



June 28, 2019

Mr. Sam Bradley
Impetro Resources, LLC
2820 Logan Drive
Loveland, Colorado 80538

Via E-Mail: sbradley.impetro@gmail.com

Re: Soil Sample Report - Flessner Lease

Mr. Bradley,

On June 3, 2019, CGRS mobilized to the Flessner Lease, located in Washington County, Colorado, to collect soil samples. A total of 20 soil samples were collected using a hand auger from the suspected spill-affected area and were submitted to Origins Laboratory in Denver, Colorado for analysis of pH, electrical conductivity (EC), and sodium adsorption ratio (SAR). Soil samples were collected in the general vicinity of previous sample locations, based on previous records.

Site Description and History

The Flessner Lease is an active exploration and production tank battery facility located in cropland that has been planted with wheat. The drainage from the tank battery facility is to the east, shifting dramatically to the southeast approximately 1,800 feet east of the tank battery. Records obtained from COGCC indicate historical presence of 4-5 produced water and/or skim pits with two associated remediation projects which remain active (COGCC Remediation No. 4916 and 8430).

Soil Analytical Results

Review of the analytical results for the soil samples collected on June 3, 2019 indicate elevated sodium adsorption ratio (SAR) in several locations. Electrical conductivity (EC) and pH were within the allowable concentration listed in COGCC Table 910-1 in all samples. Soil analytical results are illustrated in the attached Soil Sample Location Map. The laboratory reports and chain-of-custody documentation are included in Attachment A.

Data Analysis

In comparison with 2017 analytical data, there is a noticeable decrease in the EC and pH at depths of 0.5, 1.5, and 3 feet. SAR values decreased at depths of 1.5 and 3 feet, while some SAR values increased at a depth of 0.5 feet. Graphs demonstrating the comparison of 2017 and 2019 SAR, pH and EC analysis can be found in Attachment B.

Sodium adsorption ratio (SAR) is a ratio of the amount of cationic (positive) charge that is contributed to a soil by water soluble sodium, to that contributed by calcium (Ca) and magnesium (Mg) in the soil. If SAR levels are greater than 13, the soil is classified as sodic. Sodic soils develop poor structure and drainage because sodium ions cause the soil particles to disperse. The dispersion of soil particles can cause the soil to harden and crust, consequently hindering plant growth and germination. High sodium levels compete with calcium, magnesium, and potassium for uptake by plant roots and can cause chemical imbalances and nutrient deficiencies. (J.G. Davis, 2012)

The increasing SAR at shallower depths may be an indication of upward migration of inorganic contaminant by capillary action resulting in surface damage, which was listed by COGCC as a condition in the Condition Approval

of the pit closure (Remediation Project No. 4916). During inspection and sampling events, CGRS noted the presence of material that appears to be blast furnace slag distributed on the soil surface in the areas with damaged vegetation. However, documentation of the application of the slag as a soil amendment at this location has not been identified.

Remediation Options

Typical recovery options for soils with elevated SAR resulting in poor infiltration include the following:

- Dissolve the limestone (calcium carbonate) already present in the soil
- Apply specified amounts of calcium to the soil
- Incorporate crop residues, plow in manure or compost to increase water infiltration
- Plant vegetation that is sodium tolerant to assist in restoring soil function

Additional soil sampling would be required to monitor soil conditions over time, confirm successful remediation, and provide necessary documentation to close the active remediation projects with COGCC. Costs of such sampling and analysis could range between \$1,900 and \$2,900 per sampling event, assuming up to 20 soil samples taken at various depths.

Please note that CGRS strongly recommends consultation with an agricultural soil specialist before applying soil amendments. Additional data and assessment of the specific soil chemistry may be required to determine the appropriate soil recovery option. Chemical composition of the soil may have been altered with previous soil amendment or fertilizer applications and conditions may become less favorable to plant growth if the incorrect soil amendments are applied or amendments are applied incorrectly. If soil recovery is not possible, the other option would be to remove and dispose of the impacted soil and replace it with un-impacted soil prior to revegetation.

The Colorado State University Agriculture Extension generally offers consultation for this type of soil reclamation and is a resource of additional information. CGRS is available to facilitate a meeting with the CSU Agriculture Extension or other available resources if needed.

Should you have any questions or require any additional information, please feel free to contact me at dkinnaird@cgrs.com.

Sincerely,



Dresden Kinnaird
CGRS, Inc.
Environmental Staff Scientist



Reviewed by:

Brannan Davis, PE

CGRS, Inc.

Enc: Figures

Attachment A – Laboratory Analytical Reports & Chain-of-Custody Documentation

Attachment B – Analytical Data Comparison

References

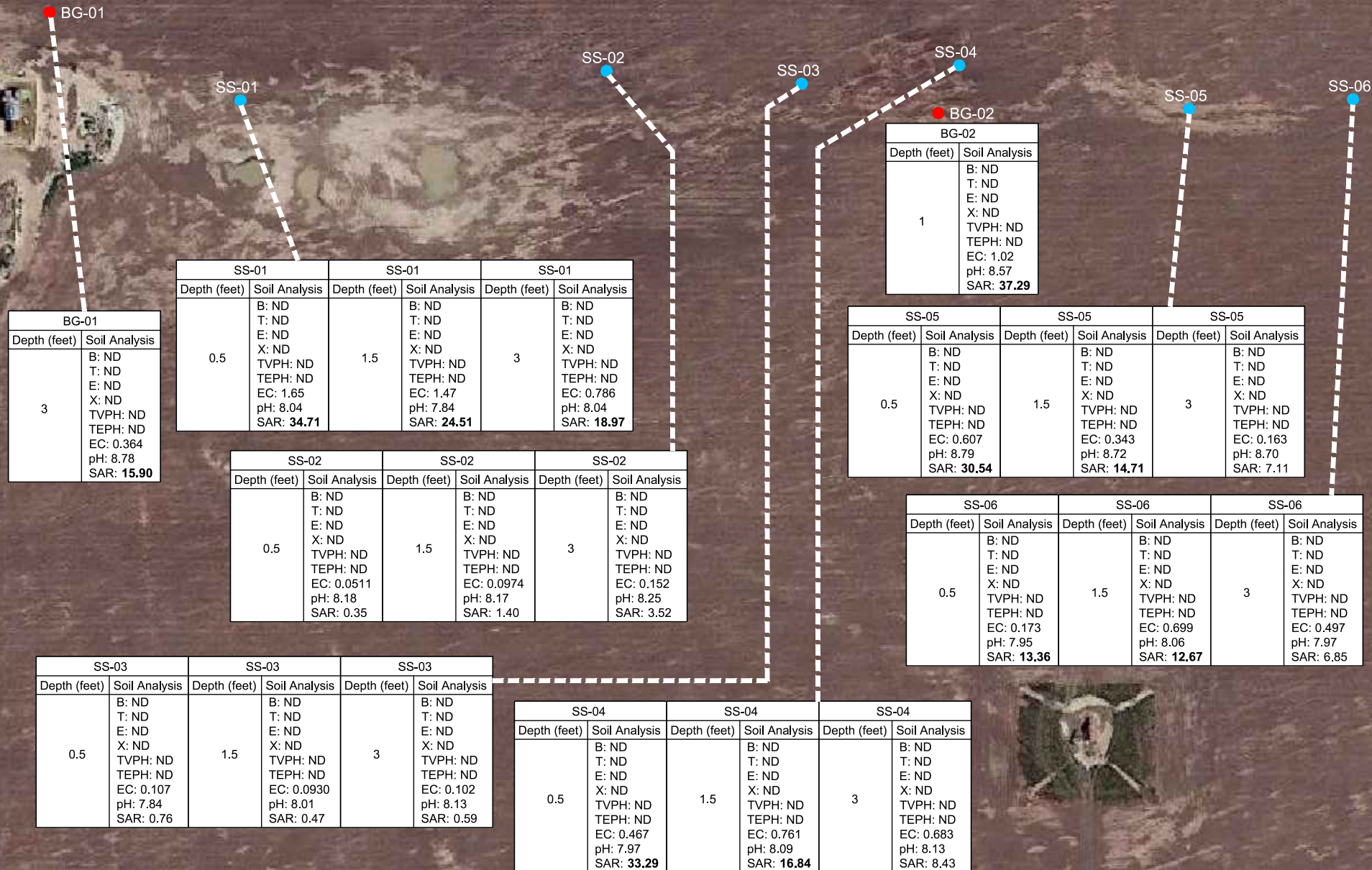
J.G. Davis, R. W. (2012, May). Managing Sodic Soils. *Colorado State University Fact Sheet* .



Figures

Soil Sample Location Map 2019

Soil Sample Location Map 2017

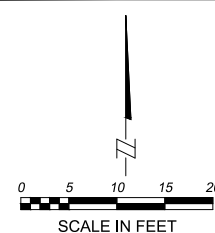


ABBREVIATION	ANALYTICAL PARAMETER	UNITS	CONCENTRATIONS
EC	SPECIFIC CONDUCTANCE (EC)	mmhos/cm	< 4 mmhos/cm or 2x background
pH	pH	pH Units	6-9
SAR	SODIUM ABSORPTION RATIO	Unitless	< 12

CONCENTRATIONS IN **BOLD** EXCEED COGCC TABLE 910-1 CONCENTRATION LEVELS

LEGEND

- SS-01 SOIL SAMPLE LOCATION
- BG-01 BACKGROUND SAMPLE LOCATION



SOIL ANALYTICAL RESULTS

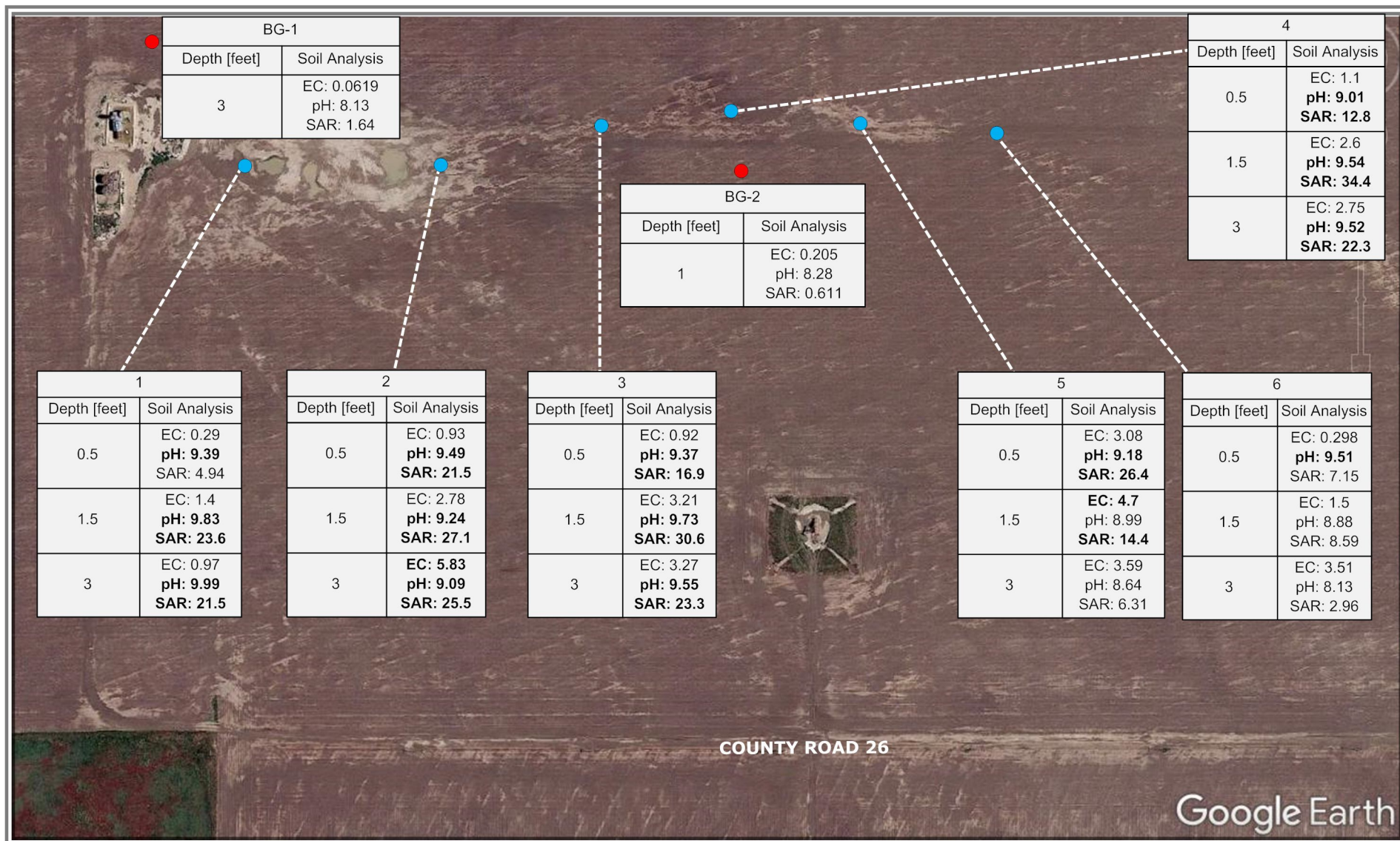
June 3, 2019

FLESSNER LEASE
IMPETRO RESOURCES, INC.
SWSE, S19, T1S, R56W
WASHINGTON COUNTY, COLORADO

PROJECT:
1-14006-18038aa
DATE:
6/20/2019

DRAFT:
CLB
REVIEW:





- Background Sampling Location
- Soil Sampling Location

Abbreviation	Analytical Parameter	Units	COGCC Table 910-1 Concentration Levels
EC	Electrical Conductivity	milliSiemens per centimeter [mS/cm]	< 4 mS/cm
pH	pH	Standard Units [su]	6-9 su
SAR	Sodium Absorption Ratio [-]	unitless [-]	< 12

Concentrations in **BOLD** exceed COGCC Table 910-1 Concentration Levels



Approximate Scale: 1" = 230'

A.G. WASSENAAR INC.

GEOTECHNICAL • ENVIRONMENTAL CONSULTANTS

Figure 1
Soil Analytical Results
March 27, 2017
Flessner 9, Washington County, Colorado
AGW Project Number: E13236



Attachment A

Laboratory Reports and Chain of Custody Documentation

June 10, 2019

CGRS, Inc

Drezden Kinnaird

1301 Academy Court

Fort Collins CO 80524

Project Name - Flessner

Project Number - 1-14006-18038aa

Attached are your analytical results for Flessner received by Origins Laboratory, Inc. June 04, 2019. This project is associated with Origins project number Y906048-01.

The analytical results in the following report were analyzed under the guidelines of EPA Methods. These methods are identified as follows; "SW" are defined in SW-846, "EPA" are defined in 40CFR part 136 and "SM" are defined in the most current revision of Standard Methods For the Examination of Water and Wastewater.

The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. As such, this report shall not be reproduced except in full, without the written approval of Origin's laboratory.

Unless otherwise noted, the analytical results for all soil samples are reported on a wet weight basis. All analytical analyses were performed under NELAP guidelines unless noted by a data qualifier.

Any holding time exceedances, deviations from the method specifications or deviations from Origins Laboratory's Standard Operating Procedures are outlined in the case narrative.

Thank you for selecting Origins for your analytical needs. Please contact us with any questions concerning this report, or if we can help with anything at all.

Origins Laboratory, Inc.
303.433.1322
o-squad@oelabinc.com



CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BG-1 @ 3'	Y906048-01	Soil	June 3, 2019 12:20	06/04/2019 08:05
BG-2 @ 1'	Y906048-02	Soil	June 3, 2019 11:40	06/04/2019 08:05
SS-1 @ 0.5'	Y906048-03	Soil	June 3, 2019 12:00	06/04/2019 08:05
SS-1 @ 1.5'	Y906048-04	Soil	June 3, 2019 12:00	06/04/2019 08:05
SS-1 @ 3'	Y906048-05	Soil	June 3, 2019 12:00	06/04/2019 08:05
SS-2 @ 0.5'	Y906048-06	Soil	June 3, 2019 11:20	06/04/2019 08:05
SS-2 @ 1.5'	Y906048-07	Soil	June 3, 2019 11:20	06/04/2019 08:05
SS-2 @ 3'	Y906048-08	Soil	June 3, 2019 11:20	06/04/2019 08:05
SS-3 @ 0.5'	Y906048-09	Soil	June 3, 2019 11:00	06/04/2019 08:05
SS-3 @ 1.5'	Y906048-10	Soil	June 3, 2019 11:00	06/04/2019 08:05
SS-3 @ 3'	Y906048-11	Soil	June 3, 2019 11:00	06/04/2019 08:05
SS-4 @ 0.5'	Y906048-12	Soil	June 3, 2019 10:40	06/04/2019 08:05
SS-4 @ 1.5'	Y906048-13	Soil	June 3, 2019 10:40	06/04/2019 08:05
SS-4 @ 3'	Y906048-14	Soil	June 3, 2019 10:40	06/04/2019 08:05

Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-5 @ 0.5'	Y906048-15	Soil	June 3, 2019 10:20	06/04/2019 08:05
SS-5 @ 1.5'	Y906048-16	Soil	June 3, 2019 10:20	06/04/2019 08:05
SS-5 @ 3'	Y906048-17	Soil	June 3, 2019 10:20	06/04/2019 08:05
SS-6 @ 0.5'	Y906048-18	Soil	June 3, 2019 10:00	06/04/2019 08:05
SS-6 @ 1.5'	Y906048-19	Soil	June 3, 2019 10:00	06/04/2019 08:05
SS-6 @ 3'	Y906048-20	Soil	June 3, 2019 10:00	06/04/2019 08:05

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

www.originslaboratory.com

9906048

page 1 of 1

ORIGINS
LABORATORY, INC

Client: CGRS
Address: 1301 Academy Ct
Fort Collins, CO 80524
Telephone Number: 970 201 6357
Email Address: dkinnaird@cgrs.com

Project Manager: Drezden Kinnaird
Project Name: Flessner
Project Number: 1-14006-18038aa
Samples Collected By: John Kinnaird

1725 Elk Place | Denver, CO 80211 | Phone: 303.433.1322 | Fax: 303.265.9645

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis		Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Summ #	Other	EC	
PG-1 @ 3'	6/13/19	12:20	2						X				1
PG-2 @ 1'	6/13/19	11:40	2						X				2
SS-1 @ 0.5', 1.5', 3.0'	6/13/19	12:00	6						X				3
SS-2 @ 0.5', 1.5', 3.0'	6/13/19	11:20	6						X				4
SS-3 @ 0.5', 1.5', 3.0'	6/13/19	11:00	6						X				5
SS-4 @ 0.5', 1.5', 3.0'	6/13/19	10:40	6						X				6
SS-5 @ 0.5', 1.5', 3.0'	6/13/19	10:20	6						X				7
SS-6 @ 0.5', 1.5', 3.0'	6/13/19	10:00	6						X				8
													9
													10

Relinquished By:	Date:	Time:	Received By:	Date:	Time:	Turnaround Time:		
						Same Day	48 Hr	72 Hr
<i>[Signature]</i>	6/13/19	16:00	<i>[Signature]</i>	6-4-19	8:05			<input checked="" type="checkbox"/>
<i>[Signature]</i>	6-4-19	8:05	<i>[Signature]</i>	6-4-19	8:05			

Date Results Needed

Temp Received: 0.7

Origins Laboratory, Inc.

Jefe Pellegrini

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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

Origins Laboratory

F-012207-01-R1
Effective Date: 01/09/12

Sample Receipt Checklist

Origins Work Order: 796048

Client: CGRS

Client Project ID: Flessner

Checklist Completed by: Dan Lu

Shipped Via: Pick-up
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Date/time completed: 6-14-19

Airbill #: NA

Matrix(s) Received: (Check all that apply): ☒ Soil/Solid ☐ Water ☐ Other: _____

Cooler Number/Temperature: 1 / 8.7 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C (Describe)

Thermometer ID: 1003

Requirement Description	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature between 0°C to ≤ 6°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Are custody seals present on each sample container? (if so, document in comments if they are signed and dated, broken or intact)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<u>px</u>
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation and was it checked ⁽¹⁾ ? (note ID of confirmation instrument used in comments) / (preservation is not confirmed for subcontracted analyses in order to insure sample integrity)/(pH <2 for samples preserved with HNO ₃ , HCL, H ₂ SO ₄) / (pH >10 for samples preserved with NaAsO ₂ +NaOH, ZnAc+NaOH)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾If NO, then contact the client before proceeding with analysis and note date/time and person contacted as well as the corrective action to in the additional comments (above) and the case narrative.

Reviewed by (Project Manager) [Signature]

Date/Time Reviewed 6/15/19

Origins Laboratory, Inc.

[Signature]

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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

BG-1 @ 3'
6/3/2019 12:20:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-01 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.13	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	1.00	"	"		"		"	"	
Sodium	16.41	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.78	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	15.90		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.364	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

BG-2 @ 1'**6/3/2019 11:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-02 (Soil)**Metals (Saturated Paste Prep)**

Calcium	1.07	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.49	"	"		"		"	"	
Sodium	32.93	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.57	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	37.29		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	1.02	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-1 @ 0.5'**6/3/2019 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-03 (Soil)**Metals (Saturated Paste Prep)**

Calcium	9.67	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	5.90	"	"		"		"	"	
Sodium	96.86	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.04	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	34.71		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	1.65	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-1 @ 1.5'**6/3/2019 12:00:00PM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-04 (Soil)**Metals (Saturated Paste Prep)**

Calcium	8.71	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	5.53	"	"		"		"	"	
Sodium	65.41	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	7.84	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	24.51		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	1.47	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-1 @ 3'
6/3/2019 12:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-05 (Soil)

Metals (Saturated Paste Prep)

Calcium	7.95	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	6.06	"	"		"		"	"	
Sodium	50.20	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.04	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	18.97		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.786	0.00505	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-2 @ 0.5'
6/3/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-06 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.96		me/L	1	'[none]'		06/05/2019	06/07/2019	
Magnesium	0.58		"	"	"		"	"	
Sodium	0.39		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.18		pH Units	1	B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	0.35			1	'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0511	0.00504	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-2 @ 1.5'
6/3/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
---------	--------	-----------------	-------	----------	-------	---------	----------	----------	-------

AAL, Inc.
Y906048-07 (Soil)

Metals (Saturated Paste Prep)

Calcium	0.81		me/L	1	'[none]'		06/05/2019	06/07/2019	
Magnesium	0.44		"	"	"		"	"	
Sodium	1.11		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.17		pH Units	1	B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	1.40			1	'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0974	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-2 @ 3'
6/3/2019 11:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-08 (Soil)

Metals (Saturated Paste Prep)

Calcium	0.84	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.48	"	"		"		"	"	
Sodium	2.86	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.25	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	3.52		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.152	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-3 @ 0.5'**6/3/2019 11:00:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-09 (Soil)**Metals (Saturated Paste Prep)**

Calcium	2.25	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.84	"	"		"		"	"	
Sodium	0.94	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	7.84	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	0.76		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.107	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-3 @ 1.5'

6/3/2019 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y906048-10 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.62		me/L	1	'[none]'		06/05/2019	06/07/2019	
Magnesium	0.69		"	"	"		"	"	
Sodium	0.51		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.01		pH Units	1	B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	0.47			1	'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0930	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-3 @ 3'
6/3/2019 11:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-11 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.18	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.98	"	"		"		"	"	
Sodium	0.61	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.13	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	0.59		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.102	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-4 @ 0.5'**6/3/2019 10:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-12 (Soil)**Metals (Saturated Paste Prep)**

Calcium	1.28		me/L	1	'[none]'		06/05/2019	06/07/2019	
Magnesium	0.52		"	"	"		"	"	
Sodium	31.58		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	7.97		pH Units	1	B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	33.29			1	'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.467	0.00508	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-4 @ 1.5'**6/3/2019 10:40:00AM**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-13 (Soil)**Metals (Saturated Paste Prep)**

Calcium	7.74	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	6.47	"	"		"		"	"	
Sodium	44.88	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.09	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	16.84		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.761	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-4 @ 3'
6/3/2019 10:40:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-14 (Soil)

Metals (Saturated Paste Prep)

Calcium	9.57	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	10.73	"	"		"		"	"	
Sodium	26.87	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.13	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	8.43		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.683	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-5 @ 0.5'
6/3/2019 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-15 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.89	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.97	"	"		"		"	"	
Sodium	36.52	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.79	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	30.54		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.607	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-5 @ 1.5'

6/3/2019 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y906048-16 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.68	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	1.39	"	"		"		"	"	
Sodium	18.22	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.72	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	14.71		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.343	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-5 @ 3'
6/3/2019 10:20:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-17 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.30	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	0.80	"	"		"		"	"	
Sodium	7.29	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.70	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	7.11		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.163	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-6 @ 0.5'
6/3/2019 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-18 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.47		me/L	1	'[none]'		06/05/2019	06/07/2019	
Magnesium	0.61		"	"	"		"	"	
Sodium	13.62		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	7.95		pH Units	1	B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	13.36			1	'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.173	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-6 @ 1.5'

6/3/2019 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y906048-19 (Soil)

Metals (Saturated Paste Prep)

Calcium	6.31	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	6.54	"	"		"		"	"	
Sodium	32.12	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	8.06	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	12.67		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.699	0.00506	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

SS-6 @ 3'
6/3/2019 10:00:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y906048-20 (Soil)

Metals (Saturated Paste Prep)

Calcium	10.06	me/L	1		'[none]'		06/05/2019	06/07/2019	
Magnesium	10.05	"	"		"		"	"	
Sodium	21.72	"	"		"		"	"	

pH in Soil by EPA 9045D

pH	7.97	pH Units	1		B9F0405	OLAB	06/04/2019	06/04/2019	
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SAR by 20B Saturated Paste

SAR	6.85		1		'[none]'		06/05/2019	06/07/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.497	0.00500	mmhos/cm	1	B9F0406	OLAB	06/04/2019	06/04/2019	
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Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 1-14006-18038aa
Project: Flessner

Classical Chemistry Parameters - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9F0405 - NO PREP										
Duplicate (B9F0405-DUP1)		Source: Y906048-01			Prepared: 06/04/2019 Analyzed: 06/04/2019					
pH	8.65		pH Units		8.78			1.49	25	
Batch B9F0406 - NO PREP										
Blank (B9F0406-BLK1)		Prepared: 06/04/2019 Analyzed: 06/04/2019								
Specific Conductance (EC)	0.00330	0.00500	mmhos/cm							
Duplicate (B9F0406-DUP1)		Source: Y906048-01			Prepared: 06/04/2019 Analyzed: 06/04/2019					
Specific Conductance (EC)	0.369	0.00501	mmhos/cm		0.364			1.61	25	

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

CGRS, Inc

1301 Academy Court

Fort Collins CO 80524

Drezden Kinnaird

Project Number: 1-14006-18038aa

Project: Flessner

Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

Origins Laboratory, Inc.



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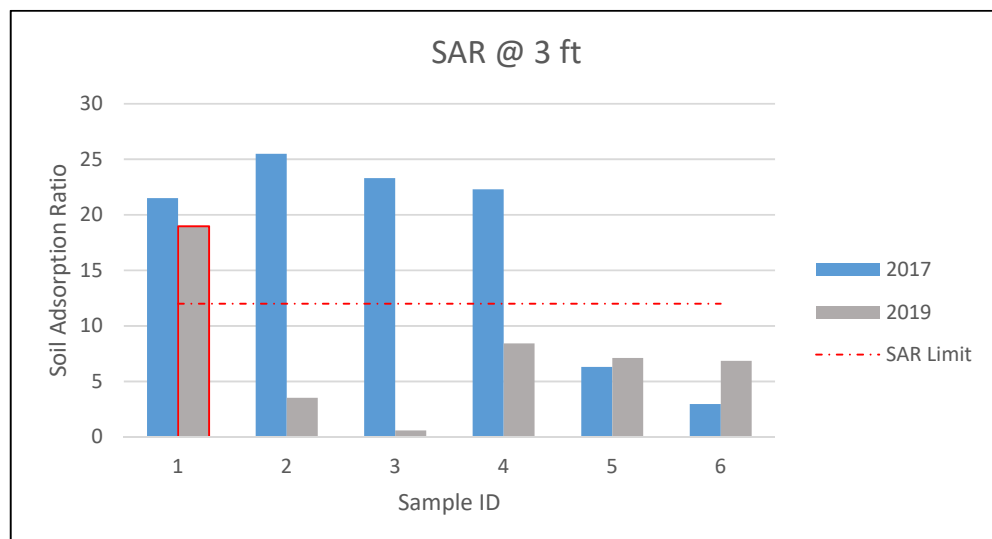
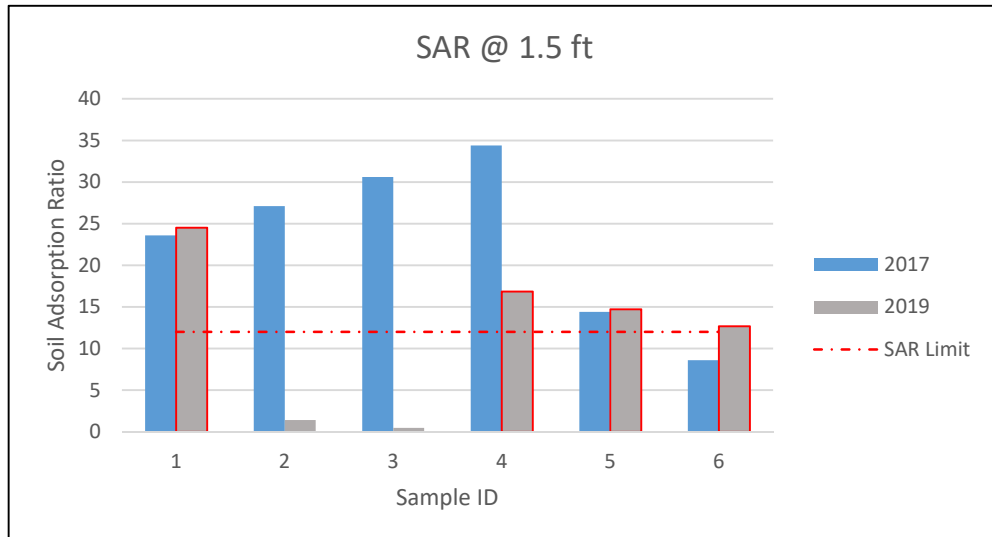
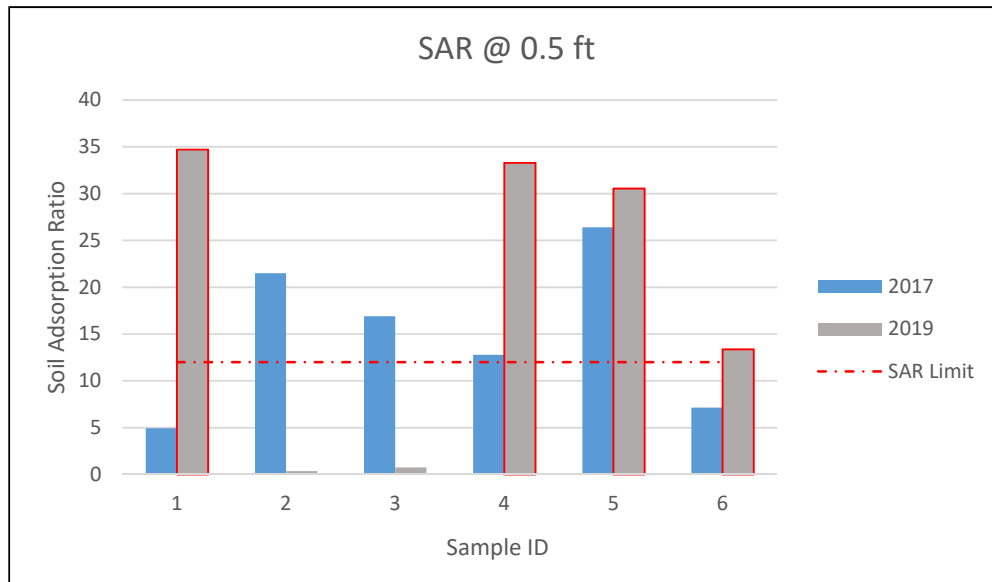
Jen Pellegrini, Project Manager



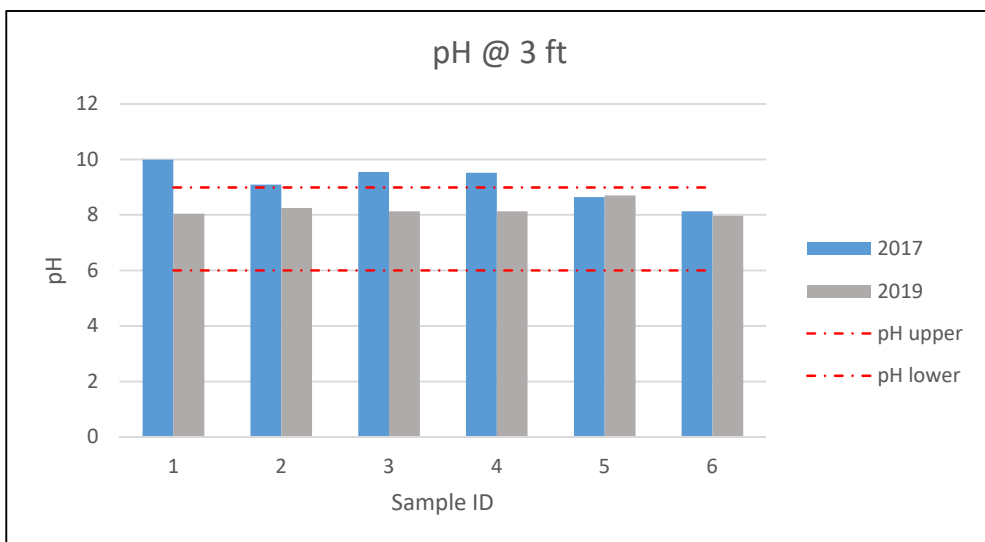
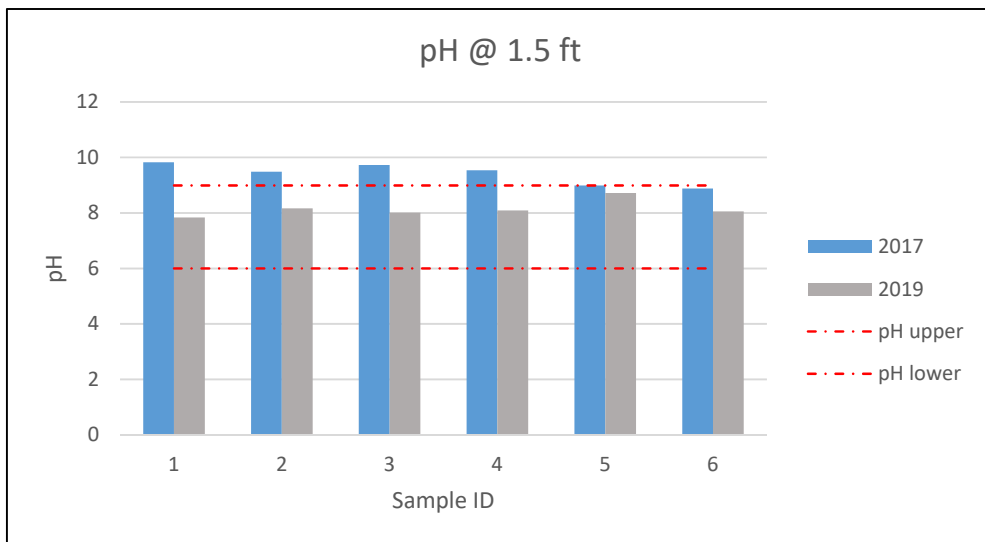
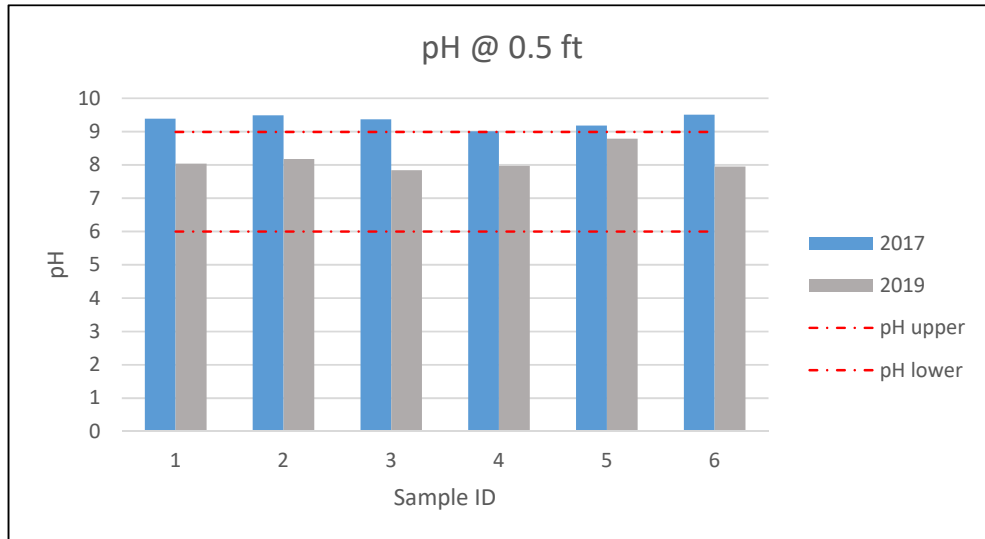
Attachment B

Analytical Data Comparison

Flessner Lease
Impetro Resources, LLC



Flessner Lease
Impetro Resources, LLC



Flessner Lease
Impetro Resources, LLC

