



0 750 1,500 Feet

Figure 1

Site Location Map
Wacker 1 Tank Battery
SWNW S10 T5N R64W
Weld County, Colorado





DATE:	April 19, 2017
DESIGNED BY:	C. Hamlin
DRAWN BY:	C. Hamlin



TASMAN
GEOSCIENCES

Tasman Geosciences, Inc.
6899 Pecos Street – Unit C
Denver, CO 80221

PDC Energy, Inc. – DJ Basin
Wacker 1 Tank Battery
SWNW, Section 10, Township 5 North, Range 64 West
Weld County, Colorado

**SITE INVESTIGATION
MAP**

**FIGURE
2**

TABLE 1
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

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
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	
BH01	4/13/2017	9.7	1.2	1.8	<2.0	22.78 ⁽³⁾
BH02	4/13/2017	<1.0	1.0	<1.0	<2.0	31.56
BH03	4/13/2017	<1.0	<1.0	<1.0	5.6	31.97
BH04	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.48
BH05	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.58
BH06	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.23
BH07	4/13/2017	<1.0	<1.0	<1.0	<2.0	31.15

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.
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.

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

March 21, 2017

Mark Longhurst
Tasman Geosciences
6899 Pecos Street
Denver, CO 80221
RE: Wacker #1

Enclosed are the results of analyses for samples received by Summit Scientific on 03/20/17 17:30. 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



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 06:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS01@20'	1703165-01	Soil	03/20/17 09:45	03/20/17 17:30
TP02@16'	1703165-02	Soil	03/20/17 10:30	03/20/17 17:30

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.

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



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/21/17 06:42

Summit Scientific 1703/65

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

Page 1 of 1

Client: PDC (Tasman)
Address: 6899 Pecos St Unit C
City/State/Zip: Denver, CO, 80221
Phone: _____ Fax: _____
Sampler Name: Alex C.

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdc.com
Project Name: Wacker #1
Project Number: _____

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:										Special Instructions																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	GB	TEX	N	D	C	O	P	S	Si		Fe	Mn	Zn	As	Se	Mo	Cr	B	Br	I	Ag	Cd	Cu	Pb	Sn	Tl	Hg	Co	Ni	V	Al	Mg	Ca	Na	K	Li	Be	Ba	Sr	Zr	Hf	Ta	Nb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au	Hg	Tl	Pb	Bi	Po	At	Rn	Fr	Ac	Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Mn	Co	Ni	Cu	Zn	Ga	Ge	As	Se	Br	Kr	Rb	Sr	Y	Zr	Nb	Mo	Tc	Ru	Rh	Pd	Ag	Cd	In	Sn	Sb	Te	I	Xe	Ba	La	Ce	Pr	Nd	Pm	Sm	Eu	Gd	Tb	Dy	Ho	Er	Tm	Yb	Lu	Hf	Ta	W	Re	Os	Ir	Pt	Au



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/21/17 06:42

Sample Receipt Checklist

S2 Work Order: 15.03/65

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>3.9</u>				

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⁾ ?	<input checked="" type="checkbox"/>			
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⁾ ?	<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⁾ ?			<input checked="" type="checkbox"/>	
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

3/20/17 1730
Date/Time

[Signature]



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 06:42

SS01@20'
1703165-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/20/17 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	910	50	mg/kg	1	1703216	03/20/17	03/20/17	8015M	

Date Sampled: **03/20/17 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: o-Terphenyl</i>		93.3 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/20/17 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.32	0.010	mg/kg	1	1703215	03/20/17	03/20/17	EPA 8260B	
Benzene	0.16	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	4.4	0.050	"	10	"	"	"	"	
Xylenes (total)	50	0.10	"	"	"	"	"	"	E
Gasoline Range Hydrocarbons	730	5.0	"	"	"	"	"	"	

Date Sampled: **03/20/17 09:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		119 %	23-173		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		96.4 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		332 %	21-167		"	"	"	"	S-02

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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 06:42

TP02@16'
1703165-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/20/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	120	50	mg/kg	1	1703216	03/20/17	03/20/17	8015M	

Date Sampled: **03/20/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		93.2 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/20/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.022	0.010	mg/kg	1	1703215	03/20/17	03/20/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	03/20/17	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.018	0.0050	"	"	"	"	03/20/17	"	
Xylenes (total)	0.23	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	8.3	0.50	"	"	"	"	"	"	

Date Sampled: **03/20/17 10:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		98.7 %	23-173		"	"	03/20/17	"	
Surrogate: Toluene-d8		98.2 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		106 %	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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 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 1703216 - EPA 3550A

Blank (1703216-BLK1)

Prepared & Analyzed: 03/20/17

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

LCS (1703216-BS1)

Prepared & Analyzed: 03/20/17

C10-C28 (DRO)	578	50	mg/kg	499		116	73-134			
Surrogate: o-Terphenyl	12.1		"	12.5		97.2	30-150			

Matrix Spike (1703216-MS1)

Source: 1703168-01

Prepared & Analyzed: 03/20/17

C10-C28 (DRO)	517	50	mg/kg	499	39.6	95.6	50-148			
Surrogate: o-Terphenyl	11.1		"	12.5		88.9	30-150			

Matrix Spike Dup (1703216-MSD1)

Source: 1703168-01

Prepared & Analyzed: 03/20/17

C10-C28 (DRO)	508	50	mg/kg	499	39.6	93.9	50-148	1.67	20	
Surrogate: o-Terphenyl	10.9		"	12.5		87.5	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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 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 1703215 - EPA 5030 Soil MS

Blank (1703215-BLK1)

Prepared & Analyzed: 03/20/17

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>0.0403</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0430</i>		<i>"</i>	<i>0.0400</i>		<i>107</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0415</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>21-167</i>			

LCS (1703215-BS1)

Prepared & Analyzed: 03/20/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0835	0.0020	"	0.100		83.5	58-130			
Toluene	0.100	0.0050	"	0.100		100	61-134			
Ethylbenzene	0.115	0.0050	"	0.0992		116	74-139			
m,p-Xylene	0.235	0.010	"	0.200		118	73-137			
o-Xylene	0.108	0.0050	"	0.0980		110	73-141			
Xylenes (total)	0.343	0.010	"				0-200			
Gasoline Range Hydrocarbons	2.62	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0439</i>		<i>"</i>	<i>0.0400</i>		<i>110</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0398</i>		<i>"</i>	<i>0.0400</i>		<i>99.6</i>	<i>21-167</i>			

Matrix Spike (1703215-MS1)

Source: 1703169-01

Prepared & Analyzed: 03/20/17

Naphthalene	0.0181	0.010	mg/kg		0.0177		10-158			
Benzene	0.0862	0.0020	"	0.100	ND	86.2	30-131			
Toluene	0.114	0.0050	"	0.100	0.0116	102	30-134			
Ethylbenzene	0.118	0.0050	"	0.0992	ND	119	22-153			
m,p-Xylene	0.283	0.010	"	0.200	0.0244	130	10-159			
o-Xylene	0.123	0.0050	"	0.0980	0.00756	118	31-151			
Xylenes (total)	0.407	0.010	"		0.0320		30-160			
Gasoline Range Hydrocarbons	2.97	0.50	"		0.208		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0434</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0410</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0399</i>		<i>"</i>	<i>0.0400</i>		<i>99.8</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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

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

Reported:
03/21/17 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 1703215 - EPA 5030 Soil MS

Matrix Spike Dup (1703215-MSD1)			Source: 1703169-01		Prepared & Analyzed: 03/20/17					
Naphthalene	0.0178	0.010	mg/kg		0.0177		10-158	1.67	42	
Benzene	0.0895	0.0020	"	0.100	ND	89.5	30-131	3.76	34	
Toluene	0.116	0.0050	"	0.100	0.0116	105	30-134	2.19	30	
Ethylbenzene	0.120	0.0050	"	0.0992	ND	121	22-153	1.73	24	
m,p-Xylene	0.273	0.010	"	0.200	0.0244	124	10-159	3.79	68	
o-Xylene	0.120	0.0050	"	0.0980	0.00756	115	31-151	2.46	38	
Xylenes (total)	0.393	0.010	"		0.0320		30-160	3.38	30	
Gasoline Range Hydrocarbons	2.90	0.50	"		0.208		30-160	2.38	30	
Surrogate: 1,2-Dichloroethane-d4	0.0457		"	0.0400		114	23-173			
Surrogate: Toluene-d8	0.0419		"	0.0400		105	20-170			
Surrogate: 4-Bromofluorobenzene	0.0386		"	0.0400		96.4	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.



Tasman Geosciences
6899 Pecos Street
Denver CO, 80221

Project: Wacker #1

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
03/21/17 06:42

Notes and Definitions

S-02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
E	The concentration indicated for this analyte is an estimated value above the calibration range of the instrument.
DET	Analyte DETECTED
ND	Analyte NOT DETECTED at or above the reporting limit
NR	Not Reported
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference

Summit Scientific

741 Corporate Circle – Suite I ♦ Golden, Colorado 80401

303.277.9310 - laboratory ♦ 303.277.9531 - fax

March 22, 2017

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 03/21/17 17:30. 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:
03/22/17 07:04

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SS02@26'	1703181-01	Soil	03/21/17 10:45	03/21/17 17:30

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:
03/22/17 07:04

Sample Receipt Checklist

S2 Work Order: 1703181

Client: PDC Energy

Client Project ID: Wacker #1

Shipped Via: P/V

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>4.7</u>				

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⁾ ?	<input checked="" type="checkbox"/>			
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⁾ ?	<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.

Nakita
Custodian Printed Name

AAA
Signature or Initials of Custodian

3/21/17 1700
Date/Time



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

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

Reported:
03/22/17 07:04

SS02@26'
1703181-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **03/21/17 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	940	50	mg/kg	1	1703233	03/21/17	03/21/17	8015M	

Date Sampled: **03/21/17 10:45**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **03/21/17 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.70	0.010	mg/kg	1	1703232	03/21/17	03/22/17	EPA 8260B	
Benzene	0.011	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.39	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.077	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	1000	50	"	100	"	"	03/22/17	"	

Date Sampled: **03/21/17 10:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		119 %	23-173		"	"	03/22/17	"	
<i>Surrogate: Toluene-d8</i>		96.8 %	20-170		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		121 %	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:
03/22/17 07:04

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 1703233 - EPA 3550A

Blank (1703233-BLK1)

Prepared: 03/21/17 Analyzed: 03/22/17

C10-C28 (DRO) ND 50 mg/kg

Surrogate: o-Terphenyl 12.1 " 12.5 96.9 30-150

LCS (1703233-BS1)

Prepared: 03/21/17 Analyzed: 03/22/17

C10-C28 (DRO) 536 50 mg/kg 499 107 73-134

Surrogate: o-Terphenyl 12.1 " 12.5 96.7 30-150

Matrix Spike (1703233-MS1)

Source: 1703180-01

Prepared: 03/21/17 Analyzed: 03/22/17

C10-C28 (DRO) 580 50 mg/kg 499 26.0 111 50-148

Surrogate: o-Terphenyl 12.1 " 12.5 96.8 30-150

Matrix Spike Dup (1703233-MSD1)

Source: 1703180-01

Prepared: 03/21/17 Analyzed: 03/22/17

C10-C28 (DRO) 591 50 mg/kg 499 26.0 113 50-148 1.74 20

Surrogate: o-Terphenyl 12.4 " 12.5 99.5 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:
03/22/17 07:04

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 1703232 - EPA 5030 Soil MS

Blank (1703232-BLK1)

Prepared & Analyzed: 03/21/17

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>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0407</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>			

LCS (1703232-BS1)

Prepared & Analyzed: 03/21/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.111	0.0020	"	0.100		111	58-130			
Toluene	0.115	0.0050	"	0.100		115	61-134			
Ethylbenzene	0.133	0.0050	"	0.0992		135	74-139			
m,p-Xylene	0.250	0.010	"	0.200		125	73-137			
o-Xylene	0.123	0.0050	"	0.0980		125	73-141			
Xylenes (total)	0.373	0.010	"				0-200			
Gasoline Range Hydrocarbons	1.18	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0409</i>		<i>"</i>	<i>0.0400</i>		<i>102</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>0.0404</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>21-167</i>			

Matrix Spike (1703232-MS1)

Source: 1703180-01

Prepared & Analyzed: 03/21/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.113	0.0020	"	0.100	ND	113	30-131			
Toluene	0.121	0.0050	"	0.100	0.00477	117	30-134			
Ethylbenzene	0.131	0.0050	"	0.0992	ND	132	22-153			
m,p-Xylene	0.260	0.010	"	0.200	0.00939	126	10-159			
o-Xylene	0.124	0.0050	"	0.0980	0.00318	123	31-151			
Xylenes (total)	0.384	0.010	"		0.0126		30-160			
Gasoline Range Hydrocarbons	1.14	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0437</i>		<i>"</i>	<i>0.0400</i>		<i>109</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0412</i>		<i>"</i>	<i>0.0400</i>		<i>103</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0421</i>		<i>"</i>	<i>0.0400</i>		<i>105</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:
03/22/17 07:04

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 1703232 - EPA 5030 Soil MS

Matrix Spike Dup (1703232-MSD1)			Source: 1703180-01		Prepared: 03/21/17		Analyzed: 03/22/17			
Naphthalene	ND	0.010	mg/kg		ND		10-158			42
Benzene	0.117	0.0020	"	0.100	ND	117	30-131	2.92		34
Toluene	0.121	0.0050	"	0.100	0.00477	116	30-134	0.645		30
Ethylbenzene	0.133	0.0050	"	0.0992	ND	134	22-153	1.57		24
m,p-Xylene	0.259	0.010	"	0.200	0.00939	125	10-159	0.324		68
o-Xylene	0.126	0.0050	"	0.0980	0.00318	126	31-151	1.94		38
Xylenes (total)	0.385	0.010	"		0.0126		30-160	0.414		30
Gasoline Range Hydrocarbons	1.17	0.50	"		ND		30-160	1.86		30
Surrogate: 1,2-Dichloroethane-d4	0.0438		"	0.0400		109	23-173			
Surrogate: Toluene-d8	0.0413		"	0.0400		103	20-170			
Surrogate: 4-Bromofluorobenzene	0.0422		"	0.0400		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:
03/22/17 07:04

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

April 18, 2017

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 04/11/17 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:
04/18/17 17:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SB01@28-29'	1704122-01	Soil	04/10/17 10:25	04/11/17 16:30
SB03@17-18'	1704122-02	Soil	04/10/17 13:07	04/11/17 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:
04/18/17 17:12

Sample Receipt Checklist

S2 Work Order: 1704122

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 ☒ Soil/Solid ☐ Water ☐ Other: _____
(Describe)

Cooler ID					
Temp (°C)	3.4				

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⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
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⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Was adequate sample volume provided ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
If custody seals are present, are they intact ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are short holding time analytes or samples with HTs due within 48 hours present?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Is a chain-of-custody (COC) form present and filled out completely ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Does the COC agree with the number and type of sample bottles received ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Do the sample IDs on the bottle labels match the COC ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Is the COC properly relinquished by the client w/ date and time recorded ⁽¹⁾ ?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
For volatiles in water – is there headspace present? If yes, contact client and note in narrative.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Are samples preserved that require preservation (excluding cooling) ⁽¹⁾ ?	<input type="checkbox"/>	<input type="checkbox"/>	<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 type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Record the pH in Comments.				
If dissolved metals are requested, were samples field filtered?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	
Additional Comments (if any):				

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

Murip.
Custodian Printed Name

MD 4-11-17
Signature or Initials of Custodian

18:38
Date/Time



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

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

Reported:
04/18/17 17:12

SB01@28-29'
1704122-01 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/10/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	700	50	mg/kg	1	1704139	04/12/17	04/13/17	8015M	

Date Sampled: **04/10/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: o-Terphenyl		105 %	30-150		"	"	"	"	

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.026	0.010	mg/kg	1	1704137	04/12/17	04/13/17	EPA 8260B	
Benzene	ND	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	0.017	0.0050	"	"	"	"	"	"	
Xylenes (total)	0.011	0.010	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	49	0.50	"	"	"	"	"	"	

Date Sampled: **04/10/17 10:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.8 %	23-173		"	"	"	"	
Surrogate: Toluene-d8		96.1 %	20-170		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		160 %	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:
04/18/17 17:12

SB03@17-18'
1704122-02 (Soil)

Summit Scientific

Extractable Petroleum Hydrocarbons by 8015

Date Sampled: **04/10/17 13:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
C10-C28 (DRO)	400	50	mg/kg	1	1704139	04/12/17	04/13/17	8015M	

Date Sampled: **04/10/17 13:07**

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

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/10/17 13:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Naphthalene	0.50	0.010	mg/kg	1	1704137	04/12/17	04/13/17	EPA 8260B	
Benzene	0.038	0.0020	"	"	"	"	"	"	
Toluene	ND	0.0050	"	"	"	"	"	"	
Ethylbenzene	1.4	0.50	"	100	"	"	"	"	
Xylenes (total)	17	1.0	"	"	"	"	"	"	
Gasoline Range Hydrocarbons	460	50	"	"	"	"	04/13/17	"	

Date Sampled: **04/10/17 13:07**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		96.8 %	23-173		"	"	04/13/17	"	
Surrogate: Toluene-d8		350 %	20-170		"	"	"	"	S-02
Surrogate: 4-Bromofluorobenzene		361 %	21-167		"	"	"	"	S-02

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:
04/18/17 17:12

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 1704139 - EPA 3550A

Blank (1704139-BLK1)

Prepared & Analyzed: 04/12/17

C10-C28 (DRO)	ND	50	mg/kg							
Surrogate: o-Terphenyl	13.7		"	12.5		109	30-150			

LCS (1704139-BS1)

Prepared & Analyzed: 04/12/17

C10-C28 (DRO)	482	50	mg/kg	499		96.6	73-134			
Surrogate: o-Terphenyl	13.4		"	12.5		107	30-150			

Matrix Spike (1704139-MS1)

Source: 1704130-01

Prepared & Analyzed: 04/12/17

C10-C28 (DRO)	495	50	mg/kg	499	25.5	94.1	50-148			
Surrogate: o-Terphenyl	13.7		"	12.5		110	30-150			

Matrix Spike Dup (1704139-MSD1)

Source: 1704130-01

Prepared & Analyzed: 04/12/17

C10-C28 (DRO)	518	50	mg/kg	499	25.5	98.7	50-148	4.57	20	
Surrogate: o-Terphenyl	14.4		"	12.5		115	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:
04/18/17 17:12

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 1704137 - EPA 5030 Soil MS

Blank (1704137-BLK1)

Prepared & Analyzed: 04/12/17

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>0.0406</i>		<i>"</i>	<i>0.0400</i>		<i>101</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0416</i>		<i>"</i>	<i>0.0400</i>		<i>104</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0370</i>		<i>"</i>	<i>0.0400</i>		<i>92.6</i>	<i>21-167</i>			

LCS (1704137-BS1)

Prepared: 04/12/17 Analyzed: 04/13/17

Naphthalene	ND	0.010	mg/kg				66-138			
Benzene	0.0954	0.0020	"	0.100		95.4	58-130			
Toluene	0.100	0.0050	"	0.100		100	61-134			
Ethylbenzene	0.0970	0.0050	"	0.0992		97.8	74-139			
m,p-Xylene	0.191	0.010	"	0.200		95.7	73-137			
o-Xylene	0.0957	0.0050	"	0.0980		97.6	73-141			
Xylenes (total)	0.287	0.010	"				0-200			
Gasoline Range Hydrocarbons	0.186	0.50	"				30-150			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0392</i>		<i>"</i>	<i>0.0400</i>		<i>98.1</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0395</i>		<i>"</i>	<i>0.0400</i>		<i>98.8</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.5</i>	<i>21-167</i>			

Matrix Spike (1704137-MS1)

Source: 1704102-01

Prepared: 04/12/17 Analyzed: 04/13/17

Naphthalene	ND	0.010	mg/kg		ND		10-158			
Benzene	0.0876	0.0020	"	0.100	ND	87.6	30-131			
Toluene	0.0912	0.0050	"	0.100	ND	91.2	30-134			
Ethylbenzene	0.0880	0.0050	"	0.0992	ND	88.7	22-153			
m,p-Xylene	0.174	0.010	"	0.200	ND	87.2	10-159			
o-Xylene	0.0884	0.0050	"	0.0980	ND	90.2	31-151			
Xylenes (total)	0.262	0.010	"		ND		30-160			
Gasoline Range Hydrocarbons	0.186	0.50	"		ND		30-160			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>0.0390</i>		<i>"</i>	<i>0.0400</i>		<i>97.4</i>	<i>23-173</i>			
<i>Surrogate: Toluene-d8</i>	<i>0.0393</i>		<i>"</i>	<i>0.0400</i>		<i>98.2</i>	<i>20-170</i>			
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>0.0374</i>		<i>"</i>	<i>0.0400</i>		<i>93.5</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:
04/18/17 17:12

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 1704137 - EPA 5030 Soil MS

Matrix Spike Dup (1704137-MSD1)		Source: 1704102-01			Prepared: 04/12/17		Analyzed: 04/13/17			
Naphthalene	ND	0.010	mg/kg		ND		10-158		42	
Benzene	0.0845	0.0020	"	0.100	ND	84.5	30-131	3.62	34	
Toluene	0.0879	0.0050	"	0.100	ND	87.9	30-134	3.72	30	
Ethylbenzene	0.0842	0.0050	"	0.0992	ND	84.9	22-153	4.46	24	
m,p-Xylene	0.168	0.010	"	0.200	ND	84.2	10-159	3.58	68	
o-Xylene	0.0849	0.0050	"	0.0980	ND	86.6	31-151	3.98	38	
Xylenes (total)	0.253	0.010	"		ND		30-160	3.71	30	
Gasoline Range Hydrocarbons	ND	0.50	"		ND		30-160		30	
Surrogate: 1,2-Dichloroethane-d4	0.0401		"	0.0400		100	23-173			
Surrogate: Toluene-d8	0.0395		"	0.0400		98.8	20-170			
Surrogate: 4-Bromofluorobenzene	0.0376		"	0.0400		94.0	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:
04/18/17 17:12

Notes and Definitions

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

April 14, 2017

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

Enclosed are the results of analyses for samples received by Summit Scientific on 04/13/17 17:45. 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 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
BH 01	1704141-01	Water	04/13/17 14:25	04/13/17 17:45
BH 02	1704141-02	Water	04/13/17 13:52	04/13/17 17:45
BH 03	1704141-03	Water	04/13/17 14:10	04/13/17 17:45
BH 04	1704141-04	Water	04/13/17 13:45	04/13/17 17:45
BH 05	1704141-05	Water	04/13/17 14:30	04/13/17 17:45
BH 06	1704141-06	Water	04/13/17 14:15	04/13/17 17:45
BH 07	1704141-07	Water	04/13/17 14:35	04/13/17 17:45

Summit Scientific

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

Project: Wacker #1 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

Summit Scientific 1704141

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

Page 1 of 1

Client: PDC / Tasman Geosciences
Address: 6899 Pecos St, Unit C
City/State/Zip: Denver, CO 80221
Phone: 303-487-1228 Fax:
Sampler Name: Mitch Weller, Derek Cavinder

Project Manager: Mark Longhurst
E-Mail: mark.longhurst@pdce.com
Project Name: Wacker 1 Tank Battery
Project Number: N/A

Sample Description	Date Sampled	Time Sampled	Number of Containers	Preservative				Matrix			Analyze For:				Special Instructions
				HCl	HNO ₃	None	Other (Specify)	Groundwater	Soil	Air - Canister Serial #	Other (Specify)	BTEX - 8260			
BH 01	4-13-17	1425	3			X		X				X			
BH 02		1352													
BH 03		1410													
BH 04		1345													
BH 05		1430													
BH 06		1415													
BH 07		1435													
<div> <div>Relinquished by: <i>Mitch Weller</i> Date/Time: 4-13-17 1730</div> <div>Received by: <i>MW</i> Date/Time: 4/13/17 1730</div> <div>Turn Around Time (Check) Same Day <input type="checkbox"/> 72 Hours <input type="checkbox"/> 24 Hours <input checked="" type="checkbox"/> Standard <input type="checkbox"/> 48 Hours <input type="checkbox"/></div> </div>															
<div> <div>Relinquished by: <i>MW</i> Date/Time: 4/13/17 1745</div> <div>Received by: <i>DJ</i> Date/Time: 4-13-17 1745</div> <div>Sample Integrity: Temperature Upon Receipt: 6.8°C Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</div> </div>															
Notes: 24 hr TAT on ice															

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 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

Sample Receipt Checklist

S2 Work Order: 704141

Client: PDC/Tasman

Client Project ID: Wacker 1 Tank Battery

Shipped Via: YIU

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

Airbill #: _____

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

Cooler ID					
Temp (°C)	<u>6.8</u>				

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.	<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⁾ ?				
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⁾ ?	<input checked="" type="checkbox"/>			
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⁾ ?			<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.				

Nakita
Custodian Printed Name

[Signature]
Signature or initials of Custodian

4/13/17 1745
Date/Time

[Signature]



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

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

Reported:
04/14/17 15:41

BH 01
1704141-01 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	9.7	1.0	ug/l	1	1704151	04/13/17	04/13/17	EPA 8260B	
Toluene	1.2	1.0	"	"	"	"	"	"	
Ethylbenzene	1.8	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 14:25**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
<i>Surrogate: 1,2-Dichloroethane-d4</i>		93.5 %	37-154		"	"	"	"	
<i>Surrogate: Toluene-d8</i>		89.9 %	45-149		"	"	"	"	
<i>Surrogate: 4-Bromofluorobenzene</i>		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 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

BH 02
1704141-02 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 13:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	1.0	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 13:52**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.1 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.6 %	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 Tank Battery
Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

BH 03
1704141-03 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	5.6	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 14:10**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		92.4 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.2 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.0 %	45-146		"	"	"	"	

Summit Scientific

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

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

Reported:
04/14/17 15:41

BH 04
1704141-04 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 13:45**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.0 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.9 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	45-146		"	"	"	"	

Summit Scientific

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

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

Reported:
04/14/17 15:41

BH 05
1704141-05 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 14:30**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		93.3 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.6 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		98.2 %	45-146		"	"	"	"	

Summit Scientific

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

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

Reported:
04/14/17 15:41

BH 06
1704141-06 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 14:15**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		95.7 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		92.7 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		102 %	45-146		"	"	"	"	

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

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

Reported:
04/14/17 15:41

BH 07
1704141-07 (Water)

Summit Scientific

Volatile Organic Compounds by EPA Method 8260B

Date Sampled: **04/13/17 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Benzene	ND	1.0	ug/l	1	1704151	04/14/17	04/14/17	EPA 8260B	
Toluene	ND	1.0	"	"	"	"	"	"	
Ethylbenzene	ND	1.0	"	"	"	"	"	"	
Xylenes (total)	ND	2.0	"	"	"	"	"	"	

Date Sampled: **04/13/17 14:35**

Analyte	Result	Reporting Limit	Units	Dilution	Batch	Prepared	Analyzed	Method	Notes
Surrogate: 1,2-Dichloroethane-d4		94.1 %	37-154		"	"	"	"	
Surrogate: Toluene-d8		89.4 %	45-149		"	"	"	"	
Surrogate: 4-Bromofluorobenzene		99.2 %	45-146		"	"	"	"	

Summit Scientific

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

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

Reported:
04/14/17 15:41

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 1704151 - EPA 5030 Water MS

Blank (1704151-BLK1)

Prepared & Analyzed: 04/13/17

Benzene	ND	1.0	ug/l							
Toluene	ND	1.0	"							
Ethylbenzene	ND	1.0	"							
Xylenes (total)	ND	2.0	"							
Surrogate: 1,2-Dichloroethane-d4	12.1		"	13.3		91.0	37-154			
Surrogate: Toluene-d8	12.2		"	13.3		91.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.1		"	13.3		98.4	45-146			

LCS (1704151-BS1)

Prepared & Analyzed: 04/13/17

Benzene	37.0	1.0	ug/l	33.3		111	51-132			
Toluene	39.0	1.0	"	33.3		117	51-138			
Ethylbenzene	42.1	1.0	"	33.1		127	58-146			
m,p-Xylene	44.1	2.0	"	66.5		66.3	57-144			
o-Xylene	39.5	1.0	"	32.7		121	53-146			
Surrogate: 1,2-Dichloroethane-d4	12.8		"	13.3		96.2	37-154			
Surrogate: Toluene-d8	12.6		"	13.3		94.7	45-149			
Surrogate: 4-Bromofluorobenzene	12.5		"	13.3		93.5	45-146			

Matrix Spike (1704151-MS1)

Source: 1704141-01

Prepared & Analyzed: 04/13/17

Benzene	44.9	1.0	ug/l	33.3	9.68	106	34-141			
Toluene	39.2	1.0	"	33.3	1.18	114	27-151			
Ethylbenzene	44.6	1.0	"	33.1	1.79	129	29-160			
m,p-Xylene	46.1	2.0	"	66.5	1.16	67.5	20-166			
o-Xylene	40.8	1.0	"	32.7	ND	125	33-159			
Surrogate: 1,2-Dichloroethane-d4	13.0		"	13.3		97.3	37-154			
Surrogate: Toluene-d8	12.2		"	13.3		91.7	45-149			
Surrogate: 4-Bromofluorobenzene	13.2		"	13.3		98.6	45-146			

Summit Scientific

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

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

Reported:
04/14/17 15:41

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 1704151 - EPA 5030 Water MS

Matrix Spike Dup (1704151-MSD1)	Source: 1704141-01			Prepared & Analyzed: 04/13/17						
Benzene	44.1	1.0	ug/l	33.3	9.68	103	34-141	1.82	32	
Toluene	38.7	1.0	"	33.3	1.18	112	27-151	1.36	25	
Ethylbenzene	43.9	1.0	"	33.1	1.79	127	29-160	1.56	50	
m,p-Xylene	44.9	2.0	"	66.5	1.16	65.8	20-166	2.55	36	
o-Xylene	40.8	1.0	"	32.7	ND	125	33-159	0.0981	26	
Surrogate: 1,2-Dichloroethane-d4	13.2		"	13.3		99.2	37-154			
Surrogate: Toluene-d8	12.4		"	13.3		92.9	45-149			
Surrogate: 4-Bromofluorobenzene	13.0		"	13.3		97.5	45-146			

Summit Scientific

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

Project: Wacker #1 Tank Battery

Project Number: [none]
Project Manager: Mark Longhurst

Reported:
04/14/17 15:41

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