

ARS Aleut Analytical, LLC 3710 Woodland Dr. Suite 900 Anchorage, AK 99517 Phone: 907-258-2155 Fax: 907-258-6634

5/16/2018

Kenai Watershed Forum 44129 Sterling Highway Soldotna, AK 99669 Attn: Jeff Sires Work Order #: A1804325

Date: 5/16/2018

Work ID: Kenai Penn Borough Date Received: 4/24/2018 Proj #: Kenai Penn Borough

Sample Identification

Lab Sample Number	Client Description	Lab Sample Number	Client Description
A1804325-01	RM 0 - No Name Creek	A1804325-02	RM 1.5 - Kenai City Dock
A 1804325-03	RM 1.5 - Kenai City Dock Dup		

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,

Jerry Baker Project Manager

"The Science of Analysis, The Art of Service"

Case Narrative

ARS Aleut Analytical, LLC Work Order: A1804325

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, 21st Edition, 2005.

SAMPLE RECEIPT:

Three (3) samples were received 4/24/2018 11:05 AM at ARS Aleut Analytical - Anchorage. Samples were received at a temperature of 8.5 deg C.in cooler 1 at ARS Aleut Analytical. The samples were received in good condition and in order per chain of custody.

Samples requiring metals analyses were subcontracted to Test America - Denver and arrived 4/27/2018 9:10 AM and at a temperature of 16.7°C.

Samples requiring inorganic analyses were subcontracted to Test America - Houston and arrived 4/27/2018 9:10 AM and at a temperature of 0.6°C. Please see sample results for individual analysis locations.

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 Analytica's internal quality assurance and quality control program. Any deviations in quality control parameters for specific analyses are noted in the following text.

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

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

The following is a subcontracted tests and have been represented to us as having met criteria:

Test Method: 200.7 - Metals by ICP - 200.7 metals - Aqueous

Test Method: 200.8 - Metals by ICP/MS - Dissolved 200.8 Metals - Aqueous MS/MSD and DUP OUTLIERS:

Zinc 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.

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

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

7440-50-8

7439-92-1

ND

ND

Client Sample Name: RM 0 - No Name Creek

Matrix:						1.11 d. 15 d	4/04/0010	0.50.00435
1/14/11/1	Aqueous				C	ollection Date:	4/24/2018	9:56:00AM
The following test was	conducted by: ARS Aleut	Analytical,	LLC					
Lab Sample Number:	A1804325-01A					Analysis Date:	5/1/2018	3:42:00PM
Prep Date:	05-01-2018 15:05					Instrument:	Thermos	pectr
Analytical Method ID:	SM4500-NO3E - Nitrog	en (Nitrate),	Cadmium Reduc	ction Me	ethod -	Nile Name:		
Prep Method ID:						Dilution Factor:	1	
Prep Batch Number:	A180502005							
Report Basis:	As Received					Analyst Initials:	AAS/CS/.	JR
Sample prep wt./vol:	25.00 ml					Prep Extract Vol:	25.00	ml
pH on receipt:	< 2.00							
<u>Analyte</u>	CASNo	Result	Flags Units	<u>PQL</u>	<u>MDL</u>			<u>run #:</u>
Nitrate-Nitrite as Nitrogen		ND	mg/L	0.10	0.028			1
The following test was	conducted by: TestAmeri	ca - Houston	1					
Lab Sample Number:	A1804325-01D					Analysis Date:	5/10/201	8 2:25:00PM
Prep Date:	05-10-2018 05:05					Instrument:		
Analytical Method ID:	SM4500-PE - Phos					File Name:		
Prep Method ID:	4500-PB					Dilution Factor:	1	
Prep Batch Number:	R1805150602-4							
Report Basis:	As Received					Analyst Initials:	SC1	
Sample prep wt./vol:						Prep Extract Vol:		ml
pH on receipt:	< 2.00							
Analyte	< 2.00 <u>CASNo</u>	Result	Flags Units	<u>PQL</u>	MDL			<u>run #:</u>
pri on receipt.		<u>Result</u> 0.075	Flags Units mg/L	PQL 0.050	MDL 0.021			<u>run #:</u> 1
Analyte Phosphorous, Total		0.075						
Analyte Phosphorous, Total	<u>CASNo</u>	0.075				Analysis Date:	5/2/2018	1
Analyte Phosphorous, Total The following test was	CASNo conducted by: TestAmeri	0.075				Analysis Date: Instrument:	5/2/2018	1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date:	CASNo conducted by: TestAmeri A1804325-01C	0.075 ca - Denver	mg/L	0.050		•	5/2/2018	1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05	0.075 ca - Denver	mg/L	0.050		Instrument:	5/2/2018	1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05	0.075 ca - Denver	mg/L	0.050		Instrument: File Name:		1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/	0.075	mg/L	0.050		Instrument: File Name:		1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID: Prep Batch Number: Report Basis: Sample prep wt./vol:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/ R1805140626-11 As Received	0.075	mg/L	0.050		Instrument: File Name: Dilution Factor:	1	1
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID: Prep Batch Number: Report Basis: Sample prep wt./vol:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/	0.075	mg/L	0.050		Instrument: File Name: Dilution Factor: Analyst Initials:	1	5:34:00PM
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID: Prep Batch Number: Report Basis: Sample prep wt./vol:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/ R1805140626-11 As Received	0.075	mg/L	0.050		Instrument: File Name: Dilution Factor: Analyst Initials:	1	5:34:00PM
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID: Prep Batch Number: Report Basis: Sample prep wt./vol: pH on receipt:	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/ R1805140626-11 As Received < 2.00	0.075 ca - Denver MS - Dissolv	mg/L ved 200.8 Metals	0.050	0.021	Instrument: File Name: Dilution Factor: Analyst Initials:	1	1 5:34:00PM ml
Analyte Phosphorous, Total The following test was Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID: Prep Batch Number: Report Basis: Sample prep wt./vol: pH on receipt: Analyte	CASNo conducted by: TestAmeri A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/ R1805140626-11 As Received < 2.00 CASNo	0.075 ca - Denver MS - Dissolv Result	mg/L ved 200.8 Metals Flags Units	0.050 PQL	0.021	Instrument: File Name: Dilution Factor: Analyst Initials: Prep Extract Vol:	1	1 5:34:00PM ml run #:

ug/L

ug/L

0.20

0.10

2.0

1.0

Copper

Lead

Detailed Analytical Report ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 0 - No Name Creek

Matrix:	Aqueous					(Collection Date:	4/24/2018	9:56:00AM
Lab Sample Number: Prep Date: Analytical Method ID:	A1804325-01C 05-01-2018 07:05 200.8 - Metals by ICP/	MS - Dissol	ved 200	0.8 Metals			Analysis Date: Instrument: File Name:	5/7/2018	3:54:00PM
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-11								
Report Basis:	As Received						Analyst Initials:	LMT	
Sample prep wt./vol:	2.00						Prep Extract Vol:		ml
pri on receipt.	< 2.00								
Analyte Zinc	<u>CASNo</u> 7440-66-6	<u>Result</u> 97.0	<u>Flags</u>	Units ug/L	<u>PQL</u> 10	MDL 2.0			<u>run #:</u> 2
The following test was	conducted by: TestAmeri	ca - Denver							
Lab Sample Number:	A1804325-01B						Analysis Date:	5/4/2018	12:08:00AM
Prep Date:	05-03-2018 08:05						Instrument:		
Analytical Method ID:	200. 7 - Metals by ICP -	200.7 metal	S				File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10								
Report Basis:	As Received						Analyst Initials:	SJS	
Sample prep wt./vol:							Prep Extract Vol:		ml
Analyte Calcium	<u>CASNo</u> 7440-70-2	<u>Result</u> 7,600	<u>Flags</u>	Units ug/L	PQL 200	MDL 35			<u>run #:</u> 1
Magnesium	7439-96-4	2,800		ug/L	200	11			
Lab Sample Number: Prep Date:	A1804325-01B 05-03-2018 08:05						Analysis Date: Instrument:	5/7/2018	6:43:00PM
Analytical Method ID:	200. 7 - Metals by ICP -	200.7 metal	S				File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10								
Report Basis:	As Received						Analyst Initials:	SJS	
Sample prep wt./vol:							Prep Extract Vol:		ml
Analyte Iron	<u>CASNo</u> 7439-89-6	<u>Result</u> 4,500	Flags	Units ug/L	<u>PQL</u> 100	MDL 22			<u>run #:</u> 2

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 1.5 - Kenai City Dock

Chene Sample Ivame.	KWI 1.5	- Kenai C	ity Dock					
Matrix:	Aqueous				C	Collection Date:	4/24/2018	8:42:00AM
The following test was	conducted by: ARS Ale	ut Analytical,	LLC					
Lab Sample Number:	A1804325-02A					Analysis Date:	5/1/2018	3:42:00PM
Prep Date:	05-01-2018 15:05					Instrument:	Thermos	spectr
Analytical Method ID:	SM4500-NO3E - Nitro	ogen (Nitrate),	Cadmium Redu	iction Me	ethod -	Nile Name:		
Prep Method ID:						Dilution Factor:	1	
Prep Batch Number:	A180502008							
Report Basis:	As Received					Analyst Initials:	AAS/CS/	JR
Sample prep wt./vol:						Prep Extract Vol:	25.00	ml
pH on receipt:	< 2.00							
<u>Analyte</u>	CASNo	Result	Flags Units	<u>PQL</u>	<u>MDL</u>			<u>run #:</u>
Nitrate-Nitrite as Nitrogen		ND	mg/L	0.10	0.028			1
The following test was	conducted by: TestAme	rica - Houston	1					
Lab Sample Number:	A1804325-02D					Analysis Date:	5/10/201	8 2:25:00PM
Prep Date:	05-10-2018 05:05					Instrument:		
Analytical Method ID:	SM4500-PE - Phos					File Name:		
Prep Method ID:	4500-PB					Dilution Factor:	1	
Prep Batch Number:	R1805150602-4							
Report Basis:	As Received					Analyst Initials:	SC1	
Sample prep wt./vol:						Prep Extract Vol:		ml
pH on receipt:	< 2.00							
Analyte Phosphorous, Total	<u>CASNo</u>	Result	Flags Units mg/L	PQL 0.050	MDL 0.021			<u>run #:</u> 1
		0.094	mg/L	0.030	0.021			1
	conducted by: TestAme	rica - Denver						
Lab Sample Number:	A1804325-02C					Analysis Date:	5/2/2018	3 5:37:00PM
Prep Date:	05-01-2018 07:05	D/MC D:===1-		_		Instrument:		
•	200.8 - Metals by ICI	P/MS - Dissor	ved 200.8 Metai	S		File Name:	1	
Prep Method ID:	D100514062644					Dilution Factor:	1	
Prep Batch Number:	R1805140626-11					A 1 (T 12 1	INT	
Report Basis:	As Received					Analyst Initials:	LMT	1
Sample prep wt./vol:	< 2.00					Prep Extract Vol:		ml
pir on receipt.	•							
Analyte Arsenic	<u>CASNo</u>	<u>Result</u> ND	Flags Units ug/L	<u>PQL</u> 5.0	MDL 0.50			<u>run #:</u>
Cadmium	7440-38-2		_	1.0	0.30	1		1
	7440-43-9	ND ND	ug/L	3.0	0.040	,		
Chromium	7440-47-3	ND	ug/L	3.0	0.00			

ug/L

ug/L

0.20

0.10

2.0

1.0

ND

ND

7440-50-8

7439-92-1

Copper

Lead

Detailed Analytical Report ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 1.5 - Kenai City Dock

Matrix:	Aqueous					(Collection Date:	4/24/2018	8:42:00AM
Lab Sample Number: Prep Date: Analytical Method ID:	A1804325-02C 05-01-2018 07:05 200.8 - Metals by ICP/	MS - Dissolv	ed 200	0.8 Metals			Analysis Date: Instrument: File Name:	5/7/2018	3:57:00PM
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-11								
Report Basis:	As Received						Analyst Initials:	LMT	
Sample prep wt./vol:	< 2.00						Prep Extract Vol:		ml
pri on receipt.		D 14	T21	TT - *4	DOL	MDI			44.
Analyte Zinc	<u>CASNo</u> 7440-66-6	<u>Result</u> 51.0	Flags	Units ug/L	10	<u>MDL</u> 2.0			<u>run #:</u> 2
The following test was	conducted by: TestAmer	ica - Denver							
Lab Sample Number: Prep Date:	A1804325-02B 05-03-2018 08:05						Analysis Date: Instrument:	5/4/2018	12:11:00AM
Analytical Method ID:	200. 7 - Metals by ICP -	200.7 metals					File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10							Q.T.Q.	
Report Basis: Sample prep wt./vol:	As Received						Analyst Initials: Prep Extract Vol:	SJS	ml
	CACNI	D 14	T21	TT . *4	DOL	MDI	Prep Extract voi:		
<u>Analyte</u> Calcium	<u>CASNo</u> 7440-70-2	Result 130,000	Flags	Units ug/L	200	MDL 35			<u>run #:</u> 1
Magnesium	7439-96-4	440,000		ug/L	200	11			
Lab Sample Number: Prep Date:	A1804325-02B 05-03-2018 08:05						Analysis Date: Instrument:	5/7/2018	6:46:00PM
Analytical Method ID:	200. 7 - Metals by ICP -	200.7 metals					File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10							272	
Report Basis:	As Received						Analyst Initials:	SJS	1
Sample prep wt./vol:	CACN	D 14	E	WT . *4	DO.	MDI	Prep Extract Vol:		ml
Analyte Iron	<u>CASNo</u> 7439-89-6	<u>Result</u> 2,000	Flags	Units ug/L	100	MDL 22			<u>run #:</u> 2

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 1.5 - Kenai City Dock Duplicate

Chefit Sample Ivame.	KW 1.5	- Kenai C	Ity Dock	Dupnca	te			
Matrix:	Aqueous				(Collection Date:	4/24/2018	8:55:00AM
The following test was	conducted by: ARS Aleu	ıt Analytical,	LLC					
Lab Sample Number:	A1804325-03A					Analysis Date:	5/1/2018	3:42:00PM
Prep Date:	05-01-2018 15:05					Instrument:	Thermos	pectr
Analytical Method ID:	SM4500-NO3E - Nitro	gen (Nitrate),	, Cadmium R	eduction M	ethod -	Nile Name:		
Prep Method ID:						Dilution Factor:	1	
Prep Batch Number:	A180502005							
Report Basis:	As Received					Analyst Initials:	AAS/CS/J	R
Sample prep wt./vol:	25.00 ml					Prep Extract Vol:	25.00	ml
pH on receipt:	< 2.00							
<u>Analyte</u>	CASNo	Result	Flags Units		MDL			<u>run #:</u>
Nitrate-Nitrite as Nitrogen		0.132	mg/	L 0.10	0.028	3		1
The following test was	conducted by: TestAmer	rica - Houstor	1					
Lab Sample Number:	A1804325-03D					Analysis Date:	5/10/201	8 2:25:00PM
Prep Date:	05-10-2018 05:05					Instrument:		
Analytical Method ID:	SM4500-PE - Phos					File Name:		
Prep Method ID:	4500-PB					Dilution Factor:	1	
Prep Batch Number:	R1805150602-4							
Report Basis:	As Received					Analyst Initials:	SC1	
Sample prep wt./vol:						Prep Extract Vol:		ml
pH on receipt:	< 2.00							
<u>Analyte</u>	CASNo	Result	Flags Units	<u>PQL</u>	MDL			<u>run #:</u>
Phosphorous, Total		0.18	mg/	L 0.050	0.021	<u> </u>		1
The following test was	conducted by: TestAmer	rica - Denver						
Lab Sample Number:	A1804325-03C					Analysis Date:	5/2/2018	5:41:00PM
Prep Date:	05-01-2018 07:05					Instrument:		
Analytical Method ID:	200.8 - Metals by ICP	/MS - Dissol	ved 200.8 Me	etals		File Name:		
Prep Method ID:						Dilution Factor:	1	
Prep Batch Number:	R1805140626-11							
Report Basis:	As Received					Analyst Initials:	LMT	
Sample prep wt./vol:						Prep Extract Vol:		ml
pH on receipt:	< 2.00							
<u>Analyte</u>	<u>CASNo</u>	Result	Flags Units		MDL			<u>run #:</u>
Arsenic	7440-38-2	ND	ug/		0.50			1
Cadmium	7440-43-9	ND	ug/		0.040			
Chromium	7440-47-3	ND	ug/	L 3.0	0.88			
Copper	7440-50-8	ND	ug/	L 2.0	0.20			
Lead	7439-92-1	ND	ug/	L 1.0	0.10			

ARS Aleut Analytical, LLC

Detailed Analytical Report

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Client Sample Report

Client Sample Name: RM 1.5 - Kenai City Dock Duplicate

Matrix:	Aqueous			(Collection Date:	4/24/2018	8:55:00AM		
Lab Sample Number: Prep Date: Analytical Method ID:	A1804325-03C 05-01-2018 07:05 200.8 - Metals by ICP/N	MS - Dissolv	ed 200	.8 Metals			Analysis Date: Instrument: File Name:	5/7/2018	4:01:00PM
Prep Method ID:	200.0 Metals by left	15 215501	200	.o metars			Dilution Factor:	1	
Prep Batch Number:	R1805140626-11								
Report Basis: Sample prep wt./vol:	As Received						Analyst Initials: Prep Extract Vol:	LMT	ml
1 1 1	< 2.00						riep Extract voi.		1111
Analyte Zinc	<u>CASNo</u> 7440-66-6	<u>Result</u> 76.0	Flags	Units ug/L	<u>PQL</u> 10	MDL 2.0			<u>run #:</u> 2
ŭ	conducted by: TestAmeric	ca - Denver							
Lab Sample Number: Prep Date:	A1804325-03B 05-03-2018 08:05	•••					Analysis Date: Instrument:	5/4/2018	12:13:00AM
Analytical Method ID: Prep Method ID:	200. 7 - Metals by ICP -	200.7 metals					File Name: Dilution Factor:	1	
Prep Batch Number:	R1805140626-10						Dilution Factor.	1	
Report Basis: Sample prep wt./vol:	As Received						Analyst Initials: Prep Extract Vol:	SJS	ml
Analyte Calcium		Result 140,000	Flags	Units ug/L ug/L	PQL 200 200	MDL 35			<u>run #:</u> 1
Magnesium Lab Sample Number:	7439-96-4 A1804325-03B	470,000		ug/L	200	11	Analysis Date:	5/7/2018	6:48:00PM
Prep Date: Analytical Method ID:	05-03-2018 08:05 200. 7 - Metals by ICP -	200.7 metals					Instrument: File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10								
Report Basis:	As Received						Analyst Initials:	SJS	ml
Sample prep wt./vol:	CACN	D	TZI. ·	TI:4	DOL	MDI	Prep Extract Vol:		ml #4
Analyte Iron	<u>CASNo</u> 7439-89-6	Result 2,900	<u>Flags</u>	Units ug/L	<u>PQL</u> 100	<u>MDL</u> 22			<u>run #:</u> 2

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB

Matrix: Aqueous Collection Date: 5/1/2018 3:42:00PM

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

Lab Sample Number: A180502005-MB Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05 Instrument: Thermospectr

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

Prep Method ID: Dilution Factor: 1

Prep Batch Number: A180502005

Report Basis: As Received Analyst Initials: AAS/CS/JR
Sample prep wt./vol: 25.00 ml Prep Extract Vol: 25.00 ml

pH on receipt: 0.00

AnalyteCASNoResultFlagsUnitsPQLMDLmg/Lmg/L0.100.028Nitrate-Nitrite as NitrogenNDmg/L0.100.0281

Lab Sample Number: A180502008-MB Analysis Date: 5/1/2018 3:42:00PM

Prep Date: 05-01-2018 15:05 Instrument: Thermospectr

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

Prep Method ID: Dilution Factor: 1

Prep Batch Number: A180502008

Report Basis: As Received Analyst Initials: AAS/CS/JR
Sample prep wt./vol: 25.00 ml Prep Extract Vol: 25.00 ml

pH on receipt: 0.00

AnalyteCASNoResultFlagsUnitsPQLMDLrun #:Nitrate-Nitrite as NitrogenNDmg/L0.100.0281

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB 600-238187/3-A

Matrix: Collection Date: 5/10/2018 5:12:00AM

The following test was conducted by: TestAmerica - Houston

Lab Sample Number: MB 600-238187/3-A Analysis Date: 5/10/2018 2:25:00PM

Prep Date: 05-10-2018 05:05 Instrument: Analytical Method ID: SM4500-PE - Phos File Name:

Prep Method ID: 4500-PB Dilution Factor: 1

Prep Batch Number: R1805150602-4

Report Basis: As Received Analyst Initials: SC1

Sample prep wt./vol: Prep Extract Vol: ml

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Report Section: Method Blank Report

Client Sample Name: MB 280-413331/1-A

Matrix:	<u>-</u>					(Collection Date:	5/3/2018	8:41:00AM
The following test was	conducted by: TestAmeri	ca - Denver							
Lab Sample Number:	MB 280-413331/1-A						Analysis Date:	5/3/201	8 11:28:00PM
Prep Date:	05-03-2018 08:05						Instrument:		
Analytical Method ID:	200. 7 - Metals by ICP -	200.7 metals					File Name:		
Prep Method ID:							Dilution Factor:	1	
Prep Batch Number:	R1805140626-10								
Report Basis:	As Received						Analyst Initials:	SJS	
Sample prep wt./vol:							Prep Extract Vol:		ml
Analyte Calcium	<u>CASNo</u> 7440-70-2	<u>Result</u> ND	Flags	Units ug/L	<u>PQL</u> 200	MDL 35			<u>run #:</u> 1
Magnesium	7439-96-4	ND		ug/L	200	11			
Lab Sample Number: Prep Date: Analytical Method ID: Prep Method ID:	MB 280-413331/1-A 05-03-2018 08:05 200. 7 - Metals by ICP -	200.7 metals					Analysis Date: Instrument: File Name: Dilution Factor:	5/4/201	8 2:43:00PM
Prep Batch Number:	R1805140626-10						Different Lactor.	-	
Report Basis:	As Received						Analyst Initials:	SJS	
Sample prep wt./vol:							Prep Extract Vol:		ml
Analyte Iron	<u>CASNo</u> 7439-89-6	<u>Result</u> ND	Flags	Units ug/L	<u>PQL</u> 100	MDL 22			<u>run #:</u> 2

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Tests Run at: Analytica Environmental Laboratories - Anchorage, Alaska

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Project Number: QUALITY CONTROL REPORT

Prep Batch: A180502008

LCS REPORT

Analysis: SM4500-NO3E - Nitrogen (Nitrate), Cadmium Reduction Method -MB: A180502008-MB

Prep Date: 5/1/2018

Analyte Name SampResult LCSRes. SPLev Recov. Recov. Recov Lim RPDLim Flag

Nitrate-Nitrite as Nitrogen ND 0.702 0.690 101.7 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.

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

Tests Run at: TestAmerica - Denver

Workorder (SDG): A1804325

Project: Kenai Penn Borough

Project Number:

QUALITY CONTROL REPORT

Prep Batch: R1805140626-10

LCS REPORT

Analysis: 200. 7 - Metals by ICP - 200.7 metals MB: MB 280-413331/1-A

Prep Date: 5/3/2018

MB Anal. Date: 5/3/2018 11:28:00PM Units: ug/L

LCS Anal. Date: 5/3/2018 11:31:00PM Matrix:

Analyte Name Recov Lim RPDLim Flag SampResult LCSRes. **SPLev** Recov. Calcium 46,600 50,000 93.2 90 - 111 ND ND 100.0 89 - 115 Iron 1.000 1.000 101.2 90 - 113 Magnesium ND 50,600 50,000

Prep Batch: R1805150602-4

LCS REPORT

Analysis: SM4500-PE - Phos MB: MB 600-238187/3-A

Prep Date: 5/10/2018

MB Anal. Date: 5/10/2018 2:25:00PM Units: mg/L

LCS Anal. Date: 5/10/2018 2:25:00PM

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>

Phosphorous, Total ND 0.477 0.500 95.4 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.

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID:	194,276	Lab Project Number:	A1804325	
Lab Method Blank Id: Prep Batch ID: Method:	A180502005-MB A180502005 SM4500-NO3E - Nit	rogen (Nitrate), Cadmiun	n Reduction Method -	Prep Date: 5/1/2018
				dumlicators
		re associated with the follow <u>Data</u> F		•
SampleNum	ClientSampleName	<u>Datar</u>	<u>ne</u>	AnalysisDate
A1804322-01B	Batch QC			5/1/2018 3:42:00PM
A1804325-01A	RM 0 - No Name Creek			5/1/2018 3:42:00PM
A1804325-03A	RM 1.5 - Kenai City Do	ck Duplicate		5/1/2018 3:42:00PM
A180502005-LCS	LCS			5/1/2018 3:42:00PM
A1804322-01B-DUP	DUP			5/1/2018 3:42:00PM
A1804322-01B-MS	MS			5/1/2018 3:42:00PM
				Prep Date: 5/1/2018
Lab Method Blank Id:	A180502008-MB			
Prep Batch ID:	A180502008			
Method:	SM4500-NO3E - Nit	rogen (Nitrate), Cadmiun	n Reduction Method -	
This Method blank and	sample preparation batch as	re associated with the follow	ing samples, spikes, and	duplicates:
SampleNum	ClientSampleName	<u>DataF</u>	<u>ile</u>	<u>AnalysisDate</u>
A1804319-01B	Batch QC			5/1/2018 3:42:00PM
A1804325-02A	RM 1.5 - Kenai City Do	ck		5/1/2018 3:42:00PM
A180502008-LCS	LCS			5/1/2018 3:42:00PM
A1804319-01B-DUP	DUP			5/1/2018 3:42:00PM
A1804319-01B-MS	MS			5/1/2018 3:42:00PM
				Prep Date: 5/3/2018
Lab Method Blank Id: Prep Batch ID: Method:	MB 280-413331/1-A R1805140626-10 200. 7 - Metals by IC			
This Method blank and	sample preparation batch as	re associated with the follow	ing samples, spikes, and	duplicates:
SampleNum	ClientSampleName	<u>Data</u> F	<u>ile</u>	<u>AnalysisDate</u>
A1804325-01B	RM 0 - No Name Creek			5/4/2018 12:08:00AM
A1804325-01B	RM 0 - No Name Creek			5/7/2018 6:43:00PM
A1804325-02B	RM 1.5 - Kenai City Do	ck		5/4/2018 12:11:00AM
A1804325-02B	RM 1.5 - Kenai City Do			5/7/2018 6:46:00PM
A1804325-03B	RM 1.5 - Kenai City Do			5/4/2018 12:13:00AM
A1804325-03B	RM 1.5 - Kenai City Do	•		5/7/2018 6:48:00PM
	LCS 280-413331/2-A	wp		5/3/2018 11:31:00PM
	LCS 280-413331/2-A			5/4/2018 2:46:00PM
LCB 20U-413331/2-A	LCD 200-713331/2-A			5/7/2010 2.40.001 WI

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

QC BATCH ASSOCIATIONS - BY METHOD BLANK

Lab Project ID:	194,276	Lab Project Number:	Lab Project Number: A1804325					
				Prep Date: 5/10/2018				
Lab Method Blank Id:	MB 600-238187/	3-A						
Prep Batch ID:	R1805150602-4							
Method:	SM4500-PE - Ph	os						
This Method blank and	sample preparation bate	ch are associated with the follow	ring samples, spikes, and	duplicates:				
<u>SampleNum</u>	<u>ClientSampleName</u>	<u>Data F</u>	<u>file</u>	<u>AnalysisDate</u>				
A1804325-01D	RM 0 - No Name Cr	eek		5/10/2018 2:25:00PM				
A1804325-02D	RM 1.5 - Kenai City	Dock		5/10/2018 2:25:00PM				
A1804325-03D	RM 1.5 - Kenai City	Dock Duplicate		5/10/2018 2:25:00PM				
LCS 600-238187/4-A	LCS 600-238187/4-	A		5/10/2018 2:25:00PM				

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

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

ARS Aleut Analytical, LLC

Workorder (SDG): A1804325

Project: Kenai Penn Borough
Client: Kenai Watershed Forum
Client Project Number: Kenai Penn Borough

REPORTING CONVENTIONS FOR THIS REPORT

A1804325

TestPkgName	Basis	# Sig Figs	Reporting Limit
200.7 (Aqueous) - 200.7 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



AAA Chain of Custody

Custody form MUST be signed Please provide as much information as possible

3710 Woodland Dr. Suite 900 Anchorage, AK 99517 907-258-2155 907-258-6634 fax

Mat-Su Service Center 701 East Parks Highway #206 Wasilla, AK 9654 907.373,5440

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

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

Sampling Event ID:

Name of Sampler: (printed)		Relinquished by:		remideled by.	Relinquished hw	SAUN CARA	Relinquished by:	0	5	0	8	7	0	5	* No 1.3 - Nellal City Dock Duplicate	BM 15 Konsi City Dock	2 DM 1 h Known Clock	RM 0 -No Name Creek	Client Sample Identification (Name, Designation, Location, etc.)	Kit Preparation/Shipping Charge:	4/2	* 00000	Special Instructions/Requirements:	E-mail:	Fax No:	Phone No:	Contact Person:	Soldotna, AK 99669	44129 Sterling HWY	Kenai Watershed Forum	Client/Company Name & Address:
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