



ARS Aleut Analytical, LLC  
4307 Arctic Boulevard  
Anchorage, AK 99503  
Phone: 907-258-2155  
Fax: 907-258-6634

5/16/2016

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

Work Order #: A1604406  
Date: 5/16/2016  
Work ID: KWF Baseline Monitoring 2016  
Date Received: 4/26/2016  
Proj #: 2016

### Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1604406-01	RM 0-No Name Creek	A1604406-02	RM 0-No Name Creek Duplic
A1604406-03	RM 1.5-Kenai City Dock		

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 'Carissa Cumine'.

Carissa Cumine  
Project Manager

*"The Science of Analysis, The Art of Service"*

## Case Narrative

*ARS Aleut Analytical*

*Work Order: A1604406*

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 three (3) samples received on 4/26/2016 11:47:00 AM at a temperature of 4.9°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

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

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

### Report Section: Client Sample Report

Client Sample Name: **RM 0-No Name Creek**

Matrix: Aqueous

Collection Date: 4/26/2016 10:30:00AM

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

Lab Sample Number:	A1604406-01A	Analysis Date:	5/11/2016 2:45:00PM
Prep Date:	5/11/2016	Instrument:	Thermospectr
Analytical Method ID:	SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - N		
Prep Method ID:		Dilution Factor:	1
Prep Batch Number:	A160511015		
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>run #:</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:	A1604406-01C	Analysis Date:	5/5/2016 8:14:00PM
Prep Date:	5/2/2016	Instrument:	
Analytical Method ID:	200.8 - Metals by ICP/MS - Dissolved 200.8 Metals		
Prep Method ID:		Dilution Factor:	1
Prep Batch Number:	R1605121044-4		
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>
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	1.7		ug/L	1.0	0.31	
Lead	7439-92-1	<0.20		ug/L	0.20	0.062	
Zinc	7440-66-6	29		ug/L	5.0	2.5	

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

Lab Sample Number:	A1604406-01B	Analysis Date:	5/5/2016 8:05:00PM
Prep Date:	5/2/2016	Instrument:	
Analytical Method ID:	200.8 - Metals by ICP/MS - Total		
Prep Method ID:		Dilution Factor:	1
Prep Batch Number:	R1605121044-3		
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>
Calcium	7440-70-2	11,000		ug/L	500	150	1
Iron	7439-89-6	3,000		ug/L	250	78	
Magnesium	7439-96-4	4,900		ug/L	50	15	

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

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### Report Section: Client Sample Report

**Client Sample Name:** RM 0-No Name Creek

Matrix: Aqueous Collection Date: 4/26/2016 10:30:00AM

Lab Sample Number: A1604406-01D

Analysis Date: 5/2/2016 11:50:00PM

Prep Date: 5/2/2016

Instrument: Spectrophoto

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: F160504004

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>run #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

### Report Section: Client Sample Report

Client Sample Name: **RM 0-No Name Creek Duplicate**

Matrix: Aqueous

Collection Date: 4/26/2016 10:45:00AM

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

Lab Sample Number: A1604406-02A

Analysis Date: 5/11/2016 2:45:00PM

Prep Date: 5/11/2016

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A160511015

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>run #:</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: A1604406-02C

Analysis Date: 5/5/2016 8:23:00PM

Prep Date: 5/2/2016

Instrument:

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1605121044-4

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>
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	29		ug/L	5.0	2.5	

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

Lab Sample Number: A1604406-02B

Analysis Date: 5/5/2016 8:08:00PM

Prep Date: 5/2/2016

Instrument:

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1605121044-3

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>
Calcium	7440-70-2	11,000		ug/L	500	150	1
Iron	7439-89-6	2,900		ug/L	250	78	
Magnesium	7439-96-4	4,900		ug/L	50	15	

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

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### Report Section: Client Sample Report

**Client Sample Name:** RM 0-No Name Creek Duplicate

Matrix: Aqueous Collection Date: 4/26/2016 10:45:00AM

Lab Sample Number: A1604406-02D

Analysis Date: 5/2/2016 11:50:00PM

Prep Date: 5/2/2016

Instrument: Spectrophoto

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: F160504004

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>run #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

### Report Section: Client Sample Report

Client Sample Name: **RM 1.5-Kenai City Dock**

Matrix: Aqueous

Collection Date: 4/26/2016 9:45:00AM

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

Lab Sample Number: A1604406-03A

Analysis Date: 5/11/2016 2:45:00PM

Prep Date: 5/11/2016

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A160511015

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>run #:</u>
Nitrate-Nitrite as Nitrogen		0.161		mg/L	0.10	0.015	1

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

Lab Sample Number: A1604406-03C

Analysis Date: 5/10/2016 11:31:00AM

Prep Date: 5/2/2016

Instrument:

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

Prep Method ID:

Dilution Factor: 10

Prep Batch Number: R1605121044-4

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>
Arsenic	7440-38-2	<50		ug/L	50	15	1
Cadmium	7440-43-9	<5.0		ug/L	5.0	1.5	
Chromium	7440-47-3	<20		ug/L	20	6.2	
Copper	7440-50-8	<10		ug/L	10	3.1	
Lead	7439-92-1	<2.0		ug/L	2.0	0.62	
Zinc	7440-66-6	<50		ug/L	50	25	

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

Lab Sample Number: A1604406-03B

Analysis Date: 5/10/2016 11:28:00AM

Prep Date: 5/2/2016

Instrument:

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

Prep Method ID:

Dilution Factor: 10

Prep Batch Number: R1605121044-3

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>
Calcium	7440-70-2	180,000		ug/L	5,000	1,500	1
Iron	7439-89-6	2,800		ug/L	2,500	780	
Magnesium	7439-96-4	510,000		ug/L	500	150	

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

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### Report Section: Client Sample Report

**Client Sample Name:** RM 1.5-Kenai City Dock

Matrix: Aqueous Collection Date: 4/26/2016 9:45:00AM

Lab Sample Number: A1604406-03D

Analysis Date: 5/2/2016 11:50:00PM

Prep Date: 5/2/2016

Instrument: Spectrophoto

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: F160504004

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>run #:</u>
Phosphorous, Total		0.15		mg/L	0.10	0.025	1



## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

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: 5/11/2016 2:45:00PM

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

Lab Sample Number: A160511015-MB

Analysis Date: 5/11/2016 2:45:00PM

Prep Date: 5/11/2016

Instrument: Thermospectr

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: A160511015

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>run #:</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: 1322233

Analysis Date: 5/5/2016 7:47:00PM

Prep Date: 5/2/2016

Instrument:

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

Prep Method ID:

Dilution Factor: 1

Prep Batch Number: R1605121044-3

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>
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	

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

Lab Sample Number: F160504004-MB

Analysis Date: 5/2/2016 11:50:00PM

Prep Date: 5/2/2016

Instrument: Spectrophoto

Analytical Method ID: SM4500-PE - Total Phos HACH 8190

Prep Method ID: 4500-PB

Dilution Factor: 1

Prep Batch Number: F160504004

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>run #:</u>
Phosphorous, Total		<0.10		mg/L	0.10	0.025	1

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: A160511015

### QUALITY CONTROL REPORT

#### SAMPLE DUPLICATE REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Base Sample: A1604400-02A  
Prep Date: 5/11/2016

Samp. Anal. Date: 5/11/2016 2:45:00PM

Units: mg/L

DUP Anal. Date: 5/11/2016 2:45:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>DUPRes.</u>	<u>RPD</u>	<u>RPDLim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	0.196	0.199	1.5	20	

#### LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - MB: A160511015-MB

Prep Date: 5/11/2016

MB Anal. Date: 5/11/2016 2:45:00PM

Units: mg/L

LCS Anal. Date: 5/11/2016 2:45:00PM

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>
Nitrate-Nitrite as Nitrogen	ND	0.525	0.527	99.6	90 - 110		

#### MS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method - Parent: A1604400-02A

Prep Date: 5/11/2016

Samp. Anal. Date: 5/11/2016 2:45:00PM

Units: mg/L

MS Anal. Date: 5/11/2016 2:45:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>MSRes.</u>	<u>SPLev</u>	<u>Recov.</u>	<u>Recov Lim</u>	<u>Flag</u>
Nitrate-Nitrite as Nitrogen	0.196	0.483	0.275	105	80 - 120	

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**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

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: SGS Environmental Services Inc.

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: R1605121044-3

### QUALITY CONTROL REPORT

#### LCS REPORT

Analysis: 200.8 - Metals by ICP/MS - Total

MB: 1322233

Prep Date: 5/2/2016

MB Anal. Date: 5/5/2016 7:47:00PM

Units: ug/L

LCS Anal. Date: 5/5/2016 7:50:00PM

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	10,500	10,000	105	85 - 115		
Iron	ND	5,050	5,000	101	85 - 115		
Magnesium	ND	10,600	10,000	106	85 - 115		

#### 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): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Project Number:

Prep Batch: F160504004

### QUALITY CONTROL REPORT

#### SAMPLE DUPLICATE REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

Base Sample: A1604406-03D

Prep Date: 5/2/2016

Samp. Anal. Date: 5/2/2016 11:50:00PM

Units: mg/L

DUP Anal. Date: 5/2/2016 11:50:00PM

Matrix: Aqueous

<u>Analyte Name</u>	<u>SampResult</u>	<u>DUPRes.</u>	<u>RPD</u>	<u>RPDLim</u>	<u>Flag</u>
Phosphorous, Total	0.153	0.157	2.6	0	OUT

#### LCS REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

MB: F160504004-MB

Prep Date: 5/2/2016

MB Anal. Date: 5/2/2016 11:50:00PM

Units: mg/L

LCS Anal. Date: 5/2/2016 11:50:00PM

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	0.349	0.333	105	90 - 110		

#### MS/MSD REPORT

Analysis: SM4500-PE - Total Phos HACH 8190

Parent: A1604406-03D

Prep Date: 5/2/2016

Samp. Anal. Date: 5/2/2016 11:50:00PM

Units: mg/L

MS Anal. Date: 5/2/2016 11:50:00PM MSD Anal. Date: 5/2/2016 11:50:00PM 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	0.153	0.215	0.280	0.0646	0.129	101	101	26.3	80 - 120	20	

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**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

Workorder (SDG): A1604406

Project: KWF Baseline Monitoring 2016

Client: Kenai Watershed Forum

Client Project Number: 2016

### QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID: 178,782 Lab Project Number: A1604406

Prep Date: 5/2/2016

Lab Method Blank Id: F160504004-MB

Prep Batch ID: F160504004

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>
A1604406-01D	RM 0-No Name Creek		5/2/2016 11:50:00PM
A1604406-02D	RM 0-No Name Creek Duplicate		5/2/2016 11:50:00PM
A1604406-03D	RM 1.5-Kenai City Dock		5/2/2016 11:50:00PM
F160504004-LCS	LCS		5/2/2016 11:50:00PM
A1604406-03D-DUP	DUP		5/2/2016 11:50:00PM
A1604406-03D-MS	MS		5/2/2016 11:50:00PM
A1604406-03D-MSD	MSD		5/2/2016 11:50:00PM

Prep Date: 5/11/2016

Lab Method Blank Id: A160511015-MB

Prep Batch ID: A160511015

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>
A1604400-02A	Batch QC		5/11/2016 2:45:00PM
A1604406-01A	RM 0-No Name Creek		5/11/2016 2:45:00PM
A1604406-02A	RM 0-No Name Creek Duplicate		5/11/2016 2:45:00PM
A1604406-03A	RM 1.5-Kenai City Dock		5/11/2016 2:45:00PM
A160511015-LCS	LCS		5/11/2016 2:45:00PM
A1604400-02A-DUP	DUP		5/11/2016 2:45:00PM
A1604400-02A-MS	MS		5/11/2016 2:45:00PM

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### QC BATCH ASSOCIATIONS - BY METHOD BLANK

**Lab Project ID:** 178,782      **Lab Project Number:** A1604406

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Prep Date: 5/2/2016

Lab Method Blank Id: 1322233

Prep Batch ID: R1605121044-3

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>
A1604406-01B	RM 0-No Name Creek		5/5/2016 8:05:00PM
A1604406-02B	RM 0-No Name Creek Duplicate		5/5/2016 8:08:00PM
A1604406-03B	RM 1.5-Kenai City Dock		5/10/2016 11:28:00AM
1322234	LCS for HBN 1732757 [MXX/29695]		5/5/2016 7:50:00PM
1322236	1322235 MS FOR [MXX29695]		5/5/2016 7:56:00PM
1322238	1322237 MS FOR [MXX29695]		5/5/2016 8:32:00PM

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## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### DATA FLAGS AND DEFINITIONS

The PQL is the Method Quantitation Limit.

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

Result Field:

< = Not Detected at or above the Reporting Limit shown

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 ARS 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. When results are provided from a subcontract laboratory, ARS reflects their data flags.

## Detailed Analytical Report

ARS Aleut Analytical

Workorder (SDG): A1604406

**Project:** KWF Baseline Monitoring 2016

**Client:** Kenai Watershed Forum

**Client Project Number:** 2016

### REPORTING CONVENTIONS FOR THIS REPORT

A1604406

<u>TestPkgName</u>	<u>Basis</u>	<u># Sig Figs</u>	<u>Reporting Limit</u>
200.8 (Aqueous) - Dissolved 200.8 Metals	As Received	2	Report to PQL
200.8 (Aqueous) - Total	As Received	2	Report to PQL
4500-NO3E (Aqueous) - Nitrate+Nitrite pres	As Received	3	Report to PQL
4500-PE/4500-PB (Aqueous) - Total Phos HACH 8190	As Received	2	Report to PQL



ARS Alcor Analytical

# AAA Chain of Custody

Anchorage Laboratory

4307 Arctic Blvd

Anchorage, AK 99503

907.256.2155

907.256.6634 fax

Mat-Su Service Center

701 East Parks Highway #203

Wasilla, AK 99654

907.373.5440

Fairbanks Laboratory

475 Hall Street

Fairbanks, AK 99701

907.456.3116

907.456.3126 fax

ARS Corporate Office

2609 North River Road

Port Allen, LA 70767

225.381.2991

225.381.2996 fax

Chain of Custody No:

Page \_\_\_\_ of \_\_\_\_

Client Name & Address:

Kenai Watershed Forum

44129 Sterling Hwy

Soldotna, AK 99669

Contact Person: Brandon Bornemann

Phone No: (907) 260-5449

Fax No: (907) 260-5412

E-mail: branden@kenaiwatershed.org

Special Instructions/Comments:

TEAM ID: Kenai Peninsula Borough  
Project Name: KWF Baseline Monitoring - April 2016

Turnaround Time for Results (TAT)

Standard

Expedited (< 10 days, prior authorization required)

(please specify due date below, add if changes may apply)

Results Due Date:

P.O. or Contract

Section To be Completed by AAA

Quote ID No: A16030019

LG#:

A16044016

Account #:

Cost:

Credit Card:

Invoice to Name & Address:

Lab Bottle Order No:

Client Sample Identification / Location

Date Sampled

Time Sampled

Matrix (S-DW-WW-Other)

No. of Containers

Nitrate SM4500-NO3E

Lot #: 445 A62

Pres: H2SO4

200.8 Metals by ICP-Total TR

Lot #: 445 2981

Pres: HNO3

200.8 Dissolved Metals

Lot #: 445 2981

Pres: HNO3

Total Phos SM4500

Lot #: 4405A62

Pres: H2SO4

Lot #:

Pres:

Lot #:

Pres:

Lot #:

Pres:

Field Preserved

Field Filtered

MS/MSD ?

RM 0 --- No Name Creek

RM 0 --- No Name Creek Duplicate

RM 1.5- Kenai City Dock

Collected/Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by:

Date

Time

Relinquished by:

Date

Time

Received by:

Date

Time

Name of Sampler: (printed)

Morgan Alvord + Bryan Harris

To be Completed by AAA

Chain-of-Custody Seal?

ANC

WAS

FBKS

Initiated By:

Temp/Loc:

Thermo ID#:

Shipping Via:

4.9

NA

150187391

Client