

ALS Group USA, Corp.
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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 11:40
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW001-WT1
Lab Code: K1505990-001

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	1.40	0.0357	0.0100	0.0100	1	06/05/15 07:42	6/4/15	
Perfluorooctanoic Acid	0.130	0.0179	0.00700	0.00300	1	06/05/15 07:42	6/4/15	
Perfluoroheptanoic Acid	0.0544	0.00893	0.00300	0.00200	1	06/05/15 07:42	6/4/15	
Perfluorononanoic Acid	0.0128 J	0.0179	0.00700	0.00400	1	06/05/15 07:42	6/4/15	
Perfluorobutanesulfonic Acid	0.0521 J	0.0804	0.0300	0.0100	1	06/05/15 07:42	6/4/15	
Perfluorohexylsulfonic Acid	0.442	0.0268	0.0100	0.00400	1	06/05/15 07:42	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	06/05/15 07:42	
Perfluoro-n-[1,2-13C2] decanoic acid	103	70 - 130	06/05/15 07:42	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 12:20
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW002-WT2
Lab Code: K1505990-002

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	1.27	0.0345	0.0100	0.0100	1	06/05/15 07:51	6/4/15	
Perfluorooctanoic Acid	0.103	0.0172	0.00700	0.00300	1	06/05/15 07:51	6/4/15	
Perfluoroheptanoic Acid	0.0626	0.00862	0.00300	0.00200	1	06/05/15 07:51	6/4/15	
Perfluorononanoic Acid	0.0125 J	0.0172	0.00700	0.00400	1	06/05/15 07:51	6/4/15	
Perfluorobutanesulfonic Acid	0.0454 J	0.0776	0.0300	0.0100	1	06/05/15 07:51	6/4/15	
Perfluorohexylsulfonic Acid	0.377	0.0259	0.0100	0.00400	1	06/05/15 07:51	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	111	70 - 130	06/05/15 07:51	
Perfluoro-n-[1,2-13C2] decanoic acid	108	70 - 130	06/05/15 07:51	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 12:50
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW003-WT3
Lab Code: K1505990-003

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	0.988	0.0345	0.0100	0.0100	1	06/05/15 08:00	6/4/15	
Perfluorooctanoic Acid	0.0705	0.0172	0.00700	0.00300	1	06/05/15 08:00	6/4/15	
Perfluoroheptanoic Acid	0.0323	0.00862	0.00300	0.00200	1	06/05/15 08:00	6/4/15	
Perfluorononanoic Acid	0.00571 J	0.0172	0.00700	0.00400	1	06/05/15 08:00	6/4/15	
Perfluorobutanesulfonic Acid	0.0267 J	0.0776	0.0300	0.0100	1	06/05/15 08:00	6/4/15	
Perfluorohexylsulfonic Acid	0.244	0.0259	0.0100	0.00400	1	06/05/15 08:00	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	115	70 - 130	06/05/15 08:00	
Perfluoro-n-[1,2-13C2] decanoic acid	116	70 - 130	06/05/15 08:00	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 13:10
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW004-WT4
Lab Code: K1505990-004

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	1.79	0.357	0.100	0.100	10	06/05/15 14:33	6/4/15	
Perfluorooctanoic Acid	0.113	0.0179	0.00700	0.00300	1	06/05/15 08:09	6/4/15	
Perfluoroheptanoic Acid	0.0505	0.00893	0.00300	0.00200	1	06/05/15 08:09	6/4/15	
Perfluorononanoic Acid	0.0107 J	0.0179	0.00700	0.00400	1	06/05/15 08:09	6/4/15	
Perfluorobutanesulfonic Acid	0.0460 J	0.0804	0.0300	0.0100	1	06/05/15 08:09	6/4/15	
Perfluorohexylsulfonic Acid	0.394	0.0268	0.0100	0.00400	1	06/05/15 08:09	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	109	70 - 130	06/05/15 08:09	
Perfluoro-n-[1,2-13C2] decanoic acid	114	70 - 130	06/05/15 08:09	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 13:15
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW005-WT5
Lab Code: K1505990-005

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	2.09	0.357	0.100	0.100	10	06/05/15 14:42	6/4/15	
Perfluorooctanoic Acid	0.146	0.0179	0.00700	0.00300	1	06/05/15 08:18	6/4/15	
Perfluoroheptanoic Acid	0.0523	0.00893	0.00300	0.00200	1	06/05/15 08:18	6/4/15	
Perfluorononanoic Acid	0.0142 J	0.0179	0.00700	0.00400	1	06/05/15 08:18	6/4/15	
Perfluorobutanesulfonic Acid	0.0648 J	0.0804	0.0300	0.0100	1	06/05/15 08:18	6/4/15	
Perfluorohexylsulfonic Acid	0.529	0.0268	0.0100	0.00400	1	06/05/15 08:18	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	108	70 - 130	-	06/05/15 08:18
Perfluoro-n-[1,2-13C2] decanoic acid	107	70 - 130	-	06/05/15 08:18

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 13:50
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW006-WT6
Lab Code: K1505990-006

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	2.09	0.345	0.100	0.100	10	06/05/15 14:52	6/4/15	
Perfluorooctanoic Acid	0.132	0.0172	0.00700	0.00300	1	06/05/15 08:27	6/4/15	
Perfluoroheptanoic Acid	0.0547	0.00862	0.00300	0.00200	1	06/05/15 08:27	6/4/15	
Perfluorononanoic Acid	0.0182	0.0172	0.00700	0.00400	1	06/05/15 08:27	6/4/15	
Perfluorobutanesulfonic Acid	0.0618 J	0.0776	0.0300	0.0100	1	06/05/15 08:27	6/4/15	
Perfluorohexylsulfonic Acid	0.499	0.0259	0.0100	0.00400	1	06/05/15 08:27	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	101	70 - 130	- 06/05/15 08:27	
Perfluoro-n-[1,2-13C2] decanoic acid	100	70 - 130	- 06/05/15 08:27	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 14:25
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW007-WT7
Lab Code: K1505990-007

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	0.106	0.0357	0.0100	0.0100	1	06/05/15 08:36	6/4/15	
Perfluorooctanoic Acid	0.0177 J	0.0179	0.00700	0.00300	1	06/05/15 08:36	6/4/15	
Perfluoroheptanoic Acid	0.0150	0.00893	0.00300	0.00200	1	06/05/15 08:36	6/4/15	
Perfluorononanoic Acid	ND U	0.0179	0.00700	0.00400	1	06/05/15 08:36	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0804	0.0300	0.0100	1	06/05/15 08:36	6/4/15	
Perfluorohexylsulfonic Acid	0.0538	0.0268	0.0100	0.00400	1	06/05/15 08:36	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	107	70 - 130	-	06/05/15 08:36
Perfluoro-n-[1,2-13C2] decanoic acid	110	70 - 130	-	06/05/15 08:36

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 12:20
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW002-WT9
Lab Code: K1505990-008

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	1.37	0.0357	0.0100	0.0100	1	06/05/15 09:40	6/4/15	
Perfluorooctanoic Acid	0.106	0.0179	0.00700	0.00300	1	06/05/15 09:40	6/4/15	
Perfluoroheptanoic Acid	0.0638	0.00893	0.00300	0.00200	1	06/05/15 09:40	6/4/15	
Perfluorononanoic Acid	0.0129 J	0.0179	0.00700	0.00400	1	06/05/15 09:40	6/4/15	
Perfluorobutanesulfonic Acid	0.0468 J	0.0804	0.0300	0.0100	1	06/05/15 09:40	6/4/15	
Perfluorohexylsulfonic Acid	0.396	0.0268	0.0100	0.00400	1	06/05/15 09:40	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	113	70 - 130	06/05/15 09:40	
Perfluoro-n-[1,2-13C2] decanoic acid	114	70 - 130	06/05/15 09:40	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/30/15 13:50
Date Received: 06/03/15 10:00

Sample Name: 15MC-PWFB-WT
Lab Code: K1505990-009

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	0.0400	0.0100	0.0100	1	06/05/15 09:49	6/4/15	
Perfluorooctanoic Acid	ND U	0.0200	0.00700	0.00300	1	06/05/15 09:49	6/4/15	
Perfluoroheptanoic Acid	ND U	0.0100	0.00300	0.00200	1	06/05/15 09:49	6/4/15	
Perfluorononanoic Acid	ND U	0.0200	0.00700	0.00400	1	06/05/15 09:49	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0900	0.0300	0.0100	1	06/05/15 09:49	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0300	0.0100	0.00400	1	06/05/15 09:49	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	105	70 - 130	06/05/15 09:49	
Perfluoro-n-[1,2-13C2] decanoic acid	111	70 - 130	06/05/15 09:49	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/31/15 11:00
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW008-WT8
Lab Code: K1505990-010

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	1.39	0.0357	0.0100	0.0100	1	06/05/15 09:58	6/4/15	
Perfluorooctanoic Acid	0.101	0.0179	0.00700	0.00300	1	06/05/15 09:58	6/4/15	
Perfluoroheptanoic Acid	0.0547	0.00893	0.00300	0.00200	1	06/05/15 09:58	6/4/15	
Perfluorononanoic Acid	0.00971 J	0.0179	0.00700	0.00400	1	06/05/15 09:58	6/4/15	
Perfluorobutanesulfonic Acid	0.0501 J	0.0804	0.0300	0.0100	1	06/05/15 09:58	6/4/15	
Perfluorohexylsulfonic Acid	0.381	0.0268	0.0100	0.00400	1	06/05/15 09:58	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	112	70 - 130	-	06/05/15 09:58
Perfluoro-n-[1,2-13C2] decanoic acid	117	70 - 130	-	06/05/15 09:58

ALS Group USA, Corp.
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Analytical Report

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

Service Request: K1505990
Date Collected: 05/31/15 11:05
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW009-WT9
Lab Code: K1505990-011

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	1.10	0.0357	0.0100	0.0100	1	06/05/15 10:07	6/4/15	
Perfluorooctanoic Acid	0.101	0.0179	0.00700	0.00300	1	06/05/15 10:07	6/4/15	
Perfluoroheptanoic Acid	0.0398	0.00893	0.00300	0.00200	1	06/05/15 10:07	6/4/15	
Perfluorononanoic Acid	0.00689 J	0.0179	0.00700	0.00400	1	06/05/15 10:07	6/4/15	
Perfluorobutanesulfonic Acid	0.0359 J	0.0804	0.0300	0.0100	1	06/05/15 10:07	6/4/15	
Perfluorohexylsulfonic Acid	0.285	0.0268	0.0100	0.00400	1	06/05/15 10:07	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	114	70 - 130	06/05/15 10:07	
Perfluoro-n-[1,2-13C2] decanoic acid	122	70 - 130	06/05/15 10:07	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/31/15 11:15
Date Received: 06/03/15 10:00

Sample Name: 15MC-PW010-WT10
Lab Code: K1505990-012

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	1.37	0.0357	0.0100	0.0100	1	06/05/15 10:16	6/4/15	
Perfluorooctanoic Acid	0.0943	0.0179	0.00700	0.00300	1	06/05/15 10:16	6/4/15	
Perfluoroheptanoic Acid	0.0518	0.00893	0.00300	0.00200	1	06/05/15 10:16	6/4/15	
Perfluorononanoic Acid	0.00993 J	0.0179	0.00700	0.00400	1	06/05/15 10:16	6/4/15	
Perfluorobutanesulfonic Acid	0.0458 J	0.0804	0.0300	0.0100	1	06/05/15 10:16	6/4/15	
Perfluorohexylsulfonic Acid	0.359	0.0268	0.0100	0.00400	1	06/05/15 10:16	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	114	70 - 130	-	06/05/15 10:16
Perfluoro-n-[1,2-13C2] decanoic acid	118	70 - 130	-	06/05/15 10:16

ALS Group USA, Corp.
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Analytical Report

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

Service Request: K1505990
Date Collected: 05/31/15 09:00
Date Received: 06/03/15 10:00

Sample Name: 15MC-PWFB-WT
Lab Code: K1505990-013

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	0.0345	0.0100	0.0100	1	06/05/15 10:25	6/4/15	
Perfluorooctanoic Acid	ND U	0.0172	0.00700	0.00300	1	06/05/15 10:25	6/4/15	
Perfluoroheptanoic Acid	ND U	0.00862	0.00300	0.00200	1	06/05/15 10:25	6/4/15	
Perfluorononanoic Acid	ND U	0.0172	0.00700	0.00400	1	06/05/15 10:25	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0776	0.0300	0.0100	1	06/05/15 10:25	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0259	0.0100	0.00400	1	06/05/15 10:25	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	107	70 - 130	06/05/15 10:25	
Perfluoro-n-[1,2-13C2] decanoic acid	117	70 - 130	06/05/15 10:25	

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Analytical Report

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

Service Request: K1505990
Date Collected: 05/31/15 20:15
Date Received: 06/03/15 10:00

Sample Name: TRIP BLANK
Lab Code: K1505990-014

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 10:34	6/4/15	
Perfluorooctanoic Acid	ND U	0.0200	0.00700	0.00300	1	06/05/15 10:34	6/4/15	
Perfluoroheptanoic Acid	ND U	0.0100	0.00300	0.00200	1	06/05/15 10:34	6/4/15	
Perfluorononanoic Acid	ND U	0.0200	0.00700	0.00400	1	06/05/15 10:34	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0900	0.0300	0.0100	1	06/05/15 10:34	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0300	0.0100	0.00400	1	06/05/15 10:34	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	107	70 - 130	-	06/05/15 10:34
Perfluoro-n-[1,2-13C2] decanoic acid	116	70 - 130	-	06/05/15 10:34

ALS Group USA, Corp.
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Analytical Report

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

Service Request: K1505990
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	

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Analytical Report

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

Service Request: K1505990
Date Collected: NA
Date Received: NA

Sample Name: Method Blank
Lab Code: KQ1505941-03

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 09:12	6/4/15	
Perfluorooctanoic Acid	ND U	0.0200	0.00700	0.00300	1	06/05/15 09:12	6/4/15	
Perfluoroheptanoic Acid	ND U	0.0100	0.00300	0.00200	1	06/05/15 09:12	6/4/15	
Perfluorononanoic Acid	ND U	0.0200	0.00700	0.00400	1	06/05/15 09:12	6/4/15	
Perfluorobutanesulfonic Acid	ND U	0.0900	0.0300	0.0100	1	06/05/15 09:12	6/4/15	
Perfluorohexylsulfonic Acid	ND U	0.0300	0.0100	0.00400	1	06/05/15 09:12	6/4/15	

Surrogate Name	% Rec	Control Limits	Date Analyzed	Q
Perfluoro-n-[1,2-13C2] hexanoic acid	108	70 - 130	-	06/05/15 09:12
Perfluoro-n-[1,2-13C2] decanoic acid	114	70 - 130	-	06/05/15 09:12

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: K1505990

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
Batch QC	K1505980-001	106	108
15MC-PW001-WT1	K1505990-001	105	103
15MC-PW002-WT2	K1505990-002	111	108
15MC-PW003-WT3	K1505990-003	115	116
15MC-PW004-WT4	K1505990-004	109	114
15MC-PW005-WT5	K1505990-005	108	107
15MC-PW006-WT6	K1505990-006	101	100
15MC-PW007-WT7	K1505990-007	107	110
15MC-PW002-WT9	K1505990-008	113	114
15MC-PWFB-WT	K1505990-009	105	111
15MC-PW008-WT8	K1505990-010	112	117
15MC-PW009-WT9	K1505990-011	114	122
15MC-PW010-WT10	K1505990-012	114	118
15MC-PWFB-WT	K1505990-013	107	117
TRIP BLANK	K1505990-014	107	116
Batch QC	KQ1505932-01	105	108
Batch QC	KQ1505932-02	109	111
Lab Control Sample	KQ1505932-03	103	105
Method Blank	KQ1505932-04	108	106
Lab Control Sample	KQ1505941-01	109	115
Duplicate Lab Control Sample	KQ1505941-02	109	114
Method Blank	KQ1505941-03	108	114

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QA/QC Report

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

Service Request: K1505990
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
Batch QC	K1505980-001.R01	537131.29	4.28	1596289.78	4.79
Batch QCMS	KQ1505932-01	544540.40	4.27	1461051.52	4.79
Batch QCDMS	KQ1505932-02	516489.27	4.28	1498035.47	4.80

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QA/QC Report

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

Service Request: K1505990
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\1032.wiff
Instrument ID: K-LCMS-02
Analysis Method: 537

Lab Code: KQ1506058-05
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 ==>	518,463	4.28	1,460,052	4.79
Upper Limit ==>	725,848	5.28	2,044,073	5.79
Lower Limit ==>	362,924	3.28	1,022,036	3.79
ICAL Result ==>				

Associated Analyses

15MC-PW001-WT1	K1505990-001	556615.76	4.29	1827401.39	4.79
15MC-PW002-WT2	K1505990-002	523124.41	4.28	1645928.65	4.80
15MC-PW003-WT3	K1505990-003	516806.46	4.28	1671906.24	4.79
15MC-PW004-WT4	K1505990-004.R01	548080.03	4.28	1785405.83	4.79
15MC-PW005-WT5	K1505990-005.R01	557502.14	4.28	1765879.16	4.79
15MC-PW006-WT6	K1505990-006.R01	585731.92	4.28	1772333.97	4.79
15MC-PW007-WT7	K1505990-007	532350.32	4.28	1693579.20	4.80

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QA/QC Report

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

Service Request: K1505990
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\1043.wiff
Instrument ID: K-LCMS-02
Analysis Method: 537

Lab Code: KQ1506060-01
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 ==>	547,965	4.28	1,597,292	4.79
Upper Limit ==>	767,151	5.28	2,236,209	5.79
Lower Limit ==>	383,575	3.28	1,118,104	3.79
ICAL Result ==>				

Associated Analyses

Method Blank	KQ1505941-03	521153.35	4.28	1514926.31	4.79
Lab Control Sample	KQ1505941-01	522198.46	4.28	1628511.28	4.79
Duplicate Lab Control Sample	KQ1505941-02	522312.61	4.28	1575044.84	4.79
15MC-PW002-WT9	K1505990-008	550917.70	4.28	1733205.10	4.79
15MC-PWFB-WT	K1505990-009	513170.83	4.27	1499481.26	4.79
15MC-PW008-WT8	K1505990-010	527591.20	4.28	1699274.65	4.80
15MC-PW009-WT9	K1505990-011	508878.56	4.28	1666496.65	4.80
15MC-PW010-WT10	K1505990-012	525810.84	4.29	1675473.29	4.80
15MC-PWFB-WT	K1505990-013	532962.70	4.28	1584656.91	4.80
TRIP BLANK	K1505990-014	538944.83	4.28	1669607.57	4.79

ALS Group USA, Corp.
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QA/QC Report

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

Service Request: K1505990
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

Batch QC	K1505980-001	543976.00	4.28	1705639.10	4.79
15MC-PW004-WT4	K1505990-004	506650.00	4.28	1571226.65	4.79
15MC-PW005-WT5	K1505990-005	508138.97	4.28	1663465.85	4.79
15MC-PW006-WT6	K1505990-006	533620.88	4.27	1692330.36	4.79

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QA/QC Report

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

Service Request: K1505990
Date Collected: N/A
Date Received: N/A
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: Batch QC
Lab Code: K1505980-001
Analysis Method: 537
Prep Method: Method

Units: ug/L
Basis: NA

Analyte Name	Matrix Spike KQ1505932-01				Duplicate Matrix Spike KQ1505932-02			% Rec Limits	RPD	RPD Limit
	Sample Result	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perfluorobutanesulfonic Acid	0.0505 J	0.448	0.310	128	0.430	0.310	122	0-200	4	30
Perfluoroheptanoic Acid	0.0464	0.0791	0.0345	95	0.0860	0.0345	115	0-200	8	30
Perfluorohexylsulfonic Acid	0.379	0.497	0.103	114	0.502	0.103	119	0-200	<1	30
Perfluorononanoic Acid	0.00891 J	0.0789	0.0690	102	0.0871	0.0690	113	0-200	10	30
Perfluorooctanoic Acid	0.0980	0.164	0.0690	96	0.180	0.0690	118	0-200	9	30
Perfluorooctylsulfonic Acid	1.70	1.50	0.138	-149 #	1.56	0.138	-107 #	0-200	4	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.

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: K1505990
Date Analyzed: 06/05/15
Date Extracted: 06/04/15

Duplicate 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: 447994

Analyte Name	Lab Control Sample KQ1505941-01			Duplicate Lab Control Sample KQ1505941-02			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perfluorobutanesulfonic Acid	0.106	0.0900	118	0.0961	0.0900	107	50-150	10	50
Perfluoroheptanoic Acid	0.0119	0.0100	119	0.0110	0.0100	110	50-150	8	50
Perfluorohexylsulfonic Acid	0.0321	0.0300	107	0.0298	0.0300	99	50-150	8	50
Perfluorononanoic Acid	0.0251	0.0200	126	0.0229	0.0200	115	50-150	9	50
Perfluorooctanoic Acid	0.0248	0.0200	124	0.0214	0.0200	107	50-150	14	50
Perfluorooctylsulfonic Acid	0.0468	0.0400	117	0.0435	0.0400	109	50-150	7	50

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QA/QC Report

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

Service Request:K1505990
Date Analyzed:NA
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: **Instrument ID:**
Lab Code: **File ID:**
Analysis Method: 537 **Analysis Lot:**447994
Prep Method: Method **Extraction Lot:**237404

This Method Blank applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1505980-001	060415\1059.wiff	06/05/15 14:15
15MC-PW004-WT4	K1505990-004	060415\1061.wiff	06/05/15 14:33
15MC-PW005-WT5	K1505990-005	060415\1062.wiff	06/05/15 14:42
15MC-PW006-WT6	K1505990-006	060415\1063.wiff	06/05/15 14:52

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QA/QC Report

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

Service Request: K1505990
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
Batch QC	K1505980-001	060415\1015.wiff	06/05/15 04:50
Batch QC	KQ1505932-01	060415\1016.wiff	06/05/15 04:59
Batch QC	KQ1505932-02	060415\1017.wiff	06/05/15 05:08
15MC-PW001-WT1	K1505990-001	060415\1034.wiff	06/05/15 07:42
15MC-PW002-WT2	K1505990-002	060415\1035.wiff	06/05/15 07:51
15MC-PW003-WT3	K1505990-003	060415\1036.wiff	06/05/15 08:00
15MC-PW004-WT4	K1505990-004	060415\1037.wiff	06/05/15 08:09
15MC-PW005-WT5	K1505990-005	060415\1038.wiff	06/05/15 08:18
15MC-PW006-WT6	K1505990-006	060415\1039.wiff	06/05/15 08:27
15MC-PW007-WT7	K1505990-007	060415\1040.wiff	06/05/15 08:36
Batch QC	K1505980-001	060415\1059.wiff	06/05/15 14:15
15MC-PW004-WT4	K1505990-004	060415\1061.wiff	06/05/15 14:33
15MC-PW005-WT5	K1505990-005	060415\1062.wiff	06/05/15 14:42
15MC-PW006-WT6	K1505990-006	060415\1063.wiff	06/05/15 14:52

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:K1505990
Date Analyzed:NA
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: **Instrument ID:**
Lab Code: **File ID:**
Analysis Method: 537 **Analysis Lot:**447994
Prep Method: Method **Extraction Lot:**237404

This Lab Control Sample applies to the following analyses.

Sample Name	Lab Code	File ID	Date Analyzed
Batch QC	K1505980-001	060415\1059.wiff	06/05/15 14:15
15MC-PW004-WT4	K1505990-004	060415\1061.wiff	06/05/15 14:33
15MC-PW005-WT5	K1505990-005	060415\1062.wiff	06/05/15 14:42
15MC-PW006-WT6	K1505990-006	060415\1063.wiff	06/05/15 14:52

ALS Group USA, Corp.
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QA/QC Report

Client: Jacobs Engineering Group, Incorporated
Project: Eielson

Service Request: K1505990
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: K1505990
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: K1505990
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

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dba ALS Environmental

QA/QC Report

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

Service Request: K1505990
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: K1505990
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

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QA/QC Report

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

Service Request: K1505990
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: K1505990
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

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

Service Request: K1505990
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: K1505990
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: K1505990
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:K1505990

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	Batch QC	K1505980-001	6/5/2015	04:50:23	
060415\1016.wiff	Batch QC MS	KQ1505932-01	6/5/2015	04:59:23	
060415\1017.wiff	Batch QC DMS	KQ1505932-02	6/5/2015	05:08:26	
060415\1018.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	05:17:29	
060415\1019.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	05:26:31	
060415\1020.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	05:35:34	
060415\1021.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	05:44:38	
060415\1022.wiff	Continuing Calibration Verification	KQ1506058-04	6/5/2015	05:53:41	
060415\1024.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:11:47	
060415\1025.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:20:50	
060415\1026.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:29:55	
060415\1027.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:38:58	
060415\1028.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:48:02	
060415\1029.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	06:57:04	
060415\1030.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	07:06:08	
060415\1031.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	07:15:10	
060415\1032.wiff	Continuing Calibration Verification	KQ1506058-05	6/5/2015	07:24:17	
060415\1034.wiff	15MC-PW001-WT1	K1505990-001	6/5/2015	07:42:22	
060415\1035.wiff	15MC-PW002-WT2	K1505990-002	6/5/2015	07:51:26	
060415\1036.wiff	15MC-PW003-WT3	K1505990-003	6/5/2015	08:00:29	
060415\1037.wiff	15MC-PW004-WT4	K1505990-004	6/5/2015	08:09:32	
060415\1038.wiff	15MC-PW005-WT5	K1505990-005	6/5/2015	08:18:34	
060415\1039.wiff	15MC-PW006-WT6	K1505990-006	6/5/2015	08:27:37	
060415\1040.wiff	15MC-PW007-WT7	K1505990-007	6/5/2015	08:36:40	
060415\1041.wiff	Continuing Calibration Verification	KQ1506058-06	6/5/2015	08:45:44	
060415\1060.wiff	ZZZZZZZ	ZZZZZZZ	6/5/2015	14:24:54	

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QA/QC Report

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

Service Request: K1505990

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\1044.wiff	Method Blank	KQ1505941-03	6/5/2015	09:12:52	
060415\1045.wiff	Lab Control Sample	KQ1505941-01	6/5/2015	09:21:55	
060415\1046.wiff	Duplicate Lab Control Sample	KQ1505941-02	6/5/2015	09:30:58	
060415\1047.wiff	15MC-PW002-WT9	K1505990-008	6/5/2015	09:40:02	
060415\1048.wiff	15MC-PWFB-WT	K1505990-009	6/5/2015	09:49:05	
060415\1049.wiff	15MC-PW008-WT8	K1505990-010	6/5/2015	09:58:07	
060415\1050.wiff	15MC-PW009-WT9	K1505990-011	6/5/2015	10:07:11	
060415\1051.wiff	15MC-PW010-WT10	K1505990-012	6/5/2015	10:16:13	
060415\1052.wiff	15MC-PWFB-WT	K1505990-013	6/5/2015	10:25:14	
060415\1053.wiff	TRIP BLANK	K1505990-014	6/5/2015	10:34:16	
060415\1054.wiff	Continuing Calibration Verification	KQ1506060-02	6/5/2015	10:43:19	
060415\1059.wiff	Batch QC	K1505980-001	6/5/2015	14:15:51	
060415\1061.wiff	15MC-PW004-WT4	K1505990-004	6/5/2015	14:33:56	
060415\1062.wiff	15MC-PW005-WT5	K1505990-005	6/5/2015	14:42:59	
060415\1063.wiff	15MC-PW006-WT6	K1505990-006	6/5/2015	14:52:05	
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:K1505990

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
Batch QC	K1505980-001	NA	NA	290.0000	1 mL	
Batch QC	K1505980-001	NA	NA	290.0000	1 mL	
15MC-PW001-WT1	K1505990-001	5/30/15	6/3/15	280.0000	1 mL	
15MC-PW002-WT2	K1505990-002	5/30/15	6/3/15	290.0000	1 mL	
15MC-PW003-WT3	K1505990-003	5/30/15	6/3/15	290.0000	1 mL	
15MC-PW004-WT4	K1505990-004	5/30/15	6/3/15	280.0000	1 mL	
15MC-PW004-WT4	K1505990-004	5/30/15	6/3/15	280.0000	1 mL	
15MC-PW005-WT5	K1505990-005	5/30/15	6/3/15	280.0000	1 mL	
15MC-PW005-WT5	K1505990-005	5/30/15	6/3/15	280.0000	1 mL	
15MC-PW006-WT6	K1505990-006	5/30/15	6/3/15	290.0000	1 mL	
15MC-PW006-WT6	K1505990-006	5/30/15	6/3/15	290.0000	1 mL	
15MC-PW007-WT7	K1505990-007	5/30/15	6/3/15	280.0000	1 mL	
Batch QC	KQ1505932-01	NA	NA	290.0000	1 mL	
Batch QC	KQ1505932-02	NA	NA	290.0000	1 mL	
Lab Control Sample	KQ1505932-03	NA	NA	250.0000	1 mL	
Method Blank	KQ1505932-04	NA	NA	250.0000	1 mL	

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Prep Summary Report

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

Service Request:K1505990

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

Prep Method: Method

Extraction Lot:237435

Analytical Method: 537

Sample Name	Lab Code	Date Collected	Date Received	Sample Amount	Final Amount	Percent Solids
15MC-PW002-WT9	K1505990-008	5/30/15	6/3/15	280.0000	1 mL	
15MC-PWFB-WT	K1505990-009	5/30/15	6/3/15	250.0000	1 mL	
15MC-PW008-WT8	K1505990-010	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW009-WT9	K1505990-011	5/31/15	6/3/15	280.0000	1 mL	
15MC-PW010-WT10	K1505990-012	5/31/15	6/3/15	280.0000	1 mL	
15MC-PWFB-WT	K1505990-013	5/31/15	6/3/15	290.0000	1 mL	
TRIP BLANK	K1505990-014	5/31/15	6/3/15	250.0000	1 mL	
Lab Control Sample	KQ1505941-01	NA	NA	250.0000	1 mL	
Duplicate Lab Control Sample	KQ1505941-02	NA	NA	250.0000	1 mL	
Method Blank	KQ1505941-03	NA	NA	250.0000	1 mL	