

CO. RD. 39

WEST PRODUCED WATER PIT

DIRT BERM

DIRT BERM

ABOVEGROUND
STORAGE TANK

10/15/2019
pH 8.12
SAR 0.49
EC 0.0739
GRO ND
DRO 54.2
RRO 218

SS-07

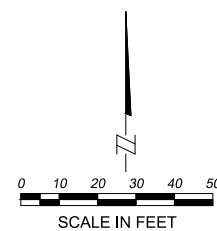
SS-08

10/15/2019
pH 8.16
SAR 0.14
EC 0.0577
GRO ND
DRO ND
RRO ND

LEGEND

SS-07 SOIL SAMPLE LOCATION
ND NOT DETECTED

SAMPLE DATE	
pH	pH (pH Units)
SAR	SODIUM ABSORPTION RATIO
EC	SPECIFIC CONDUCTANCE (EC) (mmhos/cm)
GRO	GASOLINE RANGE ORGANICS (C6-C10) (mg/kg)
DRO	DIESEL RANGE ORGANICS (C10-C28) (mg/kg)
RRO	RESIDUAL RANGE ORGANICS (C28-C40) (mg/kg)



SOIL SAMPLE LOCATION MAP October 15, 2019

IMPETRO RESOURCES, INC.
WALTERS-CALHOUN LEASE LANDFARM
COGCC REMEDIATION PROJECT #7096
NENW, S21, T2N, R49W
OTIS, COLORADO

PROJECT:

1-14006-17728aa

DATE:

12/12/2019

DRAFT:

CLB

REVIEW:





October 22, 2019

CGRS, Inc

Drezden Kinnaird

1301 Academy Court

Fort Collins CO 80524

Project Name - Impetro - Walters-Calhoun

Project Number - 17728aa

Attached are your analytical results for Impetro - Walters-Calhoun received by Origins Laboratory, Inc. October 16, 2019. This project is associated with Origins project number Y910240-01.

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



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

CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS-6	Y910240-01	Soil	October 15, 2019 13:45	10/16/2019 10:05
SS-7	Y910240-02	Soil	October 15, 2019 14:00	10/16/2019 10:05
SS-8	Y910240-03	Soil	October 15, 2019 14:30	10/16/2019 10:05
SS-3a	Y910240-04	Soil	October 15, 2019 14:45	10/16/2019 10:05

Origins Laboratory, Inc.



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CGRS, Inc

1301 Academy Court

Fort Collins CO 80524

Drezden Kinnaird

Project Number: 17728aa

Project: Impetro - Walters-Calhoun

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page 1 of 1

19102410

ORIGINS
LABORATORY, INC

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

Project Manager: Drezden Kinnaird
Project Name: Impetro - Walters-Calhoun
Project Number: 17728aa
Samples Collected By: John Acker

Sample ID Description	Date Sampled	Time Sampled	# of Containers	Preservative				Matrix			Analysis	Sample Instructions
				Unpreserved	HCl	HNO ₃	Other	Groundwater	Soil	Air Sampling #		
SS-6	10/15/19	13:45	2	X				X			TPH, EC, pH, SAR	1
SS-7	10/15/19	14:00	2	X				X			TPH, EC, pH, SAR	2
SS-8	10/15/19	14:30	2	X				X			TPH, EC, pH, SAR	3
SS-3a	10/15/19	14:45	1	X				X			SAR	4
												5
												6
												7
												8
												9
												10
Relinquished By: John Acker	Date: 10/15/19	Time: 16:15									Date: Time:	Turnaround Time: Same Day <input type="checkbox"/> 24 Hr <input type="checkbox"/> 48 Hr <input type="checkbox"/> 72 Hr <input type="checkbox"/> Standard <input checked="" type="checkbox"/>
Relinquished By: S. V.	Date: 10/16/19	Time: 10:04									Date: 10-16-19 Time: 10:05	

24 Date Results Needed

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

Origins Laboratory, Inc.

Jefe Pellegrini

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CGRS, Inc

1301 Academy Court

Fort Collins CO 80524

Drezden Kinnaird

Project Number: 17728aa

Project: Impetro - Walters-Calhoun

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: 7910240

Client: CGRS

Client Project ID: Impetro - Walters - Calhoun

Checklist Completed by: Don Lee

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

Date/time completed: 10-16-19

Airbill #: _____

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

Cooler Number/Temperature: 1 / 2-4 °C 1 / _____ °C 1 / _____ °C 1 / _____ °C

Thermometer ID: 5003

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>PH</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) MD

Date/Time Reviewed 10/17/19

Origins Laboratory, Inc.

Jefe Pellegrini

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

SS-6

10/15/2019 1:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y910240-01 (Soil)

Metals (Saturated Paste Prep)

Calcium	1.97		me/L	1	[none]		10/17/2019	10/21/2019	
Magnesium	0.58		"	"	"		"	"	
Sodium	7.99		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.46		pH Units	1	B9J1602	DJL	10/16/2019	10/17/2019	
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SAR by 20B Saturated Paste

SAR	7.08			1	[none]		10/17/2019	10/21/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.118	0.00500	mmhos/cm	1	B9J1603	DJL	10/16/2019	10/17/2019	
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TPH-Carbon Chain by EPA 8015D

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9J1604	KDK	10/16/2019	10/16/2019	U
Diesel (C10-C28)	2200	50.0	"	"	"	KDK	"	"	
Residual Range Organics (C28-C40)	3420	200	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	63.2 %	50-150			"	"		"	
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Origins Laboratory, Inc.



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1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

SS-7

10/15/2019 2:00:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y910240-02 (Soil)

Metals (Saturated Paste Prep)

Calcium	2.83		me/L	1	[none]		10/17/2019	10/21/2019	
Magnesium	0.70		"	"	"		"	"	
Sodium	0.65		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.12		pH Units	1	B9J1602	DJL	10/16/2019	10/17/2019	
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SAR by 20B Saturated Paste

SAR	0.49			1	[none]		10/17/2019	10/21/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0739	0.00500	mmhos/cm	1	B9J1603	DJL	10/16/2019	10/17/2019	
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TPH-Carbon Chain by EPA 8015D

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9J1604	KDK	10/16/2019	10/16/2019	U
Diesel (C10-C28)	54.2	50.0	"	"	"	KDK	"	"	
Residual Range Organics (C28-C40)	218	200	"	"	"	KDK	"	"	

Surrogate: o-Terphenyl	65.1 %	50-150			"	"	"	"	
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1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

SS-8

10/15/2019 2:30:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc. Y910240-03 (Soil)

Metals (Saturated Paste Prep)

Calcium	2.99		me/L	1	[none]		10/17/2019	10/21/2019	
Magnesium	0.46		"	"	"		"	"	
Sodium	0.18		"	"	"		"	"	

pH in Soil by EPA 9045D

pH	8.16		pH Units	1	B9J1602	DJL	10/16/2019	10/17/2019	
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SAR by 20B Saturated Paste

SAR	0.14			1	[none]		10/17/2019	10/21/2019	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.0577	0.00500	mmhos/cm	1	B9J1603	DJL	10/16/2019	10/17/2019	
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TPH-Carbon Chain by EPA 8015D

Gasoline (C6-C10)	ND	50.0	mg/kg	1	B9J1604	KDK	10/16/2019	10/16/2019	U
Diesel (C10-C28)	ND	50.0	"	"	"	KDK	"	"	U
Residual Range Organics (C28-C40)	ND	200	"	"	"	KDK	"	"	U

Surrogate: o-Terphenyl	76.9 %	50-150			"	"	"	"	
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Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

SS-3a

10/15/2019 2:45:00PM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Analyst	Prepared	Analyzed	Notes
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AAL, Inc.
Y910240-04 (Soil)

Metals (Saturated Paste Prep)

Calcium	3.07	me/L	1	[none]	10/17/2019	10/21/2019
Magnesium	0.93	"	"	"	"	"
Sodium	5.10	"	"	"	"	"

SAR by 20B Saturated Paste

SAR	3.61		1	[none]	"	10/21/2019
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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B9J1604 - EPA 3580										
Blank (B9J1604-BLK1)					Prepared: 10/16/2019 Analyzed: 10/16/2019					
Gasoline (C6-C10)	ND	25.0	mg/kg							U
Diesel (C10-C28)	ND	25.0	"							U
Residual Range Organics (C28-C40)	ND	100	"							U
Surrogate: o-Terphenyl	19.9		"	25.0		79.5	50-150			

Origins Laboratory, Inc.



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Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9J1604 - EPA 3580

LCS (B9J1604-BS1)

Prepared: 10/16/2019 Analyzed: 10/16/2019

Gasoline (C6-C10)	1070	50.0	mg/kg	1000		107	70-130			
Diesel (C10-C28)	979	50.0	"	1000		97.9	70-130			
Residual Range Organics (C28-C40)	900	200	"	1000		90.0	70-130			
Surrogate: o-Terphenyl	51.0		"	50.0		102	50-150			

Origins Laboratory, Inc.



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1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Extractable Petroleum Hydrocarbons by 8015D - Quality Control Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9J1604 - EPA 3580

Matrix Spike (B9J1604-MS1)		Source: Y910240-01			Prepared: 10/16/2019 Analyzed: 10/16/2019					
Gasoline (C6-C10)	916	50.0	mg/kg	1000	18.9	89.7	70-130			
Diesel (C10-C28)	1660	50.0	"	1000	2200	NR	70-130			QM-07
Residual Range Organics (C28-C40)	2210	200	"	1000	3420	NR	70-130			QM-07
Surrogate: o-Terphenyl	49.3		"	50.0		98.6	50-150			

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Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Extractable Petroleum Hydrocarbons by 8015D - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9J1604 - EPA 3580

Matrix Spike Dup (B9J1604-MSD1)		Source: Y910240-01			Prepared: 10/16/2019 Analyzed: 10/16/2019					
Gasoline (C6-C10)	737	50.0	mg/kg	1000	18.9	71.8	70-130	21.7	35	
Diesel (C10-C28)	1430	50.0	"	1000	2200	NR	70-130	15.0	35	QM-07
Residual Range Organics (C28-C40)	2260	200	"	1000	3420	NR	70-130	2.11	35	QM-07
Surrogate: o-Terphenyl	35.8		"	50.0		71.6	50-150			

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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Extractable Petroleum Hydrocarbons by 8015D - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Classical Chemistry Parameters - Quality Control

Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B9J1602 - NO PREP

Duplicate (B9J1602-DUP1)		Source: Y910240-01			Prepared: 10/16/2019 Analyzed: 10/17/2019					
pH	8.32		pH Units		8.46			1.67	25	

Batch B9J1603 - NO PREP

Blank (B9J1603-BLK1)		Prepared: 10/16/2019 Analyzed: 10/17/2019								
Specific Conductance (EC)	0.00260	0.00500	mmhos/cm							
Duplicate (B9J1603-DUP1)		Source: Y910240-01			Prepared: 10/16/2019 Analyzed: 10/17/2019					
Specific Conductance (EC)	0.130	0.00500	mmhos/cm		0.118			9.44	25	

Origins Laboratory, Inc.



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CGRS, Inc
1301 Academy Court
Fort Collins CO 80524

Drezden Kinnaird
Project Number: 17728aa
Project: Impetro - Walters-Calhoun

Notes and Definitions

U Sample is Non-Detect.

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.

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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