

ATTACHMENT 3

July 31, 2020 Catch Basin Laboratory Analysis Reports



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



August 26, 2020

Kevin Veaudry-Casaus

Spill Protection and Citizen Response

Work Order
W20H005

Project
Riot Control Agent Residual Investigation

Received
07/31/20 16:24

Enclosed are the results of analysis for the above work order. If you have questions concerning this report, please contact your project coordinator Peter Abrams at 503-823-5533.

Jennifer Shackelford
Laboratory Manager





City of Portland
Water Pollution Control Laboratory
6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



LABORATORY ANALYSIS REPORT

Project:	Riot Control Agent Residual Investigation	Client:	Spill Protection and Citizen Response
Work Order:	W20H005	Project Mgr:	Kevin Veaudry-Casaus
Received:	7/31/20 16:24		
Submitted By:	Field Operations		

Sample	Laboratory ID	Matrix	Type	Sample Collection Date		Qualifier
				Start	End	
AQY840	W20H005-01	Soil	Composite	07/31/20 11:45	07/31/20 11:45	
AQY839	W20H005-02	Soil	Composite	07/31/20 12:13	07/31/20 12:13	
AQL330	W20H005-03	Soil	Composite	07/31/20 12:45	07/31/20 12:45	
AQL329	W20H005-04	Soil	Composite	07/31/20 13:04	07/31/20 13:04	
AQL328	W20H005-05	Soil	Composite	07/31/20 13:22	07/31/20 13:22	
AQL327	W20H005-06	Soil	Composite	07/31/20 13:48	07/31/20 13:48	
AMU048	W20H005-07	Soil	Composite	07/31/20 14:17	07/31/20 14:17	

Case Narrative

Samples W20H005-01 to -06 contained bismuth with estimated concentrations between 0.5-10 mg/kg.

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-------	-----	------	-------	----------	----------	--------	-----------

General Chemistry

Total Cyanide

AQY840 : W20H005-01									
Cyanide	0.75	mg/kg dry	0.38		B20H059	08/05/20	08/05/20	SM 4500-CN E	M6
AQY839 : W20H005-02RE1									
Cyanide	2.15	mg/kg dry	0.84		B20H136	08/06/20	08/06/20	SM 4500-CN E	M6
AQL330 : W20H005-03									
Cyanide	1.60	mg/kg dry	0.50		B20H059	08/05/20	08/05/20	SM 4500-CN E	
AQL329 : W20H005-04RE1									
Cyanide	7.72	mg/kg dry	0.59		B20H136	08/06/20	08/06/20	SM 4500-CN E	M6
AQL328 : W20H005-05									
Cyanide	0.48	mg/kg dry	0.35		B20H059	08/05/20	08/05/20	SM 4500-CN E	
AQL327 : W20H005-06RE1									
Cyanide	1.42	mg/kg dry	0.45		B20H136	08/06/20	08/06/20	SM 4500-CN E	M6
AMU048 : W20H005-07RE1									
Cyanide	0.28	mg/kg dry	0.11		B20H136	08/06/20	08/06/20	SM 4500-CN E	M6

Total Solids

Reported: 08/26/20 15:03

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual
Investigation**

Client: **Spill Protection and Citizen Response**

Work Order: **W20H005**

Received: **07/31/20 16:24**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
General Chemistry									
Total Solids									
AQY840 : W20H005-01									
Total solids	66.2	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AQY839 : W20H005-02									
Total solids	44.0	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AQL330 : W20H005-03									
Total solids	50.4	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AQL329 : W20H005-04									
Total solids	49.5	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AQL328 : W20H005-05									
Total solids	69.9	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AQL327 : W20H005-06									
Total solids	68.4	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	
AMU048 : W20H005-07									
Total solids	85.1	% W/W	0.01		B20H034	08/03/20	08/04/20	SM 2540G	

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**
Work Order: **W20H005**

Client: **Spill Protection and Citizen Response**
Received: **07/31/20 16:24**

Analyte	Result Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------------	-----	------	-------	----------	----------	--------	-----------

Total Metals

Total Metals by ICPMS

AQY840 : W20H005-01

Antimony	0.580 mg/kg dry	0.081	20	B20H025	08/03/20	08/04/20	EPA 6020	
Barium	515 mg/kg dry	1.63	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	11.9 mg/kg dry	0.163	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	23.7 mg/kg dry	0.650	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	4.44 mg/kg dry	0.325	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	156 mg/kg dry	1.63	20	B20H025	08/03/20	08/04/20	EPA 6020	

AQY839 : W20H005-02

Antimony	9.13 mg/kg dry	0.129	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	71.1 mg/kg dry	0.259	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	202 mg/kg dry	1.04	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	84.2 mg/kg dry	0.518	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	785 mg/kg dry	2.59	20	B20H025	08/03/20	08/04/20	EPA 6020	

AQY839 : W20H005-02RE1

Barium	1280 mg/kg dry	5.18	40	B20H025	08/03/20	08/04/20	EPA 6020	
--------	----------------	------	----	---------	----------	----------	----------	--

AQL330 : W20H005-03

Antimony	5.02 mg/kg dry	0.111	20	B20H025	08/03/20	08/04/20	EPA 6020	
Barium	669 mg/kg dry	2.22	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	31.3 mg/kg dry	0.222	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	94.1 mg/kg dry	0.888	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	38.3 mg/kg dry	0.444	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	1570 mg/kg dry	2.22	20	B20H025	08/03/20	08/04/20	EPA 6020	

AQL329 : W20H005-04

Antimony	4.28 mg/kg dry	0.090	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	42.0 mg/kg dry	0.179	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	133 mg/kg dry	0.717	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	52.7 mg/kg dry	0.359	20	B20H025	08/03/20	08/04/20	EPA 6020	

AQL329 : W20H005-04RE1

Barium	1690 mg/kg dry	8.97	100	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	5340 mg/kg dry	8.97	100	B20H025	08/03/20	08/04/20	EPA 6020	

AQL328 : W20H005-05

Antimony	1.25 mg/kg dry	0.086	20	B20H025	08/03/20	08/04/20	EPA 6020	
Barium	469 mg/kg dry	1.72	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	25.7 mg/kg dry	0.172	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	85.3 mg/kg dry	0.689	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	21.2 mg/kg dry	0.345	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	382 mg/kg dry	1.72	20	B20H025	08/03/20	08/04/20	EPA 6020	

AQL327 : W20H005-06

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project:	Riot Control Agent Residual Investigation	Client:	Spill Protection and Citizen Response
Work Order:	W20H005	Received:	07/31/20 16:24

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
Total Metals									
Total Metals by ICPMS									
AQL327 : W20H005-06									
Antimony	3.54	mg/kg dry	0.085	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	31.2	mg/kg dry	0.170	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	195	mg/kg dry	0.680	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	24.6	mg/kg dry	0.340	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	1070	mg/kg dry	1.70	20	B20H025	08/03/20	08/04/20	EPA 6020	
AQL327 : W20H005-06RE1									
Barium	733	mg/kg dry	3.40	40	B20H025	08/03/20	08/04/20	EPA 6020	
AMU048 : W20H005-07									
Antimony	2.33	mg/kg dry	0.068	20	B20H025	08/03/20	08/04/20	EPA 6020	
Barium	125	mg/kg dry	1.36	20	B20H025	08/03/20	08/04/20	EPA 6020	
Chromium	17.8	mg/kg dry	0.136	20	B20H025	08/03/20	08/04/20	EPA 6020	
Copper	45.9	mg/kg dry	0.543	20	B20H025	08/03/20	08/04/20	EPA 6020	
Lead	21.7	mg/kg dry	0.272	20	B20H025	08/03/20	08/04/20	EPA 6020	
Zinc	292	mg/kg dry	1.36	20	B20H025	08/03/20	08/04/20	EPA 6020	

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**

Client: **Spill Protection and Citizen Response**

Work Order: **W20H005**

Received: **07/31/20 16:24**

Quality Control Report

General Chemistry - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Cyanide - Batch B20H059									
Blank (B20H059-BLK1)									
Cyanide	ND	mg/kg wet	0.02					08/05/20 :08/05/20	
LCS (B20H059-BS1)									
Cyanide	0.05	mg/kg wet	0.02	0.0500		92% (85-115)		08/05/20 :08/05/20	
Matrix Spike (B20H059-MS1) Source: W20H005-01									
Cyanide	1.15	mg/kg dry	0.38	0.756	0.75	53% (70-130)		08/05/20 :08/05/20	M6
Total Cyanide - Batch B20H136									
Blank (B20H136-BLK1)									
Cyanide	ND	mg/kg wet	0.02					08/06/20 :08/06/20	
LCS (B20H136-BS1)									
Cyanide	0.13	mg/kg wet	0.02	0.125		103% (85-115)		08/06/20 :08/06/20	
Matrix Spike (B20H136-MS1) Source: W20H005-02RE1									
Cyanide	2.77	mg/kg dry	1.65	4.12	2.15	15% (70-130)		08/06/20 :08/06/20	M6
Total Solids - Batch B20H034									
Blank (B20H034-BLK1)									
Total solids	ND	% W/W	0.01					08/03/20 :08/04/20	
Duplicate (B20H034-DUP1) Source: W20H005-01									
Total solids	64.1	% W/W	0.01		66.2		3 (5)	08/03/20 :08/04/20	

Reported: 08/26/20 15:03

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**
Work Order: **W20H005**

Client: **Spill Protection and Citizen Response**
Received: **07/31/20 16:24**

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-------	-----	-------------	---------------	---------------	-------------	--------------------	-----------

Total Metals by ICPMS - Batch B20H025

Blank (B20H025-BLK1)

Antimony	ND	mg/kg wet	0.025					08/03/20 :08/04/20	
Barium	ND	mg/kg wet	0.500					08/03/20 :08/04/20	
Chromium	ND	mg/kg wet	0.050					08/03/20 :08/04/20	
Copper	ND	mg/kg wet	0.200					08/03/20 :08/04/20	
Lead	ND	mg/kg wet	0.100					08/03/20 :08/04/20	
Zinc	ND	mg/kg wet	0.500					08/03/20 :08/04/20	

Standard Reference Material (B20H025-SRM1)

Antimony	194	mg/kg wet	0.809	188		103% (75-125)		08/03/20 :08/04/20	
Barium	312	mg/kg wet	16.2	341		91% (75-125)		08/03/20 :08/04/20	
Chromium	147	mg/kg wet	1.62	166		88% (75-125)		08/03/20 :08/04/20	
Copper	93.9	mg/kg wet	6.47	105		89% (75-125)		08/03/20 :08/04/20	
Lead	99.6	mg/kg wet	3.24	114		87% (75-125)		08/03/20 :08/04/20	
Zinc	214	mg/kg wet	16.2	228		94% (75-125)		08/03/20 :08/04/20	

Duplicate (B20H025-DUP1)

Source: W20H004-01

Antimony	4.97	mg/kg dry	0.177		4.73	5 (20)		08/03/20 :08/04/20	
Barium	172	mg/kg dry	3.55		163	5 (20)		08/03/20 :08/04/20	
Chromium	44.5	mg/kg dry	0.355		41.3	7 (20)		08/03/20 :08/04/20	
Copper	283	mg/kg dry	1.42		278	2 (20)		08/03/20 :08/04/20	
Lead	72.9	mg/kg dry	0.709		48.6	40 (20)		08/03/20 :08/04/20	M3
Zinc	1060	mg/kg dry	3.55		1040	2 (20)		08/03/20 :08/04/20	

Matrix Spike (B20H025-MS1)

Source: W20H004-01

Antimony	77.9	mg/kg dry	0.911	72.9	4.73	100% (75-125)		08/03/20 :08/04/20	
Barium	1170	mg/kg dry	18.2	1090	163	92% (75-125)		08/03/20 :08/04/20	
Chromium	242	mg/kg dry	1.82	219	41.3	92% (75-125)		08/03/20 :08/04/20	
Copper	622	mg/kg dry	7.29	364	278	94% (75-125)		08/03/20 :08/04/20	
Lead	387	mg/kg dry	3.64	364	48.6	93% (75-125)		08/03/20 :08/04/20	
Zinc	1460	mg/kg dry	18.2	364	1040	117% (75-125)		08/03/20 :08/04/20	

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual
Investigation**

Client: **Spill Protection and Citizen Response**

Work Order: **W20H005**

Received: **07/31/20 16:24**

Qualifiers

- M3 Inconsistent results for matrix QC (duplicates and/or matrix spikes) indicate non-homogeneous sample matrix. Sample results should be considered estimates.
- M6 Based on low matrix spike recovery, sample results may be low estimates due to matrix interference.

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference
*	This analyte is not certified under NELAP		

Reported: 08/26/20 15:03

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
Sample Custodian: (503) 823-5696
General Lab: (503) 823-5681



City of Portland Chain-of-Custody



Bureau of Environmental Services

Date: 7/31/20

Work Order #: W2014005
Collected By: MJS/KCB

Client Name: Spill Protection & Citizen Response

City of Portland Bureau:

Project Name: **SPCR Investigations**

Contact: Kevin Veaudry Casares

Phone #: 823-6711

Requested Analyses

Lab Number	Special Instructions:									Turn-Around-Time Request:	
	Lab: Please Call SPCR (3-7180) with preliminary results.									<input type="checkbox"/> Standard (10 business days) <input checked="" type="checkbox"/> Rush (5 business days)	
	Location ID	Sample Date	Sample Time	Grab or Comp	Sample Matrix	Total Metals Cr6 Perchlorate Cyanide	# of Containers		Remarks		
01	AQY 840	7/31/20	1145	C	SOIL	• • • •	4				
02	AQY 839	7/31/20	1213	C	SOIL	• • • •	4				
03	AQL 330 ^{deb}	7/31/20	1245	C	SOIL	• • • •	4				
04	AQL 328 329	7/31/20	1304	C	SOIL	• • • •	4				
05	AQL 328	7/31/20	1322	C	SOIL	• • • •	4				
06	AQL 327	7/31/20	1348	C	SOIL	• • • •	4				
07	AMU 048	7/31/20	1417	C	SOIL	• • • •	4		Control Sw 5'rd to Clay		

Relinquished By:

Signature: Randy C Belston Date: 7/31/20
Printed Name: RANDY C BELSTON Time: 1624

Received By:

Signature: Matt Clark Date: 7/31/20
Printed Name: Matt Clark Time: 1624

Relinquished By:

Signature: _____ Date: _____
Printed Name: _____ Time: _____

Received By:

Signature: _____ Date: _____
Printed Name: _____ Time: _____

WPCL Cooler Receipt Form

Work Order Number: W204005 Cooler Receipt Form Filled Out By: mc

Project: SPCR Investigations

Received on ice: (YES) NO (circle one) [If directly from field, indicate here: _____]

Sample(s) Received From: CBWTP fridge_____ Client ☒ Courier_____

Temperature (°C): 12

	Yes	No	N/A
Is the COC present and signed?	✓		
Are sample bottles intact?	✓		
Do the COC and sample labels match?	✓		
Are the appropriate containers used?	✓		
Are samples appropriately preserved?			✓
Do VCA vials or alkalinity bottles have Headspace? (circle which this applies to)			✓
Are samples received within holding times (except for pH and residual chlorine)?	✓		

Pres. #	Preservative	LIMS ID	Standard Preservation Amounts
1	HNO ₃ (1:1) to pH <2		0.5mL/250mL; 1.0mL/500mL; 4-5 drops/50mL centrifuge tube
2	H ₂ SO ₄ (18N) to pH <2		0.4mL/250mL; 0.8mL/500mL ; 1.6mL/1000mL
3	HCl (1:1) to pH <2		1.0mL/500mL; 2.0mL/1000mL
4	HCl (1:1) to pH 2-3		For TOC: 2-5 drops/250mL
5	NaOH (pellets) to pH >12		4-10 pellets/500mL; 8-20 pellets/1000mL

[illegible]

Comments: _____



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

August 21, 2020

Analytical Report for Service Request No: K2006545

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

RE: SPCR Investigations / W20H005

Dear Jennifer,

Enclosed are the results of the sample(s) submitted to our laboratory August 03, 2020
For your reference, these analyses have been assigned our service request number **K2006545**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Chain of Custody

Total Solids

General Chemistry

Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- p The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

**ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses**

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

SUBCONTRACT ORDER

City of Portland Water Pollution Control Lab
W20H005

K2006545

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

ALS Environmental
1317 S. 13th Avenue
Kelso, WA 98626
Phone: (360) 577-7222
Fax: (360) 636-1068

WPCL Project Name

SPCR Investigations

TURNAROUND REQUEST

☐

Standard

☒

Rush 2 day(s)

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W20H005-01				
	Solid	Sampled: 07/31/20 11:45		
Out-Perchlorate	08/04/20 17:00	08/28/20 11:45		
Out-Cr+6	08/04/20 17:00	08/30/20 11:45		
<i>Containers Supplied:</i>				
G jar amber 4 oz (D)				
Sample ID: W20H005-02				
	Solid	Sampled: 07/31/20 12:13		
Out-Perchlorate	08/04/20 17:00	08/28/20 12:13		
Out-Cr+6	08/04/20 17:00	08/30/20 12:13		
<i>Containers Supplied:</i>				
G jar amber 4 oz (D)				
Sample ID: W20H005-03				
	Solid	Sampled: 07/31/20 12:45		
Out-Perchlorate	08/04/20 17:00	08/28/20 12:45		
Out-Cr+6	08/04/20 17:00	08/30/20 12:45		
<i>Containers Supplied:</i>				
G jar amber 4 oz (D)				
Sample ID: W20H005-04				
	Solid	Sampled: 07/31/20 13:04		
Out-Perchlorate	08/04/20 17:00	08/28/20 13:04		
Out-Cr+6	08/04/20 17:00	08/30/20 13:04		
<i>Containers Supplied:</i>				
G jar amber 4 oz (D)				

Released By

Date

Received By

Date

Released By

Date

Received By

Date

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W20H005

K2006545

Analysis	Due	Expires	Laboratory ID	Comments
<hr/>				
Sample ID: W20H005-05	Solid	Sampled: 07/31/20 13:22		
Out-Perchlorate	08/04/20 17:00	08/28/20 13:22		
Out-Cr+6	08/04/20 17:00	08/30/20 13:22		
<i>Containers Supplied:</i> G jar amber 4 oz (D)				
<hr/>				
Sample ID: W20H005-06	Solid	Sampled: 07/31/20 13:48		
Out-Perchlorate	08/04/20 17:00	08/28/20 13:48		
Out-Cr+6	08/04/20 17:00	08/30/20 13:48		
<i>Containers Supplied:</i> G jar amber 4 oz (D)				
<hr/>				
Sample ID: W20H005-07	Solid	Sampled: 07/31/20 14:17		
Out-Perchlorate	08/04/20 17:00	08/28/20 14:17		
Out-Cr+6	08/04/20 17:00	08/30/20 14:17		
<i>Containers Supplied:</i> G jar amber 4 oz (D)				
<hr/>				

Released By

Date

Received By

Date

Released By

Date

Received By

Date

PC HH

Cooler Receipt and Preservation Form

Client WPCL Service Request K2006545
Received: 8/3/20 Opened: 8/3/20 By: K Unloaded: 8/3/20 By: K

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID	Tracking Number	NA	Filed
<u>N/A</u>	<u>3.8</u>	<u>4.7</u>	<u>2.8</u>	<u>2.5</u>	<u>IR01</u>	<u>NA</u>	<u>NA</u>		

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y N
If applicable, tissue samples were received: Frozen Partially Thawed Thawed
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
11. Were VOA vials received without headspace? Indicate in the table below. NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____

SUBCONTRACT ORDER

**City of Portland Water Pollution Control Lab
W20H005**

R 2006545

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

ALS Environmental
1317 S. 13th Avenue
Kelso, WA 98626
Phone : (360) 577-7222
Fax: (360) 636-1068

WPCL Project Name
SPCR Investigations

TURNAROUND REQUEST

☐ Standard
☒ Rush 2 day(s)

Analysis	Due	Expires	Laboratory ID	Comments
Sample ID: W20H005-01				
	Solid	Sampled:07/31/20 11:45		
Out-Perchlorate	08/04/20 17:00	08/28/20 11:45		
Out-Cr+6	08/04/20 17:00	08/30/20 11:45		
<i>Containers Supplied:</i>				
G jar amber 4 oz (C)	G jar amber 4 oz (D)			
Sample ID: W20H005-02				
	Solid	Sampled:07/31/20 12:13		
Out-Perchlorate	08/04/20 17:00	08/28/20 12:13		
Out-Cr+6	08/04/20 17:00	08/30/20 12:13		
<i>Containers Supplied:</i>				
G jar amber 4 oz (C)	G jar amber 4 oz (D)			
Sample ID: W20H005-03				
	Solid	Sampled:07/31/20 12:45		
Out-Perchlorate	08/04/20 17:00	08/28/20 12:45		
Out-Cr+6	08/04/20 17:00	08/30/20 12:45		
<i>Containers Supplied:</i>				
G jar amber 4 oz (C)	G jar amber 4 oz (D)			
Sample ID: W20H005-04				
	Solid	Sampled:07/31/20 13:04		
Out-Perchlorate	08/04/20 17:00	08/28/20 13:04		
Out-Cr+6	08/04/20 17:00	08/30/20 13:04		
<i>Containers Supplied:</i>				
G jar amber 4 oz (C)	G jar amber 4 oz (D)			

*additional jar for project picked up on 8/3
ALS notified 11:27 8/4/20*

Released By <i>[Signature]</i>	Date <i>8/4/20 1230</i>	Received By <i>[Signature]</i>	Date <i>8/4/20 0950</i>
Released By <i>[Signature]</i>	Date <i>8/4/20 1230</i>	Received By <i>[Signature]</i>	Date <i>8/4/20 1230</i>

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W20H005

K2006545

Analysis	Due	Expires	Laboratory ID	Comments
----------	-----	---------	---------------	----------

Sample ID: W20H005-05	Solid	Sampled:07/31/20 13:22
-----------------------	-------	------------------------

Out-Perchlorate	08/04/20 17:00	08/28/20 13:22
-----------------	----------------	----------------

Out-Cr+6	08/04/20 17:00	08/30/20 13:22
----------	----------------	----------------

Containers Supplied:

G jar amber 4 oz (C)	G jar amber 4 oz (D)
----------------------	----------------------

Sample ID: W20H005-06	Solid	Sampled:07/31/20 13:48
-----------------------	-------	------------------------

Out-Perchlorate	08/04/20 17:00	08/28/20 13:48
-----------------	----------------	----------------

Out-Cr+6	08/04/20 17:00	08/30/20 13:48
----------	----------------	----------------

Containers Supplied:

G jar amber 4 oz (C)	G jar amber 4 oz (D)
----------------------	----------------------

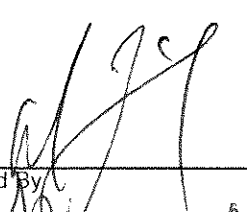
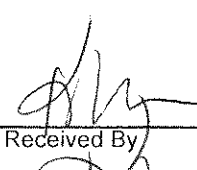


Sample ID: W20H005-07	Solid	Sampled:07/31/20 14:17
-----------------------	-------	------------------------

Out-Perchlorate	08/04/20 17:00	08/28/20 14:17
-----------------	----------------	----------------

Out-Cr+6	08/04/20 17:00	08/30/20 14:17
----------	----------------	----------------

Containers Supplied:

G jar amber 4 oz (C)	G jar amber 4 oz (D)
----------------------	----------------------

Released By	Date	Received By	Date
		 ALS	8/4/20 0950
	8/4/20 1230	 ALS	8/4/20 1230

PC HH

Cooler Receipt and Preservation Form

Client WRCE Service Request K20 06545
Received: 8/4/20 Opened: 8/4/20 By: [Signature] Unloaded: 8/4/20 By: [Signature]

1. Samples were received via? USPS Fed Ex UPS DHL PDX Courier Hand Delivered
2. Samples were received in: (circle) Cooler Box Envelope Other NA
3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID	Tracking Number	Filed
<u>NA</u>	<u>11.2</u>	<u>10.4</u>	<u>10.7</u>	<u>11.0</u>	<u>IR 01</u>	<u>NA</u>	<u>NA</u>	

4. Packing material: Inserts Baggies Bubble Wrap Gel Packs Wet Ice Dry Ice Sleeves _____
5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
6. Were samples received in good condition (temperature, unbroken)? Indicate in the table below. NA Y N
If applicable, tissue samples were received: Frozen Partially Thawed Thawed
7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
8. Did all sample labels and tags agree with custody papers? Indicate major discrepancies in the table on page 2. NA Y N
9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? Indicate in the table below NA Y N
11. Were VOA vials received without headspace? Indicate in the table below. NA Y N
12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count Bottle Type	Out of Temp	Head- space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions:

Bottles are additional volume for subcontracting
K2006545.



Total Solids

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: SPCR Investigations/W20H005
Sample Matrix: Soil
Analysis Method: 160.3 Modified
Prep Method: None

Service Request: K2006545
Date Collected: 07/31/20
Date Received: 08/3/20
Units: Percent
Basis: As Received

Solids, Total

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Q
W20H005-01	K2006545-001	66.7	-	-	1	08/04/20 14:24	
W20H005-02	K2006545-002	43.9	-	-	1	08/04/20 14:24	
W20H005-03	K2006545-003	46.9	-	-	1	08/04/20 14:24	
W20H005-04	K2006545-004	45.0	-	-	1	08/04/20 14:24	
W20H005-05	K2006545-005	75.1	-	-	1	08/04/20 14:24	
W20H005-06	K2006545-006	66.5	-	-	1	08/04/20 14:24	
W20H005-07	K2006545-007	78.9	-	-	1	08/04/20 14:24	

ALS Group USA, Corp.

dba ALS Environmental

QA/QC Report

Client: Portland, City of
Project SPCR Investigations/W20H005
Sample Matrix: Soil

Service Request: K2006545**Date Collected:** 07/31/20**Date Received:** 08/03/20**Date Analyzed:** 08/04/20**Replicate Sample Summary****Inorganic Parameters**

Sample Name: W20H005-01
Lab Code: K2006545-001

Units: Percent**Basis:** As Received

				Duplicate Sample K2006545- 001DUP			
Analyte Name	Analysis Method	MRL	Sample Result	Result	Average	RPD	RPD Limit
Solids, Total	160.3 Modified	-	66.7	66.9	66.8	<1	20

Results flagged with an asterisk (*) indicate values outside control criteria.

Results flagged with a pound (#) indicate the control criteria is not applicable.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.



General Chemistry

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: SPCR Investigations/W20H005
Sample Matrix: Soil
Analysis Method: 7196A
Prep Method: EPA 3060A

Service Request: K2006545
Date Collected: 07/31/20
Date Received: 08/3/20
Units: mg/Kg
Basis: Dry

Chromium, Hexavalent

Sample Name	Lab Code	Result	MRL	MDL	Dil.	Date Analyzed	Date Extracted	Q
W20H005-01	K2006545-001	0.65 J	0.75	0.12	1	08/12/20 14:38	8/12/20	
W20H005-02	K2006545-002	2.0 J	5.5	0.9	5	08/12/20 14:38	8/12/20	
W20H005-03	K2006545-003	0.9 J	5.3	0.9	5	08/12/20 14:38	8/12/20	
W20H005-04	K2006545-004	ND U	5.3	0.9	5	08/12/20 14:38	8/12/20	
W20H005-05	K2006545-005	ND U	0.64	0.11	1	08/12/20 14:38	8/12/20	
W20H005-06	K2006545-006	ND U	3.5	0.6	5	08/12/20 14:38	8/12/20	
W20H005-07	K2006545-007	ND U	3.0	0.5	5	08/12/20 14:38	8/12/20	
Method Blank	K2006545-MB	ND U	0.50	0.08	1	08/12/20 14:38	8/12/20	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Portland, City of
Project: SPCR Investigations/W20H005
Sample Matrix: Soil

Service Request: K2006545
Date Analyzed: 08/12/20
Date Extracted: 08/12/20

Lab Control Sample Summary
Chromium, Hexavalent

Analysis Method: 7196A
Prep Method: EPA 3060A

Units: mg/Kg
Basis: Dry
Analysis Lot: 690745

Sample Name	Lab Code	Result	Spike Amount	% Rec	% Rec Limits
Lab Control Sample	K2006545-LCS	3.10	2.94	106	80-120



Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



August 21, 2020

Service Request No:E2000712

Howard Holmes
ALS Environmental - Kelso

Laboratory Results for: K2006545

Dear Howard,

Enclosed are the results of the sample(s) submitted to our laboratory August 06, 2020
For your reference, these analyses have been assigned our service request number **E2000712**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental



Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client: ALS Kelso
Project: K2006545
Sample Matrix: S

Service Request No.: E2000712
Date Received: 08/06/20

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Seven samples were received for analysis at ALS Environmental in Houston on 08/06/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000339: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within QC limits.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US
Project: K2006545

Service Request:E2000712

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
E2000712-001	W20H005-01	7/31/2020	1145
E2000712-002	W20H005-02	7/31/2020	1213
E2000712-003	W20H005-03	7/31/2020	1245
E2000712-004	W20H005-04	7/31/2020	1304
E2000712-005	W20H005-05	7/31/2020	1322
E2000712-006	W20H005-06	7/31/2020	1348
E2000712-007	W20H005-07	7/31/2020	1417

Service Request Summary

Folder #: E2000712
Client Name: ALS Environmental - Houston
Project Name: K2006545
Project Number:

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/06/20
Internal Due Date: 8/12/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: K2006545
EDD: No EDD Specified

7 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

				HOUSTON	
				CIO4/6850	Total Solids/ALS SOP
Lab Samp No.	Client Samp No	Matrix	Collected		
E2000712-001	W20H005-01	Soil	07/31/20 1145	II	II
E2000712-002	W20H005-02	Soil	07/31/20 1213	II	II
E2000712-003	W20H005-03	Soil	07/31/20 1245	II	II
E2000712-004	W20H005-04	Soil	07/31/20 1304	II	II
E2000712-005	W20H005-05	Soil	07/31/20 1322	II	II
E2000712-006	W20H005-06	Soil	07/31/20 1348	II	II
E2000712-007	W20H005-07	Soil	07/31/20 1417	II	II

Folder #: E2000712
Client Name: ALS Environmental - Houston
Project Name: K2006545
Project Number:

Service Request Summary

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/06/20
Internal Due Date: 8/12/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: K2006545
EDD: No EDD Specified

7 4 oz-Glass Jar WM CLEAR Teflon Liner Unpreserved

Location: EHRMS-WIC 7D

Pressure Gas:

Data Qualifiers

Lab Standard

- + Possible Tedlar bag artifact.
- A TIC is a suspected aldol-condensation product
- B Analyte found in the associated method blank as well as in the sample.
- BC Reported results are not blank corrected.
- BH The back section of the tube yielded higher results than the front.
- BT Results indicated possible breakthrough; back section $\geq 10\%$ front section.
- C Result identification confirmed.
- D Compound identified in an analysis at a secondary dilution factor
- D Spike was diluted out
- DE Reported results are corrected for desorption efficiency.
- E Estimated value. Concentration above calibration range
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- H1 Sample analysis performed past holding time. See case narrative.
- H2 Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
- H3 Sample was received and analyzed past holding time.
- H4 Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
- I Internal standard not within the specified limits. See case narrative.
- J Estimated Value. Concentration found below MRL.
- K A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
- K Analyte was detected above the method reporting limit prior to normalization.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- L1 Laboratory control sample recovery outside the specified limits; results may be biased high.
- L2 Laboratory control sample recovery outside the specified limits; results may be biased low.
- L3 Laboratory control sample recovery outside the specified limits.
- M Matrix interference; results may be biased high.
- M The duplicate injection precision not met.
- M1 Matrix interference due to coelution with a non-target compound; results may be biased high.
- N Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Data Qualifiers

Lab Standard

- P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
- P Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
- Q Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
- R Duplicate Precision not met.
- R1 Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
- S Surrogate recovery not within specified limits.
- S The reported value was determined by the Method of Standard Additions (MSA).
- T Analyte is a tentatively identified compound, result is estimated.
- U Compound was analyzed for, but was not detected (ND).
- V1 The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
- V2 The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
- W Result quantified, but the corresponding peak was detected outside the generated retention time window.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- X See case narrative.
- Y Recovery outside limits
- Y The chromatogram resembles a petroleum product but does not match the calibration standard.
- Z The chromatogram does not resemble a petroleum product.
- i The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCEntration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
Nevada Department of Conservation and Natural Resources	TX026932021-1	7/31/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Conservation	04016-2020	4/30/2021
Texas Commission on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020



Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Number: K2006545
Project Manager: Howard Holmes
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample		Lab ID	Misc Out 1 None
				Date	Time		
K2006545-001	W20H005-01	1	Soil	7/31/20	1145	Houston Full	X
K2006545-002	W20H005-02	↓	Soil	7/31/20	1213	Houston Full	X
K2006545-003	W20H005-03		Soil	7/31/20	1245	Houston Full	X
K2006545-004	W20H005-04		Soil	7/31/20	1304	Houston Full	X
K2006545-005	W20H005-05		Soil	7/31/20	1322	Houston Full	X
K2006545-006	W20H005-06	↓	Soil	7/31/20	1348	Houston Full	X
K2006545-007	W20H005-07		Soil	7/31/20	1417	Houston Full	X

Test Comments

Misc Out 1 - None

K2006545-001,2,3,4,5,6,7

Perchlorate by 6850

Folder Comments:

Tier II

Special Instructions/Comments Please provide the electronic (PDF and EDD) report to the following e-mail address: <u>ALKLS.Data@alsglobal.com.</u> <i>Please send Report & Superset EDD to ALKLS.Data & Howard Holmes</i>	Turnaround Requirements <input checked="" type="checkbox"/> RUSH (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input type="checkbox"/> STANDARD Requested FAX Date: _____ Requested Report Date: <u>08/19/20</u>	Report Requirements <input type="checkbox"/> I. Results Only <input checked="" type="checkbox"/> II. Results + QC Summaries <input type="checkbox"/> III. Results + QC and Calibration Summaries <input type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>Y</u> EDD <u>Y</u>	Invoice Information PO# 51K2006545 Bill to
---	--	---	--

Page 41 of 66

I - Test is On Hold

P - Test is Authorized for Prep Only

Inquired By:

Chambers 8/5/2020 1145

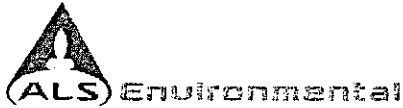
Received By:

Client needs Data ASAP

J. Williams 8/6/20 09:30

Airbill Number:

Page 31 of 56



Cooler Receipt Form

Project Chemist LL

Client/Project Alz

Thermometer ID 11231

Date/Time Received: 8/6/20

Initials: JM

Date/Time Logged in: 8/6/20

Initials LL

1. Method of delivery: ☐ US Mail ☒ Fed Ex ☐ UPS ☐ DHL ☐ Courier ☐ Client

2. Samples received in: ☒ Cooler ☐ Box ☐ Envelope ☐ Other

3. Were custody seals on coolers? ☒ Yes ☐ No

Were they intact? ☒ Yes ☐ No ☐ N/A

Were they signed and dated? ☒ Yes ☐ No ☐ N/A

If yes, how many
and where?

4. Packing Material: ☐ Inserts ☐ Baggies ☒ Bubble Wrap ☒ Gel Packs ☐ Wet Ice ☐ Sleeves ☐ Other

5. Foreign or Regulated Soil? ☐ Yes ☐ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		8/6/20	0930	JM	3.4	<input checked="" type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☒ Yes ☐ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☒ Yes ☐ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☒ Yes ☐ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ☒ Yes ☐ No

10. Did sample labels and tags agree with custody documents? ☒ Yes ☐ No

Notes, Discrepancies, & Resolutions:

Service request Label:



10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sample. The COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C.
- ✓ The sample temperature must be recorded on the COC.

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report.



Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 363305
Team: Semivoa GCMS/GRIVERA

Prep WorkFlow: Gen CLO4
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/11/20 16:05

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000712-001	W20H005-01	.01	6850/CIO4			Soil	0.991g	
2	E2000712-002	W20H005-02	.01	6850/CIO4			Soil	0.982g	
3	E2000712-003	W20H005-03	.01	6850/CIO4			Soil	1.053g	
4	E2000712-004	W20H005-04	.01	6850/CIO4			Soil	1.000g	
5	E2000712-005	W20H005-05	.01	6850/CIO4			Soil	1.039g	
6	E2000712-006	W20H005-06	.01	6850/CIO4			Soil	0.992g	
7	E2000712-007	W20H005-07	.01	6850/CIO4			Soil	1.079g	
8	E2000735-012	16EW07-200728	.01	6850/CIO4 DOD			Soil	0.971g	
9	EQ2000339-01	MB		6850/CIO4			Solid	1.007g	
10	EQ2000339-02	LCS		6850/CIO4			Solid	1.060g	
11	EQ2000339-03	DLCS		6850/CIO4			Solid	1.009g	
12	EQ2000339-04	16EW07-200728 MS	.01	6850/CIO4 DOD			Solid	1.034g	
13	EQ2000339-05	16EW07-200728 DMS	.01	6850/CIO4 DOD			Solid	0.988g	

Spiking Solutions

Name:	Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4	Inventory ID	202037	Logbook Ref:	Sodium Perchlorate	Expires On:	05/22/2021
-------	--	--------------	--------	--------------	--------------------	-------------	------------

E2000712-001 100.00µL E2000712-002 100.00µL E2000712-003 100.00µL E2000712-004 100.00µL E2000712-005 100.00µL E2000712-006 100.00µL
E2000712-007 100.00µL E2000735-012 100.00µL EQ2000339-01 100.00µL EQ2000339-02 100.00µL EQ2000339-03 100.00µL EQ2000339-04 100.00µL
EQ2000339-05 100.00µL

Name:	Perchlorate Intermediate Stock1	Inventory ID	209764	Logbook Ref:	Perchlorate Int. Stock1 51820	Expires On:	11/18/2020
-------	---------------------------------	--------------	--------	--------------	-------------------------------	-------------	------------

EQ2000339-02 100.00µL EQ2000339-03 100.00µL EQ2000339-04 100.00µL EQ2000339-05 100.00µL

Preparation Steps

Step: Extraction
Started: 8/11/20 16:05
Finished: 8/11/20 17:00
By: GRIVERA

Comments

Page 45 of 66

Comments: _____

Reviewed By: _____ Date: _____

Preparation Information Benchsheet

Prep Run#: 363305
Team: Semivoia GCMS/GRIVERA

Prep WorkFlow: Gen CLO4
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/11/20 16:05

Page 46 of 66

in of Custody

Relinquished By: _____ Date: _____

Received By: _____ Date: _____

Extracts Examined

Yes No

Printed 8/21/20 12:48

Preparation Information Benchsheet

Page 2



Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1145
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 12:59

Sample Name: W20H005-01
Lab Code: E2000712-001

Units: µg/Kg
Basis: Dry
Percent Solids: 67.4

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_026

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	292		15.0	11.2	4.50	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1145
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-01
Lab Code: E2000712-001

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	67.4					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1213
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 13:07

Sample Name: W20H005-02
Lab Code: E2000712-002

Units: µg/Kg
Basis: Dry
Percent Solids: 57.5

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_027

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND	U	17.7	13.3	5.32	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1213
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-02
Lab Code: E2000712-002

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	57.5					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1245
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 14:47

Sample Name: W20H005-03
Lab Code: E2000712-003

Units: µg/Kg
Basis: Dry
Percent Solids: 49.3

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_039

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND	U	19.3	14.4	5.78	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1245
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-03
Lab Code: E2000712-003

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	49.3					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1304
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 14:55

Sample Name: W20H005-04
Lab Code: E2000712-004

Units: µg/Kg
Basis: Dry
Percent Solids: 39.5

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_040

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	10.2	J	25.3	19.0	7.60	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1304
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-04
Lab Code: E2000712-004

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	39.5					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1322
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 15:03

Sample Name: W20H005-05
Lab Code: E2000712-005

Units: µg/Kg
Basis: Dry
Percent Solids: 68.6

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_041

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	2.81		2.81	2.10	0.842	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1322
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-05
Lab Code: E2000712-005

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	68.6					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1348
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 15:11

Sample Name: W20H005-06
Lab Code: E2000712-006

Units: µg/Kg
Basis: Dry
Percent Solids: 66.9

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_042

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 2

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	4.62		3.01	2.26	0.905	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1348
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-06
Lab Code: E2000712-006

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	66.9					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1417
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 15:18

Sample Name: W20H005-07
Lab Code: E2000712-007

Units: µg/Kg
Basis: Dry
Percent Solids: 79.0

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_043

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	18.2		11.7	8.80	3.52	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: 7/31/20 1417
Date Received: 8/ 6/20
Date Analyzed: 8/18/20 14:14

Sample Name: W20H005-07
Lab Code: E2000712-007

Units: Percent
Basis: NA

Total Solids

Analytical Method: ALS SOP
Data File Name:

Analysis Lot: 690525
Instrument Name: E-Balance-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
	Total Solids	79.0					

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 12:36

Sample Name: Method Blank
Lab Code: EQ2000339-01

Units: µg/Kg
Basis: Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_023

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND	U	0.993	0.750	0.300	



Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

QA/QC Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Analyzed: 8/20/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/Kg
Basis: Dry

Extraction Lot: 363305

Analyte Name	Lab Control Sample EQ2000339-02			Duplicate Lab Control Sample EQ2000339-03			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perchlorate	87.3	94.3	92	90.7	99.1	92	80 - 120	4	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 12:43

Sample Name: Lab Control Sample
Lab Code: EQ2000339-02

Units: µg/Kg
Basis: Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_024

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	87.3		0.943	0.750	0.300	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006545
Sample Matrix: Soil

Service Request: E2000712
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 12:51

Sample Name: Duplicate Lab Control Sample
Lab Code: EQ2000339-03

Units: µg/Kg
Basis: Dry

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_025

Analysis Lot: 691993
Extraction Lot: 363305
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	90.7		0.991	0.750	0.300	



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656



August 26, 2020

Kevin Veaudry-Casaus

Spill Protection and Citizen Response

Work Order
W20H006

Project
Riot Control Agent Residual Investigation

Received
07/31/20 16:19

Enclosed are the results of analysis for the above work order. If you have questions concerning this report, please contact your project coordinator Peter Abrams at 503-823-5533.

Jennifer Shackelford
Laboratory Manager





City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



LABORATORY ANALYSIS REPORT

Project: **Riot Control Agent Residual Investigation** Client: Spill Protection and Citizen Response
Work Order: **W20H006** Project Mgr: Kevin Veaudry-Casaus
Received: 7/31/20 16:19
Submitted By: Field Operations

Sample	Laboratory ID	Matrix	Type	Sample Collection Date		Qualifier
				Start	End	
ABQ559	W20H006-01	Water	Grab	07/31/20 14:57	07/31/20 14:57	
ABQ607	W20H006-02	Water	Grab	07/31/20 15:24	07/31/20 15:24	

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-------	-----	------	-------	----------	----------	--------	-----------

General Chemistry

Total Cyanide

ABQ559 : W20H006-01

Cyanide ND mg/L 0.0100 B20H082 08/06/20 08/06/20 SM 4500-CN E

ABQ607 : W20H006-02

Cyanide ND mg/L 0.0100 B20H082 08/06/20 08/06/20 SM 4500-CN E

Total Metals

Total Metals by ICPMS

ABQ559 : W20H006-01

Antimony	ND	ug/L	0.200	1	B20H041	08/04/20	08/04/20	EPA 200.8
Barium	107	ug/L	1.00	1	B20H041	08/04/20	08/04/20	EPA 200.8
Chromium	ND	ug/L	0.400	1	B20H041	08/04/20	08/04/20	EPA 200.8
Copper	4.48	ug/L	0.400	1	B20H041	08/04/20	08/04/20	EPA 200.8
Lead	0.389	ug/L	0.200	1	B20H041	08/04/20	08/04/20	EPA 200.8
Zinc	19.0	ug/L	1.00	1	B20H041	08/04/20	08/04/20	EPA 200.8

ABQ607 : W20H006-02

Antimony	ND	ug/L	0.200	1	B20H041	08/04/20	08/04/20	EPA 200.8
Barium	127	ug/L	1.00	1	B20H041	08/04/20	08/04/20	EPA 200.8
Chromium	0.742	ug/L	0.400	1	B20H041	08/04/20	08/04/20	EPA 200.8
Copper	6.22	ug/L	0.400	1	B20H041	08/04/20	08/04/20	EPA 200.8
Lead	1.01	ug/L	0.200	1	B20H041	08/04/20	08/04/20	EPA 200.8
Zinc	27.8	ug/L	1.00	1	B20H041	08/04/20	08/04/20	EPA 200.8

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**

Client: **Spill Protection and Citizen Response**

Work Order: **W20H006**

Received: **07/31/20 16:19**

Analyte	Result	Units	MRL	Dil.	Batch	Prepared	Analyzed	Method	Qualifier
---------	--------	-------	-----	------	-------	----------	----------	--------	-----------

Dissolved Metals

Dissolved Metals by ICPMS

ABQ559 : W20H006-01

Antimony, dissolved	ND	ug/L	0.106	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Barium, dissolved	104	ug/L	0.529	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Chromium, dissolved	ND	ug/L	0.212	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Copper, dissolved	4.21	ug/L	0.212	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Lead, dissolved	0.178	ug/L	0.106	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Zinc, dissolved	17.8	ug/L	0.529	1	B20H039	08/04/20	08/04/20	EPA 200.8	

ABQ607 : W20H006-02

Antimony, dissolved	ND	ug/L	0.106	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Barium, dissolved	105	ug/L	0.529	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Chromium, dissolved	ND	ug/L	0.212	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Copper, dissolved	3.91	ug/L	0.212	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Lead, dissolved	0.269	ug/L	0.106	1	B20H039	08/04/20	08/04/20	EPA 200.8	
Zinc, dissolved	11.5	ug/L	0.529	1	B20H039	08/04/20	08/04/20	EPA 200.8	

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**
Work Order: **W20H006**

Client: **Spill Protection and Citizen Response**
Received: **07/31/20 16:19**

Quality Control Report

General Chemistry - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Cyanide - Batch B20H082									
Blank (B20H082-BLK1)									
Cyanide	ND	mg/L	0.0100					08/06/20 :08/06/20	
LCS (B20H082-BS1)									
Cyanide	0.0515	mg/L	0.0100	0.0500		103% (85-115)		08/06/20 :08/06/20	
Duplicate (B20H082-DUP1) Source: W20G248-01									
Cyanide	ND	mg/L	0.0500		ND	(20)		08/06/20 :08/06/20	D1
Matrix Spike (B20H082-MS1) Source: W20G248-01									
Cyanide	0.152	mg/L	0.0500	0.250	ND	61% (80-120)		08/06/20 :08/06/20	D1, M4
Matrix Spike Dup (B20H082-MSD1) Source: W20G248-01									
Cyanide	0.215	mg/L	0.0500	0.250	ND	86% (80-120)	34 (20)	08/06/20 :08/06/20	D1

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
Total Metals by ICPMS - Batch B20H041									
Blank (B20H041-BLK1)									
Antimony	ND	ug/L	0.200					08/04/20 :08/04/20	
Barium	ND	ug/L	1.00					08/04/20 :08/04/20	
Chromium	ND	ug/L	0.400					08/04/20 :08/04/20	
Copper	ND	ug/L	0.400					08/04/20 :08/04/20	
Lead	ND	ug/L	0.200					08/04/20 :08/04/20	
Zinc	ND	ug/L	1.00					08/04/20 :08/04/20	
LCS (B20H041-BS1)									
Antimony	21.5	ug/L	0.200	20.0		108% (85-115)		08/04/20 :08/04/20	
Barium	20.4	ug/L	1.00	20.0		102% (85-115)		08/04/20 :08/04/20	
Chromium	19.4	ug/L	0.400	20.0		97% (85-115)		08/04/20 :08/04/20	
Copper	19.4	ug/L	0.400	20.0		97% (85-115)		08/04/20 :08/04/20	
Lead	19.8	ug/L	0.200	20.0		99% (85-115)		08/04/20 :08/04/20	
Zinc	102	ug/L	1.00	100		102% (85-115)		08/04/20 :08/04/20	
Duplicate (B20H041-DUP1) Source: W20H006-02									
Antimony	ND	ug/L	0.200		ND	(20)		08/04/20 :08/04/20	
Barium	128	ug/L	1.00		127	0.2 (20)		08/04/20 :08/04/20	

Reported: 08/26/20 15:03

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual
Investigation**

Client: **Spill Protection and Citizen Response**

Work Order: **W20H006**

Received: **07/31/20 16:19**

Total Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-------	-----	----------------	------------------	------------------	----------------	-----------------------	-----------

Total Metals by ICPMS - Batch B20H041

Duplicate (B20H041-DUP1)

Source: W20H006-02

Chromium	0.553 ug/L		0.400		0.742		29 (20)	08/04/20 :08/04/20	M8
Copper	5.96 ug/L		0.400		6.22		4 (20)	08/04/20 :08/04/20	
Lead	0.877 ug/L		0.200		1.01		14 (20)	08/04/20 :08/04/20	
Zinc	25.7 ug/L		1.00		27.8		8 (20)	08/04/20 :08/04/20	

Matrix Spike (B20H041-MS1)

Source: W20H006-02

Antimony	21.7 ug/L		0.200	20.0	ND	109% (70-130)		08/04/20 :08/04/20	
Barium	148 ug/L		1.00	20.0	127	103% (70-130)		08/04/20 :08/04/20	
Chromium	19.4 ug/L		0.400	20.0	0.742	93% (70-130)		08/04/20 :08/04/20	
Copper	23.8 ug/L		0.400	20.0	6.22	88% (70-130)		08/04/20 :08/04/20	
Lead	21.1 ug/L		0.200	20.0	1.01	100% (70-130)		08/04/20 :08/04/20	
Zinc	121 ug/L		1.00	100	27.8	93% (70-130)		08/04/20 :08/04/20	

Reported: 08/26/20 15:03

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual Investigation**
Work Order: **W20H006**

Client: **Spill Protection and Citizen Response**
Received: **07/31/20 16:19**

Dissolved Metals - QC

Analyte	Result	Units	MRL	Spike Level	Source Result	%Rec (Limits)	RPD (Limit)	Prepared: Analyzed	Qualifier
---------	--------	-------	-----	-------------	---------------	---------------	-------------	--------------------	-----------

Dissolved Metals by ICPMS - Batch B20H039

Blank (B20H039-BLK1)

Antimony, dissolved	ND	ug/L	0.106					08/04/20 :08/04/20	
Barium, dissolved	ND	ug/L	0.529					08/04/20 :08/04/20	
Chromium, dissolved	ND	ug/L	0.212					08/04/20 :08/04/20	
Copper, dissolved	ND	ug/L	0.212					08/04/20 :08/04/20	
Lead, dissolved	ND	ug/L	0.106					08/04/20 :08/04/20	
Zinc, dissolved	ND	ug/L	0.529					08/04/20 :08/04/20	

LCS (B20H039-BS1)

Antimony, dissolved	5.37	ug/L	0.107	5.34		101% (85-115)		08/04/20 :08/04/20	
Barium, dissolved	78.0	ug/L	0.534	80.0		97% (85-115)		08/04/20 :08/04/20	
Chromium, dissolved	15.5	ug/L	0.213	16.0		97% (85-115)		08/04/20 :08/04/20	
Copper, dissolved	25.8	ug/L	0.213	26.7		97% (85-115)		08/04/20 :08/04/20	
Lead, dissolved	25.6	ug/L	0.107	26.7		96% (85-115)		08/04/20 :08/04/20	
Zinc, dissolved	26.7	ug/L	0.534	26.7		100% (85-115)		08/04/20 :08/04/20	

Duplicate (B20H039-DUP1)

Source: W20H014-02

Antimony, dissolved	ND	ug/L	0.106		ND	(20)		08/04/20 :08/04/20	
Barium, dissolved	49.9	ug/L	0.529		50.2	0.8 (20)		08/04/20 :08/04/20	
Chromium, dissolved	ND	ug/L	0.212		ND	(20)		08/04/20 :08/04/20	
Copper, dissolved	ND	ug/L	0.212		0.221	(20)		08/04/20 :08/04/20	
Lead, dissolved	ND	ug/L	0.106		ND	(20)		08/04/20 :08/04/20	
Zinc, dissolved	ND	ug/L	0.529		ND	(20)		08/04/20 :08/04/20	

Matrix Spike (B20H039-MS1)

Source: W20H014-02

Antimony, dissolved	5.47	ug/L	0.107	5.34	ND	103% (70-130)		08/04/20 :08/04/20	
Barium, dissolved	127	ug/L	0.534	80.0	50.2	96% (70-130)		08/04/20 :08/04/20	
Chromium, dissolved	14.7	ug/L	0.213	16.0	ND	92% (70-130)		08/04/20 :08/04/20	
Copper, dissolved	24.3	ug/L	0.213	26.7	0.221	90% (70-130)		08/04/20 :08/04/20	
Lead, dissolved	26.0	ug/L	0.107	26.7	ND	98% (70-130)		08/04/20 :08/04/20	
Zinc, dissolved	25.7	ug/L	0.534	26.7	ND	96% (70-130)		08/04/20 :08/04/20	

Reported: 08/26/20 15:03

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Jennifer Shackelford

Jennifer Shackelford, Laboratory Manager



City of Portland
Water Pollution Control Laboratory

6543 N. Burlington Ave. / Portland OR 97203 (503) 823-5600 fax (503) 823-5656
ORELAP Certification ID 4023



Project: **Riot Control Agent Residual
Investigation**

Client: Spill Protection and Citizen Response

Work Order: **W20H006**

Received: 07/31/20 16:19

Qualifiers

- D1 The sample required dilution due to non-target matrix interferences, resulting in raised reporting limits.
M4 Based on low matrix spike recovery, the sample result may be a low estimate due to matrix interference.
M8 The matrix duplicate control limit is not applicable at concentrations less than 5 times the reporting limit.

Definitions

DET	Analyte Detected	ND	Analyte Not Detected at or above the reporting limit
MRL	Method Reporting Limit	MDL	Method Detection Limit
NR	Not Reportable	dry	Sample results reported on a dry weight basis
% Rec.	Percent Recovery	RPD	Relative Percent Difference
*	This analyte is not certified under NELAP		

Reported: 08/26/20 15:03

Jennifer Shackelford, Laboratory Manager

The results in this report apply only to the samples analyzed. Qualifiers and case narrative comments are essential to interpretation of the analytical results. Report reproductions and/or data summaries without qualifiers and comments are incomplete.

Water Pollution Control Laboratory
6543 N. Burlington Ave.
Portland, Oregon 97203-4552
Sample Custodian: (503) 823-5696
General Lab: (503) 823-5681



City of Portland Chain-of-Custody



Bureau of Environmental Services

Date: 7/31/20

Work Order #: W20H006

Collected By: MJS/KCB

Client Name: Spill Protection & Citizen Response

City of Portland Bureau:

Project Name: SPCR Investigations

Contact: Kevin Veady-Cassius

Phone #: 823-6711

Requested Analyses

Lab Number	Special Instructions: Lab: Please Call SPCR (3-7180) with preliminary results.				Turn-Around-Time Request: <input type="checkbox"/> Standard (10 business days) <input checked="" type="checkbox"/> Rush (5 business days)					
	Location ID	Sample Date	Sample Time	Grab or Comp						
01	ABQ 559	7/31/20	1457	G	Storm water		6			
02	ABQ 607	7/31/20	1524	G	Storm water		6			

Relinquished By: Signature: <i>Randy C Belston</i> Printed Name: RANDY C BELSTON Date: 7/31/20 Time: 1619	Received By: Signature: <i>Matt Clark</i> Printed Name: Matt Clark Date: 7/31/20 Time: 1619	Relinquished By: Signature: Printed Name: Date: Time:	Received By: Signature: Printed Name: Date: Time:
--	--	--	--

WPCL Cooler Receipt Form

Work Order Number: W20H006

Cooler Receipt Form Filled Out By: MC

Project: SPCR Investigations

Received on ice: YES NO (circle one) [If directly from field, indicate here: _____]

Sample(s) Received From: CBWTP fridge _____ Client ✓ Courier _____

Temperature (°C): 12

	Yes	No	N/A
Is the COC present and signed?	<u>✓</u>		
Are sample bottles intact?	<u>✓</u>		
Do the COC and sample labels match?	<u>✓</u>		
Are the appropriate containers used?	<u>✓</u>		
Are samples appropriately preserved?	<u>✓</u>		
Do VOA vials or alkalinity bottles have Headspace? (circle which this applies to)			<u>✓</u>
Are samples received within holding times (except for pH and residual chlorine)?	<u>✓</u>		

Pres. #	Preservative	LIMS ID	Standard Preservation Amounts
1	HNO ₃ (1:1) to pH <2	2000696	0.5mL/250mL; 1.0mL/500mL; 4-5 drops/50mL centrifuge tube
2	H ₂ SO ₄ (18N) to pH <2		0.4mL/250mL; 0.8mL/500mL; 1.6mL/1000mL
3	HCl (1:1) to pH <2		1.0mL/500mL; 2.0mL/1000mL
4	HCl (1:1) to pH 2-3		For TOC: 2-5 drops/250mL
5	NaOH (pellets) to pH >12	1800987	4-10 pellets/500mL; 8-20 pellets/1000mL

Date	Time	Analyst	Sample LIMS ID	Bottle ID	Pres. #	Comments
7/31/20	1625	MC	W20H006-01,02	A/B	1	
↓	↓	↓	↓	C	5	preserved in field, pH ok ✓
↓	↓	↓	↓	D/E	Ammonium sulfate 2001073	preserved in field, pH ok ✓

Comments: _____



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

August 21, 2020

Analytical Report for Service Request No: K2006544

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

RE: SPCR Investigations / W20H006

Dear Jennifer,

Enclosed are the results of the sample(s) submitted to our laboratory August 03, 2020
For your reference, these analyses have been assigned our service request number **K2006544**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current NELAP standards, where applicable, and except as noted in the laboratory case narrative provided. For a specific list of NELAP-accredited analytes, refer to the certifications section at www.alsglobal.com. All results are intended to be considered in their entirety, and ALS Group USA Corp. dba ALS Environmental (ALS) is not responsible for use of less than the complete report. Results apply only to the items submitted to the laboratory for analysis and individual items (samples) analyzed, as listed in the report.

Please contact me if you have any questions. My extension is 3364. You may also contact me via email at howard.holmes@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Howard Holmes
Project Manager



ALS Environmental
ALS Group USA, Corp
1317 South 13th Avenue
Kelso, WA 98626
T : +1 360 577 7222
F : +1 360 636 1068
www.alsglobal.com

Table of Contents

Acronyms

Qualifiers

State Certifications, Accreditations, And Licenses

Chain of Custody

Subcontract Lab Results

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LOD	Limit of Detection
LOQ	Limit of Quantitation
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

Inorganic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- E The result is an estimate amount because the value exceeded the instrument calibration range.
- J The result is an estimated value.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.
- H The holding time for this test is immediately following sample collection. The samples were analyzed as soon as possible after receipt by the laboratory.

Metals Data Qualifiers

- # The control limit criteria is not applicable. See case narrative.
- J The result is an estimated value.
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- M The duplicate injection precision was not met.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- S The reported value was determined by the Method of Standard Additions (MSA).
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- i The MRL/MDL or LOQ/LOD is elevated due to a matrix interference.
- X See case narrative.
- + The correlation coefficient for the MSA is less than 0.995.
- Q See case narrative. One or more quality control criteria was outside the limits.

Organic Data Qualifiers

- * The result is an outlier. See case narrative.
- # The control limit criteria is not applicable. See case narrative.
- A A tentatively identified compound, a suspected aldol-condensation product.
- B The analyte was found in the associated method blank at a level that is significant relative to the sample result as defined by the DOD or NELAC standards.
- C The analyte was qualitatively confirmed using GC/MS techniques, pattern recognition, or by comparing to historical data.
- D The reported result is from a dilution.
- E The result is an estimated value.
- J The result is an estimated value.
- N The result is presumptive. The analyte was tentatively identified, but a confirmation analysis was not performed.
- p The GC or HPLC confirmation criteria was exceeded. The relative percent difference is greater than 40% between the two analytical results.
- U The analyte was analyzed for, but was not detected ("Non-detect") at or above the MRL/MDL.
DOD-QSM 4.2 definition : Analyte was not detected and is reported as less than the LOD or as defined by the project. The detection limit is adjusted for dilution.
- i The MRL/MDL or LOQ/LOD is elevated due to a chromatographic interference.
- X See case narrative.
- Q See case narrative. One or more quality control criteria was outside the limits.

Additional Petroleum Hydrocarbon Specific Qualifiers

- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.
- Y The chromatographic fingerprint of the sample resembles a petroleum product eluting in approximately the correct carbon range, but the elution pattern does not match the calibration standard.
- Z The chromatographic fingerprint does not resemble a petroleum product.

ALS Group USA Corp. dba ALS Environmental (ALS) - Kelso
State Certifications, Accreditations, and Licenses

Agency	Web Site	Number
Alaska DEH	http://dec.alaska.gov/eh/lab/cs/csapproval.htm	UST-040
Arizona DHS	http://www.azdhs.gov/lab/license/env.htm	AZ0339
Arkansas - DEQ	http://www.adeq.state.ar.us/techsvs/labcert.htm	88-0637
California DHS (ELAP)	http://www.cdph.ca.gov/certlic/labs/Pages/ELAP.aspx	2795
DOD ELAP	http://www.denix.osd.mil/edqw/Accreditation/AccreditedLabs.cfm	L16-58-R4
Florida DOH	http://www.doh.state.fl.us/lab/EnvLabCert/WaterCert.htm	E87412
Hawaii DOH	http://health.hawaii.gov/	-
ISO 17025	http://www.pjllabs.com/	L16-57
Louisiana DEQ	http://www.deq.louisiana.gov/page/la-lab-accreditation	03016
Maine DHS	http://www.maine.gov/dhhs/	WA01276
Minnesota DOH	http://www.health.state.mn.us/accreditation	053-999-457
Nevada DEP	http://ndep.nv.gov/bsdwlabservice.htm	WA01276
New Jersey DEP	http://www.nj.gov/dep/enforcement/oqa.html	WA005
New York - DOH	https://www.wadsworth.org/regulatory/elap	12060
North Carolina DEQ	https://deq.nc.gov/about/divisions/water-resources/water-resources-data/water-sciences-home-page/laboratory-certification-branch/non-field-lab-certification	605
Oklahoma DEQ	http://www.deq.state.ok.us/CSDnew/labcert.htm	9801
Oregon – DEQ (NELAP)	http://public.health.oregon.gov/LaboratoryServices/EnvironmentalLaboratoryAccreditation/Pages/index.aspx	WA100010
South Carolina DHEC	http://www.scdhec.gov/environment/EnvironmentalLabCertification/	61002
Texas CEQ	http://www.tceq.texas.gov/field/qa/env_lab_accreditation.html	T104704427
Washington DOE	http://www.ecy.wa.gov/programs/eap/labs/lab-accreditation.html	C544
Wyoming (EPA Region 8)	https://www.epa.gov/region8-waterops/epa-region-8-certified-drinking-water	-
Kelso Laboratory Website	www.alsglobal.com	NA

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. A complete listing of specific NELAP-certified analytes, can be found in the certification section at www.ALSGlobal.com or at the accreditation bodies web site.

Please refer to the certification and/or accreditation body's web site if samples are submitted for compliance purposes. The states highlighted above, require the analysis be listed on the state certification if used for compliance purposes and if the method/analyte is offered by that state.



Chain of Custody

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577- 7222 Fax (360)636- 1068
www.alsglobal.com

SUBCONTRACT ORDER
City of Portland Water Pollution Control Lab
W20H006

K2006544

SENDING LABORATORY:

City of Portland Water Pollution Control Lab
6543 N. Burlington Ave
Portland, OR 97203
Phone: 503-823-5600
Fax: 503-823-5656
Invoice To: Charles Lytle

RECEIVING LABORATORY:

ALS Environmental
1317 S. 13th Avenue
Kelso, WA 98626
Phone: (360) 577-7222
Fax: (360) 636-1068

WPCL Project Name
SPCR Investigations

TURNAROUND REQUEST

☐ Standard
☒ Rush 2 day(s)

Analysis	Due	Expires	Laboratory ID	Comments
<hr/>				
Sample ID: W20H006-01	Water	Sampled:07/31/20 14:57		
Out-Perchlorate	08/04/20 17:00	08/28/20 14:57		
Out-Cr+6 diss	08/04/20 17:00	08/30/20 14:57		
Out-Cr+6	08/04/20 17:00	08/30/20 14:57		
Containers Supplied:				
P 250ml (D)	P 250ml (E)	P 250ml (F)		
<hr/>				
Sample ID: W20H006-02	Water	Sampled:07/31/20 15:24		
Out-Perchlorate	08/04/20 17:00	08/28/20 15:24		
Out-Cr+6 diss	08/04/20 17:00	08/30/20 15:24		
Out-Cr+6	08/04/20 17:00	08/30/20 15:24		
Containers Supplied:				
P 250ml (D)	P 250ml (E)	P 250ml (F)		

Released By

Date

Received By

Date

Released By

Date

Received By

Date

PC HH

Cooler Receipt and Preservation Form

Client WPCL Service Request K2006544
 Received: 8/3/20 Opened: 8/3/20 By: h Unloaded: 8/3/20 By: h

1. Samples were received via? **USPS** **Fed Ex** **UPS** **DHL** **PDX** **Courier** **Hand Delivered**
 2. Samples were received in: (circle) **Cooler** **Box** **Envelope** **Other** NA
 3. Were custody seals on coolers? NA Y N If yes, how many and where? _____
 If present, were custody seals intact? Y N If present, were they signed and dated? Y N

Temp Blank	Sample 1	Sample 2	Sample 3	Sample 4	IR GUN	Cooler / COC ID	Tracking Number	NA	Filed
<u>N/A</u>	<u>3.8</u>	<u>4.7</u>	<u>2.8</u>	<u>2.5</u>	<u>IL01</u>	<u>NA</u>	<u>NA</u>		

4. Packing material: **Inserts** **Baggies** **Bubble Wrap** **Gel Packs** **Wet Ice** **Dry Ice** **Sleeves** _____
 5. Were custody papers properly filled out (ink, signed, etc.)? NA Y N
 6. Were samples received in good condition (temperature, unbroken)? NA Y N
 If applicable, tissue samples were received: **Frozen** **Partially Thawed** **Thawed**
 7. Were all sample labels complete (i.e analysis, preservation, etc.)? NA Y N
 8. Did all sample labels and tags agree with custody papers? NA Y N
 9. Were appropriate bottles/containers and volumes received for the tests indicated? NA Y N
 10. Were the pH-preserved bottles (see SMO GEN SOP) received at the appropriate pH? NA Y N
 11. Were VOA vials received without headspace? NA Y N
 12. Was C12/Res negative? NA Y N

Sample ID on Bottle	Sample ID on COC	Identified by:

Sample ID	Bottle Count	Bottle Type	Out of Temp	Head-space	Broke	pH	Reagent	Volume added	Reagent Lot Number	Initials	Time

Notes, Discrepancies, & Resolutions: _____



Subcontract Lab Results

ALS Environmental—Kelso Laboratory
1317 South 13th Avenue, Kelso, WA 98626
Phone (360)577-7222 Fax (360)636-1068
www.alsglobal.com



August 21, 2020

Service Request No:E2000711

Howard Holmes
ALS Environmental - Kelso

Laboratory Results for: K2006544

Dear Howard,

Enclosed are the results of the sample(s) submitted to our laboratory August 06, 2020
For your reference, these analyses have been assigned our service request number **E2000711**.

Analyses were performed according to our laboratory's NELAP-approved quality assurance program. The test results meet requirements of the current TNI standards, where applicable, and except as noted in the laboratory case narrative provided. All results are intended to be considered in their entirety and ALS Environmental is not responsible for use of less than the complete final report. Results apply only to the items submitted to the laboratory, as received for analysis. In accordance with the current TNI Standard, a statement on the estimated uncertainty of measurement of any quantitative analysis will be supplied upon request.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Corey Grandits
Project Manager

ADDRESS 10450 Stancliff Rd., Suite 210, Houston, TX 77099
PHONE +1 281 530 5656 | FAX +1 281 530 5887
ALS Group USA, Corp.
dba ALS Environmental



Certificate of Analysis

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental

Client: ALS Kelso
Project: K2006544
Sample Matrix: W

Service Request No.: E2000711
Date Received: 08/06/20

CASE NARRATIVE

All analyses were performed in adherence to the quality assurance program of ALS Environmental. This report contains analytical results for samples designated for Tier II. When appropriate to the method, method blank results have been reported with each analytical test.

Sample Receipt

Two samples were received for analysis at ALS Environmental in Houston on 08/06/20.

The samples were received in good condition and are consistent with the accompanying chain of custody form. The samples were stored in a refrigerator at 4°C upon receipt at the laboratory.

Data Validation Notes and Discussion

Precision and Accuracy:

EQ2000337: Laboratory Control Spike/Duplicate Laboratory Control Spike (LCS/DLCS) samples were analyzed and reported in lieu of a MS/MSD for this extraction batch. The LCS and DLCS recoveries are within QC limits.

The results of analyses are given in the attached laboratory report. All results are intended to be considered in their entirety, and ALS Environmental (ALS) is not responsible for utilization of less than the complete report.

Use of ALS group USA Corp dba ALS Environmental (ALS)'s Name. Client shall not use ALS's name or trademark in any marketing or reporting materials, press releases or in any other manner ("Materials") whatsoever and shall not attribute to ALS any test result, tolerance or specification derived from ALS's data ("Attribution") without ALS's prior written consent, which may be withheld by ALS for any reason in its sole discretion. To request ALS's consent, Client shall provide copies of the proposed Materials or Attribution and describe in writing Client's proposed use of such Materials or Attribution. If ALS has not provided written approval of the Materials or Attribution within ten (10) days of receipt from Client, Client's request to use ALS's name or trademark in any Materials or Attribution shall be deemed denied. ALS may, in its discretion, reasonably charge Client for its time in reviewing Materials or Attribution requests. Client acknowledges and agrees that the unauthorized use of ALS's name or trademark may cause ALS to incur irreparable harm for which the recovery of money damages will be inadequate. Accordingly, Client acknowledges and agrees that a violation shall justify preliminary injunctive relief. For questions contact the laboratory.

Client: ALS Environmental - US
Project: K2006544

Service Request:E2000711

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
E2000711-001	W20H006-01	7/31/2020	1457
E2000711-002	W20H006-02	7/31/2020	1524

Service Request Summary

Folder #: E2000711
Client Name: ALS Environmental - Houston
Project Name: K2006544
Project Number:

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/06/20
Internal Due Date: 8/12/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: K2006544
EDD: No EDD Specified

2 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved
Location: EHRMS-WIC 7D
Pressure Gas:

				HOUSTON
				CIO4/6850
Lab Samp No.	Client Samp No	Matrix	Collected	
E2000711-001	W20H006-01	Water	07/31/20 1457	II
E2000711-002	W20H006-02	Water	07/31/20 1524	II

Folder #: E2000711
Client Name: ALS Environmental - Houston
Project Name: K2006544
Project Number:

Service Request Summary

Project Chemist: Corey Grandits
Originating Lab: HOUSTON
Logged By: CGRANDITS
Date Received: 08/06/20
Internal Due Date: 8/12/2020
QAP: LAB QAP
Qualifier Set: Lab Standard
Formset: Lab Standard
Merged?: N
Report to MDL?: Y
P.O. Number: K2006544
EDD: No EDD Specified

2 250 mL-Plastic Bottle HDPE WM CLEAR Unpreserved

Location: EHRMS-WIC 7D

Pressure Gas:

Data Qualifiers

Lab Standard

- + Possible Tedlar bag artifact.
- A TIC is a suspected aldol-condensation product
- B Analyte found in the associated method blank as well as in the sample.
- BC Reported results are not blank corrected.
- BH The back section of the tube yielded higher results than the front.
- BT Results indicated possible breakthrough; back section $\geq 10\%$ front section.
- C Result identification confirmed.
- D Compound identified in an analysis at a secondary dilution factor
- D Spike was diluted out
- DE Reported results are corrected for desorption efficiency.
- E Estimated value. Concentration above calibration range
- E The percent difference for the serial dilution was greater than 10%, indicating a possible matrix interference in the sample.
- F The chromatographic fingerprint of the sample matches the elution pattern of the calibration standard.
- H The chromatographic fingerprint of the sample resembles a petroleum product but the elution pattern indicates the presence of a greater amount of heavier molecular weight constituents than the calibration standard.
- H1 Sample analysis performed past holding time. See case narrative.
- H2 Initial analysis within holding time. Reanalysis for the required dilution was past holding time.
- H3 Sample was received and analyzed past holding time.
- H4 Sample was extracted past required extraction holding time, but analyzed within analysis holding time. See case narrative.
- I Internal standard not within the specified limits. See case narrative.
- J Estimated Value. Concentration found below MRL.
- K A deflection in the QC ion may indicate interference with the quantitation of this ion. The concentration of this analyte should be considered as an estimate.
- K Analyte was detected above the method reporting limit prior to normalization.
- L The chromatographic fingerprint of the sample resembles a petroleum product, but the elution pattern indicates the presence of a greater amount of lighter molecular weight constituents than the calibration standard.
- L1 Laboratory control sample recovery outside the specified limits; results may be biased high.
- L2 Laboratory control sample recovery outside the specified limits; results may be biased low.
- L3 Laboratory control sample recovery outside the specified limits.
- M Matrix interference; results may be biased high.
- M The duplicate injection precision not met.
- M1 Matrix interference due to coelution with a non-target compound; results may be biased high.
- N Presumptive evidence of a compound for TICs that have been identified based on a mass spectral library search.
- N The Matrix Spike sample recovery is not within control limits. See case narrative.
- O The chromatographic fingerprint of the sample resembles an oil, but does not match the calibration standard.

Data Qualifiers

Lab Standard

- P Indicates chlorodiphenyl ether interference present at the retention time of the target compound.
- P Pesticide/Aroclor target analyte > 40% difference for detected concentrations between GC columns
- Q Indicates as estimated value because the P and P + 2 theoretical abundance ratio does not meet method criteria.
- R Duplicate Precision not met.
- R1 Duplicate precision not within the specified limits; however, the results are below the MRL and considered estimated.
- S Surrogate recovery not within specified limits.
- S The reported value was determined by the Method of Standard Additions (MSA).
- T Analyte is a tentatively identified compound, result is estimated.
- U Compound was analyzed for, but was not detected (ND).
- V1 The continuing calibration verification standard was outside (biased high) the specified limits for this compound.
- V2 The continuing calibration verification standard was outside (biased low) the specified limits for this compound.
- W Result quantified, but the corresponding peak was detected outside the generated retention time window.
- W The post-digestion spike for furnace AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- X See case narrative.
- Y Recovery outside limits
- Y The chromatogram resembles a petroleum product but does not match the calibration standard.
- Z The chromatogram does not resemble a petroleum product.
- i The MRL/MDL has been elevated due to a matrix interference.

ALS Laboratory Group

Acronyms

Cal	Calibration
Conc	CONCEntration
Dioxin(s)	Polychlorinated dibenzo-p-dioxin(s)
EDL	Estimated Detection Limit
EMPC	Estimated Maximum Possible Concentration
Flags	Data qualifiers
Furan(s)	Polychlorinated dibenzofuran(s)
g	Grams
ICAL	Initial CALibration
ID	IDentifier
Ions	Masses monitored for the analyte during data acquisition
L	Liter (s)
LCS	Laboratory Control Sample
DLCS	Duplicate Laboratory Control Sample
MB	Method Blank
MCL	Method Calibration Limit
MDL	Method Detection Limit
mL	Milliliters
MS	Matrix Spiked sample
DMS	Duplicate Matrix Spiked sample
NO	Number of peaks meeting all identification criteria
PCDD(s)	Polychlorinated dibenzo-p-dioxin(s)
PCDF(s)	Polychlorinated dibenzofuran(s)
ppb	Parts per billion
ppm	Parts per million
ppq	Parts per quadrillion
ppt	Parts per trillion
QA	Quality Assurance
QC	Quality Control
Ratio	Ratio of areas from monitored ions for an analyte
% Rec.	Percent recovery
RPD	Relative Percent Difference
RRF	Relative Response Factor
RT	Retention Time
SDG	Sample Delivery Group
S/N	Signal-to-noise ratio
TEF	Toxicity Equivalence Factor
TEQ	Toxicity Equivalence Quotient

State Certifications, Accreditations, and Licenses

Agency	Number	Expire Date
American Association for Laboratory Accreditation	2897.01 2020	11/30/2021
Arkansas Department of Environmental Quality	20-030-0	3/26/2021
Department of Defense	A2LA 2897.01	11/30/2021
Hawaii Department of Health	2020	4/30/2021
Illinois Environmental Protection Agency	2000322020-4	5/9/2021
Louisiana Department of Health and Hospitals	LA028-2020	12/31/2020
Maine Department of Health and Human Services	2020016	6/5/2022
Minnesota Department of Health	1785988	12/31/2020
Nebraska Department of Health and Human Services	NE-OS-25-13 (2020)	4/30/2021
Nevada Department of Conservation and Natural Resources	TX026932021-1	7/31/2021
New Hampshire Environmental Laboratory Accreditation Program	209420	4/24/2021
New York Department of Health	11707	3/31/2021
Oklahoma Department of Environmental Quality	2019-067	8/31/2020
Tennessee Department of Environment and Conservation	04016-2020	4/30/2021
Texas Commission on Environmental Quality	T104704231-20-26	4/30/2021
United States Department of Agriculture	P330-19-00299	10/10/2022
Washington Department of Health	C819	11/14/2020



Chain of Custody

ALS Environmental - Houston HRMS
10450 Stancliff Rd, Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Environmental Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Number: K2006544
Project Manager: Howard Holmes
QAP: LAB QAP

Lab Code	Sample ID	# of Cont.	Matrix	Sample		Lab ID	Misc Out 1 None
				Date	Time		
K2006544-001	W20H006-01	1	Water	7/31/20	1457	Houston Full	X
K2006544-002	W20H006-02	1	Water	7/31/20	1524	Houston Full	X

Test Comments

Misc Out 1 - None

K2006544-001,2

Perchlorate by 6850
Folder Comments:

Tier II

Special Instructions/Comments Please provide the electronic (PDF and EDD) report to the following e-mail address: ALKLS.Data@alsglobal.com. <i>Send report & supersets EDD to ALKLS. Data & Howard. Holmes</i>	Turnaround Requirements <input checked="" type="checkbox"/> <u>RUSH</u> (Surcharges Apply) PLEASE CIRCLE WORK DAYS 1 2 3 4 5 <input type="checkbox"/> <u>STANDARD</u> Requested FAX Date: _____ Requested Report Date: <u>08/19/20</u>	Report Requirements <input type="checkbox"/> I. Results Only <input checked="" type="checkbox"/> <u>II. Results + QC Summaries</u> <input type="checkbox"/> III. Results + QC and Calibration Summaries <input type="checkbox"/> IV. Data Validation Report with Raw Data PQL/MDL/J <u>Y</u> EDD <u>Y</u>	Invoice Information PO# 51K2006544 Bill to
--	--	--	--

Page 30 of 64

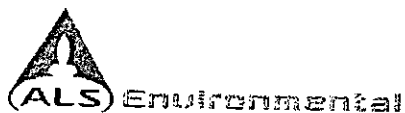
- Test is On Hold

P - Test is Authorized for Prep Only

 Shipped By: [Signature] 8/5/2020 1145

 Received By: [Signature] 8/5/2020 09:30
Client needs data ASAP
 Airbill Number: _____

 Page 21 of 55
Costs Blue Tenna 2.4K 14.51



Cooler Receipt Form

Project Chemist

Client/Project

Thermometer ID

Date/Time Received:

Initials:

Date/Time Logged in:

Initials

1. Method of delivery: ☐ US Mail ☒ Fed Ex ☐ UPS ☐ DHL ☐ Courier ☐ Client

2. Samples received in: ☒ Cooler ☐ Box ☐ Envelope ☐ Other

3. Were custody seals on coolers? ☒ Yes ☐ No

Were they intact? ☒ Yes ☐ No ☐ N/A

Were they signed and dated? ☒ Yes ☐ No ☐ N/A

If yes, how many and where?

4. Packing Material: ☐ Inserts ☐ Baggies ☒ Bubble Wrap ☒ Gel Packs ☐ Wet Ice ☐ Sleeves ☐ Other

5. Foreign or Regulated Soil? ☐ Yes ☐ No Location of Sampling:

Cooler Tracking Number	COC ID	Date Opened	Time Opened	Opened By	Temp. °C	Temp Blank?
-		8/6/20	0430	JM	3.4	<input checked="" type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>
						<input type="checkbox"/>

6. Were custody papers properly filled out (ink, signed, dated, etc)? ☒ Yes ☐ No

7. Did all bottles arrive in good condition (not broken, no signs of leakage)? ☒ Yes ☐ No

8. Were all sample labels complete (i.e., sample ID, analysis, preservation, etc)? ☒ Yes ☐ No

9. Were appropriate bottles/containers and volumes received for the requested tests? ☒ Yes ☐ No

10. Did sample labels and tags agree with custody documents? ☒ Yes ☐ No

Notes, Discrepancies, & Resolutions:

Service request Label:



10450 Stancliff Rd., Suite 210
Houston, TX 77099
T: +1 713 266 1599
F: +1 713 266 1599
www.alsglobal.com

SAMPLE ACCEPTANCE POLICY

This policy outlines the criteria samples must meet to be accepted by ALS Environmental – Houston HRMS.

Cooler Custody Seals (desirable, mandatory if specified in SAP):

- ✓ Intact on outside of cooler, signed and dated

Chain-of-Custody (COC) documentation (mandatory):

The following is required on each COC:

- ✓ Sample ID, the location, date and time of collection, collector's name, preservation type, sample type, and any other special remarks concerning the sample. The COC must be completed in ink.
- ✓ Signature and date of relinquishing party.

In the absence of a COC at sample receipt, the COC will be requested from the client.

Sample Integrity (mandatory):

Samples are inspected upon arrival to ensure that sample integrity was not compromised during transfer to the laboratory.

- ✓ Sample containers must arrive in good condition (not broken or leaking).
- ✓ Samples must be labeled appropriately, including Sample IDs, and requested test using durable labels and indelible ink.
- ✓ The correct type of sample bottle must be used for the method requested.
- ✓ An appropriate sample volume, or weight, must be received.
- ✓ Sample IDs and number of containers must reconcile with the COC.
- ✓ Samples must be received within the method defined holding time.

Temperature Requirement (varies by sample matrix):

- ✓ Aqueous and Non-aqueous samples must be shipped and stored cold, at 0 to 6°C.
- ✓ Tissue samples must be shipped and stored frozen, at -20 to -10°C.
- ✓ Air samples are shipped and stored cold, at 0 to 6°C
- ✓ The sample temperature must be recorded on the COC

All cooler inspections are documented on the Cooler Receipt Form (CRF). A separate CRF is completed for each service request. Any samples not meeting the above criteria are noted on the CRF and the Project Manager notified. The Project Manager must resolve any sample integrity issues with the client prior to proceeding with the analysis. Such resolutions are documented in writing and filed with the project folder. Data associated with samples received outside of this acceptance policy will be qualified on the case narrative of the final report



Preparation Information Benchsheets

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Preparation Information Benchsheet

Prep Run#: 363303
Team: Semivoia GCMS/GRIVERA

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/11/20 15:47

#	Lab Code	Client ID	B#	Method /Test	pH	Cl	Matrix	Amt. Ext.	Sample Description
1	E2000711-001	W20H006-01	.01	6850/CIO4			Water	10mL	
2	E2000711-002	W20H006-02	.01	6850/CIO4			Water	10mL	
3	E2000723-001	PT Lot 8213-53	.01	6850/CIO4			Water	10mL	
4	E2000724-001	GW-MW-29D-20200806-01	.01	6850/CIO4			Water	10mL	
5	E2000724-002	GW-MW-66D2-20200806-01	.01	6850/CIO4			Water	10mL	
6	E2000724-003	GW-MW-89D-20200806-01	.01	6850/CIO4			Water	10mL	
7	E2000724-004	GW-MW-98D-20200806-01	.01	6850/CIO4			Water	10mL	
8	E2000728-001	W20H047-01	.01	6850/CIO4			Water	10mL	
9	E2000728-002	W20H047-02	.01	6850/CIO4			Water	10mL	
10	E2000729-001	W20H048-01	.01	6850/CIO4			Water	10mL	
11	EQ2000337-01	MB		6850/CIO4			Liquid	10mL	
12	EQ2000337-02	LCS		6850/CIO4			Liquid	10mL	
13	EQ2000337-03	DLCS		6850/CIO4			Liquid	10mL	

Spiking Solutions

Name: Sodium Perchlorate 1 ug/mL (IS) (18-O) as CLO4 Inventory ID 202037 Logbook Ref: Sodium Perchlorate Expires On: 05/22/2021

E2000723-001 100.00µL EQ2000337-01 100.00µL EQ2000337-02 100.00µL EQ2000337-03 100.00µL

Name: Perchlorate Intermediate Stock1 Inventory ID 209764 Logbook Ref: Perchlorate Int. Stock1 51820 Expires On: 11/18/2020

EQ2000337-02 100.00µL EQ2000337-03 100.00µL

Preparation Steps

Step: Preparation
Started: 8/11/20 15:47
Finished: 8/11/20 17:00
By: GRIVERA
Comments

Comments: _____

Reviewed By: _____ Date: _____

Preparation Information Benchsheet

Prep Run#: 363303
Team: Semivoia GCMS/GRIVERA

Prep WorkFlow: GenExt28Day
Prep Method: Method

Status: Prepped
Prep Date/Time: 8/11/20 15:47

Page 35 of 64

in of Custody

Relinquished By: _____

Date: _____

Extracts Examined

YesNo

Received By: _____

Date: _____

Printed 8/19/20 16:04

Preparation Information Benchsheet

Page 2



Analytical Results

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston, TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Collected: 7/31/20 1457
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/19/20 19:43

Sample Name: W20H006-01
Lab Code: E2000711-001

Units: µg/L
Basis: NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200819\20200819_073

Analysis Lot: 691901
Extraction Lot: 363303
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	0.301		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Collected: 7/31/20 1524
Date Received: 8/ 6/20
Date Extracted: 8/11/20
Date Analyzed: 8/20/20 13:55

Sample Name: W20H006-02
Lab Code: E2000711-002

Units: µg/L
Basis: NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200820\20200820_033

Analysis Lot: 691901
Extraction Lot: 363303
Instrument Name: E-LCMS-01
Dilution Factor: 10

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	0.685	J	1.00	0.500	0.250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/19/20 12:38

Sample Name: Method Blank
Lab Code: EQ2000337-01

Units: µg/L
Basis: NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200819\20200819_019

Analysis Lot: 691901
Extraction Lot: 363303
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	ND	U	0.100	0.0500	0.0250	



Accuracy & Precision

ALS Environmental - Houston HRMS
10450 Stancliff Rd., Suite 210, Houston TX 77099
Phone (713)266-1599 Fax (713)266-0130
www.alsglobal.com

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Analyzed: 8/19/20

Lab Control Sample Summary
Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method

Units: µg/L
Basis: NA

Extraction Lot: 363303

Analyte Name	Lab Control Sample EQ2000337-02			Duplicate Lab Control Sample EQ2000337-03			% Rec Limits	RPD	RPD Limit
	Result	Spike Amount	% Rec	Result	Spike Amount	% Rec			
Perchlorate	9.42	10.0	94	9.92	10.0	99	80 - 120	5	15

Results flagged with an asterisk (*) indicate values outside control criteria.

Percent recoveries and relative percent differences (RPD) are determined by the software using values in the calculation which have not been rounded.

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/19/20 12:46

Sample Name: Lab Control Sample
Lab Code: EQ2000337-02

Units: µg/L
Basis: NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200819\20200819_020

Analysis Lot: 691901
Extraction Lot: 363303
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	9.42		0.100	0.0500	0.0250	

ALS Group USA, Corp. dba ALS Environmental

Analytical Report

Client: ALS Environmental - US
Project: K2006544
Sample Matrix: Water

Service Request: E2000711
Date Collected: NA
Date Received: NA
Date Extracted: 8/11/20
Date Analyzed: 8/19/20 12:53

Sample Name: Duplicate Lab Control Sample
Lab Code: EQ2000337-03

Units: µg/L
Basis: NA

Perchlorates in Water, Soils, Solid Wastes Using High Performance LC/Electrospray/Mass Spectrometry

Analytical Method: 6850
Prep Method: Method
Data File Name: I:\LCMS01\DATA\20200819\20200819_021

Analysis Lot: 691901
Extraction Lot: 363303
Instrument Name: E-LCMS-01
Dilution Factor: 1

CAS No.	Analyte Name	Result	Q	LOQ	LOD	MDL	Note
14797-73-0	Perchlorate	9.92		0.100	0.0500	0.0250	



August 18, 2020

Service Request No:K2006544

Jennifer Shackelford
City of Portland
6543 N. Burlington Ave
Portland, OR 97203

Laboratory Results for: SPCR Investigations

Dear Jennifer,

Enclosed are the results of the sample(s) submitted to our laboratory August 03, 2020
For your reference, these analyses have been assigned our service request number **K2006544**.

All testing was performed according to our laboratory's quality assurance program and met the requirements of the TNI standards except as noted in the case narrative report. Any testing not included in the lab's accreditation is identified on a Non-Certified Analytes report. All results are intended to be considered in their entirety. ALS Environmental is not responsible for use of less than the complete report. Results apply only to the individual samples submitted to the lab for analysis, as listed in the report. The measurement uncertainty of the results included in this report is within that expected when using the prescribed method(s), and represented by Laboratory Control Sample control limits. Any events, such as QC failures or Holding Time exceedances, which may add to the uncertainty are explained in the report narrative or are flagged with qualifiers. The flags are explained in the Report Qualifiers and Definitions page of this report.

Please contact me if you have any questions. My extension is 7472. You may also contact me via email at Janice.Jaeger@alsglobal.com.

Respectfully submitted,

ALS Group USA, Corp. dba ALS Environmental

Brady Kalkman
For
Janice Jaeger
Project Manager

ADDRESS

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

PHONE +1 585 288 5380 | **FAX** +1 585 288 8475

ALS Group USA, Corp.
dba ALS Environmental



Narrative Documents

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com



Client: Portland, City of
Project: SPCR Investigations
Sample Matrix: Water

Service Request: K2006544
Date Received: 08/03/2020

CASE NARRATIVE

All analyses were performed consistent with the quality assurance program of ALS Environmental. This report contains analytical results for samples for the Tier II level requested by the client.

Sample Receipt:

Two water samples were received for analysis at ALS Environmental on 08/03/2020. Any discrepancies upon initial sample inspection are annotated on the sample receipt and preservation form included within this report. The samples were stored at minimum in accordance with the analytical method requirements.

General Chemistry:

No significant anomalies were noted with this analysis.

Approved by  _____

Date 08/18/2020

SAMPLE DETECTION SUMMARY

CLIENT ID: W20H006-01			Lab ID: K2006544-001			
------------------------------	--	--	-----------------------------	--	--	--

Analyte	Results	Flag	MDL	MRL	Units	Method
Chromium, Hexavalent, Dissolved	0.064		0.010	0.020	ug/L	218.6
Chromium, Hexavalent, Total	0.059		0.010	0.020	ug/L	218.6

CLIENT ID: W20H006-02			Lab ID: K2006544-002			
------------------------------	--	--	-----------------------------	--	--	--

Analyte	Results	Flag	MDL	MRL	Units	Method
Chromium, Hexavalent, Dissolved	0.09	J	0.05	0.10	ug/L	218.6
Chromium, Hexavalent, Total	0.11		0.05	0.10	ug/L	218.6



Sample Receipt Information

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com

Client: Portland, City of
Project: SPCR Investigations/W20H006

Service Request:K2006544

SAMPLE CROSS-REFERENCE

<u>SAMPLE #</u>	<u>CLIENT SAMPLE ID</u>	<u>DATE</u>	<u>TIME</u>
K2006544-001	W20H006-01	7/31/2020	1457
K2006544-002	W20H006-02	7/31/2020	1524

Intra-Network Chain of Custody

1317 South 13th Avenue • Kelso, WA 98626 • 1-360-577-7222 • FAX 1-360-636-1068

ALS Contact: Howard Holmes

Project Name: SPCR Investigations
Project Number: W20H006
Project Manager: Jennifer Shackelford
Company: City of Portland
QAP: LAB QAP

Lab Code	Client Sample ID	# of Cont.	Matrix	Sample		Date Received	Send To	Cr6 D LL 218.6 LL	Cr6 TLL LogChk 218.6 LL
				Date	Time				
K2006544-001	W20H006-01	2	Water	7/31/20	1457	8/3/20	ROCHESTER	II	II
K2006544-002	W20H006-02	2	Water	7/31/20	1524	8/3/20	ROCHESTER	II	II

4 Cr⁶ 218.6 LL
731-2020
14:57-15:24

Test Comments

Cr6 D LL - 218.6 LL

K2006544-001,2

218.6 LL Diss Cr6 LL

Cr6 TLL LogChk - 218.6 LL

K2006544-001,2

218.6 LL Total Cr6 LL

Folder Comments:

Tier II

Special Instructions/Comments

Please provide the electronic (PDF and EDD) report to the following e-mail address:
ALKLS.Data@alsglobal.com.

Please send Report & Superset EDD
to ALKLS-Data & Howard Holmes

pH Checked _____

Turnaround Requirements

☒ RUSH (Surcharges Apply)

PLEASE CIRCLE WORK DAYS

1 2 3 4 5

☐ STANDARD

Requested FAX Date: _____

Requested Report Date: 08/19/20

Report Requirements

☐ I. Results Only

☒ II. Results + QC Summaries

☐ III. Results + QC and Calibration Summaries

☐ IV. Data Validation Report with Raw Data

PQL/MDL/J ☐ Y

EDD ☐ Y

Invoice Information

PO#

51K2006544

Bill to

Relinquished By:

Clemens 8/5/2020 1145

Received By:

Client needs data asap
Jeff 8/6/2020 10:11

Airbill Number: _____

K2006544

City of Portland
SPCR Investigations

5





Cooler Receipt and Preservation Check Form

K2006544

5

City of Portland
SPCR Investigations



Project/Client

ALS-Kelso

Folder Number

Cooler received on 8-6-2020

by: KE

COURIER: ALS UPS FEDEX VELOCITY CLIENT

1	Were Custody seals on outside of cooler?	(Y) N
2	Custody papers properly completed (ink, signed)?	(Y) N
3	Did all bottles arrive in good condition (unbroken)?	(Y) N
4	Circle: Wet Ice Dry Ice Gel packs present?	(Y) N

5a	Perchlorate samples have required headspace?	Y N (NA)
5b	Did VOA vials, Alk, or Sulfide have sig* bubbles?	Y N (NA)
6	Where did the bottles originate?	ALS/ROC CLIENT
7	Soil VOA received as:	Bulk Encore 5035set NA

Temperature Readings

Date: 8-6-2020 Time: 10:15

ID: IR#7 IR#10

From: Temp Blank Sample Bottle

Observed Temp (°C)	5.1						
Within 0-6°C?	(Y) N	Y N	Y N	Y N	Y N	Y N	Y N
If <0°C, were samples frozen?	Y N	Y N	Y N	Y N	Y N	Y N	Y N

If out of Temperature, note packing/ice condition: Ice melted Poorly Packed (described below) Same Day Rule

& Client Approval to Run Samples: Standing Approval Client aware at drop-off Client notified by:

All samples held in storage location: R-012 by KE on 8-6-20 at 10:17

5035 samples placed in storage location: by on at within 48 hours of sampling? Y N

Cooler Breakdown/Preservation Check**: Date: 8/6/2020 Time: 12:25 by: JHW

9. Were all bottle labels complete (i.e. analysis, preservation, etc.)? YES NO
10. Did all bottle labels and tags agree with custody papers? YES NO
11. Were correct containers used for the tests indicated? YES NO
12. Were 5035 vials acceptable (no extra labels, not leaking)? YES NO
13. Air Samples: Cassettes / Tubes Intact with MS? Canisters Pressurized Tedlar® Bags Inflated N/A

pH	Lot of test paper	Reagent	Preserved?		Lot Received	Exp	Sample ID Adjusted	Vol. Added	Lot Added	Final pH
			Yes	No						
≥12		NaOH								
≤2		HNO ₃								
≤2		H ₂ SO ₄								
<4		NaHSO ₄								
5-9		For 608pest			No=Notify for 3day					
Residual Chlorine (-)		For CN, Phenol, 625, 608pest, 522			If +, contact PM to add Na ₂ S ₂ O ₃ (625, 608, CN), ascorbic (phenol).					
		Na ₂ S ₂ O ₃								
		ZnAcetate	-	-						
		HCl	**	**						

**VOAs and 1664 Not to be tested before analysis. Otherwise, all bottles of all samples with chemical preservatives are checked (not just representatives).

Bottle lot numbers: client

Explain all Discrepancies/ Other Comments:

HPROD	BULK
HTR	FLDT
SUB	HGFB
ALS	LL3541

Labels secondary reviewed by: J

PC Secondary Review:

*significant air bubbles: VOA > 5-6 mm : WC > 1 in. diameter



Miscellaneous Forms

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com

REPORT QUALIFIERS AND DEFINITIONS

U	Analyte was analyzed for but not detected. The sample quantitation limit has been corrected for dilution and for percent moisture, unless otherwise noted in the case narrative.	+	Correlation coefficient for MSA is <0.995.
J	Estimated value due to either being a Tentatively Identified Compound (TIC) or that the concentration is between the MRL and the MDL. Concentrations are not verified within the linear range of the calibration. For DoD: concentration >40% difference between two GC columns (pesticides/Aroclors).	N	Inorganics- Matrix spike recovery was outside laboratory limits.
B	Analyte was also detected in the associated method blank at a concentration that may have contributed to the sample result.	N	Organics- Presumptive evidence of a compound (reported as a TIC) based on the MS library search.
E	Inorganics- Concentration is estimated due to the serial dilution was outside control limits.	S	Concentration has been determined using Method of Standard Additions (MSA).
E	Organics- Concentration has exceeded the calibration range for that specific analysis.	W	Post-Digestion Spike recovery is outside control limits and the sample absorbance is <50% of the spike absorbance.
D	Concentration is a result of a dilution, typically a secondary analysis of the sample due to exceeding the calibration range or that a surrogate has been diluted out of the sample and cannot be assessed.	P	Concentration >40% difference between the two GC columns.
*	Indicates that a quality control parameter has exceeded laboratory limits. Under the "Notes" column of the Form I, this qualifier denotes analysis was performed out of Holding Time.	C	Confirmed by GC/MS
H	Analysis was performed out of hold time for tests that have an "immediate" hold time criteria.	Q	DoD reports: indicates a pesticide/Aroclor is not confirmed ($\geq 100\%$ Difference between two GC columns).
#	Spike was diluted out.	X	See Case Narrative for discussion.
		MRL	Method Reporting Limit. Also known as:
		LOQ	Limit of Quantitation (LOQ) The lowest concentration at which the method analyte may be reliably quantified under the method conditions.
		MDL	Method Detection Limit. A statistical value derived from a study designed to provide the lowest concentration that will be detected 99% of the time. Values between the MDL and MRL are estimated (see J qualifier).
		LOD	Limit of Detection. A value at or above the MDL which has been verified to be detectable.
		ND	Non-Detect. Analyte was not detected at the concentration listed. Same as U qualifier.



Rochester Lab ID # for State Certifications¹

Connecticut ID # PH0556	Maine ID #NY0032	Pennsylvania ID# 68-786
Delaware Approved	New Hampshire ID # 2941	Rhode Island ID # 158
DoD ELAP #65817	New York ID # 10145	Virginia #460167
Florida ID # E87674	North Carolina #676	

¹ Analyses were performed according to our laboratory's NELAP-approved quality assurance program and any applicable state or agency requirements. The test results meet requirements of the current NELAP/TNI standards or state or agency requirements, where applicable, except as noted in the case narrative. Since not all analyte/method/matrix combinations are offered for state/NELAC accreditation, this report may contain results which are not accredited. For a specific list of accredited analytes, contact the laboratory or go to <https://www.alsglobal.com/locations/americas/north-america/usa/new-york/rochester-environmental>

ALS Laboratory Group

Acronyms

ASTM	American Society for Testing and Materials
A2LA	American Association for Laboratory Accreditation
CARB	California Air Resources Board
CAS Number	Chemical Abstract Service registry Number
CFC	Chlorofluorocarbon
CFU	Colony-Forming Unit
DEC	Department of Environmental Conservation
DEQ	Department of Environmental Quality
DHS	Department of Health Services
DOE	Department of Ecology
DOH	Department of Health
EPA	U. S. Environmental Protection Agency
ELAP	Environmental Laboratory Accreditation Program
GC	Gas Chromatography
GC/MS	Gas Chromatography/Mass Spectrometry
LUFT	Leaking Underground Fuel Tank
M	Modified
MCL	Maximum Contaminant Level is the highest permissible concentration of a substance allowed in drinking water as established by the USEPA.
MDL	Method Detection Limit
MPN	Most Probable Number
MRL	Method Reporting Limit
NA	Not Applicable
NC	Not Calculated
NCASI	National Council of the Paper Industry for Air and Stream Improvement
ND	Not Detected
NIOSH	National Institute for Occupational Safety and Health
PQL	Practical Quantitation Limit
RCRA	Resource Conservation and Recovery Act
SIM	Selected Ion Monitoring
TPH	Total Petroleum Hydrocarbons
tr	Trace level is the concentration of an analyte that is less than the PQL but greater than or equal to the MDL.

ALS Group USA, Corp.

dba ALS Environmental

Analyst Summary report

Client: Portland, City of
Project: SPCR Investigations/W20H006

Service Request: K2006544

Sample Name: W20H006-01
Lab Code: K2006544-001
Sample Matrix: Water

Date Collected: 07/31/20**Date Received:** 08/3/20

Analysis Method
218.6 LL

Extracted/Digested By

Analyzed By
CWOODS

Sample Name: W20H006-02
Lab Code: K2006544-002
Sample Matrix: Water

Date Collected: 07/31/20**Date Received:** 08/3/20

Analysis Method
218.6 LL

Extracted/Digested By

Analyzed By
CWOODS



INORGANIC PREPARATION METHODS

The preparation methods associated with this report are found in these tables unless discussed in the case narrative.

Water/Liquid Matrix

Analytical Method	Preparation Method
200.7	200.2
200.8	200.2
6010C	3005A/3010A
6020A	ILM05.3
9034 Sulfide Acid Soluble	9030B
SM 4500-CN-E Residual Cyanide	SM 4500-CN-G
SM 4500-CN-E WAD Cyanide	SM 4500-CN-I

Solid/Soil/Non-Aqueous Matrix

Analytical Method	Preparation Method
6010C	3050B
6020A	3050B
6010C TCLP (1311) extract	3005A/3010A
6010 SPLP (1312) extract	3005A/3010A
7199	3060A
300.0 Anions/ 350.1/ 353.2/ SM 2320B/ SM 5210B/ 9056A Anions	DI extraction
For analytical methods not listed, the preparation method is the same as the analytical method reference.	



Sample Results

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com



General Chemistry

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: SPCR Investigations/W20H006
Sample Matrix: Water
Sample Name: W20H006-01
Lab Code: K2006544-001

Service Request: K2006544
Date Collected: 07/31/20 14:57
Date Received: 08/03/20 14:05
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chromium, Hexavalent, Dissolved	218.6	0.064	ug/L	0.020	0.010	1	08/12/20 13:28	
Chromium, Hexavalent, Total	218.6	0.059	ug/L	0.020	0.010	1	08/12/20 12:13	

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: SPCR Investigations/W20H006
Sample Matrix: Water
Sample Name: W20H006-02
Lab Code: K2006544-002

Service Request: K2006544
Date Collected: 07/31/20 15:24
Date Received: 08/03/20 14:05
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chromium, Hexavalent, Dissolved	218.6	0.09 J	ug/L	0.10	0.05	5	08/12/20 14:17	
Chromium, Hexavalent, Total	218.6	0.11	ug/L	0.10	0.05	5	08/12/20 14:02	



QC Summary Forms

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com



General Chemistry

ALS Environmental—Rochester Laboratory

1565 Jefferson Road, Building 300, Suite 360, Rochester, NY 14623

Phone (585) 288-5380 Fax (585) 288-8475

www.alsglobal.com

ALS Group USA, Corp.
dba ALS Environmental

Analytical Report

Client: Portland, City of
Project: SPCR Investigations/W20H006
Sample Matrix: Water
Sample Name: Method Blank
Lab Code: K2006544-MB

Service Request: K2006544
Date Collected: NA
Date Received: NA
Basis: NA

Inorganic Parameters

Analyte Name	Analysis Method	Result	Units	MRL	MDL	Dil.	Date Analyzed	Q
Chromium, Hexavalent, Dissolved	218.6	ND U	ug/L	0.020	0.010	1	08/12/20 11:27	
Chromium, Hexavalent, Total	218.6	ND U	ug/L	0.020	0.010	1	08/12/20 11:27	

ALS Group USA, Corp.
dba ALS Environmental

QA/QC Report

Client: Portland, City of
Project: SPCR Investigations/W20H006
Sample Matrix: Water

Service Request: K2006544
Date Analyzed: 08/12/20

Lab Control Sample Summary
General Chemistry Parameters

Units:ug/L
Basis:NA

Lab Control Sample
K2006544-LCS

Analyte Name	Analytical Method	Result	Spike Amount	% Rec	% Rec Limits
Chromium, Hexavalent, Dissolved	218.6	0.208	0.200	104	90-110
Chromium, Hexavalent, Total	218.6	0.208	0.200	104	90-110