



Corporate Office

1775 Sherman Street, #3000
Denver, Colorado 80203
303.860.5800
www.petd.com

June 20, 2013

Mr. John Axelson, P.G.,
Environmental Protection Specialist, Northeast Region
Colorado Oil and Gas Conservation Commission
1120 Lincoln Street, Suite 801
Denver, CO 80203

**RE: Notice of Change and No Further Action Request
Smith 32-25
SWNE S25, T1N, R45W
API #05-125-09602
COGCC Spill Tracking # 2232783**

Dear Mr. Axelson:

PDC Energy, Inc. (PDC) is submitting this letter to summarize additional soil sampling and excavation activities that have been completed at the Smith 32-25 (Site) located in the SWNE QtrQtr of Section 25, Township T1N, Range 45W in Yuma County, Colorado (Figure 1). Additional soil sampling activities have been completed subsequent to the submittal of the Form 27 to the Colorado Oil and Gas Conservation Commission (COGCC) on May 6, 2013.

Site Remediation Activities Subsequent to Form 27 Submittal

On May 21, 2013, PDC re-excavated the impacted area that was detailed in the Form 19. This area is illustrated on Figure 2. Impacted soil within three feet of ground surface was removed in an attempt to meet COGCC Table 910-1 soil standards and to ensure there is at least three feet of un-impacted soil in the original flowline release area. As outlined in the Form 27 that was submitted to the COGCC, PDC used the excavated material to build up the area immediately adjacent to the Smith 32-25 wellhead. Erosion from stormwater had formed rills adjacent to the wellhead and the excavation material was used to fill in these areas. The attached pictures show where the excavated material was applied. Clean backfill was applied to the excavation after digging activities were completed. The excavation area was contoured to meet the surrounding topography.

After the soil was excavated, PDC collected additional confirmation soil samples. As illustrated on Figure 2, seven additional samples were collected along the excavation sidewalls and bottom. As summarized in Table 1, elevated concentrations for electrical conductance (EC), pH and sodium adsorption ratio (SAR) remain the excavation area however, the concentrations are present at a depth of approximately 4 feet below ground surface. This depth is below the three foot depth that is outlined by the COGCC in Rule 1003.d(3) for the closure of drilling pits and as outlined in the COGCC's response to Question #32 of the frequently asked questions that were submitted during the 2008 rulemaking.

No Further Action Request

Based on the additional activities that were completed at the site and the depth of the remaining impacts, PDC is requesting a No Further Action determination from the COGCC. In addition, using the excavated material for erosion control measures provided an additional beneficial reuse option for the project. A Form 4 – Sundry Notice is included along with this NOC.

Should you have any questions, please feel free to contact me at my office at (303) 831-3971 or by email at brandon.bruns@pdce.com

Sincerely,



Brandon Bruns
EHS Professional
PDC Energy, Inc.

Cc: Randall Ferguson (PDC)
Mike Lindstrom (Tasman Geosciences)
Christine Wasko (Tasman Geosciences)



RECEIVED
6/20/2013

Document Number:
2145356

SUNDRY NOTICE

Submit a signed original. This form is to be used for general, technical and environmental sundry information. For proposed or completed operations, describe in full in Comments or provide as an attachment. Identify Well by API Number; identify Oil and Gas Location by Location ID Number; identify other Facility by Facility ID Number.

OGCC Operator Number: _____ Contact Name _____
 Name of Operator: _____ Phone: () _____
 Address: _____ Fax: () _____
 City: _____ State: _____ Zip: _____ Email: _____

Complete the Attachment
Checklist

OP OGCC

API Number : 05- _____ OGCC Facility ID Number: _____
 Well/Facility Name: _____ Well/Facility Number: _____
 Location QtrQtr: _____ Section: _____ Township: _____ Range: _____ Meridian: _____
 County: _____ Field Name: _____
 Federal, Indian or State Lease Number: _____

Survey Plat		
Directional Survey		
Srvc Eqpmt Diagram		
Technical Info Page		
Other		

CHANGE OF LOCATION OR AS BUILT GPS REPORT

- Change of Location * As-Built GPS Location Report As-Built GPS Location Report with Survey

* Well location change requires new plat. A substantive surface location change may require new Form 2A.

SURFACE LOCATION GPS DATA Data must be provided for Change of Surface Location and As Built Reports.

Latitude _____ PDOP Reading _____ Date of Measurement _____
 Longitude _____ GPS Instrument Operator's Name _____

LOCATION CHANGE (all measurements in Feet)

Well will be: _____ (Vertical, Directional, Horizontal)

Change of **Surface** Footage **From** Exterior Section Lines:

Change of **Surface** Footage **To** Exterior Section Lines:

Current **Surface** Location **From** QtrQtr _____ Sec _____

New **Surface** Location **To** QtrQtr _____ Sec _____

Change of **Top of Productive Zone** Footage **From** Exterior Section Lines:

Change of **Top of Productive Zone** Footage **To** Exterior Section Lines:

Current **Top of Productive Zone** Location **From** Sec _____

New **Top of Productive Zone** Location **To** Sec _____

Change of **Bottomhole** Footage **From** Exterior Section Lines:

Change of **Bottomhole** Footage **To** Exterior Section Lines:

Current **Bottomhole** Location Sec _____ Twp _____

New **Bottomhole** Location Sec _____ Twp _____

Is location in High Density Area? _____

Distance, in feet, to nearest building _____, public road: _____, above ground utility: _____, railroad: _____,

property line: _____, lease line: _____, well in same formation: _____

Ground Elevation _____ feet Surface owner consultation date _____

	FNL/FSL	FEL/FWL	
Change of Surface Footage From Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Change of Surface Footage To Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Current Surface Location From QtrQtr _____ Sec _____	Twp _____	Range _____	Meridian _____
New Surface Location To QtrQtr _____ Sec _____	Twp _____	Range _____	Meridian _____
Change of Top of Productive Zone Footage From Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Change of Top of Productive Zone Footage To Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Current Top of Productive Zone Location From Sec _____	Twp _____	Range _____	
New Top of Productive Zone Location To Sec _____	Twp _____	Range _____	
Change of Bottomhole Footage From Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Change of Bottomhole Footage To Exterior Section Lines:	<input type="text"/>	<input type="text"/>	<input type="text"/>
Current Bottomhole Location Sec _____ Twp _____	Range _____		** attach deviated drilling plan
New Bottomhole Location Sec _____ Twp _____	Range _____		

CHANGE OR ADD OBJECTIVE FORMATION AND/OR SPACING UNIT

<u>Objective Formation</u>	<u>Formation Code</u>	<u>Spacing Order Number</u>	<u>Unit Acreage</u>	<u>Unit Configuration</u>

OTHER CHANGES

REMOVE FROM SURFACE BOND Signed surface use agreement is a required attachment

CHANGE OF WELL, FACILITY OR OIL & GAS LOCATION NAME OR NUMBER

From: Name _____ Number _____ Effective Date: _____

To: Name _____ Number _____

ABANDON PERMIT: Permit can only be abandoned if the permitted operation has NOT been conducted. Field inspection will be conducted to verify site status.

WELL: Abandon Application for Permit-to-Drill (Form2) – Well API Number _____ has not been drilled.

PIT: Abandon Earthen Pit Permit (Form 15) – COGCC Pit Facility ID Number _____ has not been constructed (Permitted and constructed pit requires closure per Rule 905)

CENTRALIZED E&P WASTE MANAGEMENT FACILITY: Abandon Centralized E&P Waste Management Facility Permit (Form 28) – Facility ID Number _____ has not been constructed (Constructed facility requires closure per Rule 908)

OIL & GAS LOCATION ID Number: _____

Abandon Oil & Gas Location Assessment (Form 2A) – Location has not been constructed and site will not be used in the future.

Keep Oil & Gas Location Assessment (Form 2A) active until expiration date. This site will be used in the future.

Surface disturbance from Oil and Gas Operations must be reclaimed per Rule 1003 and Rule 1004.

REQUEST FOR CONFIDENTIAL STATUS

DIGITAL WELL LOG UPLOAD

DOCUMENTS SUBMITTED Purpose of Submission: _____

RECLAMATION

INTERIM RECLAMATION

Interim Reclamation will commence approximately _____

Per Rule 1003.e.(3) operator shall submit Sundry Notice reporting interim reclamation is complete and site is ready for inspection when vegetation reaches 80% coverage.

Interim reclamation complete, site ready for inspection.

Per Rule 1003.e(3) describe interim reclamation procedure in Comments below or provide as an attachment and attach required location photographs.

Field inspection will be conducted to document Rule 1003.e. compliance

FINAL RECLAMATION

Final Reclamation will commence approximately _____

Per Rule 1004.c.(4) operator shall submit Sundry Notice reporting final reclamation is complete and site is ready for inspection when vegetation reaches 80% coverage.

Final reclamation complete, site ready for inspection. Per Rule 1004.c(4) describe final reclamation procedure in Comments below or provide as an attachment.

Field inspection will be conducted to document Rule 1004.c. compliance

Comments:

ENGINEERING AND ENVIRONMENTAL WORK

NOTICE OF CONTINUED TEMPORARILY ABANDONED STATUS

Indicate why the well is temporarily abandoned and describe future plans for utilization in the COMMENTS box below or provide as an attachment, as required by Rule 319.b.(3).

Date well temporarily abandoned _____ Has Production Equipment been removed from site? _____

Mechanical Integrity Test (MIT) required if shut in longer than 2 years. Date of last MIT _____

SPUD DATE: _____

TECHNICAL ENGINEERING AND ENVIRONMENTAL WORK

Details of work must be described in full in the COMMENTS below or provided as an attachment.

NOTICE OF INTENT Approximate Start Date _____

REPORT OF WORK DONE Date Work Completed _____

<input type="checkbox"/> Intent to Recomplete (Form 2 also required)	<input type="checkbox"/> Request to Vent or Flare	<input type="checkbox"/> E&P Waste Mangement Plan
<input type="checkbox"/> Change Drilling Plan	<input type="checkbox"/> Repair Well	<input type="checkbox"/> Beneficial Reuse of E&P Waste
<input type="checkbox"/> Gross Interval Change	<input type="checkbox"/> Rule 502 variance requested. Must provide detailed info regarding request.	
<input type="checkbox"/> Other _____	<input type="checkbox"/> Status Update/Change of Remediation Plans for Spills and Releases	

COMMENTS:

CASING AND CEMENTING CHANGES

Casing Type	Size	Of	/	Hole	Size	Of	/	Casing	Wt/Ft	Csg/LinTop	Setting Depth	Sacks of Cement	Cement Bottom	Cement Top

H2S REPORTING

Data Fields in this section are intended to document Sample and Location Data associated with the collection of a Gas Sample that is submitted for Laboratory Analysis.

Gas Analysis Report must be attached.

H2S Concentration: _____ in ppm (parts per million) Date of Measurement or Sample Collection _____

Description of Sample Point:

Absolute Open Flow Potential _____ in CFPD (cubic feet per day)

Description of Release Potential and Duration (If flow is not open to the atmosphere, identify the duration in which the container or pipeline would likely be opened for servicing operations.):

Distance to nearest occupied residence, school, church, park, school bus stop, place of business, or other areas where the public could reasonably be expected to frequent: _____

Distance to nearest Federal, State, County, or municipal road or highway owned and principally maintained for public use: _____

COMMENTS:

BMP

<u>Type</u>	<u>Comment</u>

GROUND WATER SAMPLING

Uses of Ground Water Sampling Section

Request an Exception to Ground Water Sampling Requirements in Greater Wattenberg Area Rule 318A.e(4) or in Statewide Rule 609.c. Request a Previously Sampled Water Source in the COGIS database be used to meet sampling requirements as described in Rule 609.d.(3).

NOTE: If this Sundry Notice is being submitted to request a Ground Water Sampling Exception it cannot be used for any other purpose except requesting the use of a Previously Sampled Water Source in the COGIS database.

- Request an Exception to Ground Water Sampling Requirements per Greater Wattenberg Area Rule 318A.e(4): There are no Available Water Sources located within the governmental quarter section or within a previously unsampled governmental quarter section within a ½-mile radius of this proposed Oil and Gas Well, Multi-Well Site, or Dedicated Injection Well.

- Request an Exception to Ground Water Sampling Requirements per Statewide Rule 609.c.
 - _____ Number of Water Sources located within one-half (1/2) mile of a proposed Oil and Gas Well, Multi-Well Site, or Dedicated Injection Well.
 - _____ Number of Water Source Exceptions requested per Rule 609.c.
 - _____ Number of Water Sources determined to be unsuitable. **The condition of these Water Sources MUST be documented in the comments below or in an attachment.**
 - _____ Number of Water Sources suitable for testing whose owners refused to grant access despite an operator's reasonable good faith efforts to obtain consent to conduct sampling. **The reasonable good faith efforts used to obtain access from the owners of these Water Sources MUST be documented in the comments below or in an attachment.**

- Request a Previously Sampled Water Source in the COGIS database be used to meet sampling requirements as described in Rule 609.d(3)

_____ Type of Sample Substitution Request

Enter Sample ID Number from COGIS Maps for each Previous Water Sample:

Sample ID	Facility ID	Sample Date	Sample Purpose

COMMENTS

Operator Comments:

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

Signed: Brandon Bruns Print Name: Brandon Bruns
 Title: EHS Professional Email: brandon.bruns@pdce.com Date: 6/20/13

Based on the information provided herein, this Sundry Notice (Form 4) complies with COGCC Rules and applicable orders and is hereby approved.

COGCC Approved: Ann C. Eckman for John Axelsson Date: 6/25/2013
EPS NE Colo

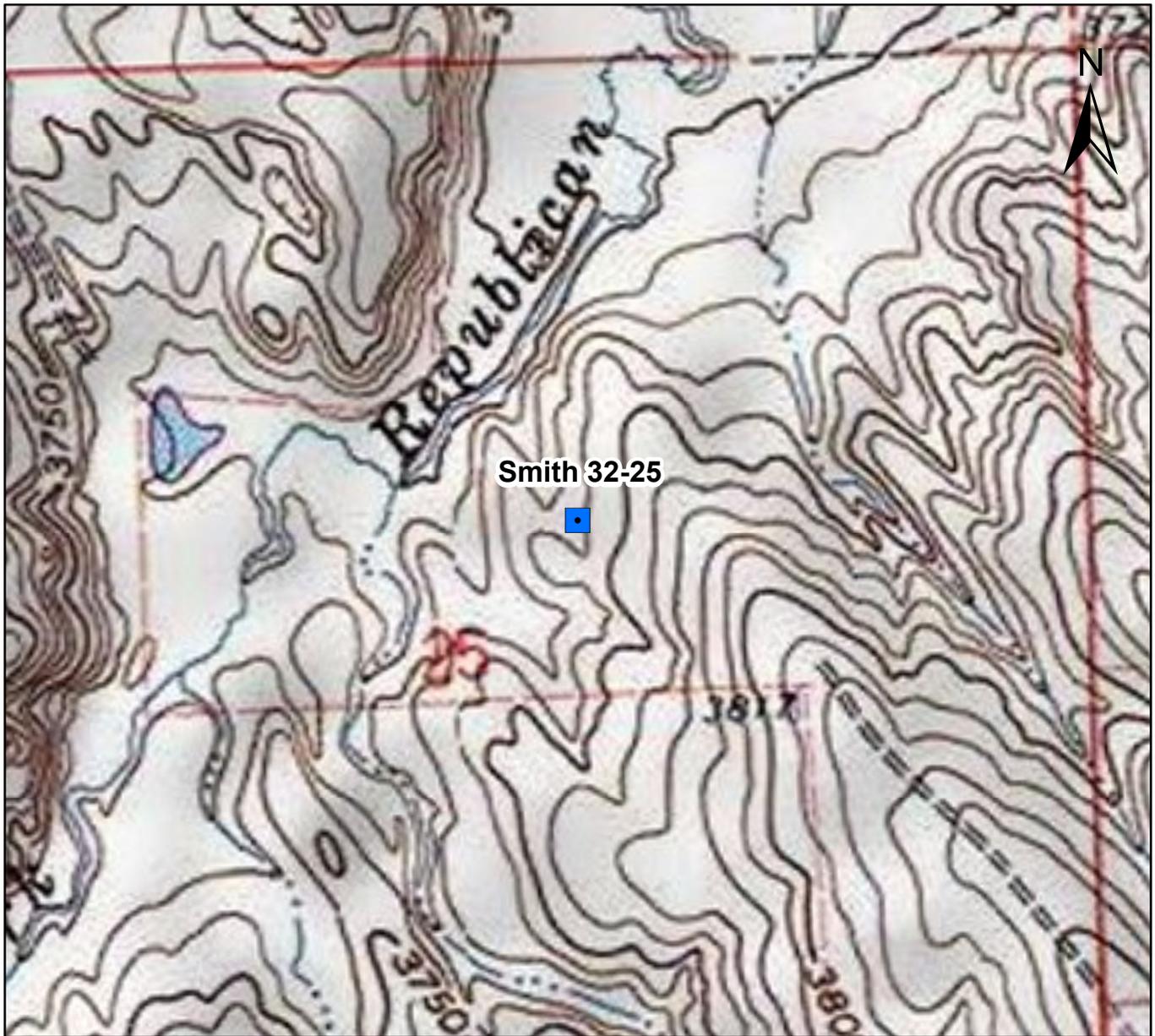


Figure 1
 Site Location Map
 Smith 32-25
 SWNE S25 T1N R45W
 Yuma County, Colorado

Drawn By: CAW
 Date: 04/18/2013

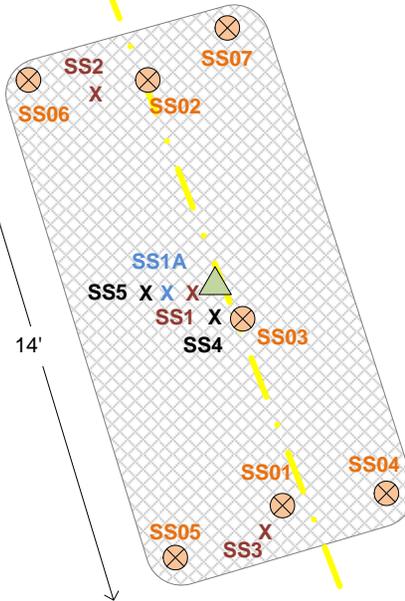




Surface
Drainage

Well Flowline

BCKG
X
15 feet west from
Point of Release



SS2 and SS3
were collected
6.5 feet from SS1

SS1A was
collected directly
below SS1

SS4 and SS5 were
collected 1.5 feet from
Point of Release

Approximately 70 feet from
Point of Release to Smith 32-25
Wellhead

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

DRAWN BY: CAW

DATE: 6/19/2013

Facility Diagram
PDC Energy – NECO
Smith 32-25
SWNE S25 T1N R45W
Yuma County, CO



6899 Pecos Street
Unit C
Denver, CO 80221

LEGEND

- Excavation Extent for Sample Collection on April 12, 2013
- Point of Release
- Shallow Soil Sample at 2 feet bgs - 4/12/2013
- Trench Soil Sample at 4 feet bgs - 4/12/2013
- Deep Trench Soil Sample at 5.5 feet bgs - 4/12/2013
- Soil Sample Location at 4 feet bgs - 5/21/2013

FIGURE 2

Not to Scale

**TABLE 1
SMITH 32-25
SOIL ANALYTICAL RESULTS SUMMARY TABLE**

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	TPH ⁽²⁾ (mg/kg)	EC ⁽³⁾ (mmhos/cm)	pH	SAR ⁽⁴⁾
SS1	4/12/2013	4	10.3	<0.005	<0.005	<0.005	<0.005	<50	3.99	8.6	13.2
SS1A	4/12/2013	5.5	2.8	<0.005	<0.005	<0.005	<0.005	<50	4.63	9.0	13.3
SS2	4/12/2013	4	1.4	<0.005	<0.005	<0.005	<0.005	<50	4.56	8.91	9.39
SS3	4/12/2013	4	0.9	<0.005	<0.005	<0.005	<0.005	<50	4.64	9.57	15.5
SS4	4/12/2013	2	3.2	<0.005	<0.005	<0.005	<0.005	<50	5.86	9.13	23.0
SS5	4/12/2013	2	6.0	<0.005	<0.005	<0.005	<0.005	<50	5.80	8.87	18.0
BCKG	4/12/2013	2	0.0	<0.005	<0.005	<0.005	<0.005	<50	0.484	8.39	0.05
SS01	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	2.11	8.75	22.3
SS02	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	2.57	9.97	49.9
SS03	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	4.76	9.99	49.9
SS04	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	4.32	9.94	48.2
SS05	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	1.73	8.08	2.59
SS06	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	3.92	9.12	28.5
SS07	5/21/2013	4	N/A	<0.005	<0.005	<0.005	<0.010	<50	2.40	9.57	34.8
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	500	<4 mmhos/cm or 2x background	6-9	<12

Notes:

- 1). Standards for Soil are taken from 2 CCR 404-1, Table 910-1, effective April 1, 2009.
 - 2). TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
 - 3). EC - Specific Conductance
 - 4). SAR - Sodium Adsorption Ratio
- GRO - Gasoline range organics. DRO - Diesel range organics.
mg/kg= Milligrams per kilogram. bgs - Below ground surface.
ppm - Parts per million N/A - PID readings were not collected
- Bold** red values indicate an exceedance of the COGCC soil standards for the Site.

PDC Energy, Inc.
Smith 32-25



Excavation area – Smith 32-25



Excavated material placed around Smith 32-25 wellhead

PDC Energy, Inc.
Smith 32-25



Excavation area after backfilling with clean backfill

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

May 31, 2013

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Smith 32-25

Enclosed are the results of analyses for samples received by Summit Scientific on 05/22/13 10:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Joseph J Egry IV
Laboratory Director

This report shall not be reproduced, except in its entirety, without the written approval of Summit Scientific. Test results relate only to samples analyzed.

Summit Scientific is the sole authority for authorizing edits or modifications to this document. Unauthorized modification of this report is strictly prohibited.



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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BCKG	R304106-01	Soil	04/12/13 09:45	04/12/13 16:00
SS1@4'	R304106-02	Soil	04/12/13 10:10	04/12/13 16:00
SS1A@5.5'	R304106-03	Soil	04/12/13 10:25	04/12/13 16:00
SS2@4'	R304106-04	Soil	04/12/13 10:30	04/12/13 16:00
SS3@4'	R304106-05	Soil	04/12/13 10:40	04/12/13 16:00
SS4@2'	R304106-06	Soil	04/12/13 09:15	04/12/13 16:00
SS5@2'	R304106-07	Soil	04/12/13 09:05	04/12/13 16:00

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: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

R304106

Summit Scientific

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9910 • 303-374-5933 Fax

Client: PDC Energy Page of

Address: _____

City/State/Zip: _____

Phone: _____ Fax: _____

Sample Name: Deterding 23-25 & Smith 22,31,32-25

Project Manager: Brandon Bruns

E-Mail: brunbr@pdc.com

Project Name: Deterding 23-25 & Smith 22,31,32-25

Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix				Analyze For:				Special Instructions	
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	Brix	TPH (arepda)	PH	SPR		FR
6140	4/15/13	7			X												
6141	4/15/13	1															
SS1055	4/15/13	1															
SS204	4/15/13	1															
SS304	4/15/13	1															
SS401	4/15/13	1															
SS502	4/15/13	1															
Requisitioned by: <u>[Signature]</u>	Date/Time: <u>4/16/13 1600</u>	Received by: <u>[Signature]</u>	Date/Time: <u>4/18/13</u>	Turn Around Time (Check)				Notes:									
Requisitioned by:	Date/Time:	Received by:	Date/Time:	Same Day	72 Hours	24 Hours	Standard										
Requisitioned by:	Date/Time:	Received in Lab by:	Date/Time:	Sample Integrity:				Temperature Upon Receipt: <u>69</u>									
				Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No													

www.s2scientific.com

[Signature]



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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

BCKG

R304106-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		118 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
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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: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

BCKG
R304106-01 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	515	2.72 mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Magnesium	24.5	1.09 "	"	"	"	"	"	
Sodium	ND	5.43 "	"	"	"	"	"	

Date Sampled: 04/12/13 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	0.0500		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: 04/12/13 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	0.484	0.00100	mmhos/cm	1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: 04/12/13 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.390		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: 04/12/13 09:45

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	92.0		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/18/13 09:06

SS1@4'
R304106-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		98.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		112 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		107 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	925	2.91	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS1@4'
R304106-02 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	50.0	1.16 mg/kg dry		1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	1520	5.82	"	"	"	"	"	"	"

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	13.2		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	3.99	0.00100 mmhos/cm		1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.600		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 10:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	85.9		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS1A@5.5'
R304106-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		112 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1290	2.94	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS1A@5.5'
R304106-03 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	74.1	1.18 mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	1810	5.89 "	"	"	"	"	"	

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	13.3		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	4.63	0.00100	mmhos/cm	1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.000		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.9		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS2@4'
R304106-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		102 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		110 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	998	2.95	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS2@4'
R304106-04 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	48.7	1.18	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	1120	5.90	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	9.39		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	4.56	0.00100	mmhos/cm	1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.910		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.7		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS3@4'
R304106-05 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		96.7 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		112 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	682	2.83	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS3@4'
R304106-05 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	36.7	1.13	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	1530	5.66	"	"	"	"	"	"	

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	15.5		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	4.64	0.00100	mmhos/cm	1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.570		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 10:40**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	88.4		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS4@2'
R304106-06 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		101 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		109 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		111 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	754	2.99	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS4@2'
R304106-06 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	50.1	1.20	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	2420	5.99	"	"	"	"	"	"	

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	23.0		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	5.86	0.00100	mmhos/cm	1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	9.130		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 09:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	83.5		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

SS5@2'
R304106-07 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	3041224	04/12/13	04/13/13	8015 DRO	

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: <i>o</i> -Terphenyl		102 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	0.0050	mg/kg	1	3041223	04/12/13	04/13/13	EPA 8260B	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.0050	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		115 %	21-167		"	"	"	"	

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Calcium	1210	2.97	mg/kg dry	1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/18/13 09:06

SS5@2'
R304106-07 (Soil)

Summit Scientific

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Magnesium	69.1	1.19 mg/kg dry		1	3041302	04/13/13	04/15/13	EPA 6020/Mod. USDA60 6(2, 3A)	
Sodium	2380	5.93	"	"	"	"	"	"	"

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Sodium Adsorption Ratio	18.0		units	"	3041709	04/17/13	04/17/13	"	

Physical Parameters by APHA/ASTM/EPA Methods

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Specific Conductance (EC)	5.80	0.00100 mmhos/cm		1	3041501	04/15/13	04/15/13	SM 2510B	

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
pH	8.870		pH Units	"	3041502	04/15/13	04/15/13	EPA 9045B	

Date Sampled: **04/12/13 09:05**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
% Solids	84.3		%	"	3041506	04/15/13	04/17/13	% calculation	

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
 Project Manager: Brandon Brunns

Reported:
 04/18/13 09:06

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 3041224 - EPA 3550A

Blank (3041224-BLK1)

Prepared & Analyzed: 04/12/13

C10-C28 (DRO) ND 50 mg/kg

LCS (3041224-BS1)

Prepared: 04/12/13 Analyzed: 04/13/13

C10-C28 (DRO) 537 50 mg/kg 501 107 73-134

LCS Dup (3041224-BSD1)

Prepared: 04/12/13 Analyzed: 04/13/13

C10-C28 (DRO) 562 50 mg/kg 501 112 73-134 4.44 11

Matrix Spike (3041224-MS1)

Source: R304106-01

Prepared: 04/12/13 Analyzed: 04/13/13

C10-C28 (DRO) 595 50 mg/kg 501 ND 119 50-148

Matrix Spike Dup (3041224-MSD1)

Source: R304106-01

Prepared: 04/12/13 Analyzed: 04/13/13

C10-C28 (DRO) 582 50 mg/kg 501 ND 116 50-148 2.27 13

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Brunns

Reported:
04/18/13 09:06

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		

Batch 3041223 - EPA 5030 Soil MS

Blank (3041223-BLK1)

Prepared: 04/12/13 Analyzed: 04/13/13

Benzene	ND	0.0050	mg/kg							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.0050	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0417</i>		<i>"</i>	<i>0.0397</i>	<i>105</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>	<i>98.0</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0431</i>		<i>"</i>	<i>0.0400</i>	<i>108</i>	<i>21-167</i>				

LCS (3041223-BS1)

Prepared: 04/12/13 Analyzed: 04/13/13

Benzene	0.0889	0.0050	mg/kg	0.100	88.9	58-130				
Toluene	0.103	0.0050	"	0.100	103	61-134				
Ethylbenzene	0.116	0.0050	"	0.100	116	74-139				
m,p-Xylene	0.220	0.010	"	0.200	110	73-137				
o-Xylene	0.113	0.0050	"	0.100	113	73-141				
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0393</i>		<i>"</i>	<i>0.0397</i>	<i>99.1</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>	<i>97.4</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0423</i>		<i>"</i>	<i>0.0400</i>	<i>106</i>	<i>21-167</i>				

LCS Dup (3041223-BSD1)

Prepared: 04/12/13 Analyzed: 04/13/13

Benzene	0.0886	0.0050	mg/kg	0.100	88.6	58-130	0.372	13		
Toluene	0.104	0.0050	"	0.100	104	61-134	0.926	16		
Ethylbenzene	0.117	0.0050	"	0.100	117	74-139	0.746	12		
m,p-Xylene	0.223	0.010	"	0.200	112	73-137	1.39	14		
o-Xylene	0.114	0.0050	"	0.100	114	73-141	1.35	12		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0425</i>		<i>"</i>	<i>0.0397</i>	<i>107</i>	<i>23-173</i>				
<i>Surrogate: Toluene-d8</i>	<i>0.0397</i>		<i>"</i>	<i>0.0400</i>	<i>99.3</i>	<i>20-170</i>				
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0439</i>		<i>"</i>	<i>0.0400</i>	<i>110</i>	<i>21-167</i>				

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

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 3041223 - EPA 5030 Soil MS

Matrix Spike (3041223-MS1)	Source: R304106-01			Prepared: 04/12/13		Analyzed: 04/13/13				
Benzene	0.0937	0.0050	mg/kg	0.100	ND	93.7	30-131			
Toluene	0.110	0.0050	"	0.100	ND	110	30-134			
Ethylbenzene	0.117	0.0050	"	0.100	ND	117	22-153			
m,p-Xylene	0.226	0.010	"	0.200	ND	113	10-159			
o-Xylene	0.116	0.0050	"	0.100	ND	116	31-151			
Surrogate: 1,2-Dichloroethane-d4	0.0434		"	0.0397		109	23-173			
Surrogate: Toluene-d8	0.0403		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0430		"	0.0400		108	21-167			

Matrix Spike Dup (3041223-MSD1)	Source: R304106-01			Prepared: 04/12/13		Analyzed: 04/13/13				
Benzene	0.0935	0.0050	mg/kg	0.100	ND	93.5	30-131	0.192	34	
Toluene	0.105	0.0050	"	0.100	ND	105	30-134	4.12	30	
Ethylbenzene	0.120	0.0050	"	0.100	ND	120	22-153	2.20	24	
m,p-Xylene	0.231	0.010	"	0.200	ND	115	10-159	1.81	68	
o-Xylene	0.117	0.0050	"	0.100	ND	117	31-151	0.978	38	
Surrogate: 1,2-Dichloroethane-d4	0.0413		"	0.0397		104	23-173			
Surrogate: Toluene-d8	0.0396		"	0.0400		99.1	20-170			
Surrogate: 4-Bromofluorobenzene	0.0430		"	0.0400		107	21-167			

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

Soluble Nutrients by EPA 6020/Mod. USDA60 6(2, 3A) - Dry Weight Basis - Quality Control
Summit Scientific

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

Batch 3041302 - General Preparation

Blank (3041302-BLK1)

Prepared: 04/13/13 Analyzed: 04/15/13

Calcium	ND	2.50	mg/kg wet						
Magnesium	ND	1.00	"						
Sodium	ND	5.00	"						

LCS (3041302-BS1)

Prepared: 04/13/13 Analyzed: 04/15/13

Calcium	388	2.50	mg/kg wet	400		97.0	77-118		
Magnesium	192	1.00	"	200		96.0	77-117		
Sodium	657	5.00	"	700		93.8	80-119		

LCS Dup (3041302-BSD1)

Prepared: 04/13/13 Analyzed: 04/15/13

Calcium	383	2.50	mg/kg wet	400		95.8	77-118	1.24	14
Magnesium	198	1.00	"	200		98.9	77-117	2.99	12
Sodium	652	5.00	"	700		93.1	80-119	0.745	14

Matrix Spike (3041302-MS1)

Source: R304106-01

Prepared: 04/13/13 Analyzed: 04/15/13

Calcium	965	2.72	mg/kg dry	415	515	108	13-170		
Magnesium	237	1.09	"	208	24.5	102	34-152		
Sodium	719	5.43	"	727	3.97	98.4	43-155		

Matrix Spike Dup (3041302-MSD1)

Source: R304106-01

Prepared: 04/13/13 Analyzed: 04/15/13

Calcium	903	2.72	mg/kg dry	416	515	93.4	13-170	6.64	37
Magnesium	220	1.09	"	208	24.5	93.9	34-152	7.53	33
Sodium	708	5.43	"	728	3.97	96.7	43-155	1.59	25

Summit Scientific

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
 Project Manager: Brandon Bruns

Reported:
 04/18/13 09:06

Physical Parameters by APHA/ASTM/EPA Methods - Quality Control
Summit Scientific

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

Batch 3041501 - General Preparation

Duplicate (3041501-DUP1)	Source: R304106-01		Prepared & Analyzed: 04/15/13								
Specific Conductance (EC)	0.476	0.00100	mmhos/cm		0.484				1.56	20	

Batch 3041502 - General Preparation

Duplicate (3041502-DUP1)	Source: R304106-01		Prepared & Analyzed: 04/15/13								
pH	8.300		pH Units		8.390				1.08	4.95	

Batch 3041506 - General Preparation

Duplicate (3041506-DUP1)	Source: R304106-01		Prepared: 04/15/13 Analyzed: 04/17/13								
% Solids	93.2		%		92.0				1.30	20	

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

Project: Deterding 23-25 & Smith 22,31,32-25

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
04/18/13 09:06

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