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5/22/2015

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

Work Order #: A1505064
Date: 5/22/2015
Work ID: KWF Baseline Monitoring 2015
Date Received: 5/5/2015
Proj #: none

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1505064-01	RM 19-Slikok Creek	A1505064-02	RM 21-Soldotna Bridge
A1505064-03	RM 22-Soldotna Creek	A1505064-04	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,

A handwritten signature in blue ink that reads 'Becky Nichols'.

Becky Nichols
Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

ARS Aleut Analytical

Work Order: A1505064

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

Standard Methods for the Examination of Water and Wastewater, 21st Edition, 2005.

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

SAMPLE RECEIPT:

Four (4) samples were received on 5/5/2015 5:20:00 PM at a temperature of 5.4°C at Analytica-Anchorage. Samples were received in good condition and in order per chain of custody.

REVIEW FOR COMPLIANCE WITH ANALYTICA 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: SM 4500-NO3 E - Nitrogen (Nitrate), Cadmium Reduction Method - Nitrate+Nitrite pres - Aqueous

The following are subcontracted tests and have been represented to us as having met criteria, unless otherwise noted.

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

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

Test Method: SM 4500-PE - Phos - Aqueous

COMMENTS for Test Method 200.8 Dissolved Metals by ICP/MS:

Zn was detected in MB 1263028 associated with Samples A1505064-01D and A1505064-03D. Concentration of Zn in the samples is either 10 times greater than the blank contamination or less than the LOQ.

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

Client Sample Name: RM 19-Slikok Creek

Matrix: Aqueous

Collection Date: 5/5/2015 12:30:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1505064-01A

Prep Date: 5/14/2015

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

Prep Method ID:

Prep Batch Number: A150515002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

Analysis Date: 5/14/2015 7:30:00AM

Instrument: Thermospectr

File Name:

Dilution Factor: 1

Analyst Initials: TR

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>run #:</u>
Nitrate-Nitrite as Nitrogen		0.190		mg/L	0.10	0.015	1

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

Lab Sample Number: A1505064-01C

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-23

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 11:23:00AM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		0.039		mg/L	0.010	0.0031	1

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

Lab Sample Number: A1505064-01D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:25:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: ACF

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>run #:</u>
Arsenic	7440-38-2	ND		ug/L	5.0	1.5	1
Cadmium	7440-43-9	ND		ug/L	0.50	0.15	
Chromium	7440-47-3	ND		ug/L	2.0	0.62	
Copper	7440-50-8	2.0		ug/L	1.0	0.31	
Lead	7439-92-1	ND		ug/L	0.20	0.062	
Zinc	7440-66-6	61		ug/L	5.0	2.5	

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

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

Client Sample Name: RM 19-Slikok Creek

Matrix: Aqueous Collection Date: 5/5/2015 12:30:00PM

Lab Sample Number: A1505064-01B Analysis Date: 5/11/2015 12:11:00PM

Prep Date: 5/7/2015 Instrument:

Analytical Method ID: 200.8 - Metals by ICP/MS - 200.8 Metals File Name:

Prep Method ID: Dilution Factor: 1

Prep Batch Number: R1505211129-22 Analyst Initials: ACF

Report Basis: As Received Prep Extract Vol: ml

Sample prep wt./vol:

<u>Analyte</u>	<u>CASNo</u>	<u>Result</u>	<u>Flags</u>	<u>Units</u>	<u>PQL</u>	<u>MDL</u>	<u>run #:</u>
Calcium	7440-70-2	13,000		ug/L	500	150	1
Iron	7439-89-6	1,600		ug/L	250	78	
Magnesium	7439-96-4	4,200		ug/L	50	15	

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

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

Matrix: Aqueous

Collection Date: 5/5/2015 1:15:00PM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1505064-02A

Prep Date: 5/14/2015

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

Prep Method ID:

Prep Batch Number: A150515002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

Analysis Date: 5/14/2015 7:30:00AM

Instrument: Thermospectr

File Name:

Dilution Factor: 1

Analyst Initials: TR

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>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

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

Lab Sample Number: A1505064-02C

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-24

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:23:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		0.015		mg/L	0.010	0.0031	1

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

Lab Sample Number: A1505064-02D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:28:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: ACF

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>run #:</u>
Arsenic	7440-38-2	ND		ug/L	5.0	1.5	1
Chromium	7440-47-3	ND		ug/L	2.0	0.62	
Lead	7439-92-1	ND		ug/L	0.20	0.062	

Lab Sample Number: A1505064-02D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/14/2015 4:50:00PM

Instrument:

File Name:

Dilution Factor: 5

Analyst Initials: EAB

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>run #:</u>
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Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

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

Matrix: Aqueous Collection Date: 5/5/2015 1:15:00PM

Lab Sample Number: A1505064-02D Analysis Date: 5/14/2015 4:50:00PM
Prep Date: 5/7/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 5
Prep Batch Number: R1505211132-25
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>run #:</u>
Zinc	7440-66-6	51		ug/L	25	13	1

Lab Sample Number: A1505064-02D Analysis Date: 5/11/2015 12:28:00PM
Prep Date: 5/13/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1505211132-26
Report Basis: As Received Analyst Initials: ACF
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>run #:</u>
Cadmium	7440-43-9	ND		ug/L	0.50	0.15	1
Copper	7440-50-8	2.0		ug/L	1.0	0.31	

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

Lab Sample Number: A1505064-02B Analysis Date: 5/11/2015 12:13:00PM
Prep Date: 5/7/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1505211129-22
Report Basis: As Received Analyst Initials: ACF
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>run #:</u>
Calcium	7440-70-2	10,000		ug/L	500	150	1
Iron	7439-89-6	450		ug/L	250	78	
Magnesium	7439-96-4	1,400		ug/L	50	15	

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

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

Matrix: Aqueous

Collection Date: 5/5/2015 9:25:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1505064-03A

Prep Date: 5/14/2015

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

Prep Method ID:

Prep Batch Number: A150515002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

Analysis Date: 5/14/2015 7:30:00AM

Instrument: Thermospectr

File Name:

Dilution Factor: 1

Analyst Initials: TR

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>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

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

Lab Sample Number: A1505064-03C

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-24

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:26:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		0.11		mg/L	0.010	0.0031	1

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

Lab Sample Number: A1505064-03D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:30:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: ACF

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>run #:</u>
Arsenic	7440-38-2	7.0		ug/L	5.0	1.5	1
Cadmium	7440-43-9	ND		ug/L	0.50	0.15	
Chromium	7440-47-3	ND		ug/L	2.0	0.62	
Copper	7440-50-8	1.7		ug/L	1.0	0.31	
Lead	7439-92-1	ND		ug/L	0.20	0.062	
Zinc	7440-66-6	71		ug/L	5.0	2.5	

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

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

Client Sample Name: RM 22-Soldotna Creek

Matrix: Aqueous Collection Date: 5/5/2015 9:25:00AM

Lab Sample Number: A1505064-03B Analysis Date: 5/11/2015 12:16:00PM

Prep Date: 5/7/2015 Instrument:

Analytical Method ID: 200.8 - Metals by ICP/MS - 200.8 Metals File Name:

Prep Method ID: Dilution Factor: 1

Prep Batch Number: R1505211129-22

Report Basis: As Received Analyst Initials: ACF

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>run #:</u>
Calcium	7440-70-2	16,000		ug/L	500	150	1
Iron	7439-89-6	1,200		ug/L	250	78	
Magnesium	7439-96-4	4,800		ug/L	50	15	

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

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

Matrix: Aqueous

Collection Date: 5/5/2015 11:00:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A1505064-04A

Prep Date: 5/14/2015

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

Prep Method ID:

Prep Batch Number: A150515002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

Analysis Date: 5/14/2015 7:30:00AM

Instrument: Thermospectr

File Name:

Dilution Factor: 1

Analyst Initials: TR

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>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

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

Lab Sample Number: A1505064-04C

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-23

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 10:56:00AM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		0.024		mg/L	0.010	0.0031	1

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

Lab Sample Number: A1505064-04D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:37:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: ACF

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>run #:</u>
Arsenic	7440-38-2	ND		ug/L	5.0	1.5	1
Chromium	7440-47-3	ND		ug/L	2.0	0.62	
Lead	7439-92-1	ND		ug/L	0.20	0.062	

Lab Sample Number: A1505064-04D

Prep Date: 5/7/2015

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

Prep Method ID:

Prep Batch Number: R1505211132-25

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/14/2015 4:53:00PM

Instrument:

File Name:

Dilution Factor: 5

Analyst Initials: EAB

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>run #:</u>
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Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Client Sample Report

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

Matrix: Aqueous Collection Date: 5/5/2015 11:00:00AM

Lab Sample Number: A1505064-04D Analysis Date: 5/14/2015 4:53:00PM
Prep Date: 5/7/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 5
Prep Batch Number: R1505211132-25
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>run #:</u>
Zinc	7440-66-6	33		ug/L	25	13	1

Lab Sample Number: A1505064-04D Analysis Date: 5/11/2015 12:37:00PM
Prep Date: 5/13/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1505211132-26
Report Basis: As Received Analyst Initials: ACF
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>run #:</u>
Cadmium	7440-43-9	ND		ug/L	0.50	0.15	1
Copper	7440-50-8	2.3		ug/L	1.0	0.31	

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

Lab Sample Number: A1505064-04B Analysis Date: 5/11/2015 12:18:00PM
Prep Date: 5/7/2015 Instrument:
Analytical Method ID: 200.8 - Metals by ICP/MS - 200.8 Metals File Name:
Prep Method ID: Dilution Factor: 1
Prep Batch Number: R1505211129-22
Report Basis: As Received Analyst Initials: ACF
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>run #:</u>
Calcium	7440-70-2	10,000		ug/L	500	150	1
Iron	7439-89-6	450		ug/L	250	78	
Magnesium	7439-96-4	1,300		ug/L	50	15	

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous

Collection Date: 5/14/2015 7:30:00AM

The following test was conducted by: Analytica - Anchorage

Lab Sample Number: A150515002-MB

Prep Date: 5/14/2015

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

Prep Method ID:

Prep Batch Number: A150515002

Report Basis: As Received

Sample prep wt./vol: 25.00 ml

Analysis Date: 5/14/2015 7:30:00AM

Instrument: Thermospectr

File Name:

Dilution Factor: 1

Analyst Initials: TR

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>run #:</u>
Nitrate-Nitrite as Nitrogen		ND		mg/L	0.10	0.015	1

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

Lab Sample Number: 1263619

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-23

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 10:19:00AM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		ND		mg/L	0.010	0.0031	1

Lab Sample Number: 1263946

Prep Date: 5/9/2015

Analytical Method ID: SM4500-PE - Phos

Prep Method ID: 4500-PB

Prep Batch Number: R1505211131-24

Report Basis: As Received

Sample prep wt./vol:

Analysis Date: 5/11/2015 12:20:00PM

Instrument:

File Name:

Dilution Factor: 1

Analyst Initials: SLC

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>run #:</u>
Phosphorous, Total		ND		mg/L	0.010	0.0031	2

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Project Number:

Prep Batch: A150515002

QUALITY CONTROL REPORT

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - MB: A150515002-MB

Prep Date: 5/14/2015

MB Anal. Date: 5/14/2015 7:30:00AM

Units: mg/L

LCS Anal. Date: 5/14/2015 7:30:00AM

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>
Nitrate-Nitrite as Nitrogen	ND	0.395	0.406	97.4	90 - 110		

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

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

Tests Run at: SGS Environmental Services Inc.

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Project Number:

Prep Batch: R1505211131-23

QUALITY CONTROL REPORT

LCS/LCSD REPORT

Analysis: SM4500-PE - Phos

MB: 1263619

Prep Date: 5/9/2015

MB Anal. Date: 5/11/2015 10:19:00AM

Units: mg/L

LCS Anal. Date: 5/11/2015 10:20:00AM LCSD Anal. Date: 5/11/2015 10:22:00AM Matrix:

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Phosphorous, Total	ND	0.207	0.207	0.200	0.200	104	103	0.19	75 - 125	25.00	

MS/MSD REPORT

Analysis: SM4500-PE - Phos

Parent: A1505064-01C

Prep Date: 5/9/2015

Samp. Anal. Date: 5/11/2015 11:23:00AM

Units: mg/L

MS Anal. Date: 5/11/2015 11:24:00AM MSD Anal. Date: 5/11/2015 11:25:00AM Matrix: Aqueous

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag
Phosphorous, Total	0.0393	0.264	0.253	0.201	0.200	112	107	4.3	75 - 125	25	

Prep Batch: R1505211131-24

LCS/LCSD REPORT

Analysis: SM4500-PE - Phos

MB: 1263946

Prep Date: 5/9/2015

MB Anal. Date: 5/11/2015 12:20:00PM

Units: mg/L

LCS Anal. Date: 5/11/2015 12:21:00PM LCSD Anal. Date: 5/11/2015 12:22:00PM Matrix:

Analyte Name	SampResult	LCSRes.	SDRes.	SPLev	SPDLev	Recov.	SD Recov	RPD	Recov Lim	RPDLim	Flag
Phosphorous, Total	ND	0.208	0.206	0.200	0.200	104	103	0.77	75 - 125	25.00	

MS/MSD REPORT

Analysis: SM4500-PE - Phos

Parent: A1505064-02C

Prep Date: 5/9/2015

Samp. Anal. Date: 5/11/2015 12:23:00PM

Units: mg/L

MS Anal. Date: 5/11/2015 12:24:00PM MSD Anal. Date: 5/11/2015 12:25:00PM Matrix: Aqueous

Analyte Name	SampResult	MSRes.	MSDRes	SPLev	SPDLev	Recov.	MSD Rec.	RPD	Recov Lim	RPDLim	Flag
Phosphorous, Total	0.0154	0.220	0.223	0.201	0.200	102	104	1.7	75 - 125	25	

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

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

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 170,461 Lab Project Number: A1505064

Prep Date: 5/14/2015

Lab Method Blank Id: A150515002-MB

Prep Batch ID: A150515002

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>
A1505063-03A	Batch QC		5/14/2015 7:30:00AM
A1505064-01A	RM 19-Slikok Creek		5/14/2015 7:30:00AM
A1505064-02A	RM 21-Soldotna Bridge		5/14/2015 7:30:00AM
A1505064-03A	RM 22-Soldotna Creek		5/14/2015 7:30:00AM
A1505064-04A	Rm 23-Swiftwater Park		5/14/2015 7:30:00AM
A150515002-LCS	LCS		5/14/2015 7:30:00AM
A1505063-03A-DUP	DUP		5/14/2015 7:30:00AM
A1505063-03A-MS	MS		5/14/2015 7:30:00AM

Prep Date: 5/9/2015

Lab Method Blank Id: 1263619

Prep Batch ID: R1505211131-23

Method: SM4500-PE - Phos

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>
A1505064-01C	RM 19-Slikok Creek		5/11/2015 11:23:00AM
A1505064-04C	Rm 23-Swiftwater Park		5/11/2015 10:56:00AM
1263620	LCS for HBN 1708523 [WXX/11020		5/11/2015 10:20:00AM
1263621	LCSD for HBN 1708523 [WXX/1102		5/11/2015 10:22:00AM
1263622	1151876001MS		5/11/2015 11:24:00AM
1263623	1151876001MSD		5/11/2015 11:25:00AM

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 170,461 **Lab Project Number:** A1505064

Prep Date: 5/9/2015

Lab Method Blank Id: 1263946

Prep Batch ID: R1505211131-24

Method: SM4500-PE - Phos

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>
A1505064-02C	RM 21-Soldotna Bridge		5/11/2015 12:23:00PM
A1505064-03C	RM 22-Soldotna Creek		5/11/2015 12:26:00PM
1263947	LCS for HBN 1708603 [WXX/11025		5/11/2015 12:21:00PM
1263948	LCSD for HBN 1708603 [WXX/1102		5/11/2015 12:22:00PM
1263949	1151876002MS		5/11/2015 12:24:00PM
1263950	1151876002MSD		5/11/2015 12:25:00PM

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

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)

Several ways of defining the limit of detection and quantitation are prevalent in the laboratory industry and may appear in Analytica reports. These include the following:

MRL = "minimum reporting level", from the EPA Safe Drinking Water program (SDW)

PQL = "practical quantitation limit", from SW-846

EQL = "estimated quantitation limit", from SW-846

LOQ = "limit of quantitation", from a number of authoritative sources

In Analytica's work, all of these terms have the same meaning, equivalent to the EPA definition of the MRL. This reporting level is supported by a satisfactory calibration data point which is at that level or lower, and also is supported by a method detection limit (MDL) determined by the procedure in 40CFR. The MDL is lower than the MRL and represents an estimate of the level where positive detections have a 99% probability of being real, but where quantitation accuracy is unknown.

The MRL as defined by Analytica is the lowest demonstrated point of known quantitation accuracy.

The MRL should not be confused with the MCL, which is the EPA-defined "maximum contaminant level" allowed for certain regulated targets under specific regulations, such as the National Primary Drinking Water Regulations. Normally, the MRL is set at a level which is much lower than the MCL in order to ensure that levels are well below those limits. Not all target analytes have MCL levels established.

Other Flags may be applied. See Case Narrative for Description

Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1505064

Project: KWF Baseline Monitoring 2015

Client: Kenai Watershed Forum

Client Project Number: none

REPORTING CONVENTIONS FOR THIS REPORT

A1505064

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
200.8 (Aqueous) - 200.8 Metals	As Received	2	Report to PQL
200.8 (Aqueous) - Dissolved 200.8 Metals	As Received	2	Report to PQL
4500-NO3E (Aqueous) - Nitrate+Nitrite pres	As Received	3	Report to PQL
4500-PE/4500-PB (Aqueous) - Phos	As Received	2	Report to PQL

