

State of Colorado  
Oil and Gas Conservation Commission

1120 Lincoln Street, Suite 801, Denver, Colorado 80203 (303) 894-2100 Fax 894-2109



FOR OGCC USE ONLY

**SITE INVESTIGATION AND REMEDIATION WORKPLAN**

This form shall be submitted to the Director for approval prior to the initiation of site investigation and remediation activities. Form 27 is intended to be used whenever possible. Additional documentation will be required when large volumes of soil and groundwater have been impacted or involve large facilities with multiple source areas. See Rule 910. Attach as many pages as needed to fully describe the proposed work.

**CAUSE OF CONDITION BEING INVESTIGATED AND REMEDIATED**

☐ Spill or Release ☐ Plug & Abandon ☐ Central Facility Closure ☐ Site/Facility Closure ☒ Other (describe): Form 27 NFA

OGCC Employee:

☐ Spill ☐ Complaint  
☐ Inspection ☐ NOAV

Tracking No:

**GENERAL INFORMATION**

<b>OGCC Operator Number:</b> <u>69175</u> Name of Operator: <u>Petroleum Development Corporation (PDC)</u> Address: <u>1775 Sherman Street, Suite 3000</u> City: <u>Denver</u> State: <u>CO</u> Zip: <u>80203</u>		Contact Name and Telephone <b>Name:</b> <u>John Nussbaumer</u> No: <u>303-860-5800</u> Fax: <u>303-860-5838</u>	
API/Facility No: <u>05-045-12892</u> Facility Name: <u>Mesa 19 Pad</u> Well Name: <u>Puckett</u>		County: <u>Garfield County</u> Facility Number: <u>14D-24D</u> Well Number: <u>14D-24D</u>	
Location (QtrQtr, Sec, Twp, Rng, Meridian): <u>SWSW SEC 24 T6S R97W 6th Principal Meridian</u> Latitude: <u>39.50342</u> Longitude: <u>-108.174013</u>			

**TECHNICAL CONDITIONS**

Type of Waste Causing Impact (crude oil, condensate, produced water, etc.): produced water, condensate, and frac tank fluids

Site Conditions: Is location within a sensitive area (according to Rule 901e)? ☒ Y ☐ N If yes, attach evaluation. Groundwater < 20 feet bgs.

Adjacent land use (cultivated, irrigated, dry land farming, industrial, residential, etc.): Oil/gas development, open range

Soil type, if not previously identified on Form 2A or Federal Surface Use Plan: black, organic-rich, loamy topsoil underlain by shale

Potential receptors (water wells within 1/4 mi, surface waters, etc.): Surface water is located 545' northwest of the site. Water wells, wetlands and buildings are located greater than 0.75 mile from the site. Depth to groundwater is unknown.

Description of Impact (if previously provided, refer to that form or document):

Impacted Media (check):	Extent of Impact:	How Determined:
<input checked="" type="checkbox"/> Soils	<u>6'N-S x 28'E-W x 2'D, and 30'N-S x 20'E-W x 4'D</u>	<u>Observations of soil staining and laboratory analysis</u>
<input type="checkbox"/> Vegetation		
<input type="checkbox"/> Groundwater		
<input type="checkbox"/> Surface water		

**REMEDIALATION WORKPLAN**

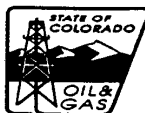
Describe initial action taken (if previously provided, refer to that form or document):  
A Form 19 for the frac tank release was submitted on 10/17/2008. A Form 19 for the production tank release was submitted on 10/21/2008.

Describe how source is to be removed:  
A Form 27 was submitted for both the frac tank and production tank releases on 2/9/2009.

Describe how remediation of existing impacts is to be accomplished, including removal and disposal at an injection well or licensed facility, land treatment on site, removal of impacted groundwater, insitu bioremediation, burning of oily vegetation, etc.:  
Petroleum hydrocarbon impacted soil and ballast material is currently being land farmed onsite within a lined containment.

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REMEDIATION WORKPLAN (CONT.)

OGCC Employee:

Tracking Number:

Name of Operator: PDC

OGCC Operator No: 69175

Received Date:

Well Name & No: Puckett 14D-24D

Facility Name & No.: Mesa 19 Pad

If groundwater has been impacted, describe proposed monitoring plan (# of wells or sample points, sampling schedule, analytical methods, etc.):

Groundwater was not encountered.

Describe reclamation plan. Discuss existing and new grade recontouring; method and testing of compaction alleviation; and reseeding program, including location of new seed, seed mix and noxious weed prevention. Attach diagram or drawing. Use additional sheet for description if required.

The site was restored to pre-release grade and PDC's production facility remains at the site.

Attach samples and analytical results taken to verify remediation of impacts. Show locations of samples on an onsite schematic or drawing.

Is further site investigation required? ☐ Y ☒ N If yes, describe:

Approximately 18 cubic yards of petroleum hydrocarbon impacted soil and ballast material are currently being land farmed onsite within a lined containment. A composite soil sample (C01@2') was collected from the land farm stockpile on February 24, 2009 and submitted for analysis of Total Petroleum Hydrocarbons (TPH) by Environmental Protection Agency (EPA) Modified Method 8015. Soil analytical results indicated the TPH concentration is below the Colorado Oil and Gas Conservation Commission (COGCC) 1,000 mg/kg sensitive area allowable level. Based on the analytical results, PDC is requesting No Further Action status for this site. A topographic map of the area and site map are presented as Figures 1 and 2, respectively. Soil analytical results are attached and presented in Table 1.

Final disposition of E&P waste (land treated and disposed onsite, name of licensed disposal facility, recycling, reuse, etc.):

A composite soil sample was collected from the land farm and analytical results indicated the TPH concentration is below the COGCC 1,000 mg/kg sensitive area allowable level. The land farmed soil will be incorporated into the onsite earthen berms.

IMPLEMENTATION SCHEDULE

Date Site Investigation Began:	9/29/08	Date Site Investigation Completed:	10/13/08	Remediation Plan Submitted:	3/30/09
Remediation Start Date:	9/29/08	Anticipated Completion Date:	6/1/09	Actual Completion Date:	

I hereby certify that the statements made in this form are, to the best of my knowledge, true, correct, and complete.

Print Name: M. Scott Ghan, LT Environmental, as agent for PDC

Signed:

Title:

Senior Environmental Scientist

Date:

3/30/09

OGCC Approved:

Title:

Date:

**TABLE 1**  
**SOIL SAMPLE ANALYTICAL DATA**  
**MESA 19 RELEASES**  
**GARFIELD COUNTY, COLORADO**  
**PETROLEUM DEVELOPMENT CORPORATION**

<b>SAMPLE ID</b>	<b>DATE</b>	<b>DEPTH (feet bgs)</b>	<b>TPH (mg/kg)</b>
C01 @ 2'	2/24/2009	2	66.1
COGCC Sensitive Area Allowable Level			<b>1,000</b>

< - Less than stated laboratory reporting limit

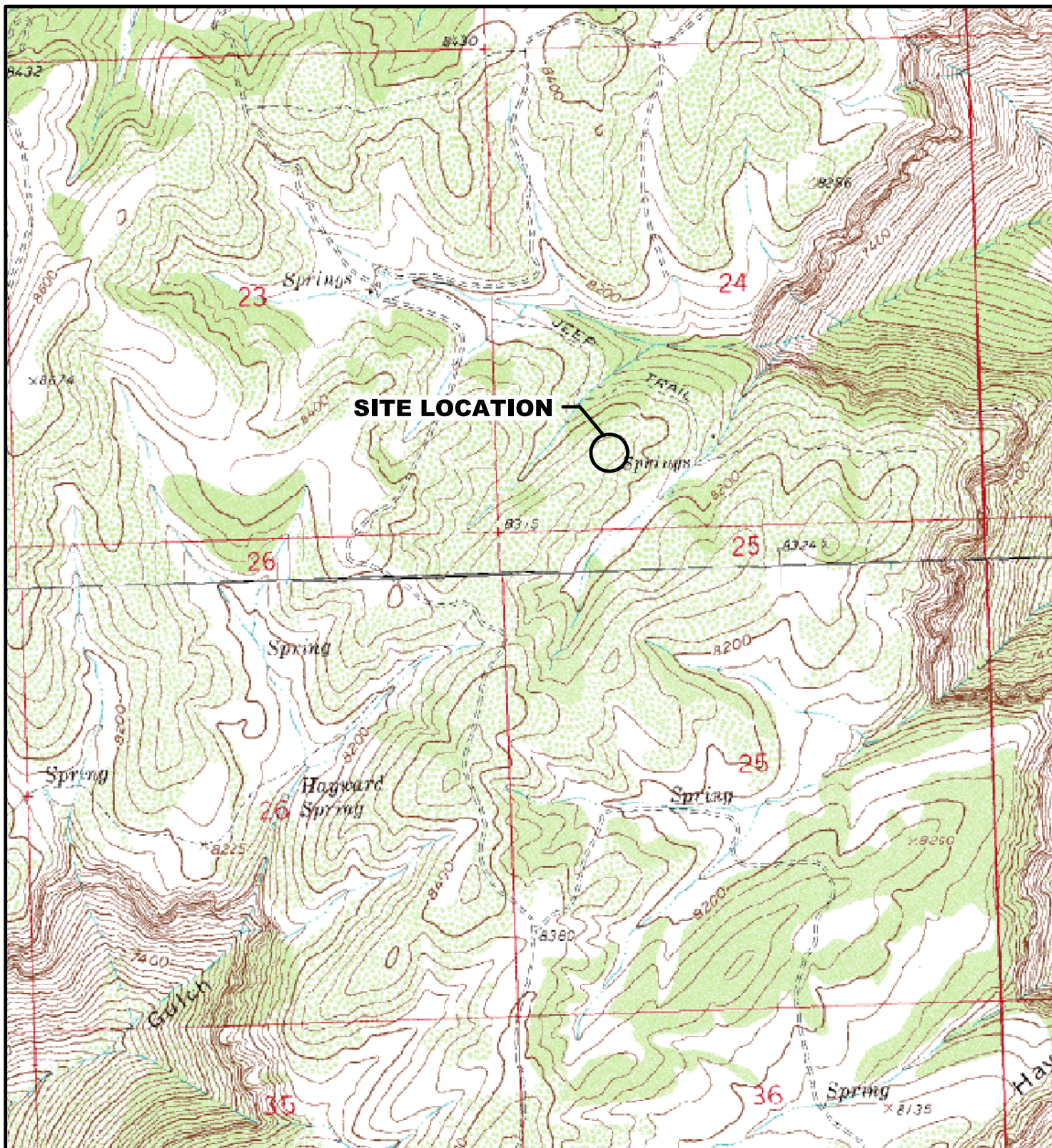
TPH - Total Petroleum Hydrocarbons

mg/kg - milligrams per kilogram

bgs - Below ground surface

COGCC - Colorado Oil and Gas Conservation Commission





# **LEGEND**



**SITE LOCATION**



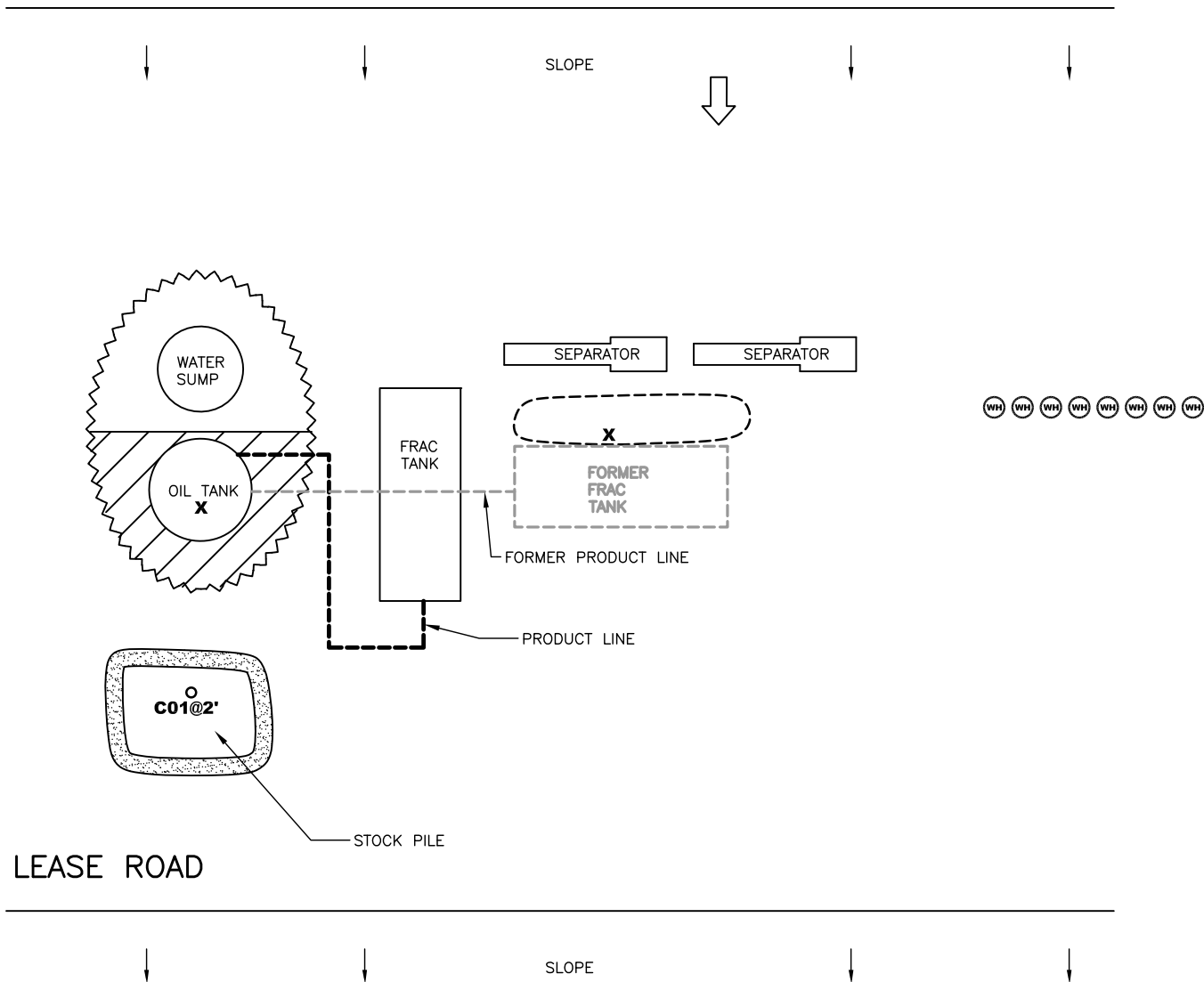
0 375 750 1500  
FEET

SOURCE: TOPOZONE.COM  
USGS 7.5' QUADRANGLE  
(NAD27)

**FIGURE 1**  
**SITE LOCATION MAP**  
**MESA 19 RELEASES**  
**SWSW 24 6S 97W**  
**GARFIELD COUNTY, CO**  
**PETROLEUM DEVELOPMENT CORPORATION**

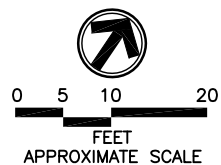


PDCW082901\_SL 10/08



### LEGEND

- B01@SURF**  
○ SOIL SAMPLE LOCATION
- ⊙ WELL HEAD
- ▬ BERM
- ~~~~~ STEEL CONTAINMENT
- ➡ ESTIMATED GROUNDWATER FLOW DIRECTION
- X** RELEASE LOCATIONS
- EXTENT OF EXCAVATION ON 9/29/08
- ⊘ BALLAST MATERIAL REMOVED ON 10/13/08



**FIGURE 2**  
**SITE MAP**  
**MESA 19 PRODUCTION TANK RELEASE**  
**SWSW 24 6S 97W**  
**GARFIELD COUNTY, CO**  
**PETROLEUM DEVELOPMENT CORPORATION**







4640 Pecos Street | Unit C | Denver, Colorado 80211  
303.433.1322 Phone 303.265.9645 Fax

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March 02, 2009

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LT Environmental, Inc.  
4600 West 60th Avenue  
Arvada CO 80003

Scott Ghan  
Project Number: PDCW0829  
Project: Mesa 19 Frac Tank Release

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Attached are the analytical results for Mesa 19 Frac Tank Release received by Origins Laboratory, Inc. 2/26/2009 12:00:00PM. Please let us know if you have any questions, or if we can help with anything at all.

Laboratory Manager  
Noelle E Doyle

The analytical results in the following report were analyzed under the guidelines of EPA Methods specified in SW-846. The analytical results apply specifically to the samples and analyses specified per the attached Chain of Custody. This laboratory report is intended solely for the above addressee and it is only to be used and or reproduced in its entirety.

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LT Environmental, Inc.  
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Scott Ghan  
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#### CROSS REFERENCE REPORT

Sample ID	Laboratory ID	Matrix	Sampled	Date Received
CO 1 @ 2'	X902100-01	Soil	2/24/2009 3:40:00PM	02/26/2009 12:00

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Project: Mesa 19 Frac Tank Release

X402100

page 1 of 1

originslaboratory.com



Client: LT Environmental, Inc.  
Address: 820 Megan Ave, Unit B  
Rifle, Colorado, 81650  
Telephone Number: 970-285-9985  
E-Mail Address: sgan@ltenv.com

Project Manager: Scott Ghan  
Project Name: Mesa 19 Frac Tank Release  
Project Number: PDCW0829  
Samples Collected by: H. Bauer

Sample ID - Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix		Analysis		Sample Instructions
				Unpreserved	HCl	HNO <sub>3</sub>	Other -	Groundwater	Soil	Air - Summa Canister #	Other -	
CO102	2-24-09	15:40	1	X			X					1
												2
												3
												4
												5
												6
												7
												8
												9
												10
Relinquished by: <u>H. Bauer</u>	Date: <u>2-25-09</u>	Time: <u>10:30</u>	Received by:	Date:	Time:	Temperature Upon Receipt:						
Relinquished by:	Date:	Time:	Received by: <u>[Signature]</u>	Date: <u>2-26-09</u>	Time: <u>12:00</u>	Turn Around Time: <u>24-hr</u>						

4640 North Pecos Street | Unit C | Denver, Colorado 80211 | Laboratory - 303.433.1322 Fax - 303.265.9645

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Scott Ghan  
Project Number: PDCW0829  
Project: Mesa 19 Frac Tank Release

CO 1 @ 2'  
X902100-01 (Soil)

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Notes
		Limit							

Origins Laboratory, Inc.

TPH-Carbon Chain by EPA Method 8015M

Gasoline (C6-C10)	ND	50.0	mg/kg	1	9B26005	02/26/2009	02/26/2009
Diesel (C10-C28)	66.1	50.0	"	"	"	"	"
Residual Range Organics (C28-C36)	ND	200	"	"	"	"	"
TPH - Carbon Chain Total	66.1	50.0	"	"	"	"	"

Origins Laboratory, Inc.

Noelle E Doyle, Laboratory Manager

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Arvada CO 80003

Scott Ghan  
Project Number: PDCW0829  
Project: Mesa 19 Frac Tank Release

**Extractable Petroleum Hydrocarbons by 8015M – 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 9B26005 – Default Prep GC-Semi**

**Blank (9B26005-BLK1)**

Prepared: 02/26/2009 Analyzed: 02/26/2009

Gasoline (C6-C10)	ND	50.0	mg/kg
Diesel (C10-C28)	ND	50.0	"
Residual Range Organics (C28-C36)	ND	200	"
TPH – Carbon Chain Total	ND	50.0	"

**LCS (9B26005-BS1)**

Prepared: 02/26/2009 Analyzed: 02/26/2009

Gasoline (C6-C10)	ND	50.0	mg/kg			65-140
Diesel (C10-C28)	151	50.0	"	200	75.6	60-140

**LCS Dup (9B26005-BSD1)**

Prepared: 02/26/2009 Analyzed: 02/26/2009

Gasoline (C6-C10)	ND	50.0	mg/kg			65-140		25
Diesel (C10-C28)	156	50.0	"	200	78.1	60-140	3.28	25

Origins Laboratory, Inc.

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### Notes and Definitions

ND Analyte NOT DETECTED at or above the reporting limit  
RPD Relative Percent Difference

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Noelle E Doyle, Laboratory Manager