RILEYGROUP

August 9, 2019

Mr. Christopher Maurer, P.E.
Voluntary Cleanup Program
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue Southeast
Bellevue, Washington 98008-5452

RE: Supplemental Soil Sampling Technical Memorandum
Completed Cleanup – Sea-Alaska Industrial Electric, Inc.
415 Maple Avenue, Snohomish, Washington 98290
RGI Project No. 2018-240A
Ecology Cleanup Site ID: 417

Dear Christopher:

On behalf of Mr. Steve Klett of Sea-Alaska Industrial Electric, Inc., please find enclosed the Supplemental Soil Sampling Technical Memorandum dated August 9, 2019 regarding the above referenced property located at 415 Maple Avenue in Snohomish, Washington. RGI has also send a hard copy of this memo to NWRO for inclusion in the cleanup file.

The property is currently enrolled in the Voluntary Cleanup Program (VCP) and this report is submitted to augment documents provided with the VCP Application for Ecology's review and inclusion in the cleanup file for CSID 417.

RGI requests Ecology review and provide an opinion as to whether the Property meets the substantive requirements of MTCA (WAC 173-340) and if the Property is found deserving of a property specific *No Further Action* letter.

If you have any questions, or need additional information, please feel free to contact me at 425-415-0551.

Regards,

Audrey Heisey, LG, LHG
Senior Environmental Manager

cc: Mr. Steve Klett of Sea-Alaska Industrial Electric, LLC

Attachments: Supplemental Soil Sampling Technical Memorandum

Corporate Office
17522 Bothell Way Northeast
Bothell, Washington 98011
Phone 425.415.0551 ♦ Fax 425.415.0311

www.riley-group.com

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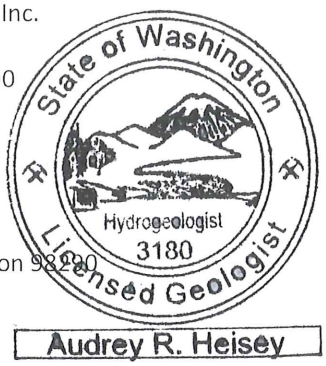
TECHNICAL MEMORANDUM

DATE: August 9, 2019

TO: Mr. Steve Klett
Sea-Alaska Industrial Electric, Inc.
415 Maple Avenue
Snohomish, Washington 98290

FROM: Audrey R. Heisey, LHG
The Riley Group, Inc.

SUBJECT: 415 Maple Avenue Property
Snohomish County, Washington 98290
RGI Project No. 2018-240A
Ecology Cleanup Site ID: 417



On August 23, 2019, RGI conducted supplemental soil sampling at 415 Maple Avenue, Snohomish, Washington 98290 (Property). RGI collected nine shallow soil samples to analyze for diesel-range hydrocarbons, motor oil-range hydrocarbons, volatile compounds, polychlorinated biphenyls, and lead. One soil sample was collected from the zero to nine inch interval and one soil sample was collected from the ten to 16 inch interval at each of the five sampling locations (figure 1). A summary of soil analytical results are provided in the attached table with full results provided in the attached laboratory analytical report. Please refer to the report, *Remedial Investigation Report, Riley Group, Inc. (RGI) Project No. 2018-240, dated May 10, 2019* (report) for a complete description of the background, determination of compliance points and cleanup levels used, cleanup actions performed, conceptual site model, analysis of the Site with respect to human health and the environment, and data/analysis that supports the request for No Further Action at the Property.

On August 24, 2019, per Quality Assurance and Quality Control (QA/QC) protocol, the samples collected from the Property were transferred to a Washington accredited laboratory (Friedman & Bruya, Inc.) from RGI under the signed chain-of-custody.

Analytical results did not detect diesel-range hydrocarbons, motor oil-range hydrocarbons, volatile compounds, or polychlorinated biphenyls above the laboratory detection limits. Lead (and methylene chloride (a common laboratory contaminant and flagged as such without further consideration)), were detected at concentrations below the selected cleanup level for lead in soil.

Reported analytical results were within designated QA/QC parameters. The laboratory analytical report, tables, and soil sampling location plan is attached. This information is intended to augment the report that was submitted with the Voluntary Cleanup Program application which requested Ecology provide a review and comment on the sufficiency of cleanup at the Property. Feel free to reach out to me at 425.415.0551 or audreyh@riley-group.com with questions or concerns

Attachments:
Laboratory Analytical Report Dated August 31, 2019
Table 1 Summary of Soil Sample Analytical Laboratory Results (cumulative)
Supplemental Soil Sampling Location Plan

CC: Christopher Maurer, P.E., Ecology VCP Project Manager (via email with hard copy to cleanup file #417)

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Bothell, Washington 98011
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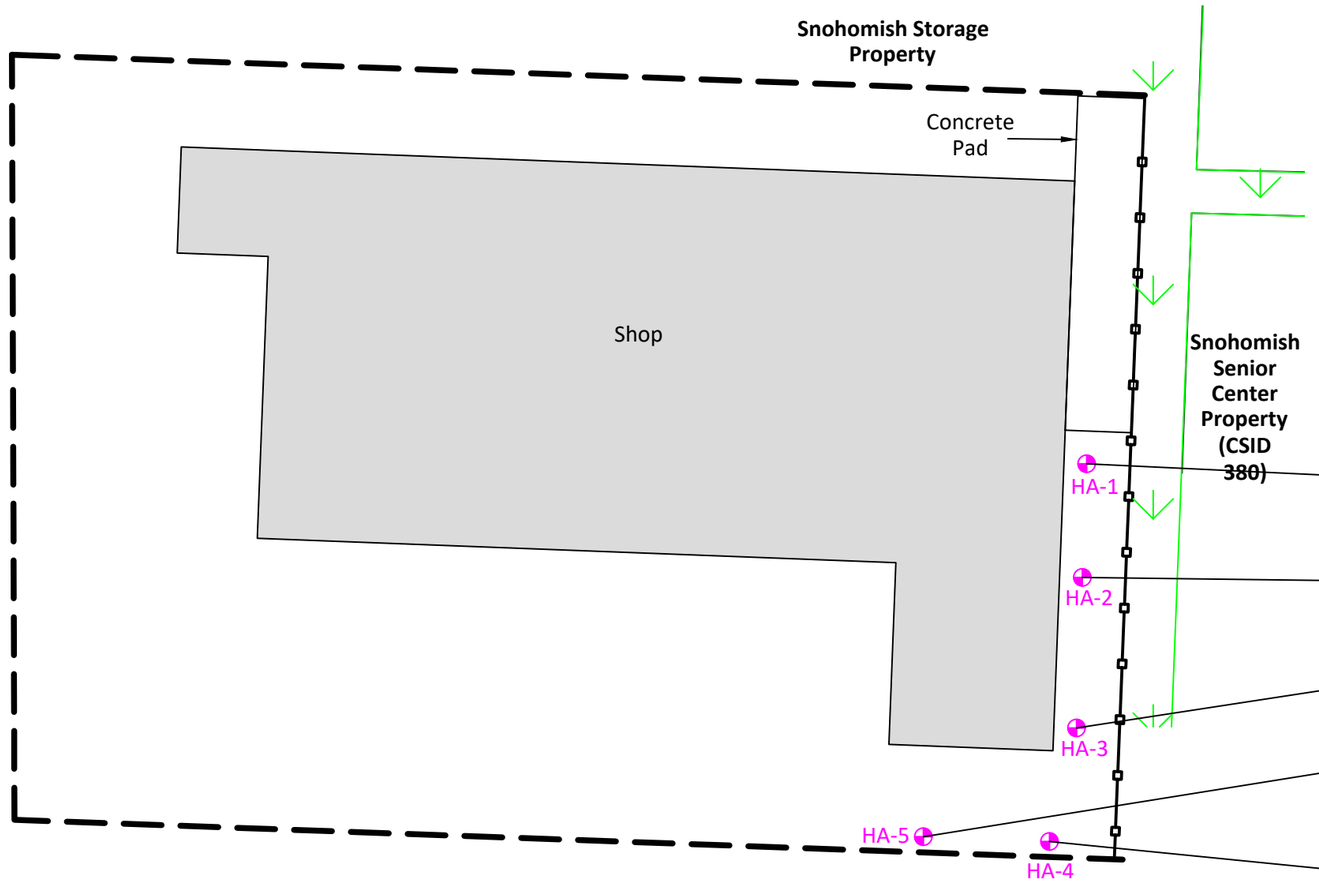

HA1								
Date	Depth	BTEX	DSL	Oil	VOCs	Naph	PCBs	Pb
07/23/19	0.75	ND	ND	ND	ND	ND	ND	118
	1.5	----	ND	ND	----	----	----	11.7

HA2								
Date	Depth	BTEX	DSL	Oil	VOCs	Naph	PCBs	Pb
07/23/19	0.75	ND	ND	ND	MC=0.60	ND	ND	28.4
	1.5	----	ND	ND	----	----	----	17.0

HA3								
Date	Depth	BTEX	DSL	Oil	VOCs	Naph	PCBs	Pb
07/23/19	0.75	ND	ND	ND	ND	ND	ND	**256**

HA5								
Date	Depth	BTEX	DSL	Oil	VOCs	Naph	PCBs	Pb
07/23/19	0.75	ND	ND	ND	MC=0.88 lc	ND	ND	149
	1.5	----	ND	ND	----	----	----	16.2

HA4								
Date	Depth	BTEX	DSL	Oil	VOCs	Naph	PCBs	Pb
07/23/19	0.75	ND	ND	ND	MC=0.55	ND	ND	74.0
	1.5	----	ND	ND	----	----	----	22.8

= Soil Analytical Data in mg/kg;

Depth = Feet below ground surface
BTEX = Benzene, toluene, ethylbenzene, xylenes
DSL/Oil = Diesel/oil total petroleum hydrocarbons
VOCs = Volatile organic carbons
MC = Methylene chloride
Naph. = Naphthalene
PCBs = Polychlorinated biphenyls
Pb = Lead
ND = Not detected above laboratory screening levels

Approximate Scale: 1"=20'

0 10 20 40

N

= Soil sample location by RGI, 07/23/19
= Property boundary with two foot concrete wall and fence
= Property boundary

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Phone: 425.415.0551
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Sea-Alaska Industrial Services | Figure 1

RGI Project Number 2018-240 | Supplemental Soil Sampling Plan | Date Drawn: 08/2019

Address: 415 Maple Avenue, Snohomish, Washington 98290

Table 1. Summary of Soil Sample Analytical Laboratory Results
Sea-Alaska Industrial Services
415 Maple Avenue, Snohomish, Washington 98290
The Riley Group, Inc. Project No. 2018-240A

Sample Number	Sample Depth	Sample Date	B	T	E	X	Diesel TPH	Oil TPH	EPH	Hexane	VOCs	Naph.	cPAHs	PCBs	Total MTCA Metals						TCLP Metals		
															As	Cd	Cr	CrVI	Pb	Hg	Cd	Cr	Pb
RGI Soil Samples Collected On-Property (2019)																							
HA1-0.75	0.75	07/23/19	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	----	----	ND	ND<0.05	----	ND<0.02	----	----	----	----	**118**	----	----	----	----
HA1-1.5	1.5	07/23/19	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	**11.7**	----	----	----	----
HA2-0.75	0.75	07/23/19	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	----	----	**MC = 0.60**	ND<0.05	----	ND<0.02	----	----	----	----	**28.4**	----	----	----	----
HA2-1.5	1.5	07/23/19	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	**17.0**	----	----	----	----
HA3-0.75	0.75	07/23/19	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	----	----	ND	ND<0.05	----	ND<0.02	----	----	----	----	**256**	----	----	----	----
HA4-0.75	0.75	07/23/19	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	----	----	**MC = 0.55**	ND<0.05	----	ND<0.02	----	----	----	----	**74.0**	----	----	----	----
HA4-1.5	1.5	07/23/19	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	**22.8**	----	----	----	----
HA5-0.75	0.75	07/23/19	ND<0.03	ND<0.05	ND<0.05	ND<0.15	ND<50	ND<250	----	----	**MC = 0.88 Ic**	ND<0.05	----	ND<0.02	----	----	----	----	**149**	----	----	----	----
HA5-1.5	1.5	07/23/19	----	----	----	----	ND<50	ND<250	----	----	----	----	----	----	----	----	----	----	**16.2**	----	----	----	----
RGI Soil Samples Collected On-Property (2018)																							
SA-3	0-1	11/28/18	----	----	----	----	ND<32	**230**	----	----	----	----	----	----	----	ND<0.63	**54**	----	**260**	--	----	----	----
SA-4	0-1	11/28/18	----	----	----	----	ND<33	**150**	----	----	----	----	----	----	----	ND<0.65	**52**	----	**85**	--	----	----	----
SA-5	0-1	11/28/18	----	----	----	----	ND<34	ND<67	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
SA-6	0-1	11/28/18	----	----	----	----	**36**	**200**	----	----	----	----	----	----	----	ND<0.67	**55**	----	**360**	--	----	----	----
SA-7	0-1	11/28/18	----	----	----	----	ND<33	ND<67	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
SHD Soil Samples Collected On-Property (Over-Excavated in 2007)																							
3	0-1	09/26/06	----	----	----	----	ND<50	**25,600**	----	----	----	----	----	----	----	**35.5**	**174**	----	**295**	**----**	**----**	**----**	----
RGI Soil Samples Collected on East-Adjoining CSID #380 (2018)																							
SA-1	0-1	11/28/18	----	----	----	----	**63**	**230**	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
SA-2	0-1	11/28/18	----	----	----	----	**160**	**1,000**	----	----	----	----	----	ND<0.069	**17**	**1.6**	**89**	----	**2,600**	ND<0.35	----	----	----
SA-8	0-1	11/28/18	----	----	----	----	ND<480	**3,800**	**1,001**	ND<0.079	----	**0.5**	**0.3176**	ND<0.069	**15**	**4.1**	**57**	----	**960**	**1.0**	----	----	----
SHD Soil Samples Collected on East-Adjoining CSID #380 (Overexcavated in 2007)																							
1	0-1	09/26/06	ND<0.025	ND<0.10	**0.4**	**4.3**	----	----	----	----	**Cl = 0.2**	ND<0.10	----	**1.55**	----	----	----	----	----	**----**	**----**	**----**	----
2	0-1	09/26/06	----	----	----	----	ND<50	**31,400**	----	----	----	----	----	----	----	**48.7**	**310**	----	**363**	**----**	**----**	**----**	----
RGI Stockpile Soil Sample for Disposal (From Soil Over-Excavated at both the Property and the East-Adjoining CSID #380)																							
SA-9	Disposal	11/28/18	----	----	----	----	ND<5,800	**66,000**	----	----	----	----	----	**0.286**	ND<10	**57**	**180**	ND<1.0	**370**	**0.37**	**0.57**	**0.023**	ND<0.20
MTCA Method A Soil Cleanup Levels for Unrestricted Land Uses			**----**	**----**	**----**	**----**	**2,000**		**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**----**	**1**	**5**	**5**
MTCA Method B Soil Cleanup Levels for Unrestricted Land Uses			**18**	**6,400**	**800**	**16,000**	**----**		**NVE**	**NVE**	**MC = 480 Cl = 32.3**	**1,600**	**TEF = 0.137**	**0.5**	**7.3 (BG)**	**80**	**120,000**	**240**	**3,000**	**2.09**	**----**	**----**	**----**

Notes:

All results and detection limits are given in milligrams per kilogram (mg/kg); equivalent to parts per million (ppm).

Sample Depth = Soil sample depth interval in feet below ground surface (bgs) after surface cover and/or landscaping material was removed.

BTEX (benzene, toluene, ethylbenzene, and xylenes) determined using EPA Test Method 8260B.

Diesel and Oil TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH-Dx.

EPH (extractable petroleum hydrocarbons) determined using EPA Test Method Northwest Total Petroleum Hydrocarbons for EPH. Results indicate heavy oil with an effective reported carbon range for aliphatics and aromatics from 16 to 34.

Hexane determined using EPA Test Method 8021B.

MC (methylene chlorided), Cl (chloroform), and VOCs (volatile organic compounds) determined using EPA Test Method 8260B.

Naph. (naphthalene) determined using EPA Test Method 8270D SIM.

cPAHs (carcinogenic polycyclic aromatic hydrocarbons) determined using EPA Test Method 8270D SIM.

PCBs (polychlorinated biphenyls) determined using EPA Test Method 8082 and 8082A.

Total MTCA Metals (As = arsenic, Cd = cadmium, Cr = chromium, CrVI = hexavalent chromium, Pb = lead, Hg = mercury) determined using EPA Method 200.8, 1631E, 6010B and 3051.

TCLP (toxicity characteristic leaching procedure) Metals determined using EPA Test Method 1311 and 6010D.

Ic = The presence of the analyte is likely due to lab contamination.

Table 1. Summary of Soil Sample Analytical Laboratory Results
Sea-Alaska Industrial Services
415 Maple Avenue, Snohomish, Washington 98290
The Riley Group, Inc. Project No. 2018-240A

ND = Not detected at a concentration above the analytical detection limit.
---- = Not analyzed or not applicable.
NVE = No value established.
BG = Established Method B Cleanup level exceeds regional background concentrations, therefore the regional background concentration is used.
TEF = Toxicity Equivalency Factor per WAC 173-340-708(8).
Cleanup level listed for chromium (Cr) is for trivalent chromium, analyses are for total chromium in this column.
Bold results indicate concentrations (if any) above laboratory detection limits.
Bold and yellow highlighted results indicate concentrations (if any) that exceed selected soil cleanup levels.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

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Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

August 5, 2019

Audrey Heisey, Project Manager
The Riley Group, Inc.
17522 Bothell Way NE
Bothell, WA 98011

Dear Ms Heisey:

Included are the results from the testing of material submitted on July 24, 2019 from the Sea-Alaska 2018-240, F&BI 907428 project. There are 30 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days, or as directed by the Chain of Custody document. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
c: Tait Russell
TRG0805R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on July 24, 2019 by Friedman & Bruya, Inc. from the The Riley Group Sea-Alaska 2018-240, F&BI 907428 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	The Riley Group
907428 -01	HA1-0.75
907428 -02	HA1-1.5
907428 -03	HA2-0.75
907428 -04	HA2-1.5
907428 -05	HA3-0.75
907428 -06	HA4-0.75
907428 -07	HA4-1.5
907428 -08	HA5-0.75
907428 -09	HA5-1.5

The 8260C calibration standard failed the acceptance criteria for 2,2-dichloropropane. The data were flagged accordingly.

Methylene chloride was detected in the 8260C analysis of sample HA5-0.75. The data were flagged as due to laboratory contamination.

All other quality control requirements were acceptable.

Date of Report: 08/05/19
Date Received: 07/24/19
Project: Sea-Alaska 2018-240, F&BI 907428
Date Extracted: 07/25/19
Date Analyzed: 07/25/19

RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL AND MOTOR OIL USING METHOD NWTPH-Dx

Results Reported on a Dry Weight Basis
Results Reported as mg/kg (ppm)

Sample ID Laboratory ID	Diesel Range (C_{10}-C_{25})	Motor Oil Range (C_{25}-C_{36})	Surrogate (% Recovery) (Limit 53-144)
HA1-0.75 907428-01	<50	<250	100
HA1-1.5 907428-02	<50	<250	95
HA2-0.75 907428-03	<50	<250	93
HA2-1.5 907428-04	<50	<250	93
HA3-0.75 907428-05	<50	<250	92
HA4-0.75 907428-06	<50	<250	91
HA4-1.5 907428-07	<50	<250	92
HA5-0.75 907428-08	<50	<250	95
HA5-1.5 907428-09	<50	<250	95
Method Blank 09-1791 MB2	<50	<250	93

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA1-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-01
Date Analyzed:	07/26/19	Data File:	907428-01.118
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	118

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA1-1.5	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-02
Date Analyzed:	07/26/19	Data File:	907428-02.163
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	11.7

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA2-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-03
Date Analyzed:	07/26/19	Data File:	907428-03.166
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	28.4

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA2-1.5	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-04
Date Analyzed:	07/26/19	Data File:	907428-04.167
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	17.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA3-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-05 x5
Date Analyzed:	07/30/19	Data File:	907428-05 x5.135
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	256

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA4-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-06
Date Analyzed:	07/26/19	Data File:	907428-06.169
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	74.0

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA4-1.5	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-07
Date Analyzed:	07/26/19	Data File:	907428-07.170
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	22.8

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA5-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-08
Date Analyzed:	07/26/19	Data File:	907428-08.171
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	149

Analysis For Total Metals By EPA Method 6020B

Client ID:	HA5-1.5	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	907428-09
Date Analyzed:	07/26/19	Data File:	907428-09.172
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	16.2

Analysis For Total Metals By EPA Method 6020B

Client ID:	Method Blank	Client:	The Riley Group
Date Received:	NA	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/26/19	Lab ID:	I9-451 mb
Date Analyzed:	07/26/19	Data File:	I9-451 mb.114
Matrix:	Soil	Instrument:	ICPMS2
Units:	mg/kg (ppm) Dry Weight	Operator:	SP

Analyte:	Concentration mg/kg (ppm)
Lead	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HA1-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	907428-01
Date Analyzed:	07/25/19	Data File:	072531.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	93	107
Toluene-d8	103	87	110
4-Bromofluorobenzene	101	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HA2-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	907428-03
Date Analyzed:	07/25/19	Data File:	072532.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	93	107
Toluene-d8	103	87	110
4-Bromofluorobenzene	101	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	0.60	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HA3-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	907428-05
Date Analyzed:	07/25/19	Data File:	072533.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	93	107
Toluene-d8	103	87	110
4-Bromofluorobenzene	101	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HA4-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	907428-06
Date Analyzed:	07/25/19	Data File:	072534.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	93	107
Toluene-d8	102	87	110
4-Bromofluorobenzene	100	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	0.55	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HA5-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	907428-08
Date Analyzed:	07/25/19	Data File:	072535.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	97	93	107
Toluene-d8	103	87	110
4-Bromofluorobenzene	101	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	0.88 lc	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/25/19	Lab ID:	09-1695 mb
Date Analyzed:	07/25/19	Data File:	072512.D
Matrix:	Soil	Instrument:	GCMS9
Units:	mg/kg (ppm) Dry Weight	Operator:	MS/AEN

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	93	107
Toluene-d8	98	87	110
4-Bromofluorobenzene	95	85	112

Compounds:	Concentration mg/kg (ppm)	Compounds:	Concentration mg/kg (ppm)
Dichlorodifluoromethane	<0.5	1,3-Dichloropropane	<0.05
Chloromethane	<0.5	Tetrachloroethene	<0.025
Vinyl chloride	<0.05	Dibromochloromethane	<0.05
Bromomethane	<0.5	1,2-Dibromoethane (EDB)	<0.05
Chloroethane	<0.5	Chlorobenzene	<0.05
Trichlorofluoromethane	<0.5	Ethylbenzene	<0.05
Acetone	<0.5	1,1,1,2-Tetrachloroethane	<0.05
1,1-Dichloroethene	<0.05	m,p-Xylene	<0.1
Hexane	<0.25	o-Xylene	<0.05
Methylene chloride	<0.5	Styrene	<0.05
Methyl t-butyl ether (MTBE)	<0.05	Isopropylbenzene	<0.05
trans-1,2-Dichloroethene	<0.05	Bromoform	<0.05
1,1-Dichloroethane	<0.05	n-Propylbenzene	<0.05
2,2-Dichloropropane	<0.05 ca	Bromobenzene	<0.05
cis-1,2-Dichloroethene	<0.05	1,3,5-Trimethylbenzene	<0.05
Chloroform	<0.05	1,1,2,2-Tetrachloroethane	<0.05
2-Butanone (MEK)	<0.5	1,2,3-Trichloropropane	<0.05
1,2-Dichloroethane (EDC)	<0.05	2-Chlorotoluene	<0.05
1,1,1-Trichloroethane	<0.05	4-Chlorotoluene	<0.05
1,1-Dichloropropene	<0.05	tert-Butylbenzene	<0.05
Carbon tetrachloride	<0.05	1,2,4-Trimethylbenzene	<0.05
Benzene	<0.03	sec-Butylbenzene	<0.05
Trichloroethene	<0.02	p-Isopropyltoluene	<0.05
1,2-Dichloropropane	<0.05	1,3-Dichlorobenzene	<0.05
Bromodichloromethane	<0.05	1,4-Dichlorobenzene	<0.05
Dibromomethane	<0.05	1,2-Dichlorobenzene	<0.05
4-Methyl-2-pentanone	<0.5	1,2-Dibromo-3-chloropropane	<0.5
cis-1,3-Dichloropropene	<0.05	1,2,4-Trichlorobenzene	<0.25
Toluene	<0.05	Hexachlorobutadiene	<0.25
trans-1,3-Dichloropropene	<0.05	Naphthalene	<0.05
1,1,2-Trichloroethane	<0.05	1,2,3-Trichlorobenzene	<0.25
2-Hexanone	<0.5		

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HA1-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	907428-01 1/6
Date Analyzed:	07/26/19	Data File:	072606.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	81	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HA2-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	907428-03 1/6
Date Analyzed:	07/26/19	Data File:	072607.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	80	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HA3-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	907428-05 1/6
Date Analyzed:	07/26/19	Data File:	072608.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	82	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HA4-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	907428-06 1/6
Date Analyzed:	07/26/19	Data File:	072609.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	88	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	HA5-0.75	Client:	The Riley Group
Date Received:	07/24/19	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	907428-08 1/6
Date Analyzed:	07/26/19	Data File:	072610.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	VM

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	83	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.02
Aroclor 1232	<0.02
Aroclor 1016	<0.02
Aroclor 1242	<0.02
Aroclor 1248	<0.02
Aroclor 1254	<0.02
Aroclor 1260	<0.02
Aroclor 1262	<0.02
Aroclor 1268	<0.02

Analysis For PCBs By EPA Method 8082A

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	Sea-Alaska 2018-240, F&BI 907428
Date Extracted:	07/24/19	Lab ID:	09-1789 mb
Date Analyzed:	07/25/19	Data File:	072513.D
Matrix:	Soil	Instrument:	GC9
Units:	mg/kg (ppm) Dry Weight	Operator:	IJL

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
TCMX	96	31	119

Compounds:	Concentration mg/kg (ppm)
Aroclor 1221	<0.002
Aroclor 1232	<0.002
Aroclor 1016	<0.002
Aroclor 1242	<0.002
Aroclor 1248	<0.002
Aroclor 1254	<0.002
Aroclor 1260	<0.002
Aroclor 1262	<0.002
Aroclor 1268	<0.002

Date of Report: 08/05/19
Date Received: 07/24/19
Project: Sea-Alaska 2018-240, F&BI 907428

QUALITY ASSURANCE RESULTS FROM THE ANALYSIS OF SOIL SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS DIESEL EXTENDED USING METHOD NWTPH-Dx

Laboratory Code: 907434-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet Wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	mg/kg (ppm)	5,000	330	102	94	73-135	8

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Diesel Extended	mg/kg (ppm)	5,000	98	74-139

Date of Report: 08/05/19
Date Received: 07/24/19
Project: Sea-Alaska 2018-240, F&BI 907428

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR TOTAL METALS USING EPA METHOD 6020B

Laboratory Code: 907428-01 x5 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Lead	mg/kg (ppm)	50	93.4	128 b	88 b	75-125	37 b

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Lead	mg/kg (ppm)	50	105	80-120

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Date Received: 07/24/19
Project: Sea-Alaska 2018-240, F&BI 907428

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 907438-12 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result (Wet wt)	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Dichlorodifluoromethane	mg/kg (ppm)	2.5	<0.5	14	12	10-56	15
Chloromethane	mg/kg (ppm)	2.5	<0.5	45	46	10-90	2
Vinyl chloride	mg/kg (ppm)	2.5	<0.05	47	47	10-91	0
Bromomethane	mg/kg (ppm)	2.5	<0.5	72	69	10-110	4
Chloroethane	mg/kg (ppm)	2.5	<0.5	64	64	10-101	0
Trichlorofluoromethane	mg/kg (ppm)	2.5	<0.5	56	56	10-95	0
Acetone	mg/kg (ppm)	12.5	<0.5	96	99	11-141	3
1,1-Dichloroethene	mg/kg (ppm)	2.5	<0.05	72	72	22-107	0
Hexane	mg/kg (ppm)	2.5	<0.25	39	39	10-95	0
Methylene chloride	mg/kg (ppm)	2.5	<0.5	80	73	14-128	9
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	<0.05	79	80	17-134	1
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	77	79	13-112	3
1,1-Dichloroethane	mg/kg (ppm)	2.5	<0.05	78	79	23-115	1
2,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	77	76	18-117	1
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	<0.05	79	80	25-120	1
Chloroform	mg/kg (ppm)	2.5	<0.05	84	85	29-117	1
2-Butanone (MEK)	mg/kg (ppm)	12.5	<0.5	82	84	20-133	2
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	<0.05	80	80	22-124	0
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	<0.05	81	84	27-112	4
1,1-Dichloropropene	mg/kg (ppm)	2.5	<0.05	79	80	26-107	1
Carbon tetrachloride	mg/kg (ppm)	2.5	<0.05	86	86	28-126	0
Benzene	mg/kg (ppm)	2.5	<0.03	79	80	26-114	1
Trichloroethene	mg/kg (ppm)	2.5	<0.02	83	83	30-112	0
1,2-Dichloropropane	mg/kg (ppm)	2.5	<0.05	82	82	31-119	0
Bromodichloromethane	mg/kg (ppm)	2.5	<0.05	91	91	31-131	0
Dibromomethane	mg/kg (ppm)	2.5	<0.05	85	86	27-124	1
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	<0.5	89	90	16-147	1
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	91	90	28-137	1
Toluene	mg/kg (ppm)	2.5	<0.05	86	87	34-112	1
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	<0.05	94	95	30-136	1
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	<0.05	88	87	32-126	1
2-Hexanone	mg/kg (ppm)	12.5	<0.5	87	88	17-147	1
1,3-Dichloropropane	mg/kg (ppm)	2.5	<0.05	89	88	29-125	1
Tetrachloroethene	mg/kg (ppm)	2.5	<0.025	86	88	25-114	2
Dibromochloromethane	mg/kg (ppm)	2.5	<0.05	105	106	32-143	1
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	<0.05	90	89	32-126	1
Chlorobenzene	mg/kg (ppm)	2.5	<0.05	87	89	37-113	2
Ethylbenzene	mg/kg (ppm)	2.5	<0.05	88	88	34-115	0
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	98	99	35-126	1
m,p-Xylene	mg/kg (ppm)	5	<0.1	90	91	25-125	1
o-Xylene	mg/kg (ppm)	2.5	<0.05	88	90	27-126	2
Styrene	mg/kg (ppm)	2.5	<0.05	90	92	39-121	2
Isopropylbenzene	mg/kg (ppm)	2.5	<0.05	90	91	34-123	1
Bromoform	mg/kg (ppm)	2.5	<0.05	100	102	18-155	2
n-Propylbenzene	mg/kg (ppm)	2.5	<0.05	90	91	31-120	1
Bromobenzene	mg/kg (ppm)	2.5	<0.05	91	91	40-115	0
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	92	94	24-130	2
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	<0.05	95	95	27-148	0
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	<0.05	89	89	33-123	0
2-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	88	90	39-110	2
4-Chlorotoluene	mg/kg (ppm)	2.5	<0.05	89	89	39-111	0
tert-Butylbenzene	mg/kg (ppm)	2.5	<0.05	93	94	36-116	1
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	<0.05	91	93	35-116	2
sec-Butylbenzene	mg/kg (ppm)	2.5	<0.05	94	95	33-118	1
p-Isopropyltoluene	mg/kg (ppm)	2.5	<0.05	93	94	32-119	1
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	92	93	38-111	1
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	87	88	39-109	1
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	<0.05	91	92	40-111	1
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	<0.5	96	95	44-112	1
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	92	95	31-121	3
Hexachlorobutadiene	mg/kg (ppm)	2.5	<0.25	93	94	24-128	1
Naphthalene	mg/kg (ppm)	2.5	<0.05	92	92	24-139	0
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	<0.25	93	96	35-117	3

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Dichlorodifluoromethane	mg/kg (ppm)	2.5	53	10-76
Chloromethane	mg/kg (ppm)	2.5	77	34-98
Vinyl chloride	mg/kg (ppm)	2.5	87	42-107
Bromomethane	mg/kg (ppm)	2.5	110	46-113
Chloroethane	mg/kg (ppm)	2.5	103	47-115
Trichlorofluoromethane	mg/kg (ppm)	2.5	102	53-112
Acetone	mg/kg (ppm)	12.5	123	39-147
1,1-Dichloroethene	mg/kg (ppm)	2.5	103	65-110
Hexane	mg/kg (ppm)	2.5	77	55-107
Methylene chloride	mg/kg (ppm)	2.5	95	50-127
Methyl t-butyl ether (MTBE)	mg/kg (ppm)	2.5	96	72-122
trans-1,2-Dichloroethene	mg/kg (ppm)	2.5	99	71-113
1,1-Dichloroethane	mg/kg (ppm)	2.5	97	74-109
2,2-Dichloropropane	mg/kg (ppm)	2.5	108	63-145
cis-1,2-Dichloroethene	mg/kg (ppm)	2.5	98	73-110
Chloroform	mg/kg (ppm)	2.5	103	76-110
2-Butanone (MEK)	mg/kg (ppm)	12.5	93	60-121
1,2-Dichloroethane (EDC)	mg/kg (ppm)	2.5	94	73-111
1,1,1-Trichloroethane	mg/kg (ppm)	2.5	108	72-116
1,1-Dichloropropene	mg/kg (ppm)	2.5	97	72-112
Carbon tetrachloride	mg/kg (ppm)	2.5	111	67-123
Benzene	mg/kg (ppm)	2.5	93	72-106
Trichloroethene	mg/kg (ppm)	2.5	96	72-107
1,2-Dichloropropane	mg/kg (ppm)	2.5	92	74-115
Bromodichloromethane	mg/kg (ppm)	2.5	105	75-126
Dibromomethane	mg/kg (ppm)	2.5	98	76-116
4-Methyl-2-pentanone	mg/kg (ppm)	12.5	96	80-128
cis-1,3-Dichloropropene	mg/kg (ppm)	2.5	98	71-138
Toluene	mg/kg (ppm)	2.5	100	74-111
trans-1,3-Dichloropropene	mg/kg (ppm)	2.5	104	73-124
1,1,2-Trichloroethane	mg/kg (ppm)	2.5	95	76-118
2-Hexanone	mg/kg (ppm)	12.5	91	67-123
1,3-Dichloropropane	mg/kg (ppm)	2.5	96	75-118
Tetrachloroethene	mg/kg (ppm)	2.5	99	73-111
Dibromochloromethane	mg/kg (ppm)	2.5	123	64-152
1,2-Dibromoethane (EDB)	mg/kg (ppm)	2.5	99	77-117
Chlorobenzene	mg/kg (ppm)	2.5	99	76-109
Ethylbenzene	mg/kg (ppm)	2.5	101	75-112
1,1,1,2-Tetrachloroethane	mg/kg (ppm)	2.5	121	75-129
m,p-Xylene	mg/kg (ppm)	5	103	77-115
o-Xylene	mg/kg (ppm)	2.5	105	76-115
Styrene	mg/kg (ppm)	2.5	101	76-119
Isopropylbenzene	mg/kg (ppm)	2.5	106	76-120
Bromoform	mg/kg (ppm)	2.5	122	50-174
n-Propylbenzene	mg/kg (ppm)	2.5	101	77-115
Bromobenzene	mg/kg (ppm)	2.5	99	76-112
1,3,5-Trimethylbenzene	mg/kg (ppm)	2.5	106	77-121
1,1,2,2-Tetrachloroethane	mg/kg (ppm)	2.5	104	74-121
1,2,3-Trichloropropane	mg/kg (ppm)	2.5	96	73-117
2-Chlorotoluene	mg/kg (ppm)	2.5	101	75-113
4-Chlorotoluene	mg/kg (ppm)	2.5	98	77-115
tert-Butylbenzene	mg/kg (ppm)	2.5	105	77-123
1,2,4-Trimethylbenzene	mg/kg (ppm)	2.5	103	77-119
sec-Butylbenzene	mg/kg (ppm)	2.5	105	78-120
p-Isopropyltoluene	mg/kg (ppm)	2.5	105	77-120
1,3-Dichlorobenzene	mg/kg (ppm)	2.5	104	76-112
1,4-Dichlorobenzene	mg/kg (ppm)	2.5	97	74-109
1,2-Dichlorobenzene	mg/kg (ppm)	2.5	104	75-114
1,2-Dibromo-3-chloropropane	mg/kg (ppm)	2.5	116	68-122
1,2,4-Trichlorobenzene	mg/kg (ppm)	2.5	106	75-122
Hexachlorobutadiene	mg/kg (ppm)	2.5	105	74-130
Naphthalene	mg/kg (ppm)	2.5	107	73-122
1,2,3-Trichlorobenzene	mg/kg (ppm)	2.5	109	75-117

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QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF SOIL SAMPLES FOR POLYCHLORINATED BIPHENYLS AS AROCLOR 1016/1260 BY EPA METHOD 8082A

Laboratory Code: 907441-01 (Duplicate)

Analyte	Reporting Units	Sample Result (Wet Wt)	Duplicate Result (Wet Wt)	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	<0.002	<0.002	nm
Aroclor 1260	mg/kg (ppm)	0.0090	0.0099	10

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Aroclor 1016	mg/kg (ppm)	0.0835	94	100	55-137	6
Aroclor 1260	mg/kg (ppm)	0.0835	107	113	51-150	5

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The analyte is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits due to sample matrix effects.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

907428

SAMPLE CHAIN OF CUSTODY

ME 07-24-19

BTB / VS-DJ

Page # 1 of 1

Report To Audrey Heisey

Company RGI

Address 17522 Bothell Way NE

City, State, ZIP Bothell, WA 98011

Phone 425-415-0551 Email aheisey@rgiengr.com

SAMPLERS (*signature*)

PROJECT NAME: Sea-Alaska

PO # 2018-240

REMARKS: cc: tom@allenkay group.com

INVOICE TO

TURNAROUND TIME
- [x] Standard Turnaround
- [ ] RUSH
- Rush charges authorized by:

SAMPLE DISPOSAL
- [x] Dispose after 30 days
- [ ] Archive Samples
- [ ] Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	PAH by 8082	Total Lead			Notes
HA1-0.75	01 A-F	7/23	1140	Soil	6		X			X			X	X			
HA1-1.5	02		1145		1		X							X			
HA2-0.75	03 A-F		1130		6		X			X			X	X			
HA2-1.5	04		1135		1		X							X			
HA3-0.75	05 A-F		1120		6		X			X			X	X			
~~HA3-1.5~~			~~1125~~		~~1~~		~~X~~							~~X~~			jar empty
HA4-0.75	06 A-F		1110		6		X			X			X	X			
HA4-1.5	07		1115		1		X							X			
HA5-0.75	08 A-F		1100		6		X			X			X	X			Samples received at 4 °C
HA5-1.5	09		1105		1		X							X			

	SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by:		Tom L.	RGI	7/23	1500
Received by:		FedEx	FedEx	7/24	10:45
Relinquished by:					
Received by:		Nhan Phan	FEBT	7/24/19	1130

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