

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 11:40
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW011-WT11
Lab Code: K1505980-001

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	1.70	0.345	0.100	0.100	10	06/05/15 14:15	6/4/15	
Perfluorooctanoic Acid	0.0980	0.0172	0.00700	0.00300	1	06/05/15 04:50	6/4/15	
Perfluoroheptanoic Acid	0.0464	0.00862	0.00300	0.00200	1	06/05/15 04:50	6/4/15	
Perfluorononanoic Acid	0.00891 J	0.0172	0.00700	0.00400	1	06/05/15 04:50	6/4/15	
Perfluorobutanesulfonic Acid	0.0505 J	0.0776	0.0300	0.0100	1	06/05/15 04:50	6/4/15	
Perfluorohexylsulfonic Acid	0.379	0.0259	0.0100	0.00400	1	06/05/15 04:50	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	106	70 - 130	-	06/05/15 04:50
Perfluoro-n-[1,2-13C2] decanoic acid	108	70 - 130	-	06/05/15 04:50

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 11:40
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW011-W119
Lab Code: K1505980-002

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	1.37	0.0345	0.0100	0.0100	1	06/05/15 05:17	6/4/15	
Perfluorooctanoic Acid	0.0980	0.0172	0.00700	0.00300	1	06/05/15 05:17	6/4/15	
Perfluoroheptanoic Acid	0.0459	0.00862	0.00300	0.00200	1	06/05/15 05:17	6/4/15	
Perfluorononanoic Acid	0.00863 J	0.0172	0.00700	0.00400	1	06/05/15 05:17	6/4/15	
Perfluorobutanesulfonic Acid	0.0526 J	0.0776	0.0300	0.0100	1	06/05/15 05:17	6/4/15	
Perfluorohexylsulfonic Acid	0.376	0.0259	0.0100	0.00400	1	06/05/15 05:17	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	103	70 - 130	06/05/15 05:17	
Perfluoro-n-[1,2-13C2] decanoic acid	103	70 - 130	06/05/15 05:17	

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 11:50
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW012-WT12
Lab Code: K1505980-003

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	1.20	0.0345	0.0100	0.0100	1	06/05/15 05:26	6/4/15	
Perfluorooctanoic Acid	0.0904	0.0172	0.00700	0.00300	1	06/05/15 05:26	6/4/15	
Perfluoroheptanoic Acid	0.0438	0.00862	0.00300	0.00200	1	06/05/15 05:26	6/4/15	
Perfluorononanoic Acid	0.00810 J	0.0172	0.00700	0.00400	1	06/05/15 05:26	6/4/15	
Perfluorobutanesulfonic Acid	0.0447 J	0.0776	0.0300	0.0100	1	06/05/15 05:26	6/4/15	
Perfluorohexylsulfonic Acid	0.343	0.0259	0.0100	0.00400	1	06/05/15 05:26	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	06/05/15 05:26	
Perfluoro-n-[1,2-13C2] decanoic acid	105	70 - 130	06/05/15 05:26	

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 11:50
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW013-WT13
Lab Code: K1505980-004

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	1.72	0.357	0.100	0.100	10	06/05/15 14:24	6/4/15	
Perfluorooctanoic Acid	0.108	0.0179	0.00700	0.00300	1	06/05/15 05:35	6/4/15	
Perfluoroheptanoic Acid	0.0521	0.00893	0.00300	0.00200	1	06/05/15 05:35	6/4/15	
Perfluorononanoic Acid	0.00957 J	0.0179	0.00700	0.00400	1	06/05/15 05:35	6/4/15	
Perfluorobutanesulfonic Acid	0.0527 J	0.0804	0.0300	0.0100	1	06/05/15 05:35	6/4/15	
Perfluorohexylsulfonic Acid	0.412	0.0268	0.0100	0.00400	1	06/05/15 05:35	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	06/05/15 05:35	
Perfluoro-n-[1,2-13C2] decanoic acid	115	70 - 130	06/05/15 05:35	

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 12:40
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW014-WT14
Lab Code: K1505980-005

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.142	0.0357	0.0100	0.0100	1	06/05/15 05:44	6/4/15	
Perfluorooctanoic Acid	0.0153 J	0.0179	0.00700	0.00300	1	06/05/15 05:44	6/4/15	
Perfluoroheptanoic Acid	0.00582 J	0.00893	0.00300	0.00200	1	06/05/15 05:44	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 05:44	6/4/15	
Perfluorobutanesulfonic Acid	0.0110 J	0.0804	0.0300	0.0100	1	06/05/15 05:44	6/4/15	
Perfluorohexylsulfonic Acid	0.0680	0.0268	0.0100	0.00400	1	06/05/15 05:44	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	102	70 - 130	-	06/05/15 05:44
Perfluoro-n-[1,2-13C2] decanoic acid	98	70 - 130	-	06/05/15 05:44

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 13:00
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW015-WT15
Lab Code: K1505980-006

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.0976	0.0345	0.0100	0.0100	1	06/05/15 06:11	6/4/15	
Perfluorooctanoic Acid	0.0127 J	0.0172	0.00700	0.00300	1	06/05/15 06:11	6/4/15	
Perfluoroheptanoic Acid	0.00488 J	0.00862	0.00300	0.00200	1	06/05/15 06:11	6/4/15	
Perfluorononanoic Acid	ND U	0.0172	0.00700	0.00400	1	06/05/15 06:11	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0776	0.0300	0.0100	1	06/05/15 06:11	6/4/15	
Perfluorohexylsulfonic Acid	0.0553	0.0259	0.0100	0.00400	1	06/05/15 06:11	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	102	70 - 130	-	06/05/15 06:11
Perfluoro-n-[1,2-13C2] decanoic acid	101	70 - 130	-	06/05/15 06:11

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 13:25
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW016-WT16
Lab Code: K1505980-007

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.746	0.0357	0.0100	0.0100	1	06/05/15 06:20	6/4/15	
Perfluorooctanoic Acid	0.0458	0.0179	0.00700	0.00300	1	06/05/15 06:20	6/4/15	
Perfluoroheptanoic Acid	0.0218	0.00893	0.00300	0.00200	1	06/05/15 06:20	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 06:20	6/4/15	
Perfluorobutanesulfonic Acid	0.0208 J	0.0804	0.0300	0.0100	1	06/05/15 06:20	6/4/15	
Perfluorohexylsulfonic Acid	0.157	0.0268	0.0100	0.00400	1	06/05/15 06:20	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	-	06/05/15 06:20
Perfluoro-n-[1,2-13C2] decanoic acid	108	70 - 130	-	06/05/15 06:20

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 13:30
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW017-WT17
Lab Code: K1505980-008

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.295	0.0357	0.0100	0.0100	1	06/05/15 06:29	6/4/15	
Perfluorooctanoic Acid	0.0215	0.0179	0.00700	0.00300	1	06/05/15 06:29	6/4/15	
Perfluoroheptanoic Acid	0.00989	0.00893	0.00300	0.00200	1	06/05/15 06:29	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 06:29	6/4/15	
Perfluorobutanesulfonic Acid	0.0134 J	0.0804	0.0300	0.0100	1	06/05/15 06:29	6/4/15	
Perfluorohexylsulfonic Acid	0.0891	0.0268	0.0100	0.00400	1	06/05/15 06:29	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	108	70 - 130	-	06/05/15 06:29
Perfluoro-n-[1,2-13C2] decanoic acid	105	70 - 130	-	06/05/15 06:29

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 13:10
Date Received: 06/03/15 10:00

Sample Name: 15MC-PWFB-WT
Lab Code: K1505980-009

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	0.0385	0.0100	0.0100	1	06/05/15 06:38	6/4/15	
Perfluorooctanoic Acid	ND U	0.0192	0.00700	0.00300	1	06/05/15 06:38	6/4/15	
Perfluoroheptanoic Acid	ND U	0.00962	0.00300	0.00200	1	06/05/15 06:38	6/4/15	
Perfluorononanoic Acid	ND U	0.0192	0.00700	0.00400	1	06/05/15 06:38	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0865	0.0300	0.0100	1	06/05/15 06:38	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0288	0.0100	0.00400	1	06/05/15 06:38	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	102	70 - 130	06/05/15 06:38	
Perfluoro-n-[1,2-13C2] decanoic acid	99	70 - 130	06/05/15 06:38	

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 13:55
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW018-WT18
Lab Code: K1505980-010

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.200	0.0357	0.0100	0.0100	1	06/05/15 06:48	6/4/15	
Perfluorooctanoic Acid	0.0107 J	0.0179	0.00700	0.00300	1	06/05/15 06:48	6/4/15	
Perfluoroheptanoic Acid	0.00492 J	0.00893	0.00300	0.00200	1	06/05/15 06:48	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 06:48	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0804	0.0300	0.0100	1	06/05/15 06:48	6/4/15	
Perfluorohexylsulfonic Acid	0.0358	0.0268	0.0100	0.00400	1	06/05/15 06:48	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	06/05/15 06:48	
Perfluoro-n-[1,2-13C2] decanoic acid	106	70 - 130	06/05/15 06:48	

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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 14:30
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW019-WT19
Lab Code: K1505980-011

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.166	0.0357	0.0100	0.0100	1	06/05/15 06:57	6/4/15	
Perfluorooctanoic Acid	0.0153 J	0.0179	0.00700	0.00300	1	06/05/15 06:57	6/4/15	
Perfluoroheptanoic Acid	0.00613 J	0.00893	0.00300	0.00200	1	06/05/15 06:57	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 06:57	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0804	0.0300	0.0100	1	06/05/15 06:57	6/4/15	
Perfluorohexylsulfonic Acid	0.0634	0.0268	0.0100	0.00400	1	06/05/15 06:57	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	109	70 - 130	- 06/05/15 06:57	
Perfluoro-n-[1,2-13C2] decanoic acid	106	70 - 130	- 06/05/15 06:57	

ALS Group USA, Corp.
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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 15:00
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW020-WT20
Lab Code: K1505980-012

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	0.420	0.0345	0.0100	0.0100	1	06/05/15 07:06	6/4/15	
Perfluorooctanoic Acid	0.0265	0.0172	0.00700	0.00300	1	06/05/15 07:06	6/4/15	
Perfluoroheptanoic Acid	0.0146	0.00862	0.00300	0.00200	1	06/05/15 07:06	6/4/15	
Perfluorononanoic Acid	ND U	0.0172	0.00700	0.00400	1	06/05/15 07:06	6/4/15	
Perfluorobutanesulfonic Acid	0.0132 J	0.0776	0.0300	0.0100	1	06/05/15 07:06	6/4/15	
Perfluorohexylsulfonic Acid	0.0976	0.0259	0.0100	0.00400	1	06/05/15 07:06	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	104	70 - 130	-	06/05/15 07:06
Perfluoro-n-[1,2-13C2] decanoic acid	97	70 - 130	-	06/05/15 07:06

ALS Group USA, Corp.
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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15 15:00
Date Received: 06/03/15 10:00

Sample Name: Trip Blank
Lab Code: K1505980-013

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	0.0357	0.0100	0.0100	1	06/05/15 07:15	6/4/15	
Perfluorooctanoic Acid	ND U	0.0179	0.00700	0.00300	1	06/05/15 07:15	6/4/15	
Perfluoroheptanoic Acid	ND U	0.00893	0.00300	0.00200	1	06/05/15 07:15	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 07:15	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0804	0.0300	0.0100	1	06/05/15 07:15	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0268	0.0100	0.00400	1	06/05/15 07:15	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	102	70 - 130	-	06/05/15 07:15
Perfluoro-n-[1,2-13C2] decanoic acid	106	70 - 130	-	06/05/15 07:15

ALS Group USA, Corp.
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Analytical Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ1505932-04

Units: ug/L
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	LOQ	LOD	MDL	Dil.	Date Analyzed	Date Extracted	Q
Perfluorooctylsulfonic Acid	ND U	0.0400	0.0100	0.0100	1	06/05/15 04:32	6/4/15	
Perfluorooctanoic Acid	ND U	0.0200	0.00700	0.00300	1	06/05/15 04:32	6/4/15	
Perfluoroheptanoic Acid	ND U	0.0100	0.00300	0.00200	1	06/05/15 04:32	6/4/15	
Perfluorononanoic Acid	ND U	0.0200	0.00700	0.00400	1	06/05/15 04:32	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0900	0.0300	0.0100	1	06/05/15 04:32	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0300	0.0100	0.00400	1	06/05/15 04:32	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	108	70 - 130	-	06/05/15 04:32
Perfluoro-n-[1,2-13C2] decanoic acid	106	70 - 130	-	06/05/15 04:32

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980

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
15MC-PW011-WT11	K1505980-001	106	108
15MC-PW011-W119	K1505980-002	103	103
15MC-PW012-WT12	K1505980-003	105	105
15MC-PW013-WT13	K1505980-004	105	115
15MC-PW014-WT14	K1505980-005	102	98
15MC-PW015-WT15	K1505980-006	102	101
15MC-PW016-WT16	K1505980-007	105	108
15MC-PW017-WT17	K1505980-008	108	105
15MC-PWFB-WT	K1505980-009	102	99
15MC-PW018-WT18	K1505980-010	105	106
15MC-PW019-WT19	K1505980-011	109	106
15MC-PW020-WT20	K1505980-012	104	97
Trip Blank	K1505980-013	102	106
15MC-PW011-WT11	KQ1505932-01	105	108
15MC-PW011-WT11	KQ1505932-02	109	111
Lab Control Sample	KQ1505932-03	103	105
Method Blank	KQ1505932-04	108	106

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 04:23

Internal Standard Area and RT SUMMARY

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

File ID: 060415\1012.wiff
Instrument ID: K-LCMS-02
Analysis Method: 537

Lab Code: KQ1506058-03
Analysis Lot: 447829
Signal ID: 1

	Perfluoro-n-[1,2,3,4-13C4] octanoic acid		Sodium perfluoro-1-[1,2,3,4- 13C4] octanesulfonate	
	Area	RT	Area	RT
Results ==>	508,159	4.29	1,370,723	4.80
Upper Limit ==>	711,423	5.29	1,919,012	5.80
Lower Limit ==>	355,711	3.29	959,506	3.80
ICAL Result ==>				

Associated Analyses

Method Blank	KQ1505932-04	494771.48	4.27	1369458.36	4.79
Lab Control Sample	KQ1505932-03	520380.51	4.28	1411284.55	4.80
15MC-PW011-WT11	K1505980-001.R01	537131.29	4.28	1596289.78	4.79
15MC-PW011-WT11	KQ1505932-01	544540.40	4.27	1461051.52	4.79
15MC-PW011-WT11	KQ1505932-02	516489.27	4.28	1498035.47	4.80
15MC-PW011-W119	K1505980-002	528325.87	4.28	1548532.13	4.80
15MC-PW012-WT12	K1505980-003	505377.36	4.28	1461077.64	4.79
15MC-PW013-WT13	K1505980-004.R01	526273.13	4.29	1549040.91	4.79
15MC-PW014-WT14	K1505980-005	529571.20	4.28	1494110.57	4.80

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 04:23

Internal Standard Area and RT SUMMARY

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

File ID: 060415\1022.wiff
Instrument ID: K-LCMS-02
Analysis Method: 537

Lab Code: KQ1506058-04
Analysis Lot: 447829
Signal ID: 1

	Perfluoro-n-[1,2,3,4- ¹³ C ₄] octanoic acid		Sodium perfluoro-1-[1,2,3,4- ¹³ C ₄] octanesulfonate	
	Area	RT	Area	RT
Results ==>	508,349	4.28	1,400,841	4.79
Upper Limit ==>	711,688	5.28	1,961,178	5.79
Lower Limit ==>	355,844	3.28	980,589	3.79
ICAL Result ==>				

Associated Analyses

15MC-PW015-WT15	K1505980-006	522525.22	4.28	1431208.88	4.79
15MC-PW016-WT16	K1505980-007	498816.74	4.28	1506373.09	4.79
15MC-PW017-WT17	K1505980-008	512573.13	4.28	1531962.00	4.79
15MC-PWFB-WT	K1505980-009	495690.68	4.28	1401221.35	4.80
15MC-PW018-WT18	K1505980-010	508526.08	4.28	1626245.32	4.80
15MC-PW019-WT19	K1505980-011	484638.52	4.27	1457834.73	4.80
15MC-PW020-WT20	K1505980-012	520138.01	4.29	1584088.03	4.79
Trip Blank	K1505980-013	548841.96	4.28	1655639.14	4.80

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 04:23

Internal Standard Area and RT SUMMARY

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

File ID: 060415\1054.wiff
Instrument ID: K-LCMS-02
Analysis Method: 537

Lab Code: KQ1506060-02
Analysis Lot: 447994
Signal ID: 1

	Perfluoro-n-[1,2,3,4-13C4] octanoic acid		Sodium perfluoro-1-[1,2,3,4- 13C4] octanesulfonate	
	Area	RT	Area	RT
Results ==>	557,244	4.27	1,608,987	4.80
Upper Limit ==>	780,142	5.27	2,252,582	5.80
Lower Limit ==>	390,071	3.27	1,126,291	3.80
ICAL Result ==>				

Associated Analyses

15MC-PW011-WT11	K1505980-001	543976.00	4.28	1705639.10	4.79
15MC-PW013-WT13	K1505980-004	513349.88	4.28	1612722.75	4.79

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Collected: 05/31/15
Date Received: 06/03/15
Date Analyzed: 06/5/15
Date Extracted: 06/4/15

Duplicate Matrix Spike Summary

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

Sample Name: 15MC-PW011-WT11
Lab Code: K1505980-001
Analysis Method: 537
Prep Method: Method

Units: ug/L
Basis: NA

Analyte Name	Sample Result	Matrix Spike KQ1505932-01			Duplicate Matrix Spike KQ1505932-02			% Rec Limits	RPD	RPD Limit
		Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perfluorobutanesulfonic Acid	0.0505 J	0.464	0.321	129	0.430	0.310	122	0-200	8	30
Perfluoroheptanoic Acid	0.0464	0.0819	0.0357	100	0.0860	0.0345	115	0-200	5	30
Perfluorohexylsulfonic Acid	0.379	0.515	0.107	127	0.502	0.103	119	0-200	3	30
Perfluorononanoic Acid	0.00891 J	0.0818	0.0714	102	0.0871	0.0690	113	0-200	6	30
Perfluorooctanoic Acid	0.0980	0.170	0.0714	101	0.180	0.0690	118	0-200	5	30
Perfluorooctylsulfonic Acid	1.70	1.55	0.143	-107 #	1.56	0.138	-107 #	0-200	<1	30

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

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Analyzed: 06/05/15
Date Extracted: 06/04/15

Lab Control Sample Summary

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

Analysis Method: 537
Prep Method: Method

Units: ug/L
Basis: NA
Analysis Lot: 447829

**Lab Control Sample
KQ1505932-03**

Analyte Name	Result	Spike Amount	% Rec	% Rec Limits
Perfluorobutanesulfonic Acid	0.0927	0.0776	120	50-150
Perfluoroheptanoic Acid	0.0100	0.00862	116	50-150
Perfluorohexylsulfonic Acid	0.0283	0.0259	110	50-150
Perfluorononanoic Acid	0.0189	0.0172	110	50-150
Perfluorooctanoic Acid	0.0197	0.0172	114	50-150
Perfluorooctylsulfonic Acid	0.0378	0.0345	110	50-150

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Analyzed: 06/05/15 04:32
Date Extracted: 06/04/15

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: KQ1505932-04 **File ID:** 060415\1013.wiff
Analysis Method: 537 **Analysis Lot:** 447829
Prep Method: Method **Extraction Lot:** 237404

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Lab Control Sample	KQ1505932-03	060415\1014.wiff	06/05/15 04:41
15MC-PW011-WT11	K1505980-001	060415\1015.wiff	06/05/15 04:50
15MC-PW011-WT11	KQ1505932-01	060415\1016.wiff	06/05/15 04:59
15MC-PW011-WT11	KQ1505932-02	060415\1017.wiff	06/05/15 05:08
15MC-PW011-W119	K1505980-002	060415\1018.wiff	06/05/15 05:17
15MC-PW012-WT12	K1505980-003	060415\1019.wiff	06/05/15 05:26
15MC-PW013-WT13	K1505980-004	060415\1020.wiff	06/05/15 05:35
15MC-PW014-WT14	K1505980-005	060415\1021.wiff	06/05/15 05:44
15MC-PW015-WT15	K1505980-006	060415\1024.wiff	06/05/15 06:11
15MC-PW016-WT16	K1505980-007	060415\1025.wiff	06/05/15 06:20
15MC-PW017-WT17	K1505980-008	060415\1026.wiff	06/05/15 06:29
15MC-PWFB-WT	K1505980-009	060415\1027.wiff	06/05/15 06:38
15MC-PW018-WT18	K1505980-010	060415\1028.wiff	06/05/15 06:48
15MC-PW019-WT19	K1505980-011	060415\1029.wiff	06/05/15 06:57
15MC-PW020-WT20	K1505980-012	060415\1030.wiff	06/05/15 07:06
Trip Blank	K1505980-013	060415\1031.wiff	06/05/15 07:15
15MC-PW011-WT11	K1505980-001	060415\1059.wiff	06/05/15 14:15
15MC-PW013-WT13	K1505980-004	060415\1060.wiff	06/05/15 14:24

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request: K1505980
Date Analyzed: 06/05/15 04:41
Date Extracted: 06/04/15

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: KQ1505932-03 **File ID:** 060415\1014.wiff
Analysis Method: 537 **Analysis Lot:** 447829
Prep Method: Method **Extraction Lot:** 237404

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Method Blank	KQ1505932-04	060415\1013.wiff	06/05/15 04:32
15MC-PW011-WT11	K1505980-001	060415\1015.wiff	06/05/15 04:50
15MC-PW011-WT11	KQ1505932-01	060415\1016.wiff	06/05/15 04:59
15MC-PW011-WT11	KQ1505932-02	060415\1017.wiff	06/05/15 05:08
15MC-PW011-W119	K1505980-002	060415\1018.wiff	06/05/15 05:17
15MC-PW012-WT12	K1505980-003	060415\1019.wiff	06/05/15 05:26
15MC-PW013-WT13	K1505980-004	060415\1020.wiff	06/05/15 05:35
15MC-PW014-WT14	K1505980-005	060415\1021.wiff	06/05/15 05:44
15MC-PW015-WT15	K1505980-006	060415\1024.wiff	06/05/15 06:11
15MC-PW016-WT16	K1505980-007	060415\1025.wiff	06/05/15 06:20
15MC-PW017-WT17	K1505980-008	060415\1026.wiff	06/05/15 06:29
15MC-PWFB-WT	K1505980-009	060415\1027.wiff	06/05/15 06:38
15MC-PW018-WT18	K1505980-010	060415\1028.wiff	06/05/15 06:48
15MC-PW019-WT19	K1505980-011	060415\1029.wiff	06/05/15 06:57
15MC-PW020-WT20	K1505980-012	060415\1030.wiff	06/05/15 07:06
Trip Blank	K1505980-013	060415\1031.wiff	06/05/15 07:15
15MC-PW011-WT11	K1505980-001	060415\1059.wiff	06/05/15 14:15
15MC-PW013-WT13	K1505980-004	060415\1060.wiff	06/05/15 14:24

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson

Service Request: K1505980
Calibration Date: 6/5/2015

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

Calibration ID: KC1500029
Instrument ID: K-LCMS-02

Signal ID: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
01	KC1500029-01	EPA537 ICAL 1-9ppb	060415\1002.wiff	06/05/2015 02:52
02	KC1500029-02	EPA537 ICAL 2.5-22.5ppb	060415\1003.wiff	06/05/2015 03:01
03	KC1500029-03	EPA537 ICAL 5-45ppb	060415\1004.wiff	06/05/2015 03:10
04	KC1500029-04	EPA537 ICAL 10-90ppb	060415\1005.wiff	06/05/2015 03:19
05	KC1500029-05	EPA537 ICAL 20-180ppb	060415\1006.wiff	06/05/2015 03:28
06	KC1500029-06	EPA537 ICAL 50-450ppb	060415\1007.wiff	06/05/2015 03:38
07	KC1500029-07	EPA537 ICAL 100-900ppb	060415\1008.wiff	06/05/2015 03:47

<u>Analyte</u>			<u>Curve Fit</u>			<u>Weighting</u>					
Perfluorooctylsulfonic Acid			Average RF			RSD = 3.62			Average RF = 1.087		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	4.00	0.8922	02	10.0	0.8695	03	20.0	0.9117	04	40.0	0.9428
05	80.0	0.9193	06	200.	0.9642	07	400.	0.9462			
Perfluorooctanoic Acid			Average RF			RSD = 3.49			Average RF = 1.062		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.00	0.9145	02	5.00	0.8997	03	10.0	0.9611	04	20.0	0.9551
05	40.0	0.9152	06	100.	0.958	07	200.	0.9917			
Perfluoroheptanoic Acid			Average RF			RSD = 6.97			Average RF = 1.043		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	1.00	1.025	02	2.50	0.8339	03	5.00	0.9707	04	10.0	0.9769
05	20.0	0.9789	06	50.0	0.9501	07	100.	0.9987			
Perfluorononanoic Acid			Average RF			RSD = 5.12			Average RF = 0.855		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	2.00	1.114	02	5.00	1.09	03	10.0	1.164	04	20.0	1.244
05	40.0	1.147	06	100.	1.206	07	200.	1.236			
Perfluorobutanesulfonic Acid			Average RF			RSD = 4.32			Average RF = 1.549		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	9.00	0.6203	02	22.5	0.6236	03	45.0	0.6435	04	90.0	0.6552
05	180.	0.6912									
Perfluorohexylsulfonic Acid			Average RF			RSD = 3.45			Average RF = 1.851		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	3.00	0.5214	02	7.50	0.5208	03	15.0	0.5367	04	30.0	0.5296
05	60.0	0.5466	06	150.	0.5601	07	300.	0.5694			
Perfluoro-n-[1,2-13C2] hexanoic acid			Average RF			RSD = 3.80			Average RF = 0.809		
			Control Criteria								
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.0	1.345	02	10.0	1.224	03	10.0	1.204	04	10.0	1.226
05	10.0	1.24	06	10.0	1.232	07	10.0	1.195			

Client: Jacobs Engineering Group, Incorporated
Project: Eielson

Service Request: K1505980
Calibration Date: 6/5/2015

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

Calibration ID: KC1500029
Instrument ID: K-LCMS-02

Signal ID: 1

<u>Analyte</u>			<u>Curve Fit</u>			<u>Weighting</u>					
Perfluoro-n-[1,2-13C2] decanoic acid			Average RF			RSD = 5.52 Control Criteria			Average RF = 0.737		
#	Amount	RF	#	Amount	RF	#	Amount	RF	#	Amount	RF
01	10.0	1.517	02	10.0	1.273	03	10.0	1.369	04	10.0	1.371
05	10.0	1.303	06	10.0	1.375	07	10.0	1.323			

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson

Service Request: K1505980
Calibration Date: 6/5/2015

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

Calibration ID: KC1500029
Instrument ID: K-LCMS-02

Signal ID: 1

#	Lab Code	Sample Name	File Location	Aquisition Date
08	KC1500029-08	EPA537 ICV 50ppb	060415\1010.wiff	06/05/2015 04:05

Analyte Name	Expected	Result	Average RF	SSV RF	% D	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	47.8	43.252	1.087	0.984	-9.514		Average RF
Perfluorooctanoic Acid	50.0	49.395	1.062	1.050	-1.209		Average RF
Perfluoroheptanoic Acid	50.0	49.613	1.043	1.035	-0.774		Average RF
Perfluorononanoic Acid	50.0	52.430	0.855	0.897	4.86		Average RF
Perfluorobutanesulfonic Acid	44.3	45.067	1.549	1.575	1.73		Average RF
Perfluorohexylsulfonic Acid	47.3	45.944	1.851	1.798	-2.866		Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.598	0.809	0.857	5.98		Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.669	0.737	0.786	6.69		Average RF

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 04:23

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: 060415\1012.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447829
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	10.0	10.4	1.087	1.131	4.1	NA	±30	Average RF
Perfluorooctanoic Acid	5.00	5.24	1.062	1.113	4.7	NA	±30	Average RF
Perfluoroheptanoic Acid	2.50	2.69	1.043	1.124	7.7	NA	±30	Average RF
Perfluorononanoic Acid	5.00	5.34	0.855	0.914	6.9	NA	±30	Average RF
Perfluorobutanesulfonic Acid	22.5	22.5	1.549	1.549	0.0	NA	±30	Average RF
Perfluorohexylsulfonic Acid	7.50	7.51	1.851	1.855	0.2	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	9.92	0.809	0.803	-0.8	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.2	0.737	0.751	2.0	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 05:53

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: 060415\1022.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447829
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	40.0	39.8	1.087	1.082	-0.5	NA	±30	Average RF
Perfluorooctanoic Acid	20.0	20.2	1.062	1.071	0.8	NA	±30	Average RF
Perfluoroheptanoic Acid	10.0	9.72	1.043	1.014	-2.8	NA	±30	Average RF
Perfluorononanoic Acid	20.0	20.1	0.855	0.859	0.5	NA	±30	Average RF
Perfluorobutanesulfonic Acid	90.0	86.0	1.549	1.480	-4.4	NA	±30	Average RF
Perfluorohexylsulfonic Acid	30.0	27.5	1.851	1.698	-8.3	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.2	0.809	0.824	1.8	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.8	0.737	0.798	8.4	NA	±30	Average RF

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 07:24

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: 060415\1032.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447829
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	80.0	80.3	1.087	1.091	0.3	NA	±30	Average RF
Perfluorooctanoic Acid	40.0	41.2	1.062	1.096	3.1	NA	±30	Average RF
Perfluoroheptanoic Acid	20.0	19.9	1.043	1.036	-0.7	NA	±30	Average RF
Perfluorononanoic Acid	40.0	41.6	0.855	0.889	4.0	NA	±30	Average RF
Perfluorobutanesulfonic Acid	180	173	1.549	1.484	-4.2	NA	±30	Average RF
Perfluorohexylsulfonic Acid	60.0	57.4	1.851	1.771	-4.4	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.6	0.809	0.859	6.1	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.8	0.737	0.798	8.3	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 08:45

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: 060415\1041.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447829
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	40.0	39.6	1.087	1.075	-1.1	NA	±30	Average RF
Perfluorooctanoic Acid	20.0	19.8	1.062	1.053	-0.9	NA	±30	Average RF
Perfluoroheptanoic Acid	10.0	9.48	1.043	0.989	-5.2	NA	±30	Average RF
Perfluorononanoic Acid	20.0	20.1	0.855	0.862	0.7	NA	±30	Average RF
Perfluorobutanesulfonic Acid	90.0	81.3	1.549	1.399	-9.6	NA	±30	Average RF
Perfluorohexylsulfonic Acid	30.0	27.0	1.851	1.669	-9.9	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.1	0.809	0.817	1.0	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.8	0.737	0.799	8.4	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 09:03

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: 060415\1043.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447994
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	10.0	10.4	1.087	1.127	3.7	NA	±30	Average RF
Perfluorooctanoic Acid	5.00	5.22	1.062	1.108	4.3	NA	±30	Average RF
Perfluoroheptanoic Acid	2.50	2.49	1.043	1.040	-0.4	NA	±30	Average RF
Perfluorononanoic Acid	5.00	5.25	0.855	0.899	5.0	NA	±30	Average RF
Perfluorobutanesulfonic Acid	22.5	22.4	1.549	1.542	-0.4	NA	±30	Average RF
Perfluorohexylsulfonic Acid	7.50	7.19	1.851	1.774	-4.2	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	9.59	0.809	0.775	-4.1	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	10.5	0.737	0.770	4.5	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 10:43

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: 060415\1054.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447994
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	40.0	39.5	1.087	1.074	-1.2	NA	±30	Average RF
Perfluorooctanoic Acid	20.0	19.4	1.062	1.032	-2.8	NA	±30	Average RF
Perfluoroheptanoic Acid	10.0	9.33	1.043	0.974	-6.7	NA	±30	Average RF
Perfluorononanoic Acid	20.0	19.5	0.855	0.836	-2.3	NA	±30	Average RF
Perfluorobutanesulfonic Acid	90.0	81.3	1.549	1.398	-9.7	NA	±30	Average RF
Perfluorohexylsulfonic Acid	30.0	27.1	1.851	1.675	-9.5	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	9.69	0.809	0.784	-3.1	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	11.2	0.737	0.822	11.6	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request: K1505980
Date Analyzed: 06/05/15 15:01

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: 060415\1064.wiff

Calibration Date: 6/5/2015 12:00:00 AM
Calibration ID: KC1500029
Analysis Lot: 447994
Units: ng/mL

Analyte Name	Expected	Result	Average RF	CCV RF	% D	% Drift	Criteria	Curve Fit
Perfluorooctylsulfonic Acid	80.0	82.6	1.087	1.122	3.2	NA	±30	Average RF
Perfluorooctanoic Acid	40.0	41.2	1.062	1.095	3.1	NA	±30	Average RF
Perfluoroheptanoic Acid	20.0	19.1	1.043	0.996	-4.5	NA	±30	Average RF
Perfluorononanoic Acid	40.0	43.0	0.855	0.921	7.6	NA	±30	Average RF
Perfluorobutanesulfonic Acid	180	161	1.549	1.387	-10.4	NA	±30	Average RF
Perfluorohexylsulfonic Acid	60.0	54.1	1.851	1.669	-9.9	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] hexanoic acid	10.0	10.3	0.809	0.835	3.2	NA	±30	Average RF
Perfluoro-n-[1,2-13C2] decanoic acid	10.0	11.6	0.737	0.854	16.0	NA	±30	Average RF

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request:K1505980

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

Analysis Method: 537

Analysis Lot:447829

Instrument ID:K-LCMS-02

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
060415\1012.wiff	Continuing Calibration Verification	KQ1506058-03	6/5/2015	04:23:14	
060415\1013.wiff	Method Blank	KQ1505932-04	6/5/2015	04:32:16	
060415\1014.wiff	Lab Control Sample	KQ1505932-03	6/5/2015	04:41:20	
060415\1015.wiff	15MC-PW011-WT11	K1505980-001	6/5/2015	04:50:23	
060415\1016.wiff	15MC-PW011-WT11 MS	KQ1505932-01	6/5/2015	04:59:23	
060415\1017.wiff	15MC-PW011-WT11 DMS	KQ1505932-02	6/5/2015	05:08:26	
060415\1018.wiff	15MC-PW011-W119	K1505980-002	6/5/2015	05:17:29	
060415\1019.wiff	15MC-PW012-WT12	K1505980-003	6/5/2015	05:26:31	
060415\1020.wiff	15MC-PW013-WT13	K1505980-004	6/5/2015	05:35:34	
060415\1021.wiff	15MC-PW014-WT14	K1505980-005	6/5/2015	05:44:38	
060415\1022.wiff	Continuing Calibration Verification	KQ1506058-04	6/5/2015	05:53:41	
060415\1024.wiff	15MC-PW015-WT15	K1505980-006	6/5/2015	06:11:47	
060415\1025.wiff	15MC-PW016-WT16	K1505980-007	6/5/2015	06:20:50	
060415\1026.wiff	15MC-PW017-WT17	K1505980-008	6/5/2015	06:29:55	
060415\1027.wiff	15MC-PWFB-WT	K1505980-009	6/5/2015	06:38:58	
060415\1028.wiff	15MC-PW018-WT18	K1505980-010	6/5/2015	06:48:02	
060415\1029.wiff	15MC-PW019-WT19	K1505980-011	6/5/2015	06:57:04	
060415\1030.wiff	15MC-PW020-WT20	K1505980-012	6/5/2015	07:06:08	
060415\1031.wiff	Trip Blank	K1505980-013	6/5/2015	07:15:10	
060415\1032.wiff	Continuing Calibration Verification	KQ1506058-05	6/5/2015	07:24:17	
060415\1034.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	07:42:22	
060415\1035.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	07:51:26	
060415\1036.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	08:00:29	
060415\1037.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	08:09:32	
060415\1038.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	08:18:34	
060415\1039.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	08:27:37	
060415\1040.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	08:36:40	
060415\1041.wiff	Continuing Calibration Verification	KQ1506058-06	6/5/2015	08:45:44	
060415\1044.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:12:52	
060415\1045.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:21:55	
060415\1046.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:30:58	
060415\1047.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:40:02	
060415\1048.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:49:05	
060415\1049.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	09:58:07	
060415\1050.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	10:07:11	
060415\1051.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	10:16:13	
060415\1052.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	10:25:14	
060415\1053.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	10:34:16	
060415\1061.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	14:33:56	
060415\1062.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	14:42:59	
060415\1063.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	14:52:05	

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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047

Service Request:K1505980

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

Analysis Method: 537

Analysis Lot:447994

Instrument ID:K-LCMS-02

Raw Data File	Sample Name	Lab Code	Date Analyzed	Time Analyzed	Q
060415\1043.wiff	Continuing Calibration Verification	KQ1506060-01	6/5/2015	09:03:50	
060415\1054.wiff	Continuing Calibration Verification	KQ1506060-02	6/5/2015	10:43:19	
060415\1059.wiff	15MC-PW011-WT11	K1505980-001	6/5/2015	14:15:51	
060415\1060.wiff	15MC-PW013-WT13	K1505980-004	6/5/2015	14:24:54	
060415\1064.wiff	Continuing Calibration Verification	KQ1506060-03	6/5/2015	15:01:08	

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Prep Summary Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson/15-047
Sample Matrix: Water

Service Request:K1505980

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

Prep Method: Method

Extraction Lot:237404

Analytical Method: 537

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
15MC-PW011-WT11	K1505980-001	5/31/15	6/3/15	290.0000	1 mL	
15MC-PW011-WT11	K1505980-001	5/31/15	6/3/15	290.0000	1 mL	
15MC-PW011-W119	K1505980-002	5/31/15	6/3/15	290.0000	1 mL	
15MC-PW012-WT12	K1505980-003	5/31/15	6/3/15	290.0000	1 mL	
15MC-PW013-WT13	K1505980-004	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW013-WT13	K1505980-004	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW014-WT14	K1505980-005	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW015-WT15	K1505980-006	5/31/15	6/3/15	290.0000	1 mL	
15MC-PW016-WT16	K1505980-007	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW017-WT17	K1505980-008	5/31/15	6/3/15	280.0000	1 mL	
15MC-PWFB-WT	K1505980-009	5/31/15	6/3/15	260.0000	1 mL	
15MC-PW018-WT18	K1505980-010	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW019-WT19	K1505980-011	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW020-WT20	K1505980-012	5/31/15	6/3/15	290.0000	1 mL	
Trip Blank	K1505980-013	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW011-WT11	KQ1505932-01	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW011-WT11	KQ1505932-02	5/31/15	6/3/15	290.0000	1 mL	
Lab Control Sample	KQ1505932-03	NA	NA	290.0000	1 mL	
Method Blank	KQ1505932-04	NA	NA	250.0000	1 mL	