

May 31, 2018

SRC Energy

Dave Castro

5400 W 11th Street

Greely

CO 80634

Project Name - Walker-Shands TB Vault Pit

Project Number - [none]

Attached are your analytical results for Walker-Shands TB Vault Pit received by Origins Laboratory, Inc. May 24, 2018. This project is associated with Origins project number Y805379-01.

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



SRC Energy
5400 W 11th Street
Greely CO 80634

Dave Castro
Project Number: [none]
Project: Walker-Shands TB Vault Pit

CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
ESS @ 2.5'	Y805379-01	Soil	May 23, 2018 10:39	05/24/2018 16:38
BSS @ 4'	Y805379-02	Soil	May 23, 2018 10:45	05/24/2018 16:38

Origins Laboratory, Inc.



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Jen Pellegrini, Project Manager

SRC Energy
 5400 W 11th Street
 Greeley CO 80634

Dave Castro
 Project Number: [none]
 Project: Walker-Shands TB Vault Pit

Origins Laboratory

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

Sample Receipt Checklist

Origins Work Order: Y805379

Client: SRC Energy
 Client Project ID: Walker-Shands TB Vault Pit

Checklist Completed by: JG
 Date/time completed: 5/25/2018

Shipped Via: HD
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
 Airbill #: N/A

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

Cooler Number/Temperature: 1 / 3.8 °C _____ / _____ °C _____ / _____ °C _____ / _____ °C (Describe)

Thermometer ID: T003

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"/>			
Is there ice present (document if blue ice is used)	<input checked="" type="checkbox"/>			
Are custody seals present on cooler? (if so, document in comments if they are signed and dated, broken or intact)		<input checked="" 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 checked="" type="checkbox"/>		
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Are short holding time analytes or samples with HTs due within 48 hours present ⁽¹⁾ ?		<input checked="" type="checkbox"/>		
Is a chain-of-custody (COC) present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client with date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace (> ¼ inch bubble) present? If yes, contact client and note in narrative.			<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 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 JG (Project Manager)

Date/Time Reviewed 5/30/18

Origins Laboratory, Inc.



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SRC Energy
 5400 W 11th Street
 Greely CO 80634

Dave Castro
 Project Number: [none]
 Project: Walker-Shands TB Vault Pit

ESS @ 2.5'
5/23/2018 10:39:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y805379-01 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E2506	05/25/2018	05/25/2018	U
<i>Surrogate: o-Terphenyl</i>	95.5 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8E2505	05/25/2018	05/26/2018	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U

<i>Surrogate: 1,2-Dichloroethane-d4</i>	110 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	99.6 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"	

Metals (Saturated Paste Prep)

Calcium	1.59		me/L	1	'[none]'	05/29/2018	05/30/2018	
Magnesium	0.73		"	"	"	"	"	
Sodium	1.20		"	"	"	"	"	

pH in Soil by EPA 9045D

pH	8.51		pH Units	1	B8E2404	05/24/2018	05/25/2018	
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SRC Energy
5400 W 11th Street
Greely CO 80634

Dave Castro
Project Number: [none]
Project: Walker-Shands TB Vault Pit

ESS @ 2.5'
5/23/2018 10:39:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y805379-01 (Soil)

SAR by 20B Saturated Paste

SAR	1.11			1	'[none]'	05/29/2018	05/30/2018	
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Specific Conductance by Modified 9050A

Specific Conductance (EC)	0.266		mmhos/cm	1	B8E2405	05/25/2018	05/27/2018	
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Jen Pellegrini, Project Manager

SRC Energy
 5400 W 11th Street
 Greely CO 80634

Dave Castro
 Project Number: [none]
 Project: Walker-Shands TB Vault Pit

BSS @ 4'
5/23/2018 10:45:00AM

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Notes
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Origins Laboratory, Inc.
Y805379-02 (Soil)

Diesel Range Organics (DRO/TEPH) by EPA 8015C

Diesel (C10-C28)	ND	50.0	mg/kg	1	B8E2506	05/25/2018	05/25/2018	U
<i>Surrogate: o-Terphenyl</i>	92.8 %	59-131			"	"	"	

GBTEX by EPA 8260C

Gasoline Range Hydrocarbons	ND	0.200	mg/kg	1	B8E2505	05/25/2018	05/26/2018	U
Benzene	ND	0.002	"	"	"	"	"	U
Toluene	ND	0.002	"	"	"	"	"	U
Ethylbenzene	ND	0.002	"	"	"	"	"	U
Xylenes, total	ND	0.002	"	"	"	"	"	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	109 %	70-130			"	"	"	
<i>Surrogate: Toluene-d8</i>	99.0 %	70-130			"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>	102 %	70-130			"	"	"	

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Dave Castro
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Volatile Organic Compounds by GC/MS SW846 8260C - Quality Control
Origins Laboratory, Inc.

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B8E2505 - EPA 5030 (soil)										
Blank (B8E2505-BLK1)										
					Prepared: 05/25/2018 Analyzed: 05/25/2018					
Gasoline Range Hydrocarbons	ND	0.200	mg/kg							U
Benzene	ND	0.002	"							U
Toluene	ND	0.002	"							U
Ethylbenzene	ND	0.002	"							U
Xylenes, total	ND	0.002	"							U
Surrogate: 1,2-Dichloroethane-d4	69		ug/kg	62.5		111	70-130			
Surrogate: Toluene-d8	63		"	62.5		101	70-130			
Surrogate: 4-Bromofluorobenzene	63		"	62.5		101	70-130			

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Dave Castro
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 Project: Walker-Shands TB Vault Pit

Volatile Organic Compounds by GC/MS SW846 8260C - 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 B8E2505 - EPA 5030 (soil)

LCS (B8E2505-BS1)

Prepared: 05/25/2018 Analyzed: 05/25/2018

Benzene	0.109	0.002	mg/kg	0.100		109	77.1-124			
Toluene	0.109	0.002	"	0.100		109	74.5-128			
Ethylbenzene	0.114	0.002	"	0.100		114	66.4-127			
m,p-Xylene	0.226	0.004	"	0.200		113	76.6-124			
o-Xylene	0.112	0.002	"	0.100		112	76.6-124			
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		106	70-130			
Surrogate: Toluene-d8	62		"	62.5		99.5	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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Volatile Organic Compounds by GC/MS SW846 8260C - 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 B8E2505 - EPA 5030 (soil)

Matrix Spike (B8E2505-MS1)	Source: Y805392-05			Prepared: 05/25/2018 Analyzed: 05/25/2018						
Benzene	0.101	0.002	mg/kg	0.100	0.005	96.2	71.8-126			
Toluene	0.097	0.002	"	0.100	0.001	95.2	65.1-130			
Ethylbenzene	0.100	0.002	"	0.100	0.001	98.8	62.2-130			
m,p-Xylene	0.198	0.004	"	0.200	0.003	97.8	46.5-137			
o-Xylene	0.099	0.002	"	0.100	0.001	98.3	54.2-134			
Surrogate: 1,2-Dichloroethane-d4	66		ug/kg	62.5		105	70-130			
Surrogate: Toluene-d8	61		"	62.5		97.7	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		103	70-130			

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Jen Pellegrini, Project Manager

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Dave Castro
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 Project: Walker-Shands TB Vault Pit

Volatile Organic Compounds by GC/MS SW846 8260C - 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 B8E2505 - EPA 5030 (soil)

Matrix Spike Dup (B8E2505-MSD1)	Source: Y805392-05			Prepared: 05/25/2018 Analyzed: 05/25/2018						
Benzene	0.099	0.002	mg/kg	0.100	0.005	93.9	71.8-126	2.36	11.3	
Toluene	0.094	0.002	"	0.100	0.001	92.3	65.1-130	3.05	15.4	
Ethylbenzene	0.096	0.002	"	0.100	0.001	94.3	62.2-130	4.63	19.6	
m,p-Xylene	0.190	0.004	"	0.200	0.003	93.8	46.5-137	4.10	19.2	
o-Xylene	0.096	0.002	"	0.100	0.001	94.7	54.2-134	3.75	17.9	
Surrogate: 1,2-Dichloroethane-d4	68		ug/kg	62.5		108	70-130			
Surrogate: Toluene-d8	61		"	62.5		98.2	70-130			
Surrogate: 4-Bromofluorobenzene	64		"	62.5		102	70-130			

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 Project: Walker-Shands TB Vault Pit

Volatile Organic Compounds by GC/MS SW846 8260C - 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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Extractable Petroleum Hydrocarbons by 8015C - 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 B8E2506 - EPA 3580

Blank (B8E2506-BLK1)

Prepared: 05/25/2018 Analyzed: 05/25/2018

Diesel (C10-C28)	ND	50.0	mg/kg							U
Surrogate: o-Terphenyl	50		"	50.0		101	59-131			

LCS (B8E2506-BS1)

Prepared: 05/25/2018 Analyzed: 05/25/2018

Diesel (C10-C28)	941	50.0	mg/kg	1000		94.1	64-121			
Surrogate: o-Terphenyl	52		"	50.0		103	59-131			

Matrix Spike (B8E2506-MS1)

Source: Y805392-05

Prepared: 05/25/2018 Analyzed: 05/25/2018

Diesel (C10-C28)	1210	50.0	mg/kg	1000	ND	121	53-125			
Surrogate: o-Terphenyl	66		"	50.0		131	59-131			

Matrix Spike Dup (B8E2506-MSD1)

Source: Y805392-05

Prepared: 05/25/2018 Analyzed: 05/25/2018

Diesel (C10-C28)	1130	50.0	mg/kg	1000	ND	113	53-125	6.98	20	
Surrogate: o-Terphenyl	64		"	50.0		128	59-131			

Origins Laboratory, Inc.



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SRC Energy
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 Greely CO 80634

Dave Castro
 Project Number: [none]
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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
Batch B8E2404 - EPA 1311										
Duplicate (B8E2404-DUP1)		Source: Y805324-01			Prepared: 05/24/2018 Analyzed: 05/25/2018					
pH	7.31		pH Units		8.32			12.9	25	
Duplicate (B8E2404-DUP2)		Source: Y805392-01			Prepared: 05/24/2018 Analyzed: 05/25/2018					
pH	8.07		pH Units		8.51			5.31	25	
Batch B8E2405 - EPA 1311										
Blank (B8E2405-BLK1)		Prepared: 05/24/2018 Analyzed: 05/27/2018								
Specific Conductance (EC)	0.00200		mmhos/cm							
Blank (B8E2405-BLK2)		Prepared: 05/24/2018 Analyzed: 05/27/2018								
Specific Conductance (EC)	0.00230		mmhos/cm							
Duplicate (B8E2405-DUP1)		Source: Y805324-01			Prepared: 05/24/2018 Analyzed: 05/27/2018					
Specific Conductance (EC)	0.131		mmhos/cm		0.135			3.00	25	
Duplicate (B8E2405-DUP2)		Source: Y805392-01			Prepared: 05/24/2018 Analyzed: 05/27/2018					
Specific Conductance (EC)	0.187		mmhos/cm		0.195			4.13	25	

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Greely CO 80634

Dave Castro
Project Number: [none]
Project: Walker-Shands TB Vault Pit

Notes and Definitions

U Sample is Non-Detect.

ND Analyte NOT DETECTED at or above the reporting limit

RPD Relative Percent Difference

All soil results are reported at a wet weight basis.

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Jen Pellegrini, Project Manager