

State of Colorado
Oil and Gas Conservation Commission

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



Document Number:

400871018

Date Received:

Spill report taken by:

Spill/Release Point ID:

SPILL/RELEASE REPORT (SUPPLEMENTAL)

This form is to be submitted by the party responsible for the oil and gas spill or release. Any spill or release which may impact waters of the State must be reported as soon as practicable; any spill over 20 bbls must be reported within 24 hours and all spills over five bbls must be reported within ten days. Submit a Site Investigation and Remediation Workplan (Form 27) when requested by the Director.

OPERATOR INFORMATION

Name of Operator: <u>PDC ENERGY INC</u>	Operator No: <u>69175</u>	Phone Numbers
Address: <u>1775 SHERMAN STREET - STE 3000</u>		Phone: <u>(970) 506-9273</u>
City: <u>DENVER</u> State: <u>CO</u> Zip: <u>80203</u>		Mobile: <u>(970) 373-6581</u>
Contact Person: <u>Zack Liesenfeld</u>		Email: <u>zack.liesenfeld@pdce.com</u>

INITIAL SPILL/RELEASE REPORT

Initial Spill/Release Report Doc# 400870835

Initial Report Date: 07/20/2015 Date of Discovery: 07/13/2015 Spill Type: Recent Spill

Spill/Release Point Location:

Location of Spill/Release: QTRQTR NESE SEC 22 TWP 5N RNG 65W MERIDIAN 6

Latitude: 40.384011 Longitude: -104.642751

Municipality (if within municipal boundaries): _____ County: WELD

Reference Location:

Facility Type: TANK BATTERY Facility/Location ID No 327103
 No Existing Facility or Location ID No.
 Well API No. (Only if the reference facility is well) 05- -

Fluid(s) Spilled/Released (please answer Yes/No):

Was one (1) barrel or more spilled outside of berms or secondary containment? No

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

Were Five (5) barrels or more spilled? Yes

Estimated Total Spill Volume: use same ranges as others for values

Estimated Oil Spill Volume(bbl): Unknown Estimated Condensate Spill Volume(bbl): 0

Estimated Flow Back Fluid Spill Volume(bbl): 0 Estimated Produced Water Spill Volume(bbl): Unknown

Estimated Other E&P Waste Spill Volume(bbl): 0 Estimated Drilling Fluid Spill Volume(bbl): 0

Specify: Dump washed out on separator and released product within containment.

Land Use:

Current Land Use: CROP LAND Other(Specify): _____

Weather Condition: Party Cloudy

Surface Owner: FEE Other(Specify): Gary Alles

Check if impacted or threatened by spill/Release (please answer Yes/No to all that apply):

Waters of the State Residence/Occupied Structure Livestock Public Byway Surface Water Supply Area
As defined in COGCC 100-Series Rules

Describe what is known about the spill/release event (what happened -- including how it was stopped, contained, and recovered):

A dump washed out on a separator on the Alles 22S-432 location and released what was thought to be around 0.75 bbls on July 13th, 2015. This release was within secondary containment under the separator units. The well was shut in and remediation activities began. On July 17th, 2015 it was determined the release was greater than 5 bbls. Excavation activities are currently being used to remove contaminated material.

List Agencies and Other Parties Notified:

OTHER NOTIFICATIONS

Date	Agency/Party	Contact	Phone	Response
7/17/2015	COGCC	Rick Allison	-	Via Email
7/17/2015	Weld County	Roy Rudisill	-	Via Email

SPILL/RELEASE DETAIL REPORTS

#1 Supplemental Report Date: 07/21/2015

FLUIDS	BBL's SPILLED	BBL's RECOVERED	Unknown
OIL	2	0	<input type="checkbox"/>
CONDENSATE	0	0	<input type="checkbox"/>
PRODUCED WATER	2	0	<input type="checkbox"/>
DRILLING FLUID	0	0	<input type="checkbox"/>
FLOW BACK FLUID	0	0	<input type="checkbox"/>
OTHER E&P WASTE	0	0	<input type="checkbox"/>

specify: _____

Was spill/release completely contained within berms or secondary containment? NO Was an Emergency Pit constructed? NO

Secondary containment, including walls & floor regardless of construction material, must be sufficiently impervious to contain any discharge from primary containment until cleanup occurs.

A Form 15 Pit Report shall be submitted within 30 calendar days after the construction of an emergency pit

Impacted Media (Check all that apply) Soil Groundwater Surface Water Dry Drainage Feature

Surface Area Impacted: Length of Impact (feet): 18 Width of Impact (feet): 15

Depth of Impact (feet BGS): 10 Depth of Impact (inches BGS): 6

How was extent determined?

On July 13, 2015, approximately 5 barrels of oil and produced water were released from the separator at the Alles 22S-432 production facility. Approximately 110 cubic yards of impacted material were removed and transported to the Waste Management Facility in Ault, Colorado for disposal under PDC waste manifests. Soil encountered in the excavation area was field screened for volatile organic compound (VOC) concentrations using a photoionization detector (PID). Five soil samples were collected from the sidewalls and base of the excavation area at 8 feet and 10.5 feet below ground surface (bgs), respectively. Soil samples were submitted to Summit Scientific Laboratories in Golden, Colorado for analysis of benzene, toluene, ethylbenzene, total xylenes (BTEX), naphthalene, and total petroleum hydrocarbons (TPH) - gasoline range organics (GRO) by USEPA Method 8260. In addition, samples were submitted for laboratory analysis of TPH - diesel range organics (DRO) by USEPA Method 8015. Analytical results indicated constituent concentrations were below COGCC Table 910-1 standards in the five soil sample locations. Soil analytical data is summarized in Table 1 and the laboratory analytical report is included as Attachment A. The excavation extent and soil sample locations are illustrated on Figure 2. Based on the soil analytical data described herein, PDC is requesting a No Further Action (NFA) determination for this release.

Soil/Geology Description:

Dacono clay loam, 0 to 1 percent slopes

Depth to Groundwater (feet BGS) 21 Number Water Wells within 1/2 mile radius: 17

If less than 1 mile, distance in feet to nearest Water Well 435 None Surface Water 130 None

Wetlands _____ None Springs _____ None

Livestock _____ None Occupied Building 290 None

Additional Spill Details Not Provided Above:

--

CORRECTIVE ACTIONS

#1 Supplemental Report Date: 07/21/2015Cause of Spill (Check all that apply) Human Error Equipment Failure Historical-Unknown
 Other (specify) _____

Describe Incident & Root Cause (include specific equipment and point of failure)

A release occurred when a dump washed out on the separator.

Describe measures taken to prevent the problem(s) from reoccurring:

The equipment was replaced and routine site inspections will be completed.

Volume of Soil Excavated (cubic yards): 110Disposition of Excavated Soil (attach documentation) Offsite Disposal Onsite Treatment
 Other (specify) _____Volume of Impacted Ground Water Removed (bbls): 0Volume of Impacted Surface Water Removed (bbls): 0

REQUEST FOR CLOSURE

Spill/Release Reports should be closed when impacts have been remediated or when further investigation and corrective actions will take place under an approved Form 27.Basis for Closure: Corrective Actions Completed (documentation attached) Work proceeding under an approved Form 27

Form 27 Remediation Project No: _____

OPERATOR COMMENTS:

--

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

Signed: _____ Print Name: Zack LiesenfeldTitle: EHS Professional Date: _____ Email: zack.liesenfeld@pdce.com

Attachment Check List

Att Doc Num	Name
400871077	ANALYTICAL RESULTS
400871092	SITE MAP
400871367	TOPOGRAPHIC MAP

Total Attach: 3 Files

General Comments

User Group

Comment

Comment Date

<u>User Group</u>	<u>Comment</u>	<u>Comment Date</u>

Total: 0 comment(s)

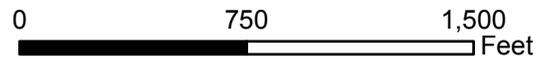
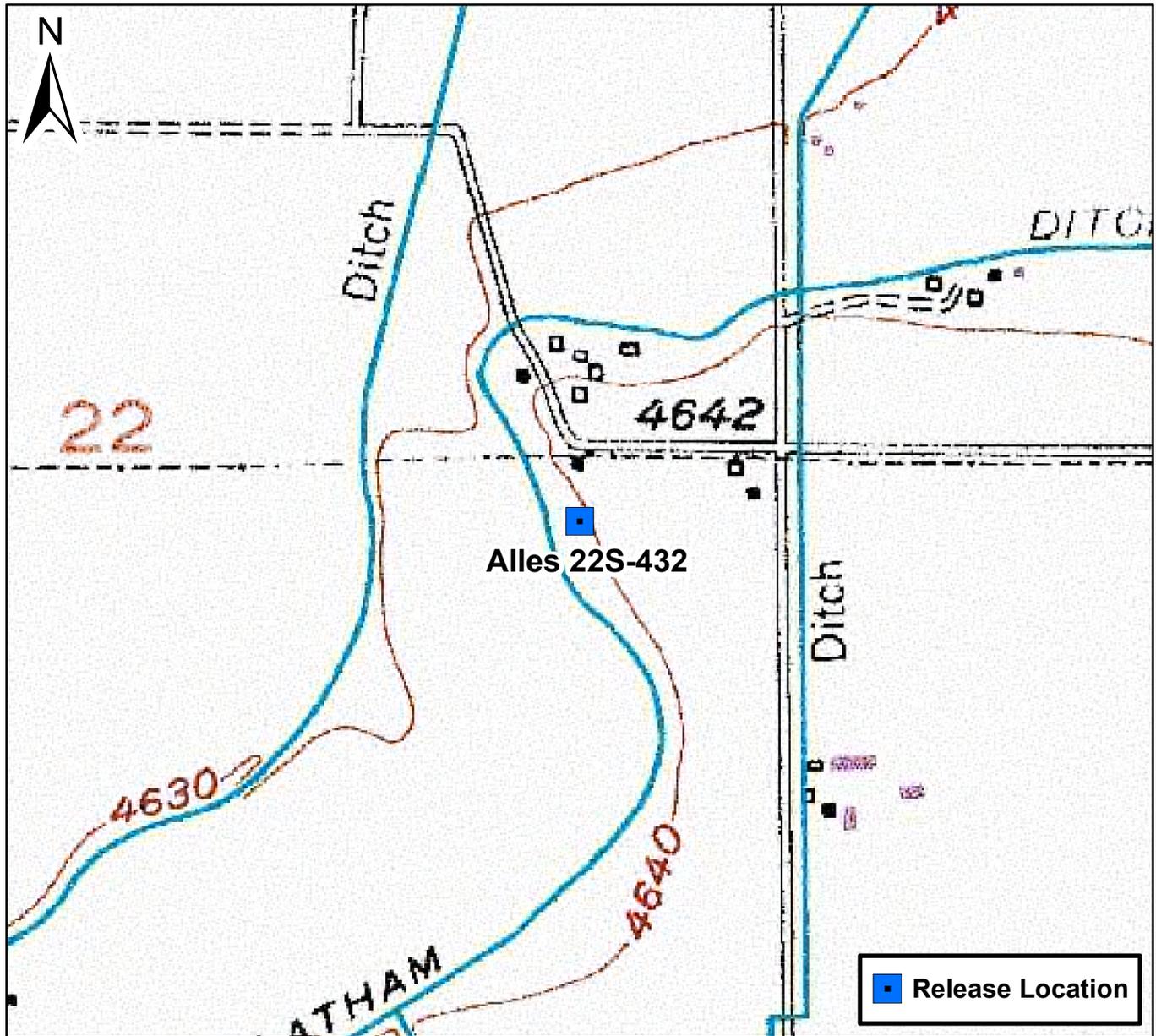


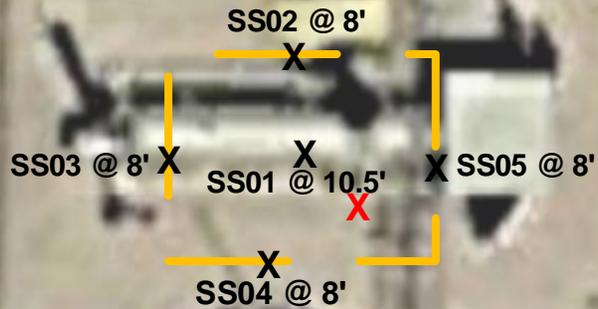
Figure 1

Site Location Map
 Alles 22S-432
 NESE S22 T5N R65W
 Weld County, Colorado

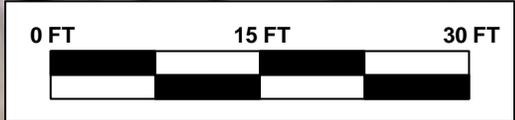




Surface
Drainage



Note: Surface drainage direction is estimated based on site topography and is not related to regional topography.



DRAWN BY: CAW

DATE: 7/20/2015

Facility Diagram
 PDC Energy – DJ Basin
 Alles 22S-432
 NESE S22 T5N R65W
 Weld County, CO

 **TASMAN** GEOSCIENCES
 6899 Pecos St., Unit C
 Denver, CO 80221

LEGEND

-  Approximate Excavation Extent
-  Approximate Soil Sample Location
-  Approximate Point of Release

FIGURE 2
 EXCAVATION SITE
 MAP

TABLE 1
ALLES 22S-432
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH ⁽²⁾ (mg/kg)	Naphthalene (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	500	23
SS01 @ 10.5'	7/16/2015	10.5	<0.0020	<0.0050	<0.0050	<0.010	<50	<0.010
SS02 @ 8'	7/16/2015	8	<0.0020	<0.0050	<0.0050	<0.010	<50	<0.010
SS03 @ 8'	7/16/2015	8	<0.0020	<0.0050	<0.0050	<0.010	<50	<0.010
SS04 @ 8'	7/16/2015	8	<0.0020	<0.0050	<0.0050	<0.010	<50	<0.010
SS05 @ 8'	7/16/2015	8	<0.0020	<0.0050	<0.0050	<0.010	<50	<0.010

Notes:

1. Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective February 1, 2014.

2. TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the indicated laboratory reporting limit.

GRO = Total volatile petroleum hydrocarbons - gasoline range organics

DRO = Total extractable petroleum hydrocarbons - diesel range organics

mg/kg = Milligrams per kilogram

bgs = Below ground surface

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

July 17, 2015

Mark Longhurst

PDC Energy

1775 Sherman St. STE. 3000

Denver, CO 80203

RE: Alles 22D-312, 402; 225-233; 9-22

Enclosed are the results of analyses for samples received by Summit Scientific on 07/16/15 18:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Paul Shrewsbury

President



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@10.5'	1507170-01	Soil	07/16/15 09:45	07/16/15 18:15
SS02@8'	1507170-02	Soil	07/16/15 10:15	07/16/15 18:15
SS03@8'	1507170-03	Soil	07/16/15 10:35	07/16/15 18:15
SS04@8'	1507170-04	Soil	07/16/15 11:00	07/16/15 18:15
SS05@8'	1507170-05	Soil	07/16/15 11:40	07/16/15 18:15

Summit Scientific

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.



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

Summit Scientific 1507170

S₂

741 Corporate Circle, Suite J&K ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933

Page 2 of 4

Client: PDC Energy Project Manager: Mark Longhurst
Address: _____ E-Mail: mark.longhurst@pdce.com
City/State/Zip: _____
Phone: _____ Fax: _____ Project Name: Alles 22D-312, 402; 225-233; 9-22
Sampler Name: Paul Downey Project Number: _____

ID	Sample Description	Date Sampled	Time Sampled	# of containers	Preservative				Matrix			Analysis Requested				Special Instructions	
					HCl	HNO3	None	Other (Specify)	Groundwater	Soil	Air-Canister #	Other (Specify)	GBTK	DRD	NAP		
1	SS01 @ 10.5'	7/16/15	9:45	1			X			X			X	X	X		
2	SS02 @ 8'		10:15	1			X			X			X	X	X		
3	SS03 @ 8'		10:35	1			X			X			X	X	X		
4	SS04 @ 8'		11:00	1			X			X			X	X	X		
5	SS05 @ 8'	X	11:40	1			X			X			X	X	X		
6																	
7																	
8																	
9																	
10																	

Relinquished by: <u>7/16/15</u> Date/Time: <u>5:49</u> <u>Downey</u>	Received by: <u>7/16/15</u> Date/Time: <u>1745</u> <u>MS</u>	Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 hours ___ 24 hours ___ Standard ___ 48 hours ___ Sample Integrity: ___ Temperature Upon Receipt: <u>10.2</u> Intact: <input checked="" type="checkbox"/> Yes No	Notes: <u>on ice</u>
Relinquished by: <u>7/16/15</u> Date/Time: <u>1815</u> <u>MS</u>	Received by: <u>7/16</u> Date/Time: <u>1815</u> <u>MS</u>		
Relinquished by: _____ Date/Time: _____	Received by: _____ Date/Time: _____		

www.s2scientific.com



PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

SS01@10.5'
1507170-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: 07/16/15 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1507192	07/16/15	07/16/15	8015M	

Date Sampled: 07/16/15 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: 07/16/15 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1507191	07/16/15	07/16/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: 07/16/15 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.4 %	21-167		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

SS02@8'
1507170-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/15 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1507192	07/16/15	07/16/15	8015M	

Date Sampled: **07/16/15 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		110 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/15 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1507191	07/16/15	07/16/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/16/15 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.3 %	21-167		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

SS03@8'
1507170-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/15 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1507192	07/16/15	07/16/15	8015M	

Date Sampled: **07/16/15 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		109 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/15 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1507191	07/16/15	07/16/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/16/15 10:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		101 %	21-167		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

SS04@8'
1507170-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1507192	07/16/15	07/16/15	8015M	

Date Sampled: **07/16/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		116 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1507191	07/16/15	07/16/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/16/15 11:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.5 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		97.3 %	21-167		"	"	"	"	

Summit Scientific

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

SS05@8'
1507170-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **07/16/15 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1507192	07/16/15	07/16/15	8015M	

Date Sampled: **07/16/15 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		115 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **07/16/15 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1507191	07/16/15	07/16/15	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **07/16/15 11:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.8 %	21-167		"	"	"	"	

Summit Scientific

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.



PDC Energy
 1775 Sherman St. STE. 3000
 Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 07/17/15 07:14

Extractable Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

Analyte	Result	Reporting		Spike Level	Source		%REC		RPD		Notes
		Limit	Units		Result	%REC	Limits	RPD	Limit		

Batch 1507192 - EPA 3550A

Blank (1507192-BLK1)

Prepared & Analyzed: 07/16/15

C10-C28 (DRO)	ND	50	mg/kg								
<i>Surrogate: o-Terphenyl</i>	12.6		"	12.2		104	30-150				

LCS (1507192-BS1)

Prepared & Analyzed: 07/16/15

C10-C28 (DRO)	483	50	mg/kg	501		96.4	73-134				
<i>Surrogate: o-Terphenyl</i>	12.9		"	12.2		105	30-150				

Matrix Spike (1507192-MS1)

Source: 1507169-02

Prepared & Analyzed: 07/16/15

C10-C28 (DRO)	431	50	mg/kg	477	ND	90.4	50-148				
<i>Surrogate: o-Terphenyl</i>	12.2		"	11.6		105	30-150				

Matrix Spike Dup (1507192-MSD1)

Source: 1507169-02

Prepared & Analyzed: 07/16/15

C10-C28 (DRO)	441	50	mg/kg	467	ND	94.4	50-148	2.25		13	
<i>Surrogate: o-Terphenyl</i>	12.8		"	11.4		112	30-150				

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PDC Energy
1775 Sherman St. STE. 3000
Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
07/17/15 07:14

Volatile Organic Compounds by EPA Method 8260B - Quality Control
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Analyte	Reporting			Spike	Source	%REC		RPD		Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1507191 - EPA 5030 Soil MS

Blank (1507191-BLK1)

Prepared & Analyzed: 07/16/15

Naphthalene	ND	0.010	mg/kg							
Benzene	ND	0.0020	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0393</i>		<i>"</i>	<i>0.0396</i>		<i>99.3</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.5</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>21-167</i>			

LCS (1507191-BS1)

Prepared & Analyzed: 07/16/15

Naphthalene	0.0101	0.010	mg/kg				66-138			
Benzene	0.109	0.0020	"	0.100		109	58-130			
Toluene	0.120	0.0050	"	0.100		120	61-134			
Ethylbenzene	0.134	0.0050	"	0.0992		135	74-139			
m,p-Xylene	0.278	0.010	"	0.200		139	73-137			
o-Xylene	0.135	0.0050	"	0.0984		137	73-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0410</i>		<i>"</i>	<i>0.0396</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0387</i>		<i>"</i>	<i>0.0400</i>		<i>96.8</i>	<i>21-167</i>			

Matrix Spike (1507191-MS1)

Source: 1507169-06

Prepared & Analyzed: 07/16/15

Naphthalene	0.00703	0.010	mg/kg		0.00750		10-158			
Benzene	0.0977	0.0020	"	0.0904	ND	108	30-131			
Toluene	0.106	0.0050	"	0.0904	ND	117	30-134			
Ethylbenzene	0.122	0.0050	"	0.0897	ND	137	22-153			
m,p-Xylene	0.252	0.010	"	0.180	0.00497	137	10-159			
o-Xylene	0.125	0.0050	"	0.0890	0.00552	134	31-151			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0370</i>		<i>"</i>	<i>0.0358</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0356</i>		<i>"</i>	<i>0.0362</i>		<i>98.5</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0353</i>		<i>"</i>	<i>0.0362</i>		<i>97.7</i>	<i>21-167</i>			

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 Denver CO, 80203

Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
 Project Manager: Mark Longhurst

Reported:
 07/17/15 07:14

Volatile Organic Compounds by EPA Method 8260B - Quality Control
Summit Scientific

Analyte	Reporting			Spike	Source	%REC			RPD	Notes
	Result	Limit	Units	Level	Result	%REC	Limits	RPD	Limit	

Batch 1507191 - EPA 5030 Soil MS

Matrix Spike Dup (1507191-MSD1)	Source: 1507169-06			Prepared & Analyzed: 07/16/15						
Naphthalene	0.00826	0.010	mg/kg	0.00750	0.00750	111	10-158	16.2	42	
Benzene	0.106	0.0020	"	0.0960	ND	111	30-131	8.40	34	
Toluene	0.115	0.0050	"	0.0960	ND	119	30-134	7.68	30	
Ethylbenzene	0.134	0.0050	"	0.0952	ND	141	22-153	9.31	24	
m,p-Xylene	0.275	0.010	"	0.192	0.00497	141	10-159	8.77	68	
o-Xylene	0.139	0.0050	"	0.0944	0.00552	141	31-151	10.6	38	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0388</i>		<i>"</i>	<i>0.0380</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0375</i>		<i>"</i>	<i>0.0384</i>		<i>97.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0362</i>		<i>"</i>	<i>0.0384</i>		<i>94.4</i>	<i>21-167</i>			

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Project: Alles 22D-312, 402; 225-233; 9-22

Project Number: [none]
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Reported:
07/17/15 07:14

Notes and Definitions

DET Analyte DETECTED
ND Analyte NOT DETECTED at or above the reporting limit
NR Not Reported
dry Sample results reported on a dry weight basis
RPD Relative Percent Difference

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