

TABLE 1
FORMER WACKER 1 TANK BATTERY
SOIL ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Depth (feet bgs)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Total Xylenes (mg/kg)	Naphthalene (mg/kg)	TPH ⁽²⁾ (mg/kg)
COGCC standards for soil (mg/kg) ⁽¹⁾			0.17	85	100	175	23	500
SS01 @ 20'	3/20/2017	20	0.16	<0.0050	4.4	50	0.32	1,640
TP02 @ 16'	3/20/2017	16	<0.0020	<0.0050	0.018	0.23	0.022	128.3
SS02 @ 26'	3/21/2017	26	0.011	<0.0050	0.39	0.077	0.70	1,940
SB01 @ 28-29' ⁽³⁾	4/10/2017	28-29	<0.0020	<0.0050	0.017	0.011	0.026	749
SB03 @ 17-18' ⁽⁴⁾	4/10/2017	17-18	0.038	<0.0050	1.4	17	0.50	860
SS01 @ 18'	1/10/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS02 @ 28'	1/10/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS03 @ 18'	1/10/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS04 @ 28'	1/10/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS05 @ 18'	1/10/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS06 @ 28'	1/10/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS07 @ 18'	1/22/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS08 @ 28'	1/22/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS09 @ 18'	1/23/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS10 @ 28'	1/23/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS11 @ 18'	1/23/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS12 @ 28'	1/23/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS13 @ 18'	1/24/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS14 @ 28'	1/24/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS15 @ 18'	1/24/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS16 @ 28'	1/24/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	0.73
SS17 @ 18'	1/25/2018	18	<0.0020	<0.0050	<0.0050	0.011	0.036	92
SS18 @ 28'	1/25/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS19 @ 18'	1/25/2018	18	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50
SS20 @ 28'	1/25/2018	28	<0.0020	<0.0050	<0.0050	<0.010	<0.010	<50

Notes:

- Standards for soil are taken from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
- TPH - Total volatile and extractable petroleum hydrocarbons. Value calculated by adding GRO and DRO concentrations.
- Soil sample collected from BH01.
- Soil sample collected from BH03.

COGCC = Colorado Oil and Gas Conservation Commission

(<) = Analytical result is less than the 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

BOLD = Analytical result is in exceedance of COGCC soil standards.

TABLE 2
FORMER WACKER 1 TANK BATTERY
GROUNDWATER ANALYTICAL RESULTS SUMMARY TABLE

Sample ID	Date Sampled	Benzene (µg/L)	Toluene (µg/L)	Ethylbenzene (µg/L)	Total Xylenes (µg/L)	Depth to Water ⁽²⁾ (feet)
COGCC Table 910-1 Groundwater Standard (µg/L) ⁽¹⁾		5	560	700	1,400	
GW01	1/29/2018	1.2	<1.0	5.1	23	~34
BH01 ⁽⁴⁾	4/13/2017	9.7	1.2	1.8	<2.0	22.78 ⁽³⁾
BH02 ⁽⁴⁾	4/13/2017	<1.0	1.0	<1.0	<2.0	31.56
BH03 ⁽⁴⁾	4/13/2017	<1.0	<1.0	<1.0	5.6	31.97
BH04 ⁽⁴⁾	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.48
BH05 ⁽⁴⁾	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.58
BH06 ⁽⁴⁾	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.23
BH07 ⁽⁴⁾	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.15
BH08	2/1/2018	<1.0	<1.0	<1.0	<2.0	32.52 ⁽⁵⁾

Notes:

1. Groundwater standards referenced from 2 CCR 404-1, Table 910-1, effective January 30, 2015.
2. Depth to water measured from top of casing and adjusted using survey data to reflect depth to water from ground surface. Excavation groundwater samples were measured from ground surface.
3. The well was temporarily installed within the partially backfilled excavation area. Consequently, top of casing was measured approximately 8 feet below native ground surface.
4. Monitoring wells destroyed during January 2018 remediation activities.
5. Depth to water was measured from top of casing and has not been adjusted to ground surface.

COGCC = Colorado Oil and Gas Conservation Commission

µg/L = Micrograms per liter

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

BOLD = Analytical result is in exceedance of COGCC groundwater standards.

ATTACHMENT A

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 11, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/10/18 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@18'	1801108-01	Soil	01/10/18 09:21	01/10/18 16:15
SS02@28'	1801108-02	Soil	01/10/18 09:27	01/10/18 16:15
SS03@18'	1801108-03	Soil	01/10/18 10:49	01/10/18 16:15
SS04@28'	1801108-04	Soil	01/10/18 10:51	01/10/18 16:15
SS05@18'	1801108-05	Soil	01/10/18 13:37	01/10/18 16:15
SS06@28'	1801108-06	Soil	01/10/18 13:41	01/10/18 16:15

Summit Scientific

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

Project: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

Summit Scientific

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

1501108

Page 1 of 1

Client: FDC Energy
Address:
City/State/Zip:
Phone: Fax:
Sampler Name: Chris Ambester

Page 1 of 1

Project Manager: Mark Longhurst
E-Mail: _____
Project Name: Wacker 1
Project Number: _____

[illegible]

www.s2scientific.com

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

Sample Receipt Checklist

S2 Work Order: 1801108

Client: PDC Energy

Client Project ID: Wacker 1

Shipped Via: Hand

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #:

Matrix (check all that apply): ☐ Air ☒ Soil/Solid

☐ Water

☐ Other:

(Describe)

Cooler ID					
Temp (°C)	5.8				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature just above 0°C to ≤ 6°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is waived provided that there is evidence that cooling has begun.	✓			
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?			✓	
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	✓			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			✓	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			✓	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			✓	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			✓	
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

1/10/18 1615
Date/Time

[Signature]



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS01@18'
1801108-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 09:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 09:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.9 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 09:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 09:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		87.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		97.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS02@28'
1801108-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 09:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 09:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		100 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 09:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 09:27**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		86.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.4 %	21-167		"	"	"	"	

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS03@18'
1801108-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 10:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 10:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		104 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 10:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 10:49**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	21-167		"	"	"	"	

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS04@28'
1801108-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		100 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 10:51**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.7 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	21-167		"	"	"	"	

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS05@18'
1801108-05 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.5 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 13:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		89.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %	21-167		"	"	"	"	

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

SS06@28'
1801108-06 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/10/18 13:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801104	01/10/18	01/10/18	8015M	

Date Sampled: **01/10/18 13:41**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/10/18 13:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801103	01/10/18	01/10/18	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: **01/10/18 13:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		88.5 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	21-167		"	"	"	"	

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

Extractable 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 1801104 - EPA 3550A

Blank (1801104-BLK1)

Prepared & Analyzed: 01/10/18

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.6		"	12.5		109	30-150			

LCS (1801104-BS1)

Prepared & Analyzed: 01/10/18

C10-C28 (DRO)	469	50	mg/kg	499		94.0	73-134			
Surrogate: o-Terphenyl	12.8		"	12.5		103	30-150			

Matrix Spike (1801104-MS1)

Source: 1801082-01

Prepared & Analyzed: 01/10/18

C10-C28 (DRO)	556	50	mg/kg	499	22.9	107	50-148			
Surrogate: o-Terphenyl	16.1		"	12.5		129	30-150			

Matrix Spike Dup (1801104-MSD1)

Source: 1801082-01

Prepared & Analyzed: 01/10/18

C10-C28 (DRO)	455	50	mg/kg	499	22.9	86.6	50-148	19.9	20	
Surrogate: o-Terphenyl	10.3		"	12.5		82.8	30-150			

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

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 1801103 - EPA 5030 Soil MS

Blank (1801103-BLK1)

Prepared & Analyzed: 01/10/18

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>0.0347</i>		<i>"</i>	<i>0.0400</i>		<i>86.8</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0386</i>		<i>"</i>	<i>0.0400</i>		<i>96.6</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0391</i>		<i>"</i>	<i>0.0400</i>		<i>97.6</i>	<i>21-167</i>			

LCS (1801103-BS1)

Prepared & Analyzed: 01/10/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.108	0.0020	"	0.100		108	58-130			
Toluene	0.113	0.0050	"	0.100		113	61-134			
Ethylbenzene	0.125	0.0050	"	0.0992		126	74-139			
m,p-Xylene	0.238	0.010	"	0.200		119	73-137			
o-Xylene	0.119	0.0050	"	0.0980		121	73-141			
Xylenes (total)	0.357	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.14	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.6</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>21-167</i>			

Matrix Spike (1801103-MS1)

Source: 1801082-01

Prepared & Analyzed: 01/10/18

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.106	0.0020	"	0.100	ND	106	30-131			
Toluene	0.108	0.0050	"	0.100	ND	108	30-134			
Ethylbenzene	0.126	0.0050	"	0.0992	ND	127	22-153			
m,p-Xylene	0.241	0.010	"	0.200	ND	121	10-159			
o-Xylene	0.119	0.0050	"	0.0980	ND	122	31-151			
Xylenes (total)	0.360	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.98	0.50	"		1.02		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0375</i>		<i>"</i>	<i>0.0400</i>		<i>93.8</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0400</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

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 1801103 - EPA 5030 Soil MS

Matrix Spike Dup (1801103-MSD1)		Source: 1801082-01			Prepared & Analyzed: 01/10/18					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.104	0.0020	"	0.100	ND	104	30-131	1.88	34	
Toluene	0.107	0.0050	"	0.100	ND	107	30-134	1.01	30	
Ethylbenzene	0.125	0.0050	"	0.0992	ND	126	22-153	1.43	24	
m,p-Xylene	0.237	0.010	"	0.200	ND	119	10-159	1.59	68	
o-Xylene	0.117	0.0050	"	0.0980	ND	120	31-151	1.50	38	
Xylenes (total)	0.354	0.010	"		ND		30-160	1.56	30	
Gasoline Range Hydrocarbons	3.44	0.50	"		1.02		30-160	14.7	30	
Surrogate: 1,2-Dichloroethane-d4	0.0367		"	0.0400		91.7	23-173			
Surrogate: Toluene-d8	0.0393		"	0.0400		98.2	20-170			
Surrogate: 4-Bromofluorobenzene	0.0406		"	0.0400		102	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/11/18 06:42

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 23, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/22/18 16:30. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS07@18'	1801224-01	Soil	01/22/18 09:07	01/22/18 16:30
SS08@28'	1801224-02	Soil	01/22/18 09:17	01/22/18 16:30

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: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

Summit Scientific

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

1801224

Page 1 of 1

Client:	PDC
Address:	
City/State/Zip:	
Phone:	Fax:
Sampler Name:	Chris Armbruster

Project Manager:	Mark Longhurst
E-Mail:	Mark.Longhurst@pdce.com
Project Name:	Wacker #1
Project Number:	

				Preservative				Matrix				Analyze For:												Special Instructions		
Sample Description	Date Sampled	Time Sampled	Number of Containers	HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GBTEXN (9260)	DRO (TPH)													
SS07 @ 18"	1/22/2018	9:07	1		X			X				X	X													
SS08 @ 28"	1/22/2018	9:17	1		X			X				X	X													
Relinquished by: <i>Car A</i> 1-22-18 16:30				Received by: <i>DA</i> 1-22-18 16:30				Turn Around Time (Check) Same Day <input checked="" type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/>																		
Relinquished by: _____ Date/Time: _____				Received by: _____ Date/Time: _____				Sample Integrity: Temperature Upon Receipt: <i>3.7</i> Inact: Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>																		
Relinquished by: _____ Date/Time: _____				Received in Lab by: _____ Date/Time: _____																						

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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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

Sample Receipt Checklist

S2 Work Order: 1801224

Client: PDC Client Project ID: Wacker #1

Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>3.7</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Muri P.
Custodian Printed Name

MA 1-22-18
Signature or Initials of Custodian

17:00
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

SS07@18'
1801224-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/18 09:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801225	01/22/18	01/22/18	8015M	

Date Sampled: **01/22/18 09:07**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/18 09:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801224	"	01/22/18	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: **01/22/18 09:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.0 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

SS08@28'
1801224-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/22/18 09:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801225	01/22/18	01/22/18	8015M	

Date Sampled: **01/22/18 09:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		97.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/22/18 09:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801224	"	01/22/18	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: **01/22/18 09:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		107 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

Extractable 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 1801225 - EPA 3550A

Blank (1801225-BLK1)

Prepared & Analyzed: 01/22/18

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.5 " 12.5 100 30-150

LCS (1801225-BS1)

Prepared & Analyzed: 01/22/18

C10-C28 (DRO) 592 50 mg/kg 499 119 73-134

Surrogate: o-Terphenyl 11.2 " 12.5 89.9 30-150

Matrix Spike (1801225-MS1)

Source: 1801218-01

Prepared & Analyzed: 01/22/18

C10-C28 (DRO) 1940 50 mg/kg 499 1220 145 50-148

Surrogate: o-Terphenyl 15.2 " 12.5 122 30-150

Matrix Spike Dup (1801225-MSD1)

Source: 1801218-01

Prepared & Analyzed: 01/22/18

C10-C28 (DRO) 1540 50 mg/kg 499 1220 64.4 50-148 23.3 20 QM-07

Surrogate: o-Terphenyl 15.9 " 12.5 127 30-150

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

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 1801224 - EPA 5030 Soil MS

Blank (1801224-BLK1)

Prepared & Analyzed: 01/22/18

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>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</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>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

LCS (1801224-BS1)

Prepared & Analyzed: 01/22/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.109	0.0020	"	0.100		109	58-130			
Toluene	0.116	0.0050	"	0.100		116	61-134			
Ethylbenzene	0.124	0.0050	"	0.0992		125	74-139			
m,p-Xylene	0.242	0.010	"	0.200		121	73-137			
o-Xylene	0.115	0.0050	"	0.0980		118	73-141			
Xylenes (total)	0.357	0.010	"				0-200			
Gasoline Range Hydrocarbons	ND	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0402</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0414</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>21-167</i>			

Matrix Spike (1801224-MS1)

Source: 1801218-01

Prepared & Analyzed: 01/22/18

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.115	0.0020	"	0.100	ND	115	30-131			
Toluene	0.118	0.0050	"	0.100	ND	118	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153			
m,p-Xylene	0.252	0.010	"	0.200	ND	126	10-159			
o-Xylene	0.121	0.0050	"	0.0980	ND	123	31-151			
Xylenes (total)	0.373	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0436</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.4</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0401</i>		<i>"</i>	<i>0.0400</i>		<i>100</i>	<i>21-167</i>			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

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 1801224 - EPA 5030 Soil MS

Matrix Spike Dup (1801224-MSD1)		Source: 1801218-01			Prepared & Analyzed: 01/22/18					
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.115	0.0020	"	0.100	ND	115	30-131	0.0524	34	
Toluene	0.122	0.0050	"	0.100	ND	122	30-134	3.28	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	2.49	24	
m,p-Xylene	0.258	0.010	"	0.200	ND	129	10-159	2.05	68	
o-Xylene	0.126	0.0050	"	0.0980	ND	128	31-151	3.84	38	
Xylenes (total)	0.383	0.010	"		ND		30-160	2.63	30	
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-160		30	
Surrogate: 1,2-Dichloroethane-d4	0.0439		"	0.0400		110	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0403		"	0.0400		101	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/23/18 06:36

Notes and Definitions

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS/LCSD recovery.

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

January 24, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/23/18 16:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS09@18'	1801233-01	Soil	01/23/18 10:11	01/23/18 16:15
SS10@28'	1801233-02	Soil	01/23/18 10:21	01/23/18 16:15
SS11@18'	1801233-03	Soil	01/23/18 12:46	01/23/18 16:15
SS12@28'	1801233-04	Soil	01/23/18 12:47	01/23/18 16:15

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: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

Summit Scientific

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

0401
180/233

Page 1 of 1

Client: PDC Emergency
Address: _____
City/State/Zip: _____
Phone: _____ Fax: _____
Sampler Name: Chris Ambroster

Project Manager: Mark Longhurst
E-Mail: _____
Project Name: Wacker 1
Project Number: _____

[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.





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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

Sample Receipt Checklist

S2 Work Order: 1801233
Client: PDC Client Project ID: Wacker 1
Shipped Via: P.U. Airbill #: _____
(UPS, FedEx, Hand Delivered, Pick-up, etc.)
Matrix (check all that apply): Air ☒ Soil/Solid Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>5.3</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				
⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.				

Murphy
Custodian Printed Name

RA 1-23-18
Signature or Initials of Custodian

17:00
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

SS09@18'
1801233-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/18 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801244	01/23/18	01/23/18	8015M	

Date Sampled: **01/23/18 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		96.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/18 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801243	01/23/18	01/23/18	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: **01/23/18 10:11**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		106 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		101 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

SS10@28'
1801233-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/18 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801244	01/23/18	01/23/18	8015M	

Date Sampled: **01/23/18 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		91.1 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/18 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801243	01/23/18	01/23/18	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: **01/23/18 10:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		102 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		100 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

SS11@18'
1801233-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/18 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801244	01/23/18	01/23/18	8015M	

Date Sampled: **01/23/18 12:46**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/18 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801243	01/23/18	01/23/18	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: **01/23/18 12:46**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		110 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.9 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

SS12@28'
1801233-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/23/18 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801244	01/23/18	01/23/18	8015M	

Date Sampled: **01/23/18 12:47**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/23/18 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801243	01/23/18	01/23/18	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: **01/23/18 12:47**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

Extractable 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 1801244 - EPA 3550A

Blank (1801244-BLK1)

Prepared & Analyzed: 01/23/18

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	12.1		"	12.5		96.7	30-150			

LCS (1801244-BS1)

Prepared & Analyzed: 01/23/18

C10-C28 (DRO)	529	50	mg/kg	499		106	73-134			
Surrogate: o-Terphenyl	16.2		"	12.5		130	30-150			

Matrix Spike (1801244-MS1)

Source: 1801233-01

Prepared & Analyzed: 01/23/18

C10-C28 (DRO)	533	50	mg/kg	499	12.8	104	50-148			
Surrogate: o-Terphenyl	15.0		"	12.5		120	30-150			

Matrix Spike Dup (1801244-MSD1)

Source: 1801233-01

Prepared & Analyzed: 01/23/18

C10-C28 (DRO)	594	50	mg/kg	499	12.8	116	50-148	10.7	20	
Surrogate: o-Terphenyl	14.6		"	12.5		117	30-150			

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

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 1801243 - EPA 5030 Soil MS

Blank (1801243-BLK1)

Prepared & Analyzed: 01/23/18

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>0.0397</i>		<i>"</i>	<i>0.0400</i>		<i>99.2</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0389</i>		<i>"</i>	<i>0.0400</i>		<i>97.3</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0413</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

LCS (1801243-BS1)

Prepared & Analyzed: 01/23/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.109	0.0020	"	0.100		109	58-130			
Toluene	0.116	0.0050	"	0.100		116	61-134			
Ethylbenzene	0.125	0.0050	"	0.0992		126	74-139			
m,p-Xylene	0.244	0.010	"	0.200		122	73-137			
o-Xylene	0.118	0.0050	"	0.0980		120	73-141			
Xylenes (total)	0.362	0.010	"				0-200			
Gasoline Range Hydrocarbons	ND	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

Matrix Spike (1801243-MS1)

Source: 1801233-01

Prepared & Analyzed: 01/23/18

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.111	0.0020	"	0.100	ND	111	30-131			
Toluene	0.123	0.0050	"	0.100	ND	123	30-134			
Ethylbenzene	0.131	0.0050	"	0.0992	ND	132	22-153			
m,p-Xylene	0.257	0.010	"	0.200	ND	129	10-159			
o-Xylene	0.124	0.0050	"	0.0980	ND	126	31-151			
Xylenes (total)	0.380	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0432</i>		<i>"</i>	<i>0.0400</i>		<i>108</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0422</i>		<i>"</i>	<i>0.0400</i>		<i>105</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0411</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>21-167</i>			

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

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 1801243 - EPA 5030 Soil MS

Matrix Spike Dup (1801243-MSD1)	Source: 1801233-01			Prepared & Analyzed: 01/23/18						
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.116	0.0020	"	0.100	ND	116	30-131	3.89	34	
Toluene	0.121	0.0050	"	0.100	ND	121	30-134	1.23	30	
Ethylbenzene	0.137	0.0050	"	0.0992	ND	138	22-153	4.58	24	
m,p-Xylene	0.266	0.010	"	0.200	ND	133	10-159	3.60	68	
o-Xylene	0.130	0.0050	"	0.0980	ND	132	31-151	4.88	38	
Xylenes (total)	0.396	0.010	"		ND		30-160	4.02	30	
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-160		30	
Surrogate: 1,2-Dichloroethane-d4	0.0425		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0402		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0413		"	0.0400		103	21-167			

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/24/18 06:59

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 25, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/24/18 16:45. 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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS13@18'	1801254-01	Soil	01/24/18 10:07	01/24/18 16:45
SS14@28'	1801254-02	Soil	01/24/18 10:15	01/24/18 16:45
SS15@18'	1801254-03	Soil	01/24/18 12:31	01/24/18 16:45
SS16@28'	1801254-04	Soil	01/24/18 12:35	01/24/18 16:45

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

Sample Receipt Checklist

S2 Work Order: 1801254

Client: PDC Energy

Client Project ID: Wacker 1

Shipped Via: P/U
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): ☐ Air ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>6.7</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.	<input checked="" type="checkbox"/>			
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?			<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect			<input checked="" type="checkbox"/>	
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ? Record the pH in Comments.			<input checked="" type="checkbox"/>	
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

1/24/18 1715
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

SS13@18'
1801254-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801264	01/24/18	01/24/18	8015M	

Date Sampled: **01/24/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		71.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801263	01/24/18	01/24/18	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: **01/24/18 10:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.9 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		105 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		94.4 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

SS14@28'
1801254-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801264	01/24/18	01/24/18	8015M	

Date Sampled: **01/24/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		75.4 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801263	01/24/18	01/24/18	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: **01/24/18 10:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.3 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.2 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

SS15@18'
1801254-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801264	01/24/18	01/24/18	8015M	

Date Sampled: **01/24/18 12:31**

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: **01/24/18 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801263	01/24/18	01/24/18	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: **01/24/18 12:31**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		97.6 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		103 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		95.8 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

SS16@28'
1801254-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/24/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801264	01/24/18	01/24/18	8015M	

Date Sampled: **01/24/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		98.8 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/24/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801263	01/24/18	01/24/18	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	ND	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	0.73	0.50	"	"	"	"	"	"	

Date Sampled: **01/24/18 12:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		100 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		104 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

Extractable 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 1801264 - EPA 3550A

Blank (1801264-BLK1)

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.6 " 12.5 101 30-150

LCS (1801264-BS1)

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO) 519 50 mg/kg 499 104 73-134

Surrogate: o-Terphenyl 13.1 " 12.5 105 30-150

Matrix Spike (1801264-MS1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO) 494 50 mg/kg 499 10.2 96.9 50-148

Surrogate: o-Terphenyl 14.5 " 12.5 116 30-150

Matrix Spike Dup (1801264-MSD1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

C10-C28 (DRO) 589 50 mg/kg 499 10.2 116 50-148 17.6 20

Surrogate: o-Terphenyl 15.3 " 12.5 122 30-150

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

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 1801263 - EPA 5030 Soil MS

Blank (1801263-BLK1)

Prepared: 01/24/18 Analyzed: 01/25/18

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0399		"	0.0400		99.8	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		104	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	21-167			

LCS (1801263-BS1)

Prepared: 01/24/18 Analyzed: 01/25/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.125	0.0020	"	0.100		125	58-130			
Toluene	0.122	0.0050	"	0.100		122	61-134			
Ethylbenzene	0.132	0.0050	"	0.0992		133	74-139			
m,p-Xylene	0.255	0.010	"	0.200		128	73-137			
o-Xylene	0.121	0.0050	"	0.0980		124	73-141			
Xylenes (total)	0.376	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.13	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0397		"	0.0400		99.3	23-173			
Surrogate: Toluene-d8	0.0418		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0381		"	0.0400		95.3	21-167			

Matrix Spike (1801263-MS1)

Source: 1801254-01

Prepared: 01/24/18 Analyzed: 01/25/18

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.128	0.0020	"	0.100	ND	128	30-131			
Toluene	0.127	0.0050	"	0.100	ND	127	30-134			
Ethylbenzene	0.138	0.0050	"	0.0992	ND	139	22-153			
m,p-Xylene	0.267	0.010	"	0.200	ND	134	10-159			
o-Xylene	0.125	0.0050	"	0.0980	ND	127	31-151			
Xylenes (total)	0.392	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	3.21	0.50	"		ND		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0422		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0382		"	0.0400		95.6	21-167			

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

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 1801263 - EPA 5030 Soil MS

Matrix Spike Dup (1801263-MSD1)			Source: 1801254-01		Prepared: 01/24/18		Analyzed: 01/25/18			
Naphthalene	ND	0.010	mg/kg		ND		10-158			42
Benzene	0.128	0.0020	"	0.100	ND	128	30-131	0.773		34
Toluene	0.128	0.0050	"	0.100	ND	128	30-134	0.825		30
Ethylbenzene	0.138	0.0050	"	0.0992	ND	139	22-153	0.131		24
m,p-Xylene	0.265	0.010	"	0.200	ND	133	10-159	0.744		68
o-Xylene	0.126	0.0050	"	0.0980	ND	128	31-151	0.864		38
Xylenes (total)	0.391	0.010	"		ND		30-160	0.230		30
Gasoline Range Hydrocarbons	3.20	0.50	"		ND		30-160	0.259		30
Surrogate: 1,2-Dichloroethane-d4	0.0404		"	0.0400		101	23-173			
Surrogate: Toluene-d8	0.0424		"	0.0400		106	20-170			
Surrogate: 4-Bromofluorobenzene	0.0379		"	0.0400		94.7	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/25/18 06:36

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 26, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/25/18 15:15. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS17@18'	1801276-01	Soil	01/25/18 11:17	01/25/18 15:15
SS18@28'	1801276-02	Soil	01/25/18 11:20	01/25/18 15:15
SS19@18'	1801276-03	Soil	01/25/18 12:37	01/25/18 15:15
SS20@28'	1801276-04	Soil	01/25/18 12:41	01/25/18 15:15

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.

Page 1 of 1

Project Manager: Mark Longstreet
E-Mail:
Project Name: Wanker 1
Project Number:

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order: 1801276

Client: PDC

Client Project ID: Wacker 1

Shipped Via: P.U.

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): Air X Soil/Solid Water Other: _____
(Describe)

Cooler ID					
Temp (°C)	<u>28</u>				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<u>X</u>			
Was adequate sample volume provided ⁽¹⁾ ?	<u>X</u>			
If custody seals are present, are they intact ⁽¹⁾ ?			<u>X</u>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<u>X</u>			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<u>X</u>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<u>X</u>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<u>X</u>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<u>X</u>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.			<u>X</u>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?			<u>X</u>	
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?			<u>X</u>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<u>X</u>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Murphy
Custodian Printed Name

1-25-18
Signature or Initials of Custodian

17:10
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

SS17@18'
1801276-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/18 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	79	50	mg/kg	1	1801275	01/25/18	01/25/18	8015M	

Date Sampled: **01/25/18 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		127 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/18 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.036	0.010	mg/kg	1	1801274	01/25/18	01/25/18	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	ND	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.011	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	13	0.50	"	"	"	"	"	"	

Date Sampled: **01/25/18 11:17**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		104 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		99.1 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		105 %	21-167		"	"	"	"	

Summit Scientific

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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

SS18@28'
1801276-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801275	01/25/18	01/25/18	8015M	

Date Sampled: **01/25/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		120 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801274	01/25/18	01/25/18	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: **01/25/18 11:20**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.8 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

SS19@18'
1801276-03 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/18 12:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801275	01/25/18	01/26/18	8015M	

Date Sampled: **01/25/18 12:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		114 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/18 12:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801274	01/25/18	01/25/18	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: **01/25/18 12:37**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		104 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		99.6 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		103 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

SS20@28'
1801276-04 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **01/25/18 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	ND	50	mg/kg	1	1801275	01/25/18	01/26/18	8015M	

Date Sampled: **01/25/18 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		107 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/25/18 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	ND	0.010	mg/kg	1	1801274	01/25/18	01/25/18	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: **01/25/18 12:41**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		98.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		105 %	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

Extractable 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 1801275 - EPA 3550A

Blank (1801275-BLK1)

Prepared: 01/25/18 Analyzed: 01/26/18

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 15.7 " 12.5 125 30-150

LCS (1801275-BS1)

Prepared: 01/25/18 Analyzed: 01/26/18

C10-C28 (DRO) 538 50 mg/kg 499 108 73-134

Surrogate: o-Terphenyl 18.7 " 12.5 150 30-150

Matrix Spike (1801275-MS1)

Source: 1801276-01

Prepared: 01/25/18 Analyzed: 01/26/18

C10-C28 (DRO) 568 50 mg/kg 499 78.8 98.0 50-148

Surrogate: o-Terphenyl 15.1 " 12.5 121 30-150

Matrix Spike Dup (1801275-MSD1)

Source: 1801276-01

Prepared: 01/25/18 Analyzed: 01/26/18

C10-C28 (DRO) 556 50 mg/kg 499 78.8 95.6 50-148 2.18 20

Surrogate: o-Terphenyl 17.7 " 12.5 142 30-150

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

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

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

Batch 1801274 - EPA 5030 Soil MS

Blank (1801274-BLK1)

Prepared: 01/25/18 Analyzed: 01/26/18

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	"							
Surrogate: 1,2-Dichloroethane-d4	0.0398		"	0.0400		99.5	23-173			
Surrogate: Toluene-d8	0.0389		"	0.0400		97.4	20-170			
Surrogate: 4-Bromofluorobenzene	0.0413		"	0.0400		103	21-167			

LCS (1801274-BS1)

Prepared: 01/25/18 Analyzed: 01/26/18

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.113	0.0020	"	0.100		113	58-130			
Toluene	0.118	0.0050	"	0.100		118	61-134			
Ethylbenzene	0.129	0.0050	"	0.0992		130	74-139			
m,p-Xylene	0.251	0.010	"	0.200		126	73-137			
o-Xylene	0.120	0.0050	"	0.0980		123	73-141			
Xylenes (total)	0.371	0.010	"				0-200			
Gasoline Range Hydrocarbons	3.04	0.50	"				30-150			
Surrogate: 1,2-Dichloroethane-d4	0.0412		"	0.0400		103	23-173			
Surrogate: Toluene-d8	0.0404		"	0.0400		101	20-170			
Surrogate: 4-Bromofluorobenzene	0.0410		"	0.0400		102	21-167			

Matrix Spike (1801274-MS1)

Source: 1801276-01

Prepared: 01/25/18 Analyzed: 01/26/18

Naphthalene	ND	0.010	mg/kg		0.0363		10-158			
Benzene	0.113	0.0020	"	0.100	ND	113	30-131			
Toluene	0.119	0.0050	"	0.100	ND	119	30-134			
Ethylbenzene	0.130	0.0050	"	0.0992	ND	131	22-153			
m,p-Xylene	0.256	0.010	"	0.200	0.0114	123	10-159			
o-Xylene	0.123	0.0050	"	0.0980	ND	125	31-151			
Xylenes (total)	0.379	0.010	"		0.0114		30-160			
Gasoline Range Hydrocarbons	3.13	0.50	"		13.5		30-160			
Surrogate: 1,2-Dichloroethane-d4	0.0424		"	0.0400		106	23-173			
Surrogate: Toluene-d8	0.0398		"	0.0400		99.5	20-170			
Surrogate: 4-Bromofluorobenzene	0.0415		"	0.0400		104	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

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 1801274 - EPA 5030 Soil MS

Matrix Spike Dup (1801274-MSD1)		Source: 1801276-01			Prepared: 01/25/18		Analyzed: 01/26/18			
Naphthalene	ND	0.010	mg/kg		0.0363		10-158		42	
Benzene	0.114	0.0020	"	0.100	ND	114	30-131	0.816	34	
Toluene	0.119	0.0050	"	0.100	ND	119	30-134	0.0251	30	
Ethylbenzene	0.133	0.0050	"	0.0992	ND	135	22-153	2.43	24	
m,p-Xylene	0.261	0.010	"	0.200	0.0114	125	10-159	1.77	68	
o-Xylene	0.124	0.0050	"	0.0980	ND	127	31-151	1.31	38	
Xylenes (total)	0.385	0.010	"		0.0114		30-160	1.62	30	
Gasoline Range Hydrocarbons	3.13	0.50	"		13.5		30-160	0.280	30	
Surrogate: 1,2-Dichloroethane-d4	0.0432		"	0.0400		108	23-173			
Surrogate: Toluene-d8	0.0401		"	0.0400		100	20-170			
Surrogate: 4-Bromofluorobenzene	0.0416		"	0.0400		104	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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/26/18 06:33

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

January 30, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 01/29/18 12:22. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/18 06:46

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
GW01	1801304-01	Water	01/29/18 10:45	01/29/18 12:22

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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.

1801304

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

Page 1 of 1

Mark Longhurst

E-Mail;

Project Name:

Fax: _____
Chris Armstrong

Project Number:

www.s2scientific.com

Sample Receipt Checklist

S2 Work Order: 1801304

Client: ADC Energy

Client Project ID: Wacker 1

Shipped Via: Hand
(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #: _____

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	4.6				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	✓			
Was adequate sample volume provided ⁽¹⁾ ?	✓			
If custody seals are present, are they intact ⁽¹⁾ ?	✓			
Are short holding time analytes or samples with HTs due within 48 hours present?			✓	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?			✓	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	✓			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	✓			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	✓			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.				
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?		✓		
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect	✓			HCl
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?				
Record the pH in Comments.			✓	
If dissolved metals are requested, were samples field filtered?			✓	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Nakita
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

1/29/18 1230
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/18 06:46

GW01
1801304-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **01/29/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	1.2	1.0	ug/l	1	1801303	01/29/18	01/29/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	5.1	1.0	"	"	"	"	"	"	
Xylenes (total)	23	2.0	"	"	"	"	"	"	

Date Sampled: **01/29/18 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		77.2 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		94.6 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		96.5 %	45-146		"	"	"	"	

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/18 06:46

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 1801303 - EPA 5030 Water MS

Blank (1801303-BLK1)

Prepared & Analyzed: 01/29/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		100	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.5	45-149			
Surrogate: 4-Bromofluorobenzene	13.6		"	13.3		102	45-146			

LCS (1801303-BS1)

Prepared & Analyzed: 01/29/18

Benzene	36.7	1.0	ug/l	33.3		110	51-132			
Toluene	38.5	1.0	"	33.3		115	51-138			
Ethylbenzene	41.9	1.0	"	33.1		127	58-146			
m,p-Xylene	81.7	2.0	"	66.5		123	57-144			
o-Xylene	39.3	1.0	"	32.7		120	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.4		"	13.3		101	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103	45-146			

Matrix Spike (1801303-MS1)

Source: 1801304-01

Prepared & Analyzed: 01/29/18

Benzene	40.2	1.0	ug/l	33.3	1.15	117	34-141			
Toluene	44.3	1.0	"	33.3	ND	133	27-151			
Ethylbenzene	47.4	1.0	"	33.1	5.13	128	29-160			
m,p-Xylene	104	2.0	"	66.5	23.0	121	20-166			
o-Xylene	51.6	1.0	"	32.7	ND	158	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.7		"	13.3		103	37-154			
Surrogate: Toluene-d8	13.6		"	13.3		102	45-149			
Surrogate: 4-Bromofluorobenzene	13.4		"	13.3		101	45-146			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/18 06:46

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 1801303 - EPA 5030 Water MS

Matrix Spike Dup (1801303-MSD1)	Source: 1801304-01			Prepared & Analyzed: 01/29/18						
Benzene	40.9	1.0	ug/l	33.3	1.15	119	34-141	1.75	32	
Toluene	46.8	1.0	"	33.3	ND	140	27-151	5.58	25	
Ethylbenzene	49.6	1.0	"	33.1	5.13	134	29-160	4.54	50	
m,p-Xylene	110	2.0	"	66.5	23.0	131	20-166	6.04	36	
o-Xylene	44.3	1.0	"	32.7	ND	136	33-159	15.2	26	
Surrogate: 1,2-Dichloroethane-d4	14.1		"	13.3		106	37-154			
Surrogate: Toluene-d8	13.5		"	13.3		101	45-149			
Surrogate: 4-Bromofluorobenzene	13.5		"	13.3		102	45-146			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
01/30/18 06:46

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

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

February 02, 2018

Mark Longhurst
PDC Energy
1775 Sherman St. STE. 3000
Denver, CO 80203
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 02/01/18 15:00. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

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

Paul Shrewsbury
President



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH08	1802002-01	Water	02/01/18 11:21	02/01/18 15:00

Summit Scientific

A handwritten signature in black ink, appearing to be 'MSM'.

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

Sample Receipt Checklist

S2 Work Order: 1802002

Client: PDC

Client Project ID: Wacker #1

Shipped Via:

(UPS, FedEx, Hand Delivered, Pick-up, etc.)

Airbill #:

Matrix (check all that apply): ☐ Air ☐ Soil/Solid ☒ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	4.0				

Thermometer ID: 61857155-K

	Yes	No	N/A	Comments (if any)
If samples require cooling, was the temperature at 4°C +/- 2°C ⁽¹⁾ ?				
NOTE: If samples are delivered the same day of sampling, this requirement is met provided that there is evidence that cooling has begun.				
Were all samples received intact ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
If custody seals are present, are they intact ⁽¹⁾ ?			<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input checked="" type="checkbox"/>			
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>			
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.		<input checked="" type="checkbox"/>		
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?				
Note the type of preservative in the Comments column – HCl, H2SO4, NaOH, HNO3, ect				HCL
If samples are acid preserved for metals, is the pH ≤ 2 ⁽¹⁾ ?				
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?			<input checked="" type="checkbox"/>	
Additional Comments (if any):				

⁽¹⁾ If NO, then contact the client before proceeding with analysis and note in case narrative.

Longhurst
Custodian Printed Name

[Signature]
Signature or Initials of Custodian

2-1-18 1500
Date/Time



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

Project: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

BH08
1802002-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **02/01/18 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1802011	02/01/18	02/01/18	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **02/01/18 11:21**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		103 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		97.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		104 %	45-146		"	"	"	"	

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

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 1802011 - EPA 5030 Water MS

Blank (1802011-BLK1)

Prepared & Analyzed: 02/01/18

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.6		"	13.3		94.7	37-154			
Surrogate: Toluene-d8	13.0		"	13.3		97.6	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	45-146			

LCS (1802011-BS1)

Prepared & Analyzed: 02/01/18

Benzene	36.1	1.0	ug/l	33.3		108	51-132			
Toluene	37.6	1.0	"	33.3		113	51-138			
Ethylbenzene	40.1	1.0	"	33.1		121	58-146			
m,p-Xylene	78.5	2.0	"	66.5		118	57-144			
o-Xylene	37.9	1.0	"	32.7		116	53-146			
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		103	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		104	45-146			

Matrix Spike (1802011-MS1)

Source: 1801322-01

Prepared & Analyzed: 02/01/18

Benzene	38.0	1.0	ug/l	33.3	ND	114	34-141			
Toluene	39.8	1.0	"	33.3	ND	120	27-151			
Ethylbenzene	42.6	1.0	"	33.1	ND	129	29-160			
m,p-Xylene	83.6	2.0	"	66.5	ND	126	20-166			
o-Xylene	40.7	1.0	"	32.7	ND	124	33-159			
Surrogate: 1,2-Dichloroethane-d4	14.2		"	13.3		106	37-154			
Surrogate: Toluene-d8	13.4		"	13.3		100	45-149			
Surrogate: 4-Bromofluorobenzene	13.9		"	13.3		104	45-146			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

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 1802011 - EPA 5030 Water MS

Matrix Spike Dup (1802011-MSD1)	Source: 1801322-01			Prepared & Analyzed: 02/01/18						
Benzene	38.0	1.0	ug/l	33.3	ND	114	34-141	0.105	32	
Toluene	39.6	1.0	"	33.3	ND	119	27-151	0.604	25	
Ethylbenzene	43.6	1.0	"	33.1	ND	132	29-160	2.28	50	
m,p-Xylene	84.3	2.0	"	66.5	ND	127	20-166	0.822	36	
o-Xylene	41.2	1.0	"	32.7	ND	126	33-159	1.34	26	
Surrogate: 1,2-Dichloroethane-d4	13.8		"	13.3		104	37-154			
Surrogate: Toluene-d8	13.3		"	13.3		99.8	45-149			
Surrogate: 4-Bromofluorobenzene	13.8		"	13.3		103	45-146			

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: Wacker #1
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
02/02/18 06:28

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