppb



☐ Before ☐ After

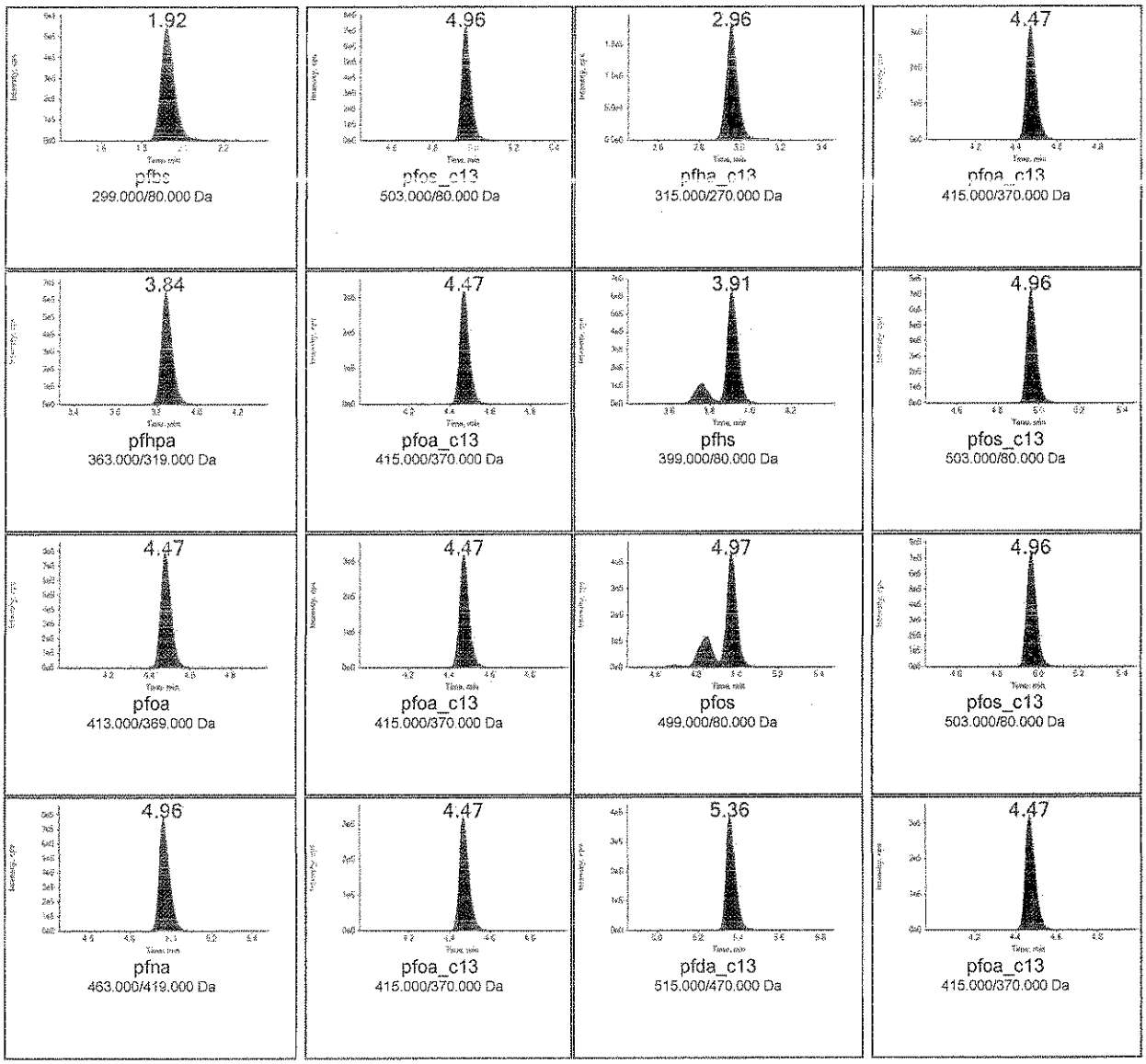
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3007.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 25.0 ppb	**Injection Vial**	66
Acquisition Date	1/16/2017 12:28:16 AM	**Injection Volume**	1
Acquisition Method	EPA 537.dam	**Sample Type**	Standard
Sample ID	16-OLC-02-25F	**Dilution Factor**	1.00
Sample Comment	*No data for Sample Comment*	**Weight to Volume**	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.92 (1.91)	pfos_c13	2460080	2641882	25.00	27.24	109	No
pfha_c13	2.96 (2.95)	pfoa_c13	1106899	740717	10.00	10.09	101	No
pfhpa	3.84 (3.84)	pfoa_c13	1106899	2470850	25.00	26.96	108	No
pfhs	3.91 (3.90)	pfos_c13	2460080	2963900	25.00	26.52	106	No
pfoa	4.47 (4.47)	pfoa_c13	1106899	2972436	25.00	26.06	104	No
pfos	4.97 (4.97)	pfos_c13	2460080	2147982	25.00	25.31	101	No
pfna	4.96 (4.96)	pfoa_c13	1106899	2809719	25.00	26.18	105	No
pfda_c13	5.36 (5.36)	pfoa_c13	1106899	1309629	10.00	9.99	100	No

Quantitative Peak Review

537 LL CAL 25.0 ppb



☐ Before ☐ After

ESD

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3008.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CAL 50.0 ppb	Injection Vial	67
Acquisition Date	1/16/2017 12:37:21 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Standard
Sample ID	16-OLC-02-25G	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

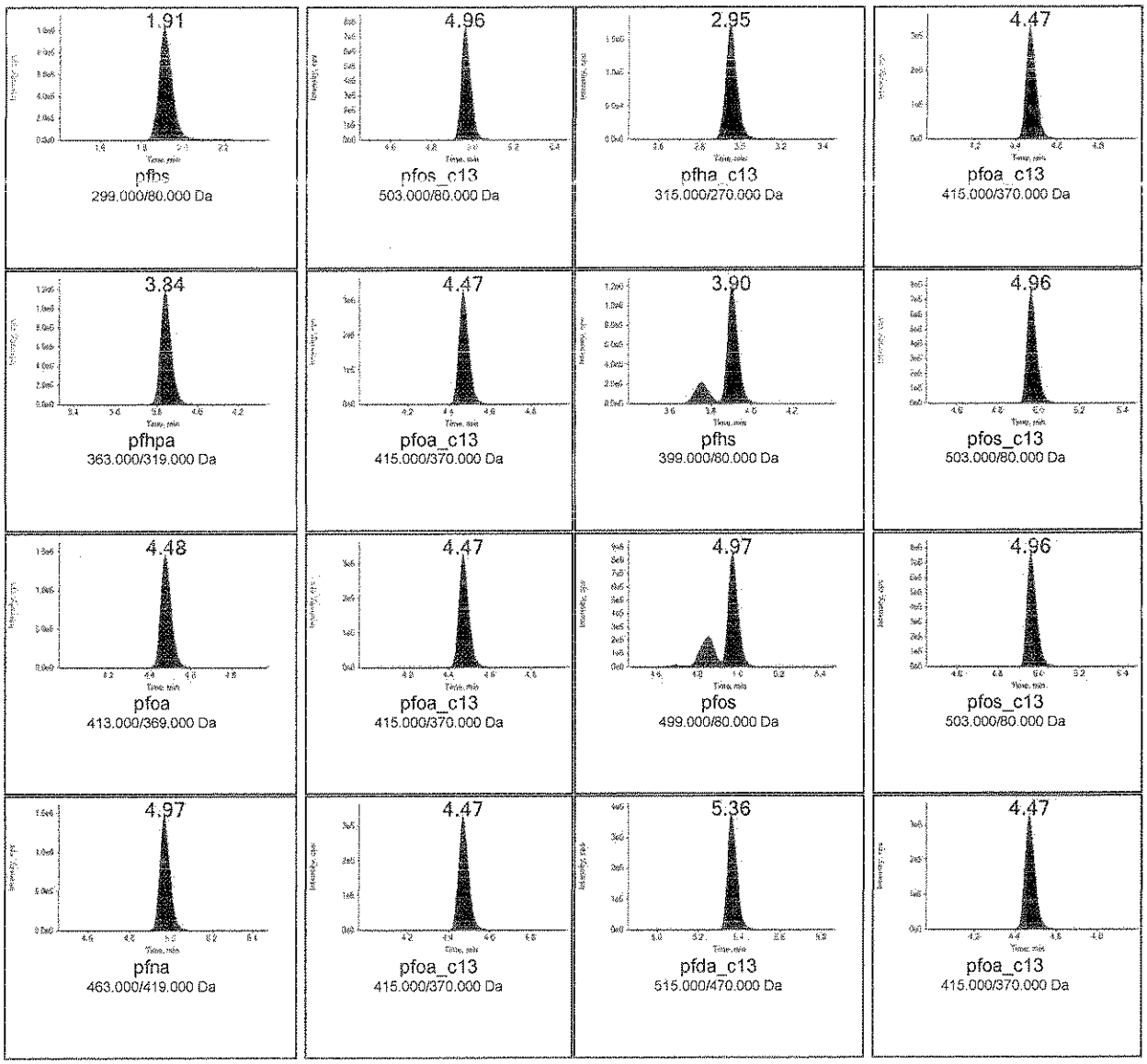
Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2515880	4892635	50.00	49.32	99	No
pfha_c13	2.95 (2.95)	pfoa_c13	1124669	703759	10.00	9.44	94	No
pfhpa	3.84 (3.84)	pfoa_c13	1124669	4598437	50.00	49.38	99	No
pfhs	3.90 (3.90)	pfos_c13	2515880	5579098	50.00	48.81	98	No
pfoa	4.48 (4.47)	pfoa_c13	1124669	5473961	50.00	47.23	94	No
pfos	4.97 (4.97)	pfos_c13	2515880	4162155	50.00	47.95	96	No
pfna	4.97 (4.96)	pfoa_c13	1124669	5225013	50.00	47.91	96	No
pfda_c13	5.36 (5.36)	pfoa_c13	1124669	1262431	10.00	9.47	95	No

1/17/17

Quantitative Peak Review

537 LL CAL 50.0 ppb



☐ Before ☒ After

all target analytes < 1/3 MRL in instrument blank

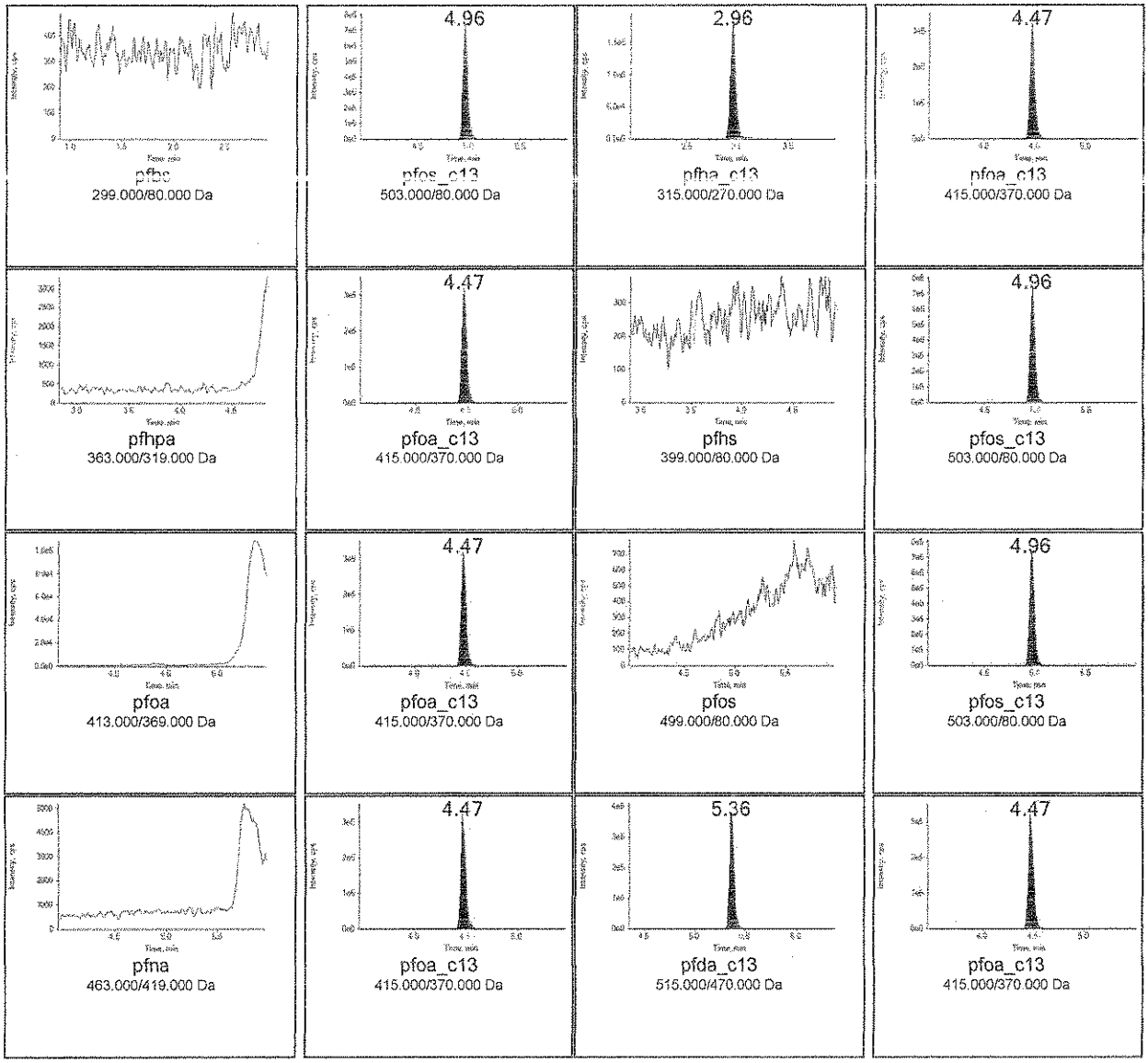
Project	Ewan's Projects\EPA 537		
Data File	011517\3009.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 12:46:26 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2459364	0.00	0	N/A	No
pfha_c13	pfoa_c13	1108048	2.96	718681	9.78	No
pfhpa	pfoa_c13	1108048	0.00	0	N/A	No
pfhs	pfos_c13	2459364	0.00	0	N/A	No
pfoa	pfoa_c13	1108048	0.00	0	N/A	No
pfos	pfos_c13	2459364	0.00	0	N/A	No
pfna	pfoa_c13	1108048	0.00	0	N/A	No
pfda_c13	pfoa_c13	1108048	5.36	1283704	9.78	No

Quantitative Peak Review

537 IB



☐ Before ☐ After

537

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3010.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL ICV 10.0 ppb	Injection Vial	68
Acquisition Date	1/16/2017 12:55:32 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	16-OLC-02-25H	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2269233	1013559	8.85	11.33	128	No
pfha_c13	2.95 (2.95)	pfoa_c13	987755	707038	10.00	10.80	108	No
pfhpa	3.84 (3.84)	pfoa_c13	987755	956726	10.00	11.70	117	No
pfhs	3.91 (3.90)	pfos_c13	2269233	1174716	9.45	11.40	121	No
pfoa	4.47 (4.47)	pfoa_c13	987755	1057504	10.00	10.39	104	No
pfos	4.97 (4.97)	pfos_c13	2269233	758247	9.55	9.69	101	No
pfna	4.96 (4.96)	pfoa_c13	987755	1035446	10.00	10.81	108	No
pfda_c13	5.36 (5.36)	pfoa_c13	987755	1271274	10.00	10.86	109	No

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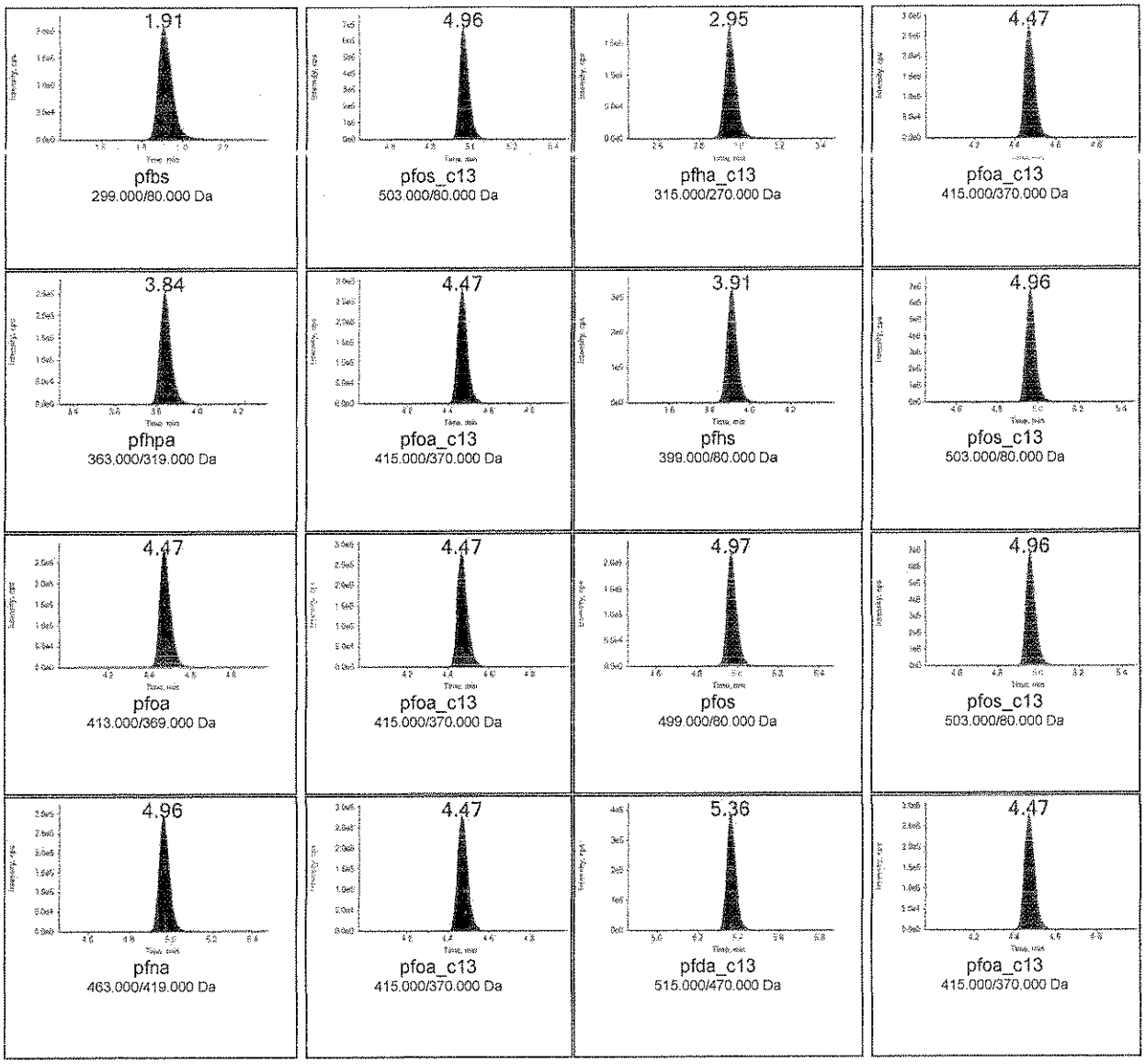
Quantitative Peak Review

537 LL ICV 10.0 ppb



☐ Before ☐ After

ESD

Project	Ewan's Projects\EPA 537	all target analytes < 1/3 MRL in instrument blank	
Data File	011517\3011.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 1:04:37 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

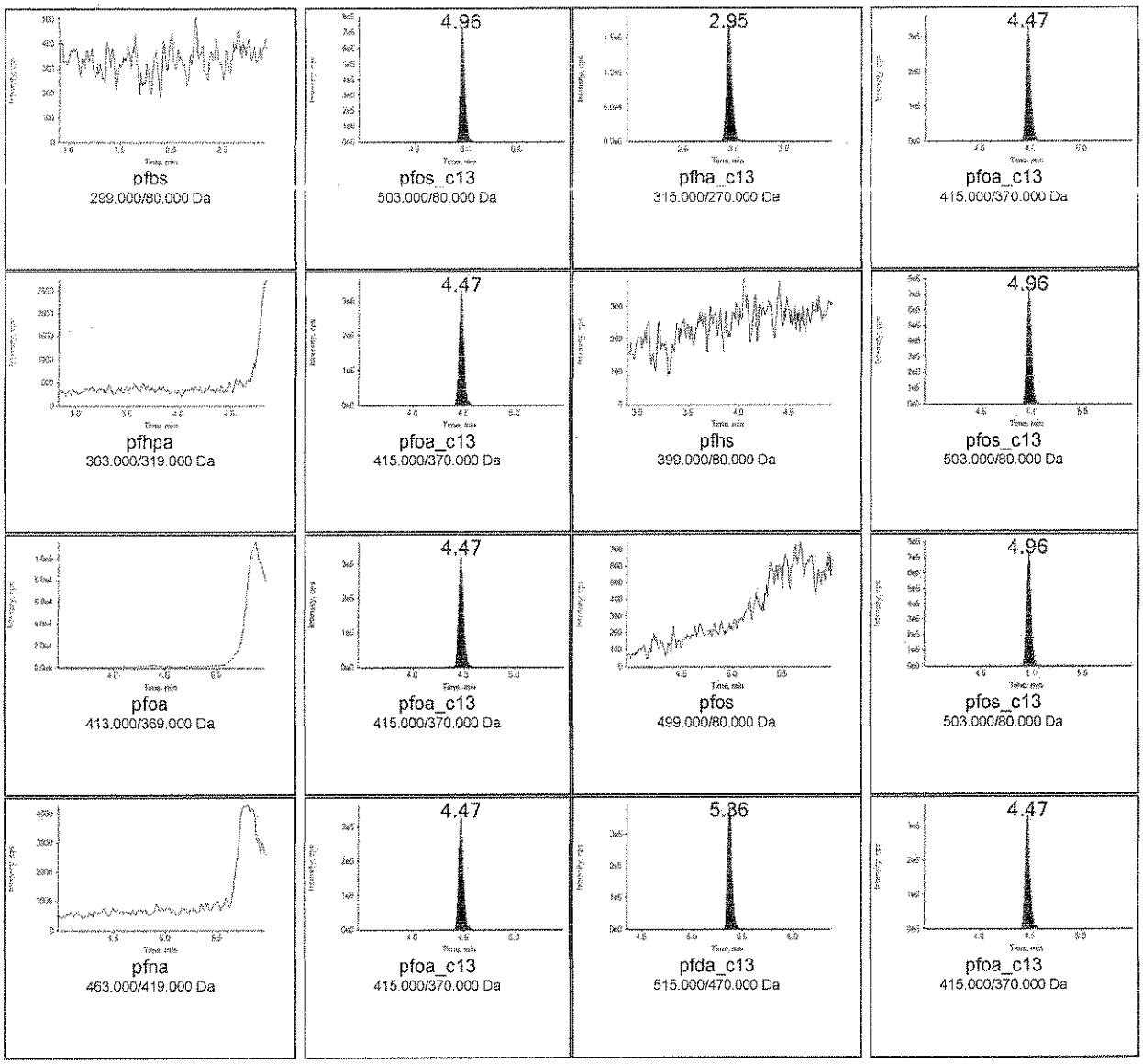
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2428345	0.00	0	N/A	No
pfha_c13	pfoa_c13	1105277	2.95	703785	9.60	No
pfhpa	pfoa_c13	1105277	0.00	0	N/A	No
pfhs	pfos_c13	2428345	0.00	0	N/A	No
pfoa	pfoa_c13	1105277	0.00	0	N/A	No
pfos	pfos_c13	2428345	0.00	0	N/A	No
pfna	pfoa_c13	1105277	0.00	0	N/A	No
pfda_c13	pfoa_c13	1105277	5.36	1248212	9.53	No

1/17/17

Quantitative Peak Review

537 IB



☐ Before ☒ After

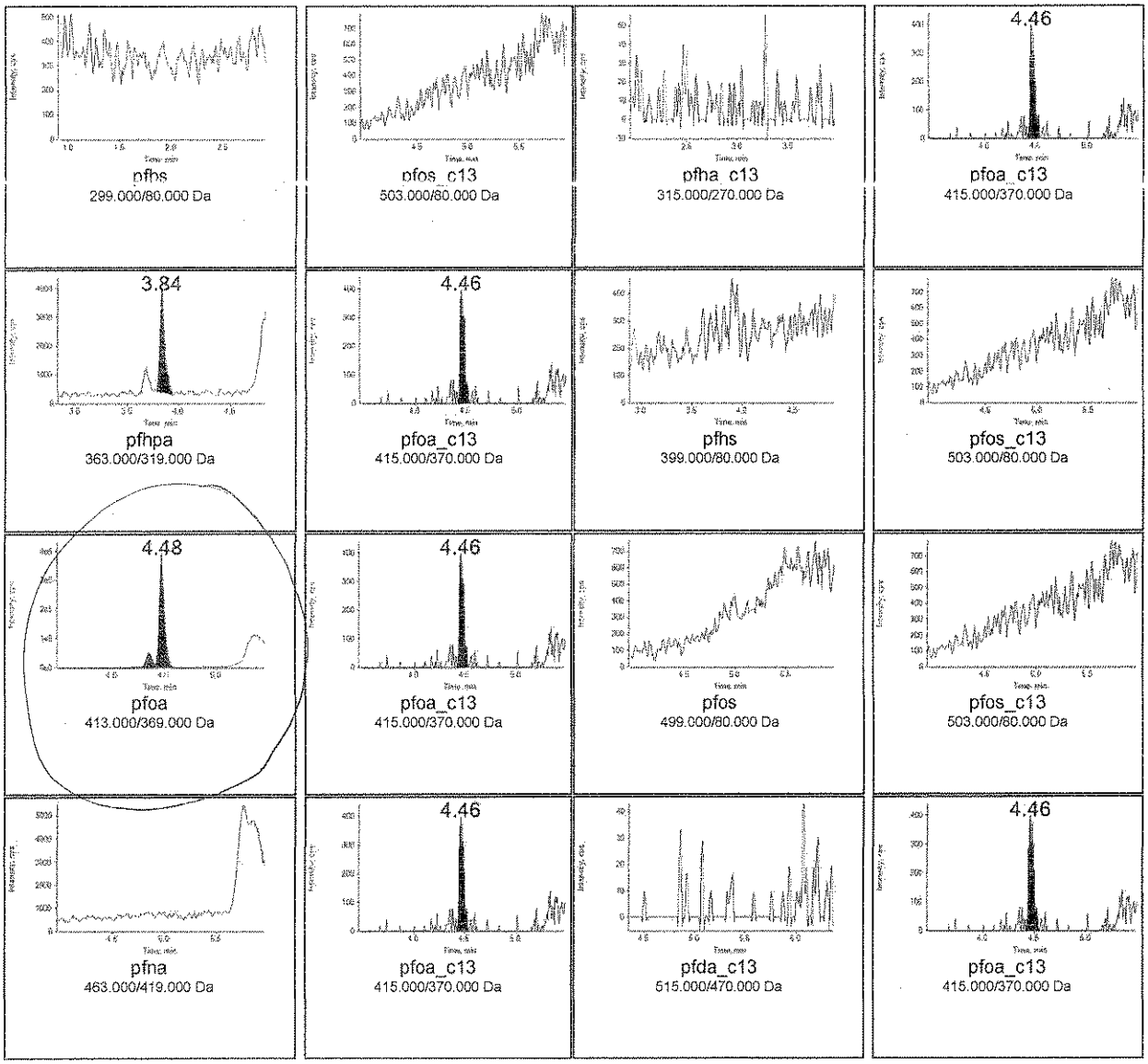
Project	Ewan's Projects\EPA 537		
Data File	011517\3012.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	20 ppb technical PFOA	Injection Volume	1
Acquisition Date	1/16/2017 1:13:42 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	60	Weight to Volume	0.00

Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	0	0.00	0	N/A	No
pfha_c13	pfoa_c13	1277	0.00	0	N/A	No
pfhpa	pfoa_c13	1277	3.84	13554	128.23	No
pfhs	pfos_c13	0	0.00	0	N/A	No
pfoa	pfoa_c13	1277	4.48	1650774	12546.22	No
pfos	pfos_c13	0	0.00	0	N/A	No
pfna	pfoa_c13	1277	0.00	0	N/A	No
pfda_c13	pfoa_c13	1277	0.00	0	N/A	No

Quantitative Peak Review

20 ppb technical PFOA



☐ Before ☐ After

EDD

Project	Ewan's Projects\EPA 537	all target analytes 2/3 more in instrument blank	
Data File	011517\3013.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 1:22:48 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

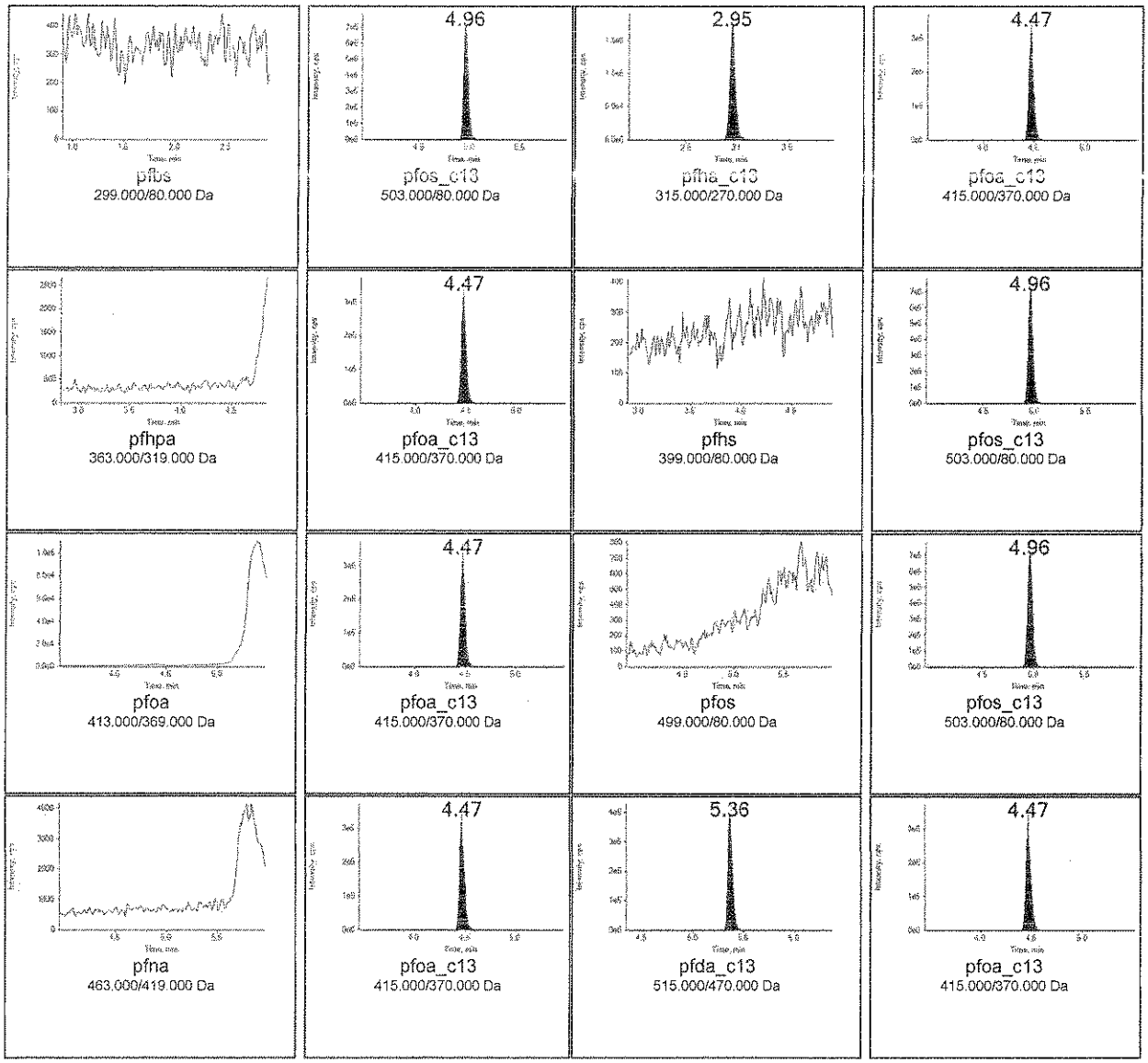
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2398092	0.00	0	N/A	No
pfha_c13	pfoa_c13	1072372	2.95	706985	9.94	No
pfhpa	pfoa_c13	1072372	0.00	0	N/A	No
pfhs	pfos_c13	2398092	0.00	0	N/A	No
pfoa	pfoa_c13	1072372	0.00	0	N/A	No
pfos	pfos_c13	2398092	0.00	0	N/A	No
pfna	pfoa_c13	1072372	0.00	0	N/A	No
pfda_c13	pfoa_c13	1072372	5.36	1284504	10.11	No

1/17

Quantitative Peak Review

537 IB



☐ Before ☒ After

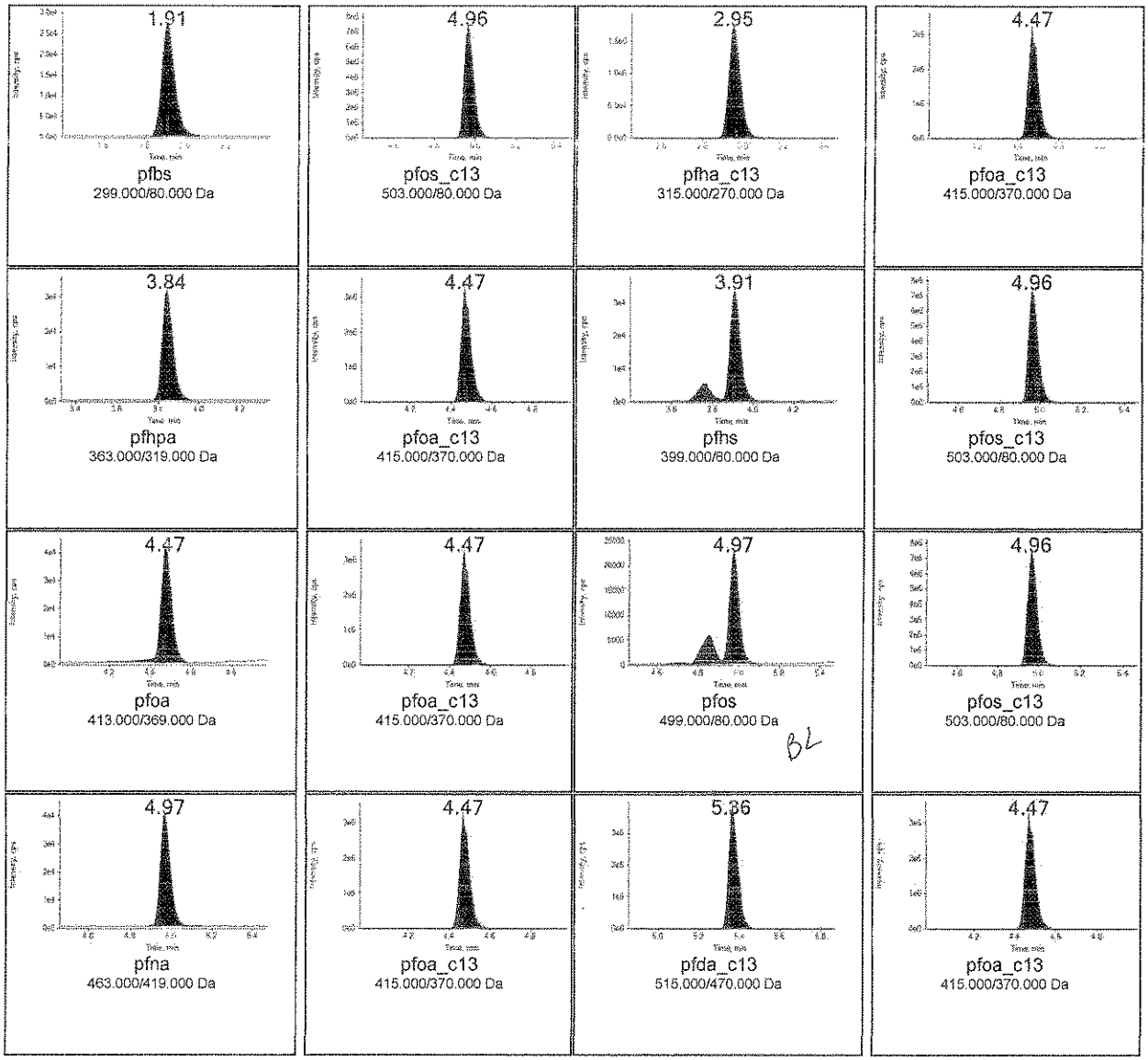
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3014.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CCV 1.25 ppb	Injection Vial	62
Acquisition Date	1/16/2017 1:31:52 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	16-OLC-02-25B	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2513626	128024	1.25	1.29	103	No
pfha_c13	2.95 (2.95)	pfoa_c13	1104229	736541	10.00	10.06	101	No
pfhpa	3.84 (3.83)	pfoa_c13	1104229	123593	1.25	1.35	108	No
pfhs	3.91 (3.91)	pfos_c13	2513626	153181	1.25	1.34	107	No
pfoa	4.47 (4.47)	pfoa_c13	1104229	162369	1.25	1.43	114	No
pfos	4.97 (4.97)	pfos_c13	2513626	108502	1.25	1.25	100	Yes
pfna	4.97 (4.96)	pfoa_c13	1104229	144591	1.25	1.35	108	No
pfda_c13	5.36 (5.36)	pfoa_c13	1104229	1281134	10.00	9.79	98	No

Quantitative Peak Review

537 LL CCV 1.25 ppb



BL

☐ Before ☐ After

1/17/17

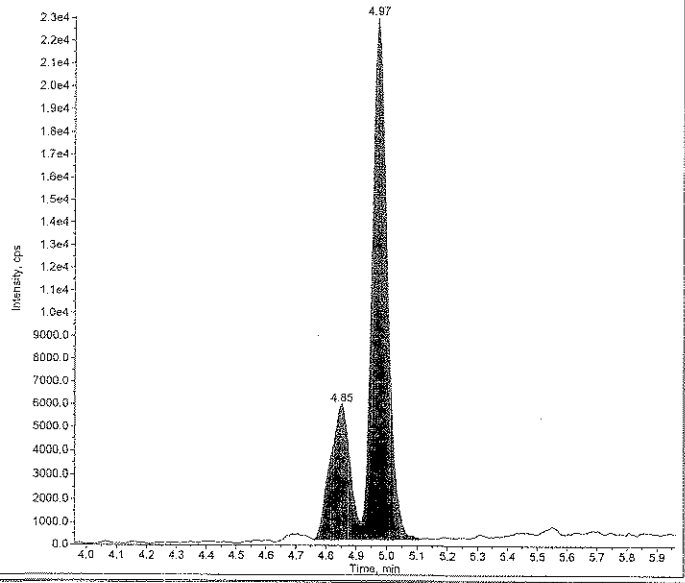
	File Name	Sample Name	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	S Peak Area (counts)	Calculated Concentration (ng/mL)
1	011517\3001.wiff	537 IB	Unknown	pfos	0.0000	N/A	2484800.	No Peak
2	011517\3002.wiff	537 LL CAL 0.50 p	Standard	pfos	24632.	0.500	2193200.	0.326
3	011517\3003.wiff	537 LL CAL 1.25 p	Standard	pfos	108850.	1.25	2517000.	1.25
4	011517\3004.wiff	537 LL CAL 2.50 p	Standard	pfos	178300.	2.50	2450100.	2.11
5	011517\3005.wiff	537 LL CAL 5.0 pp	Standard	pfos	431560.	5.00	2252000.	5.55
6	011517\3006.wiff	537 LL CAL 10.0 p	Standard	pfos	848120.	10.0	2295100.	10.7
7	011517\3007.wiff	537 LL CAL 25.0 p	Standard	pfos	2148000.	25.0	2460100.	25.3
8	011517\3008.wiff	537 LL CAL 50.0 p	Standard	pfos	4162200.	50.0	2515900.	48.0
9	011517\3009.wiff	537 IB	Unknown	pfos	0.0000	N/A	2459400.	No Peak
10	011517\3010.wiff	537 LL ICV 10.0 pp	Quality Control	pfos	758250.	9.55	2269200.	9.69
11	011517\3011.wiff	537 IB	Unknown	pfos	0.0000	N/A	2428300.	No Peak
12	011517\3012.wiff	20 ppb technical P	Unknown	pfos	0.0000	N/A	0.0000	#DIV/0!
13	011517\3013.wiff	537 IB	Unknown	pfos	0.0000	N/A	2398100.	No Peak
14	011517\3014.wiff	537 LL CCV 1.25 p	Quality Control	pfos	105810.	1.25	2513600.	1.22

Sample Name: "537 LL CCV 1.25 ppb" Sample ID: "16-OLC-02-25B" File: "3014.wiff"
Peak Name: "pfos" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:         QC
Concentration:       1.25    ng/mL
Calculated Conc:     1.22    ng/mL
Acq. Date:       1/16/2017
Acq. Time:       1:31:52 AM

Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:    70
Base. Sub. Window:   0.80    min
Peak-Split. Factor:  8
Report Largest Peak: Yes
Min. Peak Height:    500.00  cps
Min. Peak Width:     0.00    sec
Smoothing Width:     3       points
RT Window:           30.0    sec
Expected RT:         4.96    min
Use Relative RT:     Yes

Int. Type:       Base To Base
Retention Time:      4.97    min
Area:          105810.   counts
Height:         22846.   cps
Start Time:          4.76    min
End Time:            5.11    min
```

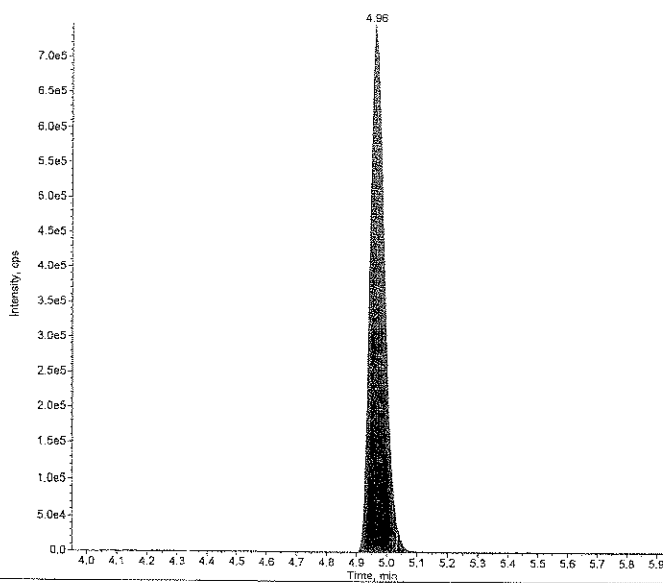


Sample Name: "537 LL CCV 1.25 ppb" Sample ID: "16-OLC-02-25B" File: "3014.wiff"
Peak Name: "pfos_c13[IS]" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

```
Sample Index:        1
Sample Type:         QC
Concentration:       10.0    ng/mL
Calculated Conc:     N/A
Acq. Date:       1/16/2017
Acq. Time:       1:31:52 AM

Modified:            No
Proc. Algorithm: Specify Parameters - MQ III
Noise Percentage:    50
Base. Sub. Window:   1.00    min
Peak-Split. Factor:  2
Report Largest Peak: Yes
Min. Peak Height:    500.00  cps
Min. Peak Width:     0.00    sec
Smoothing Width:     5       points
RT Window:           30.0    sec
Expected RT:         4.95    min
Use Relative RT:     No

Int. Type:       Valley
Retention Time:      4.96    min
Area:          2513600.   counts
Height:         750090.   cps
Start Time:          4.91    min
End Time:            5.15    min
```



Results Path: \\NAKLSW7014\LCMS02\Analyst Data\Projects\Ewan's Projects\EPA 537\Results\011517_LL.rdb

*Manual Integration: Before
Printing Date: Monday, January 16, 2017

Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3020.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CCV 5.0 ppb	Injection Vial	64
Acquisition Date	1/16/2017 2:26:28 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	16-OLC-02-25D	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

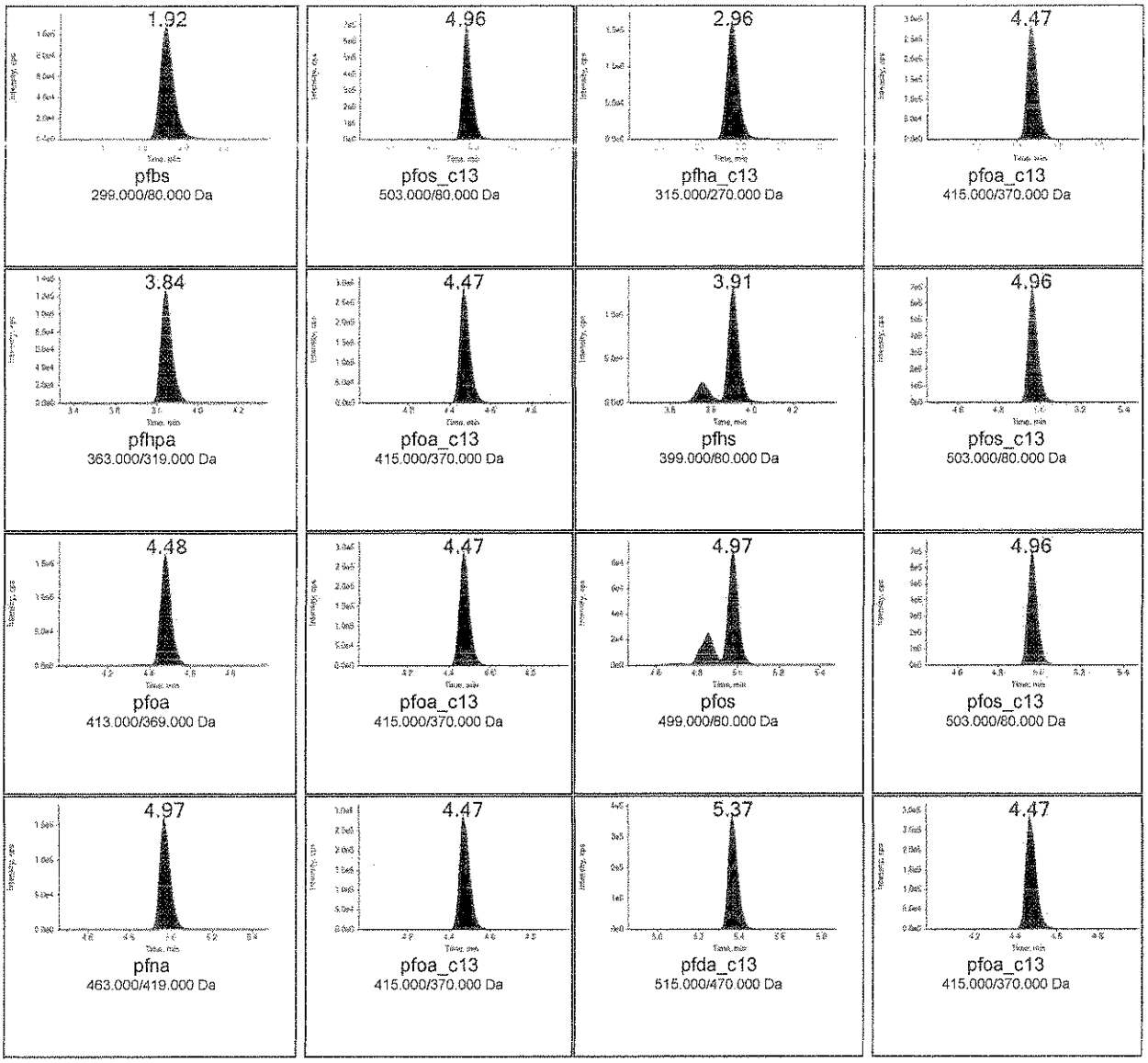
Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.92 (1.91)	pfos_c13	2291908	510789	5.00	5.65	113	No
pfha_c13	2.96 (2.95)	pfoa_c13	1010143	674443	10.00	10.07	101	No
pfhpa	3.84 (3.83)	pfoa_c13	1010143	487646	5.00	5.83	117	No
pfhs	3.91 (3.91)	pfos_c13	2291908	597575	5.00	5.74	115	No
pfoa	4.48 (4.47)	pfoa_c13	1010143	601411	5.00	5.78	116	No
pfos	4.97 (4.97)	pfos_c13	2291908	431648	5.00	5.46	109	No
pfna	4.97 (4.96)	pfoa_c13	1010143	568744	5.00	5.81	116	No
pfda_c13	5.37 (5.36)	pfoa_c13	1010143	1207356	10.00	10.09	101	No

1/17/17

Quantitative Peak Review

537 LL CCV 5.0 ppb



☐ Before ☑ After

EDD

Project	Ewan's Projects\EPA 537
Data File	011517\3021.wiff
Result Table	011517_LL.rdb
Instrument Name	LCMS02

all target analytes < 1/3 MRL in instrument blank

Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 2:35:33 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

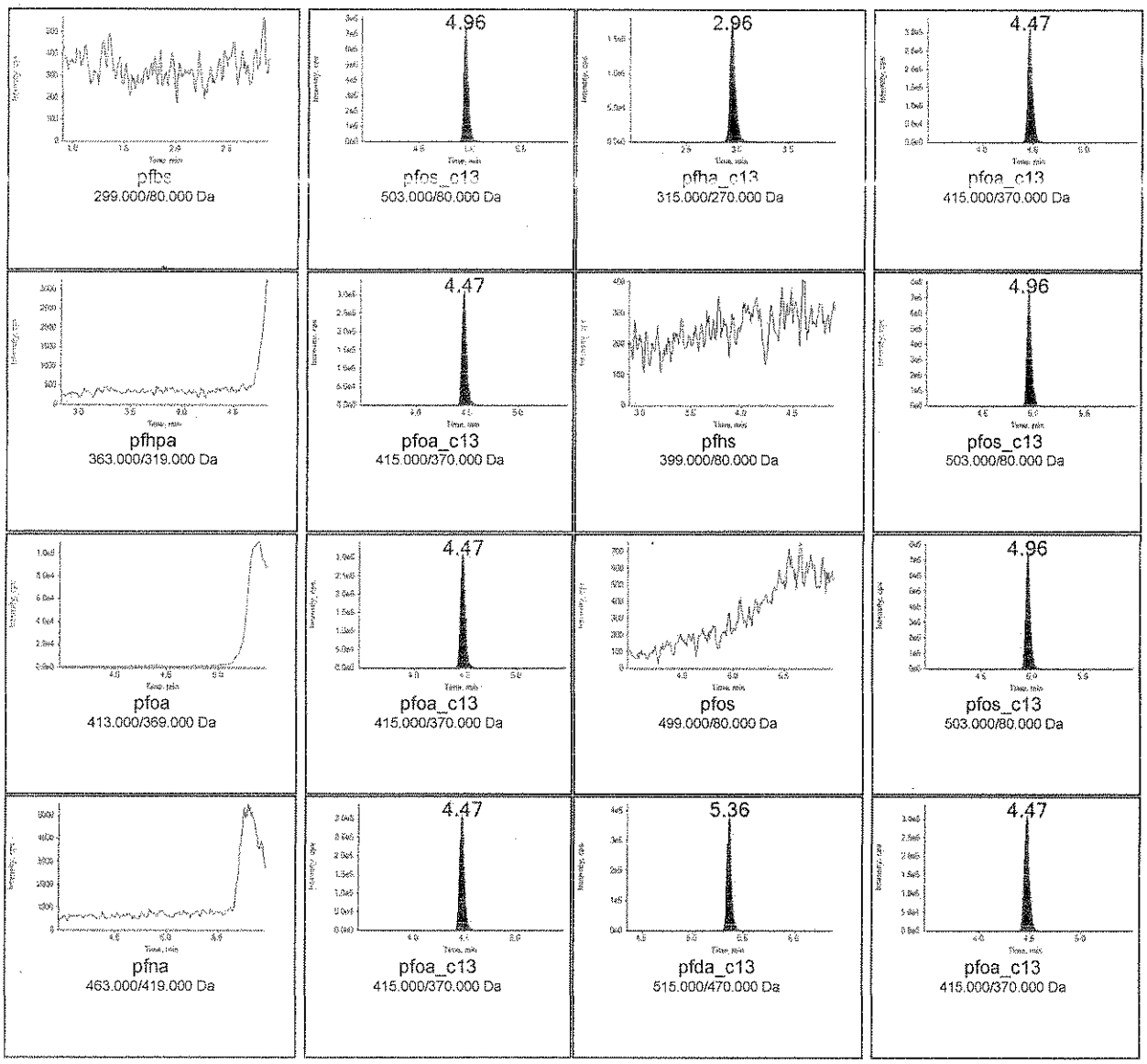
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2465748	0.00	0	N/A	No
pfha_c13	pfoa_c13	1080786	2.96	709545	9.90	No
pfhpa	pfoa_c13	1080786	0.00	0	N/A	No
pfhs	pfos_c13	2465748	0.00	0	N/A	No
pfoa	pfoa_c13	1080786	0.00	0	N/A	No
pfos	pfos_c13	2465748	0.00	0	N/A	No
pfna	pfoa_c13	1080786	0.00	0	N/A	No
pfda_c13	pfoa_c13	1080786	5.36	1261230	9.85	No

1/17/17

Quantitative Peak Review

537 IB



☐ Before ☐ After

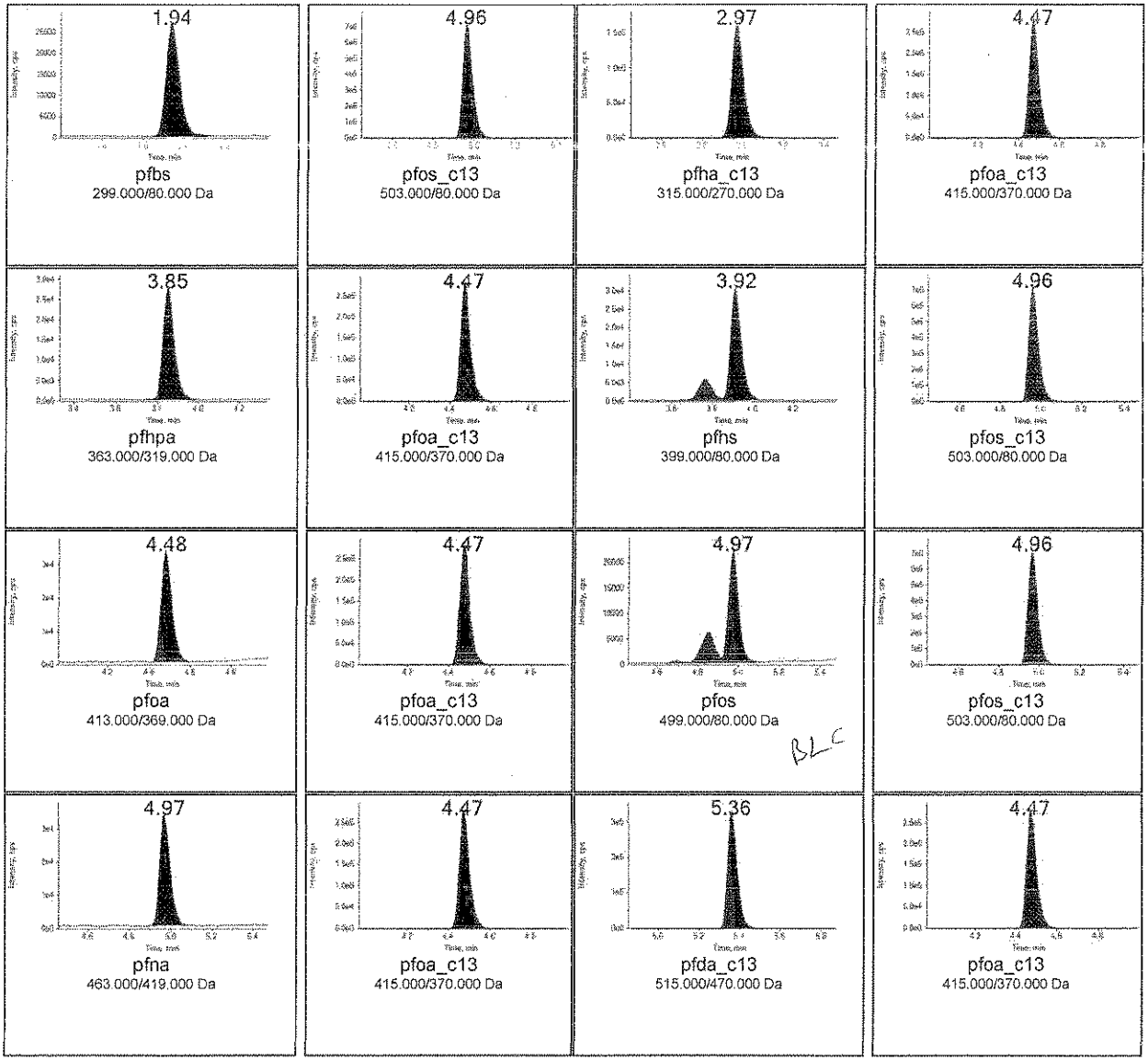
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3024.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CCV 1.25 ppb	Injection Vial	62
Acquisition Date	1/16/2017 10:54:05 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	16-OLC-02-25B	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.94 (1.91)	pfos_c13	2428986	127255	1.25	1.33	106	No
pfha_c13	2.97 (2.96)	pfoa_c13	968386	683539	10.00	10.65	106	No
pfhpa	3.85 (3.84)	pfoa_c13	968386	109356	1.25	1.36	109	No
pfhs	3.92 (3.91)	pfos_c13	2428986	143874	1.25	1.30	104	No
pfoa	4.48 (4.47)	pfoa_c13	968386	127913	1.25	1.28	103	No
pfos	4.97 (4.97)	pfos_c13	2428986	109790	1.25	1.31	105	Yes
pfna	4.97 (4.97)	pfoa_c13	968386	122950	1.25	1.31	105	No
pfda_c13	5.36 (5.36)	pfoa_c13	968386	1115672	10.00	9.72	97	No

Quantitative Peak Review

537 LL CCV 1.25 ppb



BLC

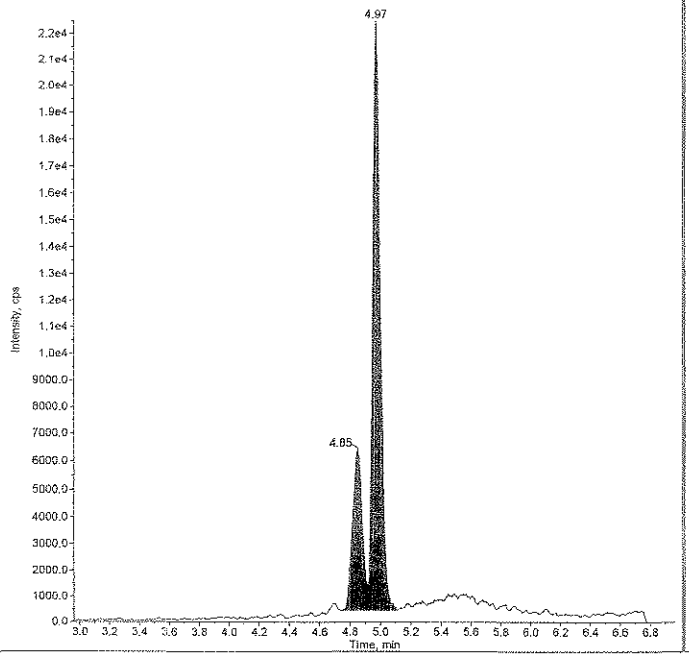
☐ Before ☒ After

1/17/17

	File Name	Sample Name	Sample ID	Sample Type	Analyte Peak Name	Analyte Peak Area (counts)	Analyte Concentration (ng/mL)	IS Peak Area (counts)	IS Peak Height (cps)
10	011517\3010.wiff	537 LL ICV 10.0 pp	16-O	Quality Control	pfos	758247.13	9.55	2269233.49	693430.
11	011517\3011.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2428345.36	739250.
12	011517\3012.wiff	20 ppb technical P	16-O	Unknown	pfos	0.00	N/A	0.00	0.0000
13	011517\3013.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2398091.79	719160.
14	011517\3014.wiff	537 LL CCV 1.25 p	16-O	Quality Control	pfos	108502.48	1.25	2513626.38	750090.
15	011517\3015.wiff	KQ1700299-03	MB	Unknown	pfos	0.00	N/A	2161989.55	653680.
16	011517\3016.wiff	KQ1700299-01	LCS	Quality Control	pfos	119686.89	1.25	2237921.53	666710.
17	011517\3017.wiff	KQ1700299-02	DLC	Quality Control	pfos	116942.16	1.25	1957483.67	604870.
18	011517\3018.wiff	K1700284-001		Unknown	pfos	17255.48	N/A	2056906.23	631250.
19	011517\3019.wiff	K1700284-002		Unknown	pfos	0.00	N/A	2227110.49	666800.
20	011517\3020.wiff	537 LL CCV 5.0 pp	16-O	Quality Control	pfos	431647.53	5.00	2291908.11	701130.
21	011517\3021.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2465747.95	755180.
22	011517\3022.wiff	537 LL CCV 5.0 pp	16-O	Quality Control	pfos	416092.35	5.00	2225650.87	680340.
23	011517\3023.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2396214.27	735910.
24	011517\3024.wiff	537 LL CCV 1.25 p	16-O	Quality Control	pfos	105315.10	1.25	2428986.14	723170.
25	011517\3025.wiff	537 IB	16-O	Unknown	pfos	0.00	N/A	2369275.44	708110.

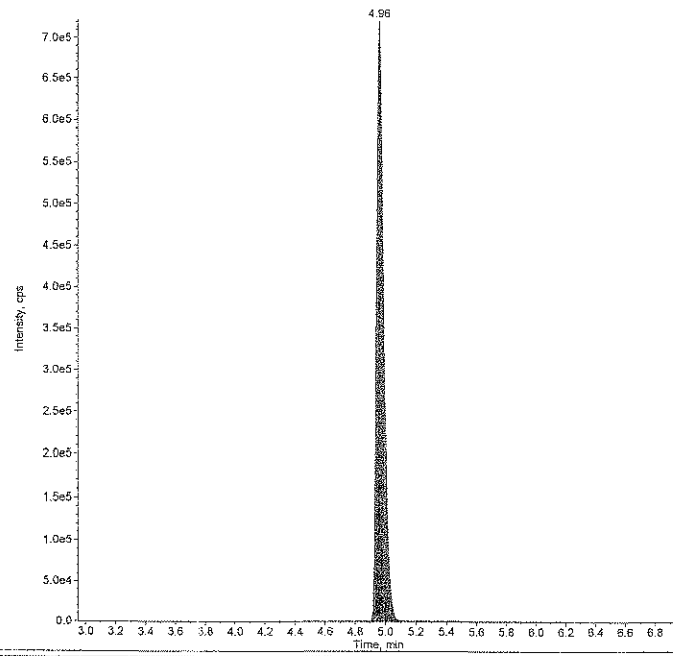
Sample Name: "537 LL CCV 1.25 ppb" Sample ID: "16-OLC-02-25B" File: "3024.wiff"
Peak Name: "pfos" Mass(es): "499.000/80.000 Da"
Comment: "" Annotation: ""

Sample Index:	1	
Sample Type:	QC	
Concentration:	1.25	ng/mL
Calculated Conc:	1.257	ng/mL
Acq. Date:	1/16/2017	
Acq. Time:	10:54:05 AM	
Modified:	No	
Proc. Algorithm:	Specify Parameters - MQ III	
Noise Percentage:	70	
Base. Sub. Window:	6.80	min
Peak-Split. Factor:	8	
Report Largest Peak:	Yes	
Min. Peak Height:	500.00	cps
Min. Peak Width:	0.00	sec
Smoothing Width:	3	points
RT Window:	30.0	sec
Expected RT:	4.96	min
Use Relative RT:	Yes	
Int. Type:	Base To Base	
Retention Time:	4.97	min
Area:	105315.10	counts
Height:	22093.	cps
Start Time:	4.74	min
End Time:	5.11	min



Sample Name: "537 LL CCV 1.25 ppb" Sample ID: "16-OLC-02-25B" File: "3024.wiff"
Peak Name: "pfos_c13(IS)" Mass(es): "503.000/80.000 Da"
Comment: "" Annotation: ""

Sample Index:	1	
Sample Type:	QC	
Concentration:	20.0	ng/mL
Calculated Conc:	N/A	
Acq. Date:	1/16/2017	
Acq. Time:	10:54:05 AM	
Modified:	No	
Proc. Algorithm:	Specify Parameters - MQ III	
Noise Percentage:	50	
Base. Sub. Window:	1.00	min
Peak-Split. Factor:	2	
Report Largest Peak:	Yes	
Min. Peak Height:	500.00	cps
Min. Peak Width:	0.00	sec
Smoothing Width:	5	points
RT Window:	30.0	sec
Expected RT:	4.95	min
Use Relative RT:	No	
Int. Type:	Valley	
Retention Time:	4.96	min
Area:	2428986.14	counts
Height:	723170.	cps
Start Time:	4.90	min
End Time:	5.17	min



Results Path: \\NAKLSW7014\LCMS02\Analyst Data\Projects\Ewan's Projects\EPA 537\Results\011517_LL.rdb

*Manual Integration: Before

Printing Date: Tuesday, January 17, 2017

LSJ

Project	Ewan's Projects\EPA 537		
Data File	011517\3025.wiff		
Result Table	011517_LL.rdb		
Instrument Name	LCMS02		
Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 11:03:09 AM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

all target analytes < 1/3 MRL in instrument blank

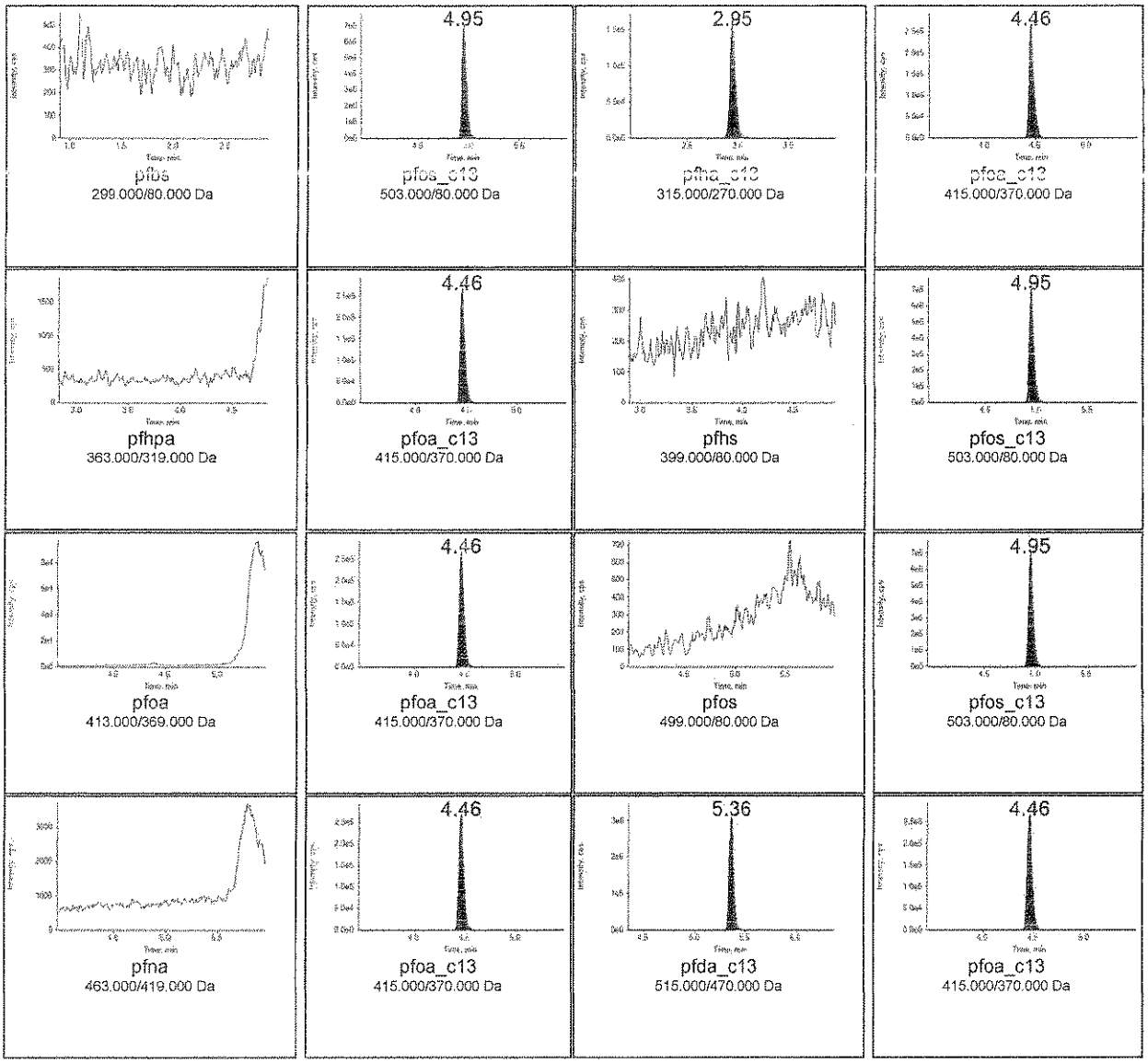
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2369275	0.00	0	N/A	No
pfha_c13	pfoa_c13	942416	2.95	668574	10.70	No
pfhpa	pfoa_c13	942416	0.00	0	N/A	No
pfhs	pfos_c13	2369275	0.00	0	N/A	No
pfoa	pfoa_c13	942416	0.00	0	N/A	No
pfos	pfos_c13	2369275	0.00	0	N/A	No
pfna	pfoa_c13	942416	0.00	0	N/A	No
pfda_c13	pfoa_c13	942416	5.36	1062690	9.52	No

1/17/17

Quantitative Peak Review

537 IB



☐ Before ☒ After

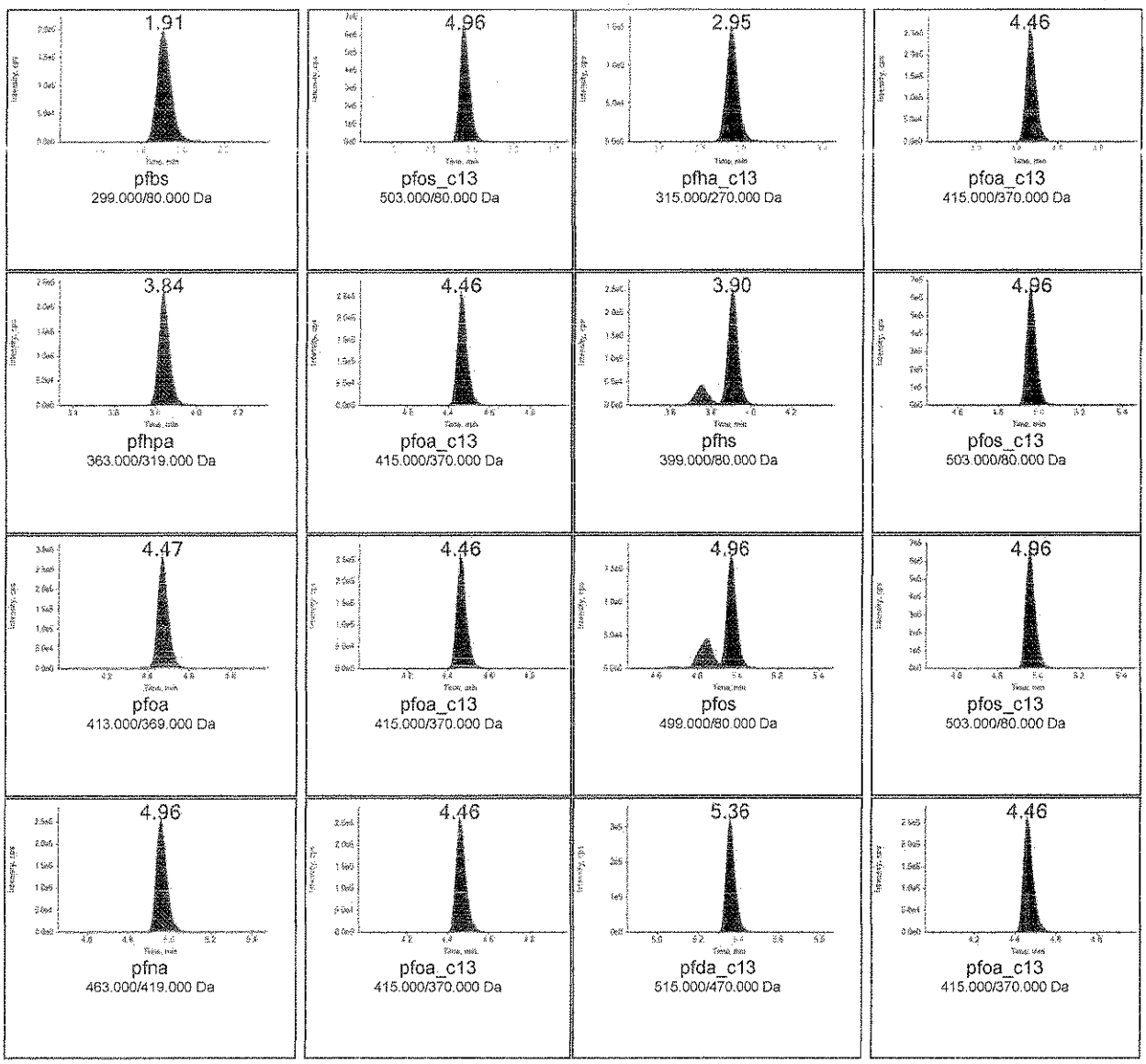
Project	Ewan's Projects\EPA 537	Result Table	011517_LL.rdb
Data File	011517\3028.wiff	Algorithm Used	MQL
Acquisition Method	EPA 537.dam	Instrument Name	LCMS02
Sample Name	537 LL CCV 10.0 ppb	Injection Vial	65
Acquisition Date	1/16/2017 11:53:55 AM	Injection Volume	1
Acquisition Method	EPA 537.dam	Sample Type	Quality Control
Sample ID	16-OLC-02-25E	Dilution Factor	1.00
Sample Comment	*No data for Sample Comment*	Weight to Volume	0.00

Results Summary

Analyte Name	Analyte RT (Expected)	IS Name	IS Area	Analyte Area	Exp Conc (ng/mL)	Calc. Conc (ng/mL)	Accuracy (%)	Mod?
pfbs	1.91 (1.91)	pfos_c13	2241894	982663	10.00	11.12	111	No
pfha_c13	2.95 (2.95)	pfoa_c13	885758	636360	10.00	10.84	108	No
pfhpa	3.84 (3.83)	pfoa_c13	885758	873346	10.00	11.91	119	No
pfhs	3.90 (3.90)	pfos_c13	2241894	1129258	10.00	11.09	111	No
pfoa	4.47 (4.46)	pfoa_c13	885758	1047221	10.00	11.47	115	No
pfos	4.96 (4.96)	pfos_c13	2241894	858490	10.00	11.10	111	No
pfna	4.96 (4.96)	pfoa_c13	885758	941451	10.00	10.96	110	No
pfda_c13	5.36 (5.35)	pfoa_c13	885758	1048790	10.00	9.99	100	No

Quantitative Peak Review

537 LL CCV 10.0 ppb



☐ Before ☐ After

Project	Ewan's Projects\EPA 537
Data File	011517\3029.wiff
Result Table	011517_LL.rdb
Instrument Name	LCMS02

all target analytes < 1/3 MRL in instrument blank

Sample Name	537 IB	Injection Volume	1
Acquisition Date	1/16/2017 12:03:02 PM	Sample Type	Unknown
Acquisition Method	EPA 537.dam	Dilution Factor	1.00
Injection Vial	69	Weight to Volume	0.00

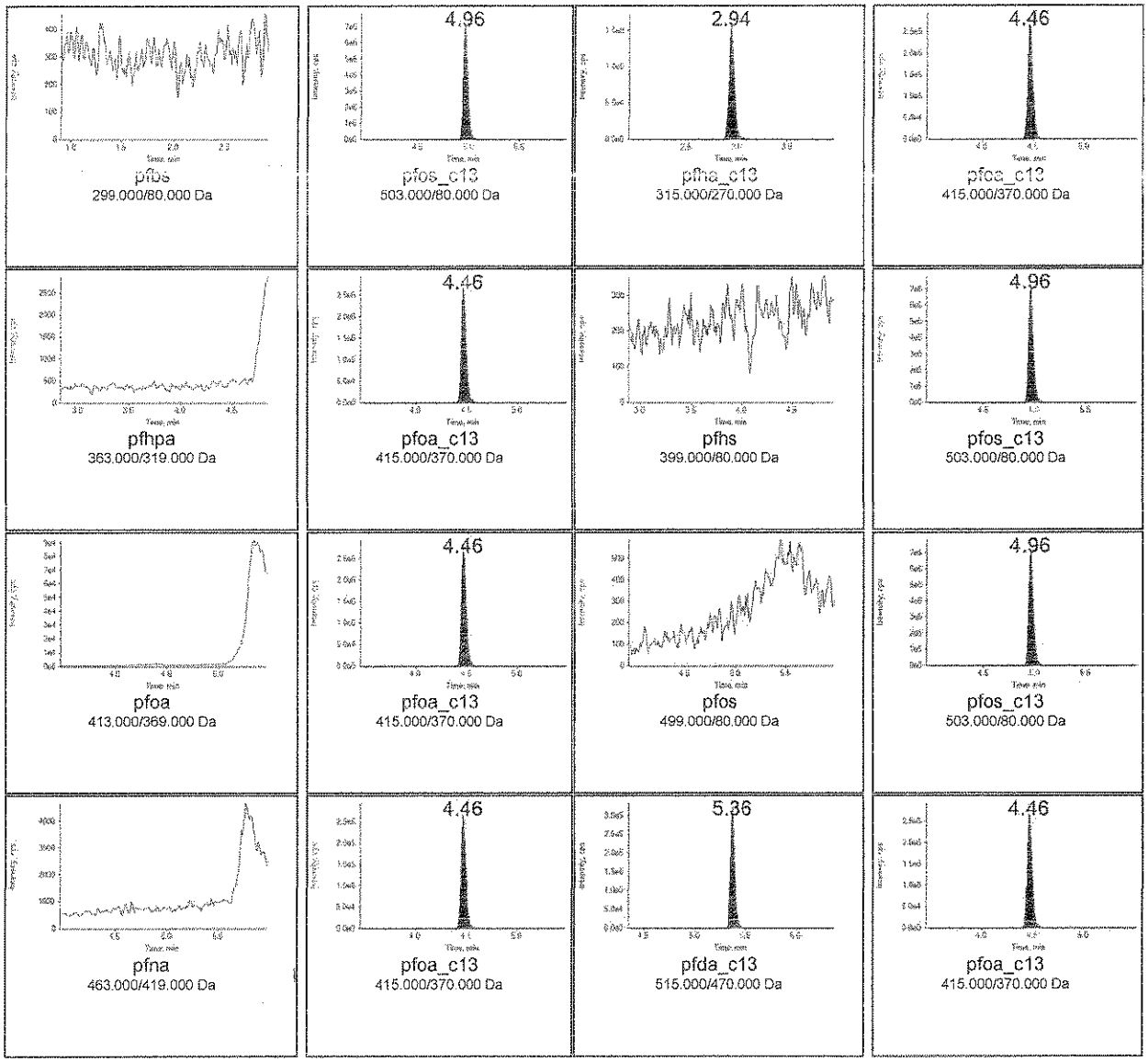
Results Summary

Analyte Name	IS Name	IS Area	Analyte RT (Exp RT)	Analyte Area	Calc. Conc (ng/mL)	Modified?
pfbs	pfos_c13	2385364	0.00	0	N/A	No
pfha_c13	pfoa_c13	950276	2.94	656736	10.42	No
pfhpa	pfoa_c13	950276	0.00	0	N/A	No
pfhs	pfos_c13	2385364	0.00	0	N/A	No
pfoa	pfoa_c13	950276	0.00	0	N/A	No
pfos	pfos_c13	2385364	0.00	0	N/A	No
pfna	pfoa_c13	950276	0.00	0	N/A	No
pfda_c13	pfoa_c13	950276	5.36	1070008	9.50	No

1/20/17

Quantitative Peak Review

537 IB



☐ Before ☒ After

Preparation Information Benchsheet

Prep Run#: 279494 **Prep WorkFlow:** OrgExtAq(14) **Status:** Draft
Team: Organic LC/RHOLDEN **Prep Method:** Method **Prep Date/Time:** 1/11/17 06:03 AM
Number of Copies to make: 1

12 RH 1-12-17

#	Lab Code	Client ID	B#	√	Method /Test	Matrix	Amt. Ext. (mL)	pH	Int. Vol	Final Vol	Surr Amt	Spike Amt
1	**K1700284-001**	Tap Water	.01	✓	537 / PerfAlkylAcids	Water	260	NA	NA	1.0 mL	10 uL	
2	**K1700284-002**	Tap Water Field Blank	.01	✓	537 / PerfAlkylAcids	Water	250					
3	**KQ1700299-01**	LCS			537 / PerfAlkylAcids	Liquid	250					5uL
4	**KQ1700299-02**	DLCS			537 / PerfAlkylAcids	Liquid	250					5uL
5	**KQ1700299-03**	MB			537 / PerfAlkylAcids	Liquid	250	↓	↓	↓	↓	

Bond Elut-LMS-500mg Lot# 6341059-02
Reagent H_2O Lot# 56160
MeOH Lot# 56217
Hex: Lot# 134056/136022

Comments:

* I.S. - 16-OLC-01-72B, 3/ppm, 10uL exp: 5-14-17

Surrogate ID: 16-OLC-01-72A, 1ppm, exp: 5-14-17 Spike ID: 16-OLC-02-22G, 250ppb, XP: 7-5-17

Witnessed By: No Witness

Analyst: [signature] 3-12-17 1-12-17 Assisted By: —NA—

Preparation Information Benchsheet

Prep Run#: 279494
Team: Organic LC/RHOLDEN
Number of Copies to make: 1

Prep WorkFlow: OrgExtAq(14)
Prep Method: Method

Status: Prepped
Prep Date/Time: 1/12/17 06:03 AM

#	Lab Code	Client ID	B#	Method /Test	pH	Matrix	Amt. Ext.	Final Vol	Sample Description
1	K1700284-001	Tap Water	.01	537/PerfAlkylAcids		Water	260.0000mL	1.00mL	
2	K1700284-002	Tap Water Field Blank	.01	537/PerfAlkylAcids		Water	250.0000mL	1.00mL	
3	KQ1700299-01	LCS		537/PerfAlkylAcids		Liquid	250.0000mL	1.00mL	
4	KQ1700299-02	DLCS		537/PerfAlkylAcids		Liquid	250.0000mL	1.00mL	
5	KQ1700299-03	MB		537/PerfAlkylAcids		Liquid	250.0000mL	1.00mL	

Spiking Solutions

Name: 537 internal standard Inventory ID 177374 Logbook Ref: 16-OLC-01-72B Expires On: 05/14/2017

K1700284-001 10.00µL K1700284-002 10.00µL KQ1700299-01 10.00µL KQ1700299-02 10.00µL KQ1700299-03 10.00µL

Name: 537 surrogate Inventory ID 177559 Logbook Ref: 16-OLC-01-72A Expires On: 05/14/2017

K1700284-001 10.00µL K1700284-002 10.00µL KQ1700299-01 10.00µL KQ1700299-02 10.00µL KQ1700299-03 10.00µL

Name: 537 250ppb spike Inventory ID 178494 Logbook Ref: 16-OLC-02-22G Expires On: 07/05/2017

KQ1700299-01 5.00µL KQ1700299-02 5.00µL

Preparation Steps

Step: Extraction
Started: 1/12/17 06:03
Finished: 1/12/17 07:25
By: RHOLDEN
Comments

Step: Final Volume
Started: 1/12/17 07:25
Finished: 1/12/17 07:25
By: RHOLDEN
Comments

Comments:

Reviewed By: [signature] Date: 1/17/17

Preparation Information Benchsheet

Prep Run#: 279494
Team: Organic LC/RHOLDEN

Prep WorkFlow: OrgExtAq(14)
Prep Method: Method

Status: Prepped
Prep Date/Time: 1/12/17 06:03 AM

Chain of Custody

Relinquished By:		Date: 1-12-17	Extracts Examined
Received By:		Date: 1/15/17	Yes / No

ENVIRONMENTAL
Data Services, Inc.

DATA VALIDATION SUMMARY REPORT
WHIDBEY ISLAND, WASHINGTON

Client: CH2M HILL, Inc., Corvallis, Oregon
SDG: K1700284
Laboratory: ALS Environmental, Kelso, Washington
Site: Whidbey Island, CTO-0008, Washington
Date: February 14, 2017

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	TAPWATER	K1700284-001	Water

A full data validation was performed on the analytical data for one water sample collected on January 9, 2017 by CH2M HILL at the Whidbey Island site in Washington. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

Analysis	*Method References*
PFCs	USEPA Method 537 Rev 1.1 Modified

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (DoD 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA "Contract Laboratories Program National Functional Guidelines for Superfund Organic Methods Data Review," August 2014;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Gas Chromatography/Mass Spectrometry (GC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries

- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data is acceptable for the intended purposes. There were no qualifications.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

GC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent difference (%D) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field blank samples were not collected.

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- A MS/MSD sample was not collected.

Laboratory Control Samples/Laboratory Control Sample Duplicates

- The LCS/LCSD samples exhibited acceptable percent recoveries (%R) and RPD values.

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- All criteria were met.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 2/15/17

Nancy Weaver
Senior Chemist

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client:	Private Parties	**Service Request:**	K1700284
Project:	Janet Wodjenski/Heart's Rest Assn	**Date Collected:**	01/09/17
Sample Matrix:	Water	**Date Received:**	01/10/17 09:30
Sample Name:	Tap Water	**Units:**	ng/L
Lab Code:	K1700284-001	**Basis:**	NA

Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS

Analysis Method: 537
Prep Method: Method

Analyte Name	Result	MRL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	4.81	1	01/16/17 02:08	1/12/17	
Perfluorooctanoic Acid	ND U	4.81	1	01/16/17 02:08	1/12/17	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	107	70 - 130	01/16/17 02:08	
Perfluoro-n-[1,2-13C2] decanoic acid	100	70 - 130	01/16/17 02:08	