

0 1,000 2,000 4,000
Feet



Figure 1

Site Location Map
Cottonwood #1
NESE S13 T6N R66W
Weld County, Colorado

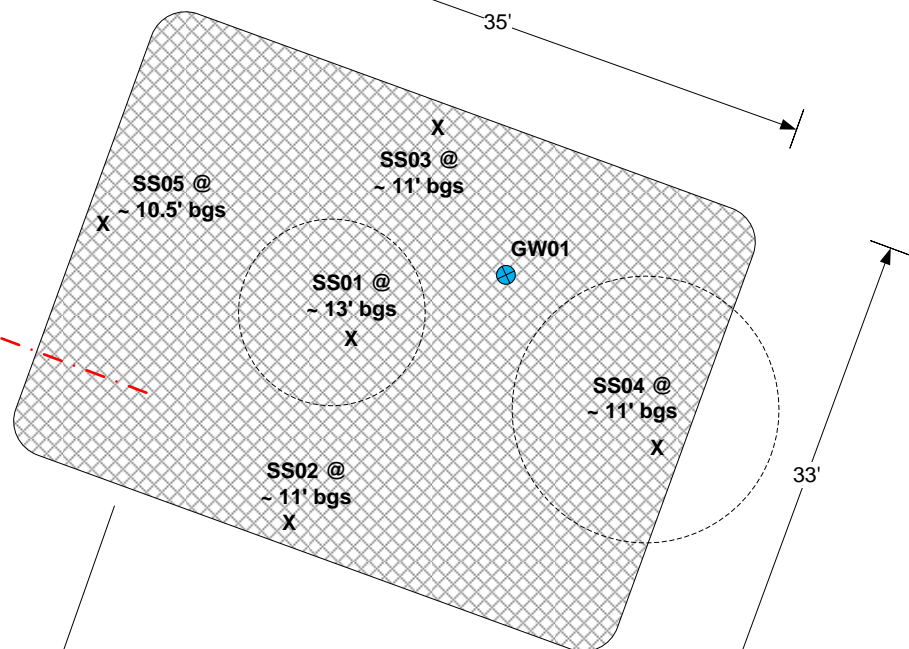
Drawn By: CAW
Date: 08/22/2012



Surface
Drainage

Separator secondary
containment

Dump Line



Access Road

Irrigation
Canal

SW01

PROJECT
NO:

DRAWN BY: CAW

DATE: 8/22/2012

Facility Diagram
PDC Energy – DJ Basin
Cottonwood #1
NESE S13 T6N R66W
Weld County, CO



5690 Webster Avenue
Arvada CO 80002

LEGEND

- Former Storage Tank Location
- Approximate Area of Excavation
- X Soil Sample Location
- Groundwater Sample Location
- Surface Water Sample Location

FIGURE 2

Not to Scale

TABLE 1
COTTONWOOD #1
SOIL ANALYTICAL RESULTS TABLE

Sample ID	Date Sampled	Depth (Feet bgs)	PID Readings (ppm)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
SS01	8/20/2012	13	1,020	4.1	ND	7.3	30	1.5	1,480
SS02	8/20/2012	11	26	ND	ND	ND	ND	ND	ND
SS03	8/20/2012	11	80	ND	ND	ND	ND	ND	ND
SS04	8/21/2012	11	41	ND	ND	ND	ND	ND	ND
SS05	8/21/2012	10.5	53	ND	ND	ND	ND	ND	ND
COGCC standards for Soil (mg/kg) ⁽¹⁾				0.17	85	100	175	23	500

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.

GRO - Gasoline range organics.

DRO - Diesel range organics.

mg/kg= Milligrams per kilogram.

bgs - Below ground surface.

ppm - Parts per million

ND- Not Detected

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

TABLE 2
COTTONWOOD #1
GROUNDWATER ANALYTICAL RESULTS

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
GW01	8/21/2012	3,000	1.7	320	1,900	200
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

ug/L= Micrograms per liter. ND - Not Detected

TABLE 3
COTTONWOOD #1
SURFACE WATER ANALYTICAL RESULTS

Sample ID	Date Sampled	Benzene (ug/L)	Toluene (ug/L)	Ethylbenzene (ug/L)	Total Xylenes (ug/L)	Naphthalene (ug/L)
SW01	8/20/2012	ND	ND	ND	ND	ND
COGCC standards for Groundwater (ug/L) ⁽¹⁾		5	560	700	1,400	

Notes:

1). The environmental cleanup standards for groundwater that are applicable to this site are the Colorado Oil and Gas Conservation Commission (COGCC) standards for contaminants in groundwater according to Table 910-1 of the COGCC 900 Series Rule for E&P Waste Management.

Bold red values indicate an exceedance of the COGCC soil standards for the Site.

ug/L= Micrograms per liter. ND - Not Detected

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 21, 2012

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Cottonwood #1

Enclosed are the results of analyses for samples received by Summit Scientific on 08/20/12 17:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read 'Paul Shrewsbury', with a stylized, cursive script.

Paul Shrewsbury For Ben Shrewsbury
President / Laboratory Director



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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SW01	R208127-01	Water	08/20/12 09:00	08/20/12 17:00
SS01@13'	R208127-02	Soil	08/20/12 09:30	08/20/12 17:00
SS02@11'	R208127-03	Soil	08/20/12 12:10	08/20/12 17:00
SS03@11'	R208127-04	Soil	08/20/12 13:00	08/20/12 17:00

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

Summit Scientific

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741 Corporate Circle Suite I ♦ Golden, Colorado 80401
303-277-9310 ♦ 303-374-5933 Fax

Client: PD Energy
Address: 175 Sullivan St
City/State/Zip: Danvers CO
Project Manager: Brandon Evans
E-Mail: brandon.evans@pdenergy.com
Phone: _____ Fax: _____
Project Name: 1
Project Number: 1
Sample Name: uninspired wss key

[illegible]

www.s2scientific.com

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

SW01
R208127-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Naphthalene	ND	1.0	ug/l	1	2082007	08/20/12	08/20/12	EPA 8260B		
Benzene	ND	1.0	"	"	"	"	"	"	"	
Toluene	ND	1.0	"	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	"	
Xylenes (total)	ND	1.0	"	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	500	"	"	"	"	"	"	"	

Date Sampled: **08/20/12 09:00**

Analyte	Result	Reporting		Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
		Limit								
Surrogate: 1,2-Dichloroethane-d4		147 %		49.7-150		"	"	"	"	
Surrogate: Toluene-d8		102 %		51-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		108 %		50.1-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

SS01@13'
R208127-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	180	50	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		84.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	1.5	0.050	mg/kg	10	2082006	08/20/12	08/21/12	EPA 8260B	
Benzene	4.1	0.050	"	"	"	"	"	"	
Toluene	ND	0.050	"	"	"	"	"	"	
Ethylbenzene	7.3	0.050	"	"	"	"	"	"	
Xylenes (total)	30	0.10	"	"	"	"	"	"	E
Gasoline Range Hydrocarbons	1300	5.0	"	"	"	"	"	"	E

Date Sampled: **08/20/12 09:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		60.8 %	30-150		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		207 %	30-150		"	"	"	"	S-02
<i>Surrogate: 4-Bromofluorobenzene</i>		169 %	30-150		"	"	"	"	S-02

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

SS02@11'
R208127-03 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	45	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		82.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082006	08/20/12	08/20/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/12 12:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		68.2 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		93.0 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.4 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

SS03@11'
R208127-04 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082005	08/20/12	08/21/12	8015 DRO	

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		80.6 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082006	08/20/12	08/20/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/20/12 13:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		81.0 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		83.1 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		88.1 %	30-150		"	"	"	"	

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 2082005 - EPA 3550A

Blank (2082005-BLK1)

Prepared: 08/20/12 Analyzed: 08/21/12

C10-C28 (DRO) ND 50 mg/kg

LCS (2082005-BS1)

Prepared: 08/20/12 Analyzed: 08/21/12

C10-C28 (DRO) 449 50 mg/kg 501 89.7 77-133

LCS Dup (2082005-BSD1)

Prepared: 08/20/12 Analyzed: 08/21/12

C10-C28 (DRO) 443 50 mg/kg 501 88.4 77-133 1.44 11

Matrix Spike (2082005-MS1)

Source: R208126-01

Prepared: 08/20/12 Analyzed: 08/21/12

C10-C28 (DRO) 462 50 mg/kg 488 ND 94.5 68-141

Matrix Spike Dup (2082005-MSD1)

Source: R208126-01

Prepared: 08/20/12 Analyzed: 08/21/12

C10-C28 (DRO) 445 50 mg/kg 474 ND 93.8 68-141 3.62 25

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

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

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

Batch 2082006 - EPA 5030 Soil MS

Blank (2082006-BLK1)

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	0.0050	mg/kg
Benzene	ND	0.0050	"
Toluene	ND	0.0050	"
Ethylbenzene	ND	0.0050	"
Xylenes (total)	ND	0.010	"
Gasoline Range Hydrocarbons	ND	0.50	"

Surrogate: 1,2-Dichloroethane-d4	0.0248	"	0.0397	62.5	30-150
Surrogate: Toluene-d8	0.0372	"	0.0400	93.1	30-150
Surrogate: 4-Bromofluorobenzene	0.0338	"	0.0400	84.4	30-150

LCS (2082006-BS1)

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	0.0050	mg/kg		85.7-124
Benzene	0.0737	0.0050	"	0.100	73.7 58.1-115
Toluene	0.0878	0.0050	"	0.100	87.8 56.7-123
Ethylbenzene	0.106	0.0050	"	0.100	106 61.4-138
m,p-Xylene	0.219	0.010	"	0.200	109 63.6-128
o-Xylene	0.113	0.0050	"	0.100	113 62.6-134

Surrogate: 1,2-Dichloroethane-d4	0.0235	"	0.0397	59.2	30-150
Surrogate: Toluene-d8	0.0368	"	0.0400	92.0	30-150
Surrogate: 4-Bromofluorobenzene	0.0333	"	0.0400	83.2	30-150

Matrix Spike (2082006-MS1)

Source: R208126-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	0.0050	mg/kg	ND	34-148
Benzene	0.0700	0.0050	"	0.0928	0.00 75.4 47.2-120
Toluene	0.0762	0.0050	"	0.0928	0.00 82.2 47.7-125
Ethylbenzene	0.0961	0.0050	"	0.0928	0.00 104 34.5-150
m,p-Xylene	0.196	0.010	"	0.186	0.00 105 30-150
o-Xylene	0.0988	0.0050	"	0.0928	0.00 107 30-150

Surrogate: 1,2-Dichloroethane-d4	0.0287	"	0.0368	77.9	30-150
Surrogate: Toluene-d8	0.0320	"	0.0371	86.2	30-150
Surrogate: 4-Bromofluorobenzene	0.0297	"	0.0371	80.1	30-150

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

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

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

Batch 2082006 - EPA 5030 Soil MS

Matrix Spike Dup (2082006-MSD1)				Source: R208126-01		Prepared: 08/20/12		Analyzed: 08/21/12		
Naphthalene	ND	0.0050	mg/kg		ND		34-148		23.9	
Benzene	0.0692	0.0050	"	0.0965	0.00	71.7	47.2-120	1.13	15.1	
Toluene	0.0868	0.0050	"	0.0965	0.00	89.9	47.7-125	13.0	16.8	
Ethylbenzene	0.105	0.0050	"	0.0965	0.00	108	34.5-150	8.53	10.1	
m,p-Xylene	0.213	0.010	"	0.193	0.00	110	30-150	8.46	17.2	
o-Xylene	0.109	0.0050	"	0.0965	0.00	113	30-150	9.90	15.2	
Surrogate: 1,2-Dichloroethane-d4	0.0247		"	0.0383		64.5	30-150			
Surrogate: Toluene-d8	0.0362		"	0.0386		93.8	30-150			
Surrogate: 4-Bromofluorobenzene	0.0339		"	0.0386		87.9	30-150			

Batch 2082007 - EPA 5030 Water MS

Blank (2082007-BLK1)			Prepared: 08/20/12 Analyzed: 08/21/12		
Naphthalene	ND	1.0	ug/l		
Benzene	ND	1.0	"		
Toluene	ND	1.0	"		
Ethylbenzene	ND	1.0	"		
Xylenes (total)	ND	1.0	"		
Gasoline Range Hydrocarbons	ND	500	"		
Surrogate: 1,2-Dichloroethane-d4	19.8		"	13.2	150 49.7-150
Surrogate: Toluene-d8	13.6		"	13.3	102 51-150
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3	107 50.1-150

LCS (2082007-BS1)				Prepared: 08/20/12		Analyzed: 08/21/12		
Naphthalene	ND	1.0	ug/l				77.7-124	
Benzene	28.0	1.0	"	33.3		84.1	56.7-114	
Toluene	29.1	1.0	"	33.3		87.2	50.7-130	
Ethylbenzene	27.9	1.0	"	33.3		83.8	54.2-143	
m,p-Xylene	56.4	2.0	"	66.7		84.6	58.3-134	
o-Xylene	28.0	1.0	"	33.3		84.0	57.4-134	
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		151	49.7-150	
Surrogate: Toluene-d8	13.4		"	13.3		101	51-150	
Surrogate: 4-Bromofluorobenzene	14.5		"	13.3		109	50.1-150	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/21/12 06:51

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

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

Batch 2082007 - EPA 5030 Water MS

LCS Dup (2082007-BSD1)

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l				77.7-124		9.87	
Benzene	27.7	1.0	"	33.3		83.1	56.7-114	1.22	14.6	
Toluene	28.7	1.0	"	33.3		86.0	50.7-130	1.39	18.9	
Ethylbenzene	27.4	1.0	"	33.3		82.2	54.2-143	1.95	11.9	
m,p-Xylene	54.9	2.0	"	66.7		82.3	58.3-134	2.73	13.7	
o-Xylene	27.4	1.0	"	33.3		82.2	57.4-134	2.09	15	
Surrogate: 1,2-Dichloroethane-d4	20.3		"	13.2		153	49.7-150			
Surrogate: Toluene-d8	13.8		"	13.3		103	51-150			
Surrogate: 4-Bromofluorobenzene	14.3		"	13.3		107	50.1-150			

Matrix Spike (2082007-MS1)

Source: R208127-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l		ND		87.8-124			
Benzene	27.8	1.0	"	33.3	ND	83.4	33.5-135			
Toluene	28.7	1.0	"	33.3	ND	86.1	30-150			
Ethylbenzene	27.6	1.0	"	33.3	ND	83.0	30-150			
m,p-Xylene	55.5	2.0	"	66.7	ND	83.2	30-150			
o-Xylene	27.9	1.0	"	33.3	ND	83.8	44.8-147			
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		151	49.7-150			
Surrogate: Toluene-d8	13.6		"	13.3		102	51-150			
Surrogate: 4-Bromofluorobenzene	14.4		"	13.3		108	50.1-150			

Matrix Spike Dup (2082007-MSD1)

Source: R208127-01

Prepared: 08/20/12 Analyzed: 08/21/12

Naphthalene	ND	1.0	ug/l		ND		87.8-124		7.87	
Benzene	22.2	1.0	"	33.3	ND	66.7	33.5-135	22.3	21.3	
Toluene	23.0	1.0	"	33.3	ND	69.0	30-150	22.0	15.5	
Ethylbenzene	22.1	1.0	"	33.3	ND	66.3	30-150	22.4	17.4	
m,p-Xylene	44.3	2.0	"	66.7	ND	66.4	30-150	22.5	18.1	
o-Xylene	22.1	1.0	"	33.3	ND	66.4	44.8-147	23.2	15	
Surrogate: 1,2-Dichloroethane-d4	19.9		"	13.2		150	49.7-150			
Surrogate: Toluene-d8	13.6		"	13.3		102	51-150			
Surrogate: 4-Bromofluorobenzene	14.2		"	13.3		107	50.1-150			

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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: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/21/12 06:51

Notes and Definitions

S-02 The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

E The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

August 23, 2012

Brandon Bruns
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Cottonwood #1

Enclosed are the results of analyses for samples received by Summit Scientific on 08/21/12 15:20. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

A handwritten signature in black ink, appearing to read "Joe Egry" with a stylized flourish at the end.

Joe Egry For Ben Shrewsbury
President / Laboratory Director



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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS04@11'	R208132-01	Soil	08/21/12 10:00	08/21/12 15:20
SS05@10.5'	R208132-02	Soil	08/21/12 12:30	08/21/12 15:20
GW01	R208132-03	Water	08/21/12 11:50	08/21/12 15:20

Summit Scientific

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

Project: Cottonwood #1

Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

Summit Scientific

5

741 Corporate Circle Suite 1 • Golden, Colorado 80401
303-277-9310 • 303-374-5933 Fax

Page 1 of 1

Client: Doc Energy

Address: 175 Sinequan St
Project Manager: Brenda Beards

Address:	HS SLEIGHWAY	Project Manager:	DEBORAH BROWN
Phone Number:	01603 606000	E-Mail:	deborah@hsleight.co.uk

City/State/Zip: DENVER CO E-Mail: barbara.brown@pae.com

Phone: _____
Fax: _____
Project Name: Costa Woods #1

Project Name: Cellulose
 Project Number: 2004-01-01
 Date: 10/10/04

[illegible]

www.s2scientific.com

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.

Regel IV



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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/23/12 16:40

SS04@11'
R208132-01 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082114	08/21/12	08/22/12	8015 DRO	

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		69.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082109	08/21/12	08/21/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/21/12 10:00**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		111 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		97.6 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/23/12 16:40

SS05@10.5'
R208132-02 (Soil)

Summit Scientific

Total Petroleum Hydrocarbons by 8015

Date Sampled: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	2082114	08/21/12	08/22/12	8015 DRO	

Date Sampled: **08/21/12 12:30**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.0050	mg/kg	1	2082109	08/21/12	08/22/12	EPA 8260B	
Benzene	ND	0.0050	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	ND	0.50	"	"	"	"	"	"	

Date Sampled: **08/21/12 12:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		114 %	30-150		"	"	"	"	
Surrogate: Toluene-d8		98.3 %	30-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	30-150		"	"	"	"	

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

GW01
R208132-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **08/21/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	200	1.0	ug/l	1	2082110	08/21/12	08/22/12	EPA 8260B	
Benzene	3000	100	"	100	"	"	"	"	
Toluene	1.7	1.0	"	1	"	"	"	"	
Ethylbenzene	320	100	"	100	"	"	"	"	
Xylenes (total)	1900	100	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	32000	5000	"	10	"	"	"	"	

Date Sampled: **08/21/12 11:50**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		69.9 %	49.7-150		"	"	"	"	
Surrogate: Toluene-d8		92.2 %	51-150		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		90.4 %	50.1-150		"	"	"	"	

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: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

Total Petroleum Hydrocarbons by 8015 - Quality Control
Summit Scientific

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

Batch 2082114 - EPA 3550A

Blank (2082114-BLK1)

Prepared: 08/21/12 Analyzed: 08/22/12

C10-C28 (DRO) ND 50 mg/kg

LCS (2082114-BS1)

Prepared: 08/21/12 Analyzed: 08/22/12

C10-C28 (DRO) 495 50 mg/kg 501 98.8 77-133

LCS Dup (2082114-BSD1)

Prepared: 08/21/12 Analyzed: 08/22/12

C10-C28 (DRO) 508 50 mg/kg 501 101 77-133 2.68 11

Matrix Spike (2082114-MS1)

Source: R208130-01

Prepared: 08/21/12 Analyzed: 08/22/12

C10-C28 (DRO) 382 45 mg/kg 447 ND 85.5 68-141

Matrix Spike Dup (2082114-MSD1)

Source: R208130-01

Prepared: 08/21/12 Analyzed: 08/22/12

C10-C28 (DRO) 432 45 mg/kg 451 ND 95.8 68-141 12.4 25

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: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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

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

Batch 2082109 - EPA 5030 Soil MS

Blank (2082109-BLK1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg							
Benzene	ND	0.0050	"							
Toluene	ND	0.0050	"							
Ethylbenzene	ND	0.0050	"							
Xylenes (total)	ND	0.010	"							
Gasoline Range Hydrocarbons	ND	0.50	"							
Surrogate: 1,2-Dichloroethane-d4	0.0409		"	0.0397	103	30-150				
Surrogate: Toluene-d8	0.0393		"	0.0400	98.2	30-150				
Surrogate: 4-Bromofluorobenzene	0.0394		"	0.0400	98.6	30-150				

LCS (2082109-BS1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg			85.7-124				
Benzene	0.0624	0.0050	"	0.100	62.4	58.1-115				
Toluene	0.0664	0.0050	"	0.100	66.4	56.7-123				
Ethylbenzene	0.0708	0.0050	"	0.100	70.8	61.4-138				
m,p-Xylene	0.141	0.010	"	0.200	70.7	63.6-128				
o-Xylene	0.0680	0.0050	"	0.100	68.0	62.6-134				
Surrogate: 1,2-Dichloroethane-d4	0.0400		"	0.0397	101	30-150				
Surrogate: Toluene-d8	0.0397		"	0.0400	99.3	30-150				
Surrogate: 4-Bromofluorobenzene	0.0391		"	0.0400	97.6	30-150				

LCS Dup (2082109-BSD1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg			85.7-124			12.6	
Benzene	0.0581	0.0050	"	0.100	58.1	58.1-115	7.22	20		
Toluene	0.0613	0.0050	"	0.100	61.3	56.7-123	8.13	20		
Ethylbenzene	0.0662	0.0050	"	0.100	66.2	61.4-138	6.70	12.2		
m,p-Xylene	0.130	0.010	"	0.200	65.0	63.6-128	8.33	13.2		
o-Xylene	0.0627	0.0050	"	0.100	62.7	62.6-134	8.08	12.2		
Surrogate: 1,2-Dichloroethane-d4	0.0392		"	0.0397	98.7	30-150				
Surrogate: Toluene-d8	0.0389		"	0.0400	97.3	30-150				
Surrogate: 4-Bromofluorobenzene	0.0384		"	0.0400	95.9	30-150				

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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

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

Batch 2082109 - EPA 5030 Soil MS

Matrix Spike (2082109-MS1)

Source: R208130-01

Prepared: 08/21/12

Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg	ND	ND		34-148			
Benzene	0.0610	0.0050	"	0.0965	0.00	63.2	47.2-120			
Toluene	0.0655	0.0050	"	0.0965	0.00	67.8	47.7-125			
Ethylbenzene	0.0679	0.0050	"	0.0965	0.00	70.3	34.5-150			
m,p-Xylene	0.135	0.010	"	0.193	0.00	69.8	30-150			
o-Xylene	0.0656	0.0050	"	0.0965	0.00	68.0	30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0426		"	0.0383		111	30-150			
Surrogate: Toluene-d8	0.0390		"	0.0386		101	30-150			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0386		98.8	30-150			

Matrix Spike Dup (2082109-MSD1)

Source: R208130-01

Prepared: 08/21/12

Analyzed: 08/22/12

Naphthalene	ND	0.0050	mg/kg	ND	ND		34-148		23.9	
Benzene	0.0703	0.0050	"	0.0888	0.00	79.1	47.2-120	14.1	15.1	
Toluene	0.0738	0.0050	"	0.0888	0.00	83.1	47.7-125	12.0	16.8	
Ethylbenzene	0.0764	0.0050	"	0.0888	0.00	86.0	34.5-150	11.8	10.1	
m,p-Xylene	0.151	0.010	"	0.178	0.00	85.2	30-150	11.5	17.2	
o-Xylene	0.0747	0.0050	"	0.0888	0.00	84.1	30-150	12.9	15.2	
Surrogate: 1,2-Dichloroethane-d4	0.0391		"	0.0353		111	30-150			
Surrogate: Toluene-d8	0.0355		"	0.0355		100	30-150			
Surrogate: 4-Bromofluorobenzene	0.0348		"	0.0355		98.0	30-150			

Batch 2082110 - EPA 5030 Water MS

Blank (2082110-BLK1)

Prepared: 08/21/12

Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l							
Benzene	ND	1.0	"							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	1.0	"							
Gasoline Range Hydrocarbons	ND	500	"							
Surrogate: 1,2-Dichloroethane-d4	8.45		"	13.2		63.9	49.7-150			
Surrogate: Toluene-d8	12.5		"	13.3		94.0	51-150			
Surrogate: 4-Bromofluorobenzene	11.9		"	13.3		89.4	50.1-150			

Summit Scientific

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

Project: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Brunns

Reported:
08/23/12 16:40

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

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

Batch 2082110 - EPA 5030 Water MS

LCS (2082110-BS1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l				77.7-124			
Benzene	26.4	1.0	"	33.3		79.1	56.7-114			
Toluene	26.0	1.0	"	33.3		78.1	50.7-130			
Ethylbenzene	29.1	1.0	"	33.3		87.3	54.2-143			
m,p-Xylene	54.2	2.0	"	66.7		81.3	58.3-134			
o-Xylene	25.3	1.0	"	33.3		75.8	57.4-134			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.2		98.5	49.7-150			
Surrogate: Toluene-d8	13.5		"	13.3		101	51-150			
Surrogate: 4-Bromofluorobenzene	12.8		"	13.3		95.7	50.1-150			

LCS Dup (2082110-BSD1)

Prepared: 08/21/12 Analyzed: 08/22/12

Naphthalene	ND	1.0	ug/l				77.7-124		9.87	
Benzene	29.2	1.0	"	33.3		87.6	56.7-114	10.2	14.6	
Toluene	29.1	1.0	"	33.3		87.2	50.7-130	11.0	18.9	
Ethylbenzene	31.8	1.0	"	33.3		95.6	54.2-143	9.06	11.9	
m,p-Xylene	58.4	2.0	"	66.7		87.7	58.3-134	7.53	13.7	
o-Xylene	28.0	1.0	"	33.3		84.0	57.4-134	10.3	15	
Surrogate: 1,2-Dichloroethane-d4	13.9		"	13.2		105	49.7-150			
Surrogate: Toluene-d8	13.5		"	13.3		101	51-150			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.8	50.1-150			

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: Cottonwood #1
Project Number: [none]
Project Manager: Brandon Bruns

Reported:
08/23/12 16:40

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

A handwritten signature in black ink, appearing to read 'Daniel A. Bruns IV'.