



ARS Aleut Analytical, LLC
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5/16/2016

Kenai Watershed Forum
44129 Sterling Highway
Soldotna, AK 99669
Attn: Branden Bornemann

Work Order #: A1604399
Date: 5/16/2016
Work ID: KWF Baseline Monitoring 2016
Date Received: 4/26/2016

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1604399-01	RM 19 - Slikok Creek	A1604399-02	RM 21 - Soldotna Bridge
A1604399-03	RM 22 - Soldotna Creek	A1604399-04	RM 23 - Swiftwater Park

Enclosed are the analytical results for the submitted sample(s). Please review the CASE NARRATIVE for a discussion of any data and/or quality control issues. Listings of data qualifiers, analytical codes, key dates, and QC relationships are provided at the end of the report.

Sincerely,

Carissa Cumine
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

ARS Aleut Analytical, LLC

Work Order: A1604399

Samples were prepared and analyzed according to EPA or equivalent methods outlined in the following references:

Methods for the Determination of Metals in Environmental Samples, EPA/600/R-94/111, May 1994.

Standard Methods for the Examination of Water and Wastewater, 22nd Edition, 2012.

SAMPLE RECEIPT:

There were four (4) samples received on 4/26/2016 12:17:00 PM at a temperature of 1.5°C at AAA - Anchorage. The samples were received in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH AAA QA PLAN

A summary of our review is shown below.

All analytical results contained in this report have been reviewed under AAA's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text. A complete quality assurance report, including laboratory control, matrix spike, and sample duplicate recoveries, is kept on file in our office and is available upon request.

All method specifications were met for the following tests, unless otherwise noted:

Test Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Nitrate+Nitrite pres - Aqueous

Test Method: SM4500-PE - Total Phos HACH 8190 - Aqueous

MS/MSD and DUP OUTLIERS:

The target was recovered outside the acceptance limits in the batch MS/MSD associated with this analysis. However, the sample spiked is not associated with this project.

The following were subcontracted tests and have been represented to us as meeting criteria:

Test Method: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals - Aqueous

Test Method: 200.8 - Metals by ICP/MS - Total - Aqueous

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: RM 19 - Slikok Creek

Matrix: Aqueous

Collection Date: 4/26/2016 9:20:00AM

The following test was conducted by: ARS Aleut Analytical, LLC

Lab Sample Number: A1604399-01A

Prep Date: 5/7/2016

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - File Name:

Prep Method ID: NO2NO3

Dilution Factor: 1

Prep Batch Number: A160509001

Report Basis: As Received

Analyst Initials: JR

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Nitrate-Nitrite as Nitrogen		0.122		mg/L	0.10	0.015	1

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-01C

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:19:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101248-11

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

Analyte	CASNo	Result	Flags	Units	PQL	MDL	Rerun #:
Arsenic	7440-38-2	<5.0		ug/L	5.0	1.5	1
Cadmium	7440-43-9	<0.50		ug/L	0.50	0.15	
Chromium	7440-47-3	<2.0		ug/L	2.0	0.62	
Copper	7440-50-8	<1.0		ug/L	1.0	0.31	
Lead	7439-92-1	<0.20		ug/L	0.20	0.062	
Zinc	7440-66-6	26		ug/L	5.0	2.5	

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-01B

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Total

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:01:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101246-10

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 19 - Slikok Creek**

Matrix: Aqueous Collection Date: 4/26/2016 9:20:00AM

Lab Sample Number: A1604399-01B Analysis Date: 5/5/2016 10:01:00PM
Prep Date: 5/2/2016 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Total File Name:
Prep Method ID: 200.8 Dilution Factor: 1
Prep Batch Number: R1605101246-10
Report Basis: As Received Analyst Initials: EAB
Sample prep wt./vol: Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Calcium	7440-70-2	10,000		ug/L	500	150	1
Iron	7439-89-6	1,300		ug/L	250	78	
Magnesium	7439-96-4	3,300		ug/L	50	15	

Lab Sample Number: A1604399-01D Analysis Date: 5/2/2016 8:40:00PM
Prep Date: 5/2/2016 Instrument: Spectrophoto
Analytical Method ID: SM4500-PE - Total Phos HACH 8190 File Name:
Prep Method ID: TotalPhos Dilution Factor: 1
Prep Batch Number: F160504003
Report Basis: As Received Analyst Initials: MOC
Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 21 - Soldotna Bridge**

Matrix: Aqueous

Collection Date: 4/26/2016 10:05:00AM

The following test was conducted by: ARS Aleut Analytical, LLC

Lab Sample Number: A1604399-02A

Prep Date: 5/7/2016

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - File Name:

Prep Method ID: NO2NO3

Dilution Factor: 1

Prep Batch Number: A160509001

Report Basis: As Received

Analyst Initials: JR

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Nitrate-Nitrite as Nitrogen		0.116		mg/L	0.10	0.015	1

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-02C

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:22:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101248-11

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Arsenic	7440-38-2	<5.0		ug/L	5.0	1.5	1
Cadmium	7440-43-9	<0.50		ug/L	0.50	0.15	
Chromium	7440-47-3	<2.0		ug/L	2.0	0.62	
Copper	7440-50-8	<1.0		ug/L	1.0	0.31	
Lead	7439-92-1	1.2		ug/L	0.20	0.062	
Zinc	7440-66-6	34		ug/L	5.0	2.5	

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-02B

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Total

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:10:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101246-10

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 21 - Soldotna Bridge**

Matrix: Aqueous Collection Date: 4/26/2016 10:05:00AM

Lab Sample Number: A1604399-02B Analysis Date: 5/5/2016 10:10:00PM
Prep Date: 5/2/2016 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Total File Name:
Prep Method ID: 200.8 Dilution Factor: 1
Prep Batch Number: R1605101246-10
Report Basis: As Received Analyst Initials: EAB
Sample prep wt./vol: Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Calcium	7440-70-2	10,000		ug/L	500	150	1
Iron	7439-89-6	320		ug/L	250	78	
Magnesium	7439-96-4	1,300		ug/L	50	15	

Lab Sample Number: A1604399-02D Analysis Date: 5/2/2016 8:40:00PM
Prep Date: 5/2/2016 Instrument: Spectrophoto
Analytical Method ID: SM4500-PE - Total Phos HACH 8190 File Name:
Prep Method ID: TotalPhos Dilution Factor: 1
Prep Batch Number: F160504003
Report Basis: As Received Analyst Initials: MOC
Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 22 - Soldotna Creek**

Matrix: Aqueous

Collection Date: 4/26/2016 10:40:00AM

The following test was conducted by: ARS Aleut Analytical, LLC

Lab Sample Number: A1604399-03A

Prep Date: 5/7/2016

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - File Name:

Prep Method ID: NO2NO3

Dilution Factor: 1

Prep Batch Number: A160509001

Report Basis: As Received

Analyst Initials: JR

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Nitrate-Nitrite as Nitrogen		<0.10		mg/L	0.10	0.015	1

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-03C

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:25:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101248-11

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Arsenic	7440-38-2	5.6		ug/L	5.0	1.5	1
Cadmium	7440-43-9	<0.50		ug/L	0.50	0.15	
Chromium	7440-47-3	<2.0		ug/L	2.0	0.62	
Copper	7440-50-8	<1.0		ug/L	1.0	0.31	
Lead	7439-92-1	0.70		ug/L	0.20	0.062	
Zinc	7440-66-6	8.4		ug/L	5.0	2.5	

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-03B

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Total

Prep Method ID: 200.8

Analysis Date: 5/5/2016 10:13:00PM

Instrument:

File Name:

Dilution Factor: 1

Prep Batch Number: R1605101246-10

Report Basis: As Received

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: RM 22 - Soldotna Creek

Matrix: Aqueous Collection Date: 4/26/2016 10:40:00AM

Lab Sample Number: A1604399-03B Analysis Date: 5/5/2016 10:13:00PM
Prep Date: 5/2/2016 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Total File Name:
Prep Method ID: 200.8 Dilution Factor: 1
Prep Batch Number: R1605101246-10
Report Basis: As Received Analyst Initials: EAB
Sample prep wt./vol: Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Calcium	7440-70-2	15,000		ug/L	500	150	1
Iron	7439-89-6	1,300		ug/L	250	78	
Magnesium	7439-96-4	4,900		ug/L	50	15	

Lab Sample Number: A1604399-03D Analysis Date: 5/2/2016 8:40:00PM
Prep Date: 5/2/2016 Instrument: Spectrophoto
Analytical Method ID: SM4500-PE - Total Phos HACH 8190 File Name:
Prep Method ID: TotalPhos Dilution Factor: 1
Prep Batch Number: F160504003
Report Basis: As Received Analyst Initials: MOC
Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Phosphorous, Total		0.13		mg/L	0.10	0.025	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 23 - Swiftwater Park**

Matrix: Aqueous

Collection Date: 4/26/2016 11:24:00AM

The following test was conducted by: ARS Aleut Analytical, LLC

Lab Sample Number: A1604399-04A

Prep Date: 5/7/2016

Analytical Method ID: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - File Name:

Prep Method ID: NO2NO3

Dilution Factor: 1

Prep Batch Number: A160509001

Report Basis: As Received

Analyst Initials: JR

Sample prep wt./vol: 25.00 ml

Prep Extract Vol: 25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Nitrate-Nitrite as Nitrogen		0.140		mg/L	0.10	0.015	1

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-04B

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals

Prep Method ID: 200.8

Prep Batch Number: R1605101248-11

Report Basis: As Received

Analysis Date: 5/5/2016 10:28:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: EAB

Sample prep wt./vol:

Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Arsenic	7440-38-2	<5.0		ug/L	5.0	1.5	1
Cadmium	7440-43-9	<0.50		ug/L	0.50	0.15	
Chromium	7440-47-3	<2.0		ug/L	2.0	0.62	
Copper	7440-50-8	1.5		ug/L	1.0	0.31	
Lead	7439-92-1	<0.20		ug/L	0.20	0.062	
Zinc	7440-66-6	55		ug/L	5.0	2.5	

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number: A1604399-04D

Prep Date: 5/2/2016

Analytical Method ID: 200.8 - Metals by ICP/MS - Total

Prep Method ID: 200.8

Prep Batch Number: R1605101246-10

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/5/2016 10:16:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: EAB

Prep Extract Vol: ml

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Client Sample Report

Client Sample Name: **RM 23 - Swiftwater Park**

Matrix: Aqueous Collection Date: 4/26/2016 11:24:00AM

Lab Sample Number: A1604399-04D Analysis Date: 5/5/2016 10:16:00PM
Prep Date: 5/2/2016 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Total File Name:
Prep Method ID: 200.8 Dilution Factor: 1
Prep Batch Number: R1605101246-10
Report Basis: As Received Analyst Initials: EAB
Sample prep wt./vol: Prep Extract Vol: ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Calcium	7440-70-2	9,900		ug/L	500	150	1
Iron	7439-89-6	320		ug/L	250	78	
Magnesium	7439-96-4	1,200		ug/L	50	15	

Lab Sample Number: A1604399-04C Analysis Date: 5/2/2016 8:40:00PM
Prep Date: 5/2/2016 Instrument: Spectrophoto
Analytical Method ID: SM4500-PE - Total Phos HACH 8190 File Name:
Prep Method ID: TotalPhos Dilution Factor: 1
Prep Batch Number: F160504003
Report Basis: As Received Analyst Initials: MOC
Sample prep wt./vol: 5.00 ml Prep Extract Vol: 5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Report Section: Method Blank Report

Client Sample Name:

MB

Matrix: Aqueous

Collection Date: 5/7/2016 8:00:00AM

The following test was conducted by: ARS Aleut Analytical, LLC

Lab Sample Number:	A160509001-MB	Analysis Date:	5/7/2016 8:00:00AM
Prep Date:	5/7/2016	Instrument:	Thermospectr
Analytical Method ID:	SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N	File Name:	
Prep Method ID:	NO2NO3	Dilution Factor:	1
Prep Batch Number:	A160509001		
Report Basis:	Dry Weight Basis	Analyst Initials:	JR
Sample prep wt./vol:	25.00 ml	Prep Extract Vol:	25.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Nitrate-Nitrite as Nitrogen		<0.10		mg/L	0.10	0.015	1

The following test was conducted by: SGS Environmental Services Inc.

Lab Sample Number:	1322267	Analysis Date:	5/5/2016 9:08:00PM
Prep Date:	5/2/2016	Instrument:	
Analytical Method ID:	200.8 - Metals by ICP/MS - Total	File Name:	
Prep Method ID:	200.8	Dilution Factor:	1
Prep Batch Number:	R1605101246-10		
Report Basis:	Dry Weight Basis	Analyst Initials:	EAB
Sample prep wt./vol:		Prep Extract Vol:	ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Calcium	7440-70-2	<500		ug/L	500	150	1
Iron	7439-89-6	<250		ug/L	250	78	
Magnesium	7439-96-4	<50		ug/L	50	15	

Lab Sample Number:	F160504003-MB	Analysis Date:	5/2/2016 8:40:00PM
Prep Date:	5/2/2016	Instrument:	Spectrophoto
Analytical Method ID:	SM4500-PE - Total Phos HACH 8190	File Name:	
Prep Method ID:	TotalPhos	Dilution Factor:	1
Prep Batch Number:	F160504003		
Report Basis:	Dry Weight Basis	Analyst Initials:	MOC
Sample prep wt./vol:	5.00 ml	Prep Extract Vol:	5.00 ml

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>Rerun #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: A160509001

QUALITY CONTROL REPORT

SAMPLE DUPLICATE REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Base Sample: W1605014-01A
Prep Date: 5/7/2016

Samp. Anal. Date: 5/7/2016 8:00:00AM

Units: mg/L

DUP Anal. Date: 5/7/2016 8:00:00AM

Matrix: Drinking Water

<u>Analyte Name</u>	<u>SampResult</u>	<u>DUPRes.</u>	<u>RPD</u>	<u>RPDLim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	0.418	0.419	0.2	20	

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - MB: A160509001-MB
Prep Date: 5/7/2016

MB Anal. Date: 5/7/2016 8:00:00AM

Units: mg/L

LCS Anal. Date: 5/7/2016 8:00:00AM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPL</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	ND	0.555			90 - 110		

MS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Parent: W1605014-01A
Prep Date: 5/7/2016

Samp. Anal. Date: 5/7/2016 8:00:00AM

Units: mg/L

MS Anal. Date: 5/7/2016 8:00:00AM

Matrix: Drinking Water

<u>Analyte Name</u>	<u>SampResult</u>	<u>MSRes.</u>	<u>SPL</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	0.418	0.681			80 - 120	

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

FOOTNOTES TO QC REPORT

Note 1: Results are shown to three significant figures to avoid rounding errors in calculations.

Note 2: If the sample concentration is greater than 4 times the spike level, a recovery is not meaningful, and the result should be used as a replicate. In such cases the spike is not as high as expected random measurement variability of the sample result itself.

Note 3: For sample duplicates, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample and duplicate results are not five times the PQL or greater, then the RPD is not expected to fall within the window shown and the comparison should be made on the basis of the absolute difference. Analytica uses the criterion that the absolute difference should be less than the PQL for water or less than 2XPQL for other matrices.

Note 4: For serial dilutions, if the result is less than the PQL, the duplicate RPD is not applicable. If the sample result is not 50 times the MDL or greater, then the fact that the RPD does not meet the 10% criterion has little significance. Otherwise it indicates that a matrix bias may exist at the analytical step.

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: SGS Environmental Services Inc.

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: R1605101246-10

QUALITY CONTROL REPORT

LCS REPORT

Analysis: 200.8 - Metals by ICP/MS - Total

MB: 1322267

Prep Date: 5/2/2016

MB Anal. Date: 5/5/2016 9:08:00PM

Units: ug/L

LCS Anal. Date: 5/5/2016 9:10:00PM

Matrix:

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Calcium	ND	10,300	10,000	103.0	85 - 115		
Iron	ND	5,080	5,000	101.6	85 - 115		
Magnesium	ND	10,800	10,000	108.0	85 - 115		

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Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: F160504003

QUALITY CONTROL REPORT

SAMPLE DUPLICATE REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

Base Sample: A1604391-01D

Prep Date: 5/2/2016

Samp. Anal. Date: 5/2/2016 8:40:00PM

Units: mg/L

DUP Anal. Date: 5/2/2016 8:40:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>DUPRes.</u>	<u>RPD</u>	<u>RPDLim</u>	<u>Flag</u>
Phosphorous, Total	0.199	0.212	6.3	0	OUT

LCS REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

MB: F160504003-MB

Prep Date: 5/2/2016

MB Anal. Date: 5/2/2016 8:40:00PM

Units: mg/L

LCS Anal. Date: 5/2/2016 8:40:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>LCSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Phosphorous, Total	ND	0.359	0.333	107.9	90 - 110		

MS/MSD REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

Parent: A1604391-01D

Prep Date: 5/2/2016

Samp. Anal. Date: 5/2/2016 8:40:00PM

Units: mg/L

MS Anal. Date: 5/2/2016 8:40:00PM MSD Anal. Date: 5/2/2016 8:40:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>MSRes.</u>	<u>MSDRes</u>	<u>SPLev</u>	<u>SPDL Lev</u>	<u>Recov.</u>	<u>MSD Rec.</u>	<u>RPD</u>	<u>Recov Lim</u>	<u>RPDLim</u>	<u>Flag</u>
Phosphorous, Total	0.199	0.225	0.287	0.0646	0.129	40.3	68.1	24.2	80 - 120	0	lowMS lowMSD RPD

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

FOOTNOTES TO QC REPORT

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Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 178,764 Lab Project Number: A1604399

Prep Date: 5/2/2016

Lab Method Blank Id: F160504003-MB

Prep Batch ID: F160504003

Method: SM4500-PE - Total Phos HACH 8190

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1604391-01D	Batch QC		5/2/2016 8:40:00PM
A1604399-01D	RM 19 - Slikok Creek		5/2/2016 8:40:00PM
A1604399-02D	RM 21 - Soldotna Bridge		5/2/2016 8:40:00PM
A1604399-03D	RM 22 - Soldotna Creek		5/2/2016 8:40:00PM
A1604399-04C	RM 23 - Swiftwater Park		5/2/2016 8:40:00PM
F160504003-LCS	LCS		5/2/2016 8:40:00PM
A1604391-01D-DUP	DUP		5/2/2016 8:40:00PM
A1604391-01D-MS	MS		5/2/2016 8:40:00PM
A1604391-01D-MSD	MSD		5/2/2016 8:40:00PM

Prep Date: 5/7/2016

Lab Method Blank Id: A160509001-MB

Prep Batch ID: A160509001

Method: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1604399-01A	RM 19 - Slikok Creek		5/7/2016 8:00:00AM
A1604399-02A	RM 21 - Soldotna Bridge		5/7/2016 8:00:00AM
A1604399-03A	RM 22 - Soldotna Creek		5/7/2016 8:00:00AM
A1604399-04A	RM 23 - Swiftwater Park		5/7/2016 8:00:00AM
W1605014-01A	Batch QC		5/7/2016 8:00:00AM
A160509001-LCS	LCS		5/7/2016 8:00:00AM
W1605014-01A-DUP	DUP		5/7/2016 8:00:00AM
W1605014-01A-MS	MS		5/7/2016 8:00:00AM

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 178,764 Lab Project Number: A1604399

Prep Date: 5/2/2016

Lab Method Blank Id: 1322267

Prep Batch ID: R1605101246-10

Method: 200.8 - Metals by ICP/MS - Total

This Method blank and sample preparation batch are associated with the following samples, spikes, and duplicates:

<u>SampleNum</u>	<u>ClientSampleName</u>	<u>DataFile</u>	<u>AnalysisDate</u>
A1604399-01B	RM 19 - Slikok Creek		5/5/2016 10:01:00PM
A1604399-02B	RM 21 - Soldotna Bridge		5/5/2016 10:10:00PM
A1604399-03B	RM 22 - Soldotna Creek		5/5/2016 10:13:00PM
A1604399-04D	RM 23 - Swiftwater Park		5/5/2016 10:16:00PM
1322268	LCS for HBN 1732763 [MXX/29697		5/5/2016 9:10:00PM
1322270	1322269 MS FOR [MXX29697]		5/5/2016 9:55:00PM

DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit as defined by USACE.

Reporting Limit: Limit below which results are shown as "ND". This may be the PQL, MDL, or a value between. See the report conventions below.

Result Field:

ND = Not Detected at or above the Reporting Limit

NA = Analyte not applicable (see Case Narrative for discussion)

Qualifier Fields:

LOW = Recovery is below Lower Control Limit

HIGH = Recovery, RPD, or other parameter is above Upper Control Limit

E = Reported concentration is above the instrument calibration upper range

Organic Analysis Flags:

B = Analyte was detected in the laboratory method blank

J = Analyte was detected above MDL or Reporting Limit but below the Quant Limit (PQL)

Inorganic Analysis Flags:

J = Analyte was detected above the Reporting Limit but below the Quant Limit (PQL)

W = Post digestion spike did not meet criteria

S = Reported value determined by the Method of Standard Additions (MSA)

Other Flags may be applied. See Case Narrative for Description

PLEASE NOTE THAT THE MDL AND PQL SHOWN FOR WAD CYANIDE IN THIS REPORT ARE SITE-SPECIFIC AS REQUESTED BY THE CLIENT AND ARE ONLY APPROPRIATE FOR THE POGO MINE SITE.

Detailed Analytical Report

ARS Aleut Analytical, LLC

Workorder (SDG): A1604399

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

REPORTING CONVENTIONS FOR THIS REPORT

A1604399

<u>Test Name</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
200.8 (Aqueous) - Dissolved 200.8 Metals	As Received		Report to PQL
200.8 (Aqueous) - Total	As Received		Report to PQL
4500-NO3E (Aqueous) - Nitrate+Nitrite pres	As Received		Report to PQL
4500-PE/4500-PB (Aqueous) - Total Phos HACH 8190	As Received		Report to PQL



ARS Alert Analytical

AAA Chain of Custody

Page ____ of ____

Anchorage Laboratory
4307 Arctic Blvd
Anchorage, AK 99503
907.258.2155
907.258.6834 fax

Mat-Su Service Center
701 East Parks Highway #203
Wasilla, AK 99654
907.373.5440
907.456.3125 fax

Fairbanks Laboratory
475 Hall Street
Fairbanks, AK 99701
907.456.3116
907.456.3125 fax

Chain of Custody No:

ARS Corporate Office
2609 North River Road
Port Allen, LA 70767
225.381.2991
225.381.2996 fax

TEAM ID: ADF&G Habitat Division

Project Name: KWF Baseline Monitoring - April 2016

Section To be Completed by AAA

Quote ID No: A16030019

LGN:

A1604399

Account #:

Cash:

Credit Card:

Invoice to Name & Address:

Turnaround Time for Results (TAT)

Standard

Expedited

(Please specify due date before add'l charges may apply)

Results Due Date:

P.O. or Contract

Special Instructions/Comments:

Lab Bottle Order No:

Client Sample Identification / Location

RM 19 - Silkok Creek

RM 21 - Soldotna Bridge

RM 22 - Soldotna Creek

Rm 23 - Swiftwater Park

Date Sampled

Time Sampled

Matrix (S-DW-WW-Other)

No. of Containers

Nitrate SM4500-NO3E
Lot #: 4405A62
Pres: H2SO4

200.8 Metals by ICP-Total TR
Lot #: 4512981
Pres: HNO3

200.8 Dissolved Metals
Lot #: 4512981
Pres: HNO3

Total Phos SM4500
Lot #: 4405A62
Pres: H2SO4

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Lot #: Pres:

Field Preserved

Field Filtered

MS/MSD ?

Collected/Relinquished by:

Date

Time

Received by:

Date

Time

Chain-of-Custody Seal?

ANC

WAS

FBKS

Initial By:

Temp/Loc:

Thermo ID#:

Shipping Via:

Relinquished by:

Date

Time

Received by:

Date

Time

Chain-of-Custody Seal?

ANC

WAS

FBKS

Initial By:

Temp/Loc:

Thermo ID#:

Shipping Via:

Relinquished by:

Date

Time

Received by:

Date

Time

Chain-of-Custody Seal?

ANC

WAS

FBKS

Initial By:

Temp/Loc:

Thermo ID#:

Shipping Via:

Name of Sampler: (printed)

Brian Blossom