

ATTACHMENT B

Borehole Logging Form

BOREHOLE ID: BH01 SITE NAME: Warner 6-14 CLIENT NAME: PDC ENERGY
 Date Completed: 7/8/19 Location: N of former excavation
 Drilling Company: Tasman Geosciences Surface Completion: Flush mount DTW: 8' TD: 18.5'
 Type of Drill: Direct Push Probe Geologist: J. McArthur Project Manager: C. Hamlin
 Bit Size: 2 3/8" Logging Method: Continuous macro core liner

Well Const. Material: Diameter: 1" Screen: Slotted .010 SCH40 PVC Riser: Blank SCH40 PVC

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑				No recovery - hydrovase
2			0% ↓				
3							
4							
5			↑				
6			30% ↓	4.7 ↑		SM	Brn silty sand, well graded, fine-coarse grain, dry, no odor
7				3.1 ↓		ML	
8			↓	↑		SW	gray clayey silt, some fine sand, low plastic, dry, no odor
9			90% ↓	3.8 ↑			Tan/light brn sand, fine-med. grain, well graded, saturated, no odor
10							
11				1793 ↓	BH01C11-12	CL	gray silty clay, low plastic, dry, no odor
12					11:17		no recovery
13			0% ↓				
14							
15							
16			50% ↓			CL	gray silty clay, low plastic, dry, slight HC odor
17							
18				163 ↓	BH01C18-18.5		
19					1408		
20							
21							
22							
23							
24							
25							

Borehole Logging Form

BOREHOLE ID: BH02 SITE NAME: Warner 6-14 CLIENT NAME: PDC ENERGY
 Date Completed: 7/30/19 Location: NW of former excavation
 Drilling Company: Site services Surface Completion: Flush mount DTW: - TD: 24
 Type of Drill: CME 55 HSA Geologist: J. McFarmer Project Manager: C. Hamilton
 Bit Size: 6" Logging Method: Continuous split spoon
 Well Const. Material: Diameter: 1" Screen: Sch 40 PVC slotted .010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	17.3		SM	Brn silty sand, poorly graded, fine gr., dry, no odor
2			50%	↓		ML	↓
3			↓	87.1		ML	tan clayey silt, low plastic, dry, no odor, gray stains
4			↓	↓		ML	↓
5			↑	6.8		ML	Gray silty clay, clayey silt, low plastic, dry, slight HC odor
6			100%	↓			
7			↓	↓			
8			↓	↓			
9			↓	↓	BH02a-1 1157	ML	Same as above
10			↑	↓			
11			100%	↓			
12			↓	↓			
13			↓	↓			
14			↓	↓		ML	some black stains
15			↑	↓			Same as above
16			↓	↓			
17			100%	↓			
18			↓	↓			
19			↓	↓			
20			↓	↓			
21			↑	↓		SM	Brn silty sand, fine gr., poorly graded, dry, no odor
22			50%	↓			↓
23			↓	↓			
24			↓	↓	BH02c-24 1241	ML	Tan silt stone, dry, no odor, poor grading
25							

Jim

Jim



Borehole Logging Form

BOREHOLE ID: BH03	SITE NAME: Warner 6-14	CLIENT NAME: PDC ENERGY
Date Completed: 7/30/19	Location: SW of former excavation	
Drilling Company: Site Services	Surface Completion: Flush mount	DTW: - TD: 24'
Type of Drill: CME 55 HSA	Geologist: J. McFarmer	Project Manager: L. Hamilton
Bit Size: 6"	Logging Method: Continuous Split Spoon	
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted .010 Riser: Sch 40 PVC Blank		

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		SM	Bn silty sand, fine gr., poor grading, dry, no odor
2			100%	0.0			
3			↓	↓			
4			↓	↓			
5			↑	↑		SM	light bn silty sandy fine gr., poorly graded, dry, no odor
6			↓	↓			
7			100%	0.0			moist
8			↓	↑		ML	Bn clayey silt, low plastic, moist, no odor, some gray staining
9			↓	↓			
10			↑	↑		ML	gray clayey silt, low plastic, dry, no odor
11			↓	↓			
12			100%	↑			
13			↓	5.3			
14			↓	↓			
15			↑	4.8		ML	Same as above
16			↓	↓		ML	Same as above, dark gray
17			100%	5.7			
18			↓	2.4		ML	Same as above, bn/gray
19			↓	4.4			
20			↑	↑		ML	fine/gray gray clayey silt, low plastic, dry, no odor
21			↓	8.7			
22			75%	↑			
23			↓	12.4			
24			↓	↓			
25							

Borehole Logging Form

BOREHOLE ID: BH04 SITE NAME: Werner 6-14 CLIENT NAME: PDC ENERGY
 Date Completed: 7/31/19 Location: 5 source boring
 Drilling Company: Site Services Surface Completion: Flush mount DTW: — TD: 29'
 Type of Drill: CME55 HSA Geologist: J. McLaren Project Manager: G. Hamilton
 Bit Size: 6" Logging Method: Continuous Split spoon
 Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted .010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		SM	Brn silty sand, fine grain, poor grading dry, no odor
2			10% ↓	1.3 ↓			
3			↓	↓			
4			↓	↓		SM	Same as above, some coarse gr sand
5			↑	0.0 ↓			
6			100% ↓	0.0 ↓			
7			↓	↓			
8			↓	↓			
9			↓	↓		ML	Brn/DK brn clayey silt, low plastic, dry, no odor
10			↑	19.2 ↓			
11			100% ↓	↓		ML	Brn clayey silt, low plastic, dry, no odor
12			↓	19.9 ↓			
13			↓	4386 ↓	BH04 13-14 0904	CL	Brn/gray silty clay, low plastic, dry, no odor
14			↑	1313 ↓			Same as above
15			↑	↓			
16			100% ↓	4306 ↓		ML	DK brn clayey silt, low plastic, dry, no odor
17			↓	↓			
18			↓	4008 ↓		ML	DK gray clayey silt, low plastic, dry, no odor
19			↓	1713 ↓			
20			↑	↓		ML	light gray clayey silt, low plastic, dry, no odor
21			100% ↓	↓			
22			↓	500 ↓			
23			↓	↓			
24			↓	↓	BH04 23-24 0906		
25			↑	↑			

Borehole Logging Form

BOREHOLE ID: **BH04** SITE NAME: **Warner 6-14** CLIENT NAME: **PDC ENERGY**


Date Completed: **7/31/19** Location: **S source boring**

Drilling Company: **Site Services** Surface Completion: **Flush mount** DTW: **-** TD: **29'**

Type of Drill: **CME 55 HSA** Geologist: **J. McInerney** Project Manager: **L. Hamilton**

Bit Size **6"** Logging Method: **Continuous split spoon**

Well Const. Material: Diameter: **1"** Screen: **Sch 40 PVC Slotted .010** Riser: **Sch 40 PVC Blank**

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
26			↑ 75% ↓	↑ 1504		CL	Gray silty clay, low plastic, dry no odor
27				↓ 50.5			
28							
29					BH04@28-29 0915	LL	light brn/light gray silty clay, low plastic, dry, no odor, rust stains
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							



Borehole Logging Form

BOREHOLE ID: BH05 SITE NAME: Warner 6-14 CLIENT NAME: PDC ENERGY
 Date Completed: 7/31/19 Location: 5 of former excavation
 Drilling Company: Site Services Surface Completion: Flush mount DTW: - TD: 24'
 Type of Drill: CME55 HSA Geologist: S. McAnner Project Manager: C. Hamilton
 Bit Size 6" Logging Method: Continuous split spoon
 Well Const. Material: Diameter: 1" Screen: Sch 40 PVC slotted .010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1						SM	Bn silty sand, fine gr, poor grading, dry, no odor
2				10.0			
3			100%				
4							
5				3.8		ML	tan clayey silt, low plastic, dry, no odor
6							
7			100%				
8				2.3		ML	gray clayey silt, low plastic, dry, no odor
9				4.4		ML	dk gray clayey silt, low plastic, dry, no odor
10							
11							
12			100%	16.7		ML	gray/olive green clayey silt, low plastic, dry, no odor, some rust colored streaks
13							
14				50.0	BH05-13-14 1038	ML	dk gray clayey silt, low plastic, dry, H ₂ O odor, some black shins
15						ML	gray clayey silt, low plastic, dry, no odor, some rust-orange shins
16				190.2			
17			50%				
18							
19							
20						ML	same as above
21							
22			50%	18.1			
23							
24					BH05-23-24 1053		
25							

Borehole Logging Form

BOREHOLE ID: BH06	SITE NAME: Warner 6-14	CLIENT NAME: PDC ENERGY
Date Completed: 7/31/19	Location: SW of former excavation	
Drilling Company: Site Services	Surface Completion: Flush mount	DTW: - TD: 24
Type of Drill: CME 55 HSA	Geologist: J. McAnar	Project Manager: C. Hamlin
Bit Size: 6	Logging Method: Continuous split spoon	
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC slotted 1010 Riser: Sch 40 PVC Blank		

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		ML	light brn sandy silt, low plasticity, fine gr., dry, no odor
2			50% ↓	1.6 ↓			
3			↓	↓			
4			↓	↓			
5			↑	↑		ML	light brn clayey silt, low plasticity, dry, no odor
6			↓	↓			
7			100% ↓	↑		ML	brn clayey silt, low plasticity, dry, no odor
8			↓	2.7 ↓			
9			↓	↓			
10			↑	↑		ML	Same as above
11			↓	1.4 ↓			
12			100% ↓	↓			
13			↓	1.5 ↓			rust colored streaks
14			↓	1.7 ↓		ML	dk gray clayey silt, low plasticity, dry, no odor
15			↑	↑			
16			↓	7.4 ↓			
17			100% ↓	↓			
18			↓	↓			
19			↓	1.8 ↓		LL	dk gray silty clay, low plasticity, dry, no odor
20			↑	4.7 ↓		ML	gray clayey silt, low plasticity, dry, no odor, rust/orange stains throughout core
21			↓	↓			
22			100% ↓	↓			
23			↓	↓			
24			↓	1.6 ↓	1510602324 1222		no rust stains
25							



Borehole Logging Form

BOREHOLE ID: <u>BH06</u>	SITE NAME: <u>Warner 6-14</u>	CLIENT NAME: <u>PDC ENERGY</u>
Date Completed: <u>7/31/19</u>	Location: <u>NW of former excavation</u>	
Drilling Company: <u>Site Services</u>	Surface Completion: <u>Flush mount</u>	DTW: <u>-</u> TD: <u>24'</u>
Type of Drill: <u>CME 55 HSA</u>	Geologist: <u>J. McFarner</u>	Project Manager: <u>C. Hamilton</u>
Bit Size <u>6"</u>	Logging Method: <u>Continuous split spoon</u>	
Well Const. Material: Diameter: <u>1"</u> Screen: <u>Sch 40 PVC Slotted .010</u> Riser: <u>Sch 40 PVC Blank</u>		

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		SM	Brn silty sand, fine gr., poor grading, dry, no odor
2			60% ↓	2.2 ↓			
3			↓	↓			
4			↓	↓			
5			↑	↑		SM	light brn silty sand, fine gr., poor grading, dry, no odor
6			↓	↓			
7			100% ↓	3.9 ↓		SM	light brn / light gray silty sand, fine-coarse gr., well graded, dry, no odor
8			↓	2.8 ↓		ML	gray clayey silt, low plastic, dry, no odor
9			↓	↓			
10			↑	↑		ML	Same as above, some rust-orange + white lenses
11			100% ↓	↓			
12			↓	↑			
13			↓	3.7 ↓			
14			↓	↓			
15			↑	↑		ML	DK gray silty clayey silt, low plastic, dry, no odor
16			↓	↓			
17			100% ↓	↓			
18			↓	3.5 ↓		ML	light gray / tan clayey silt, low plastic, dry, no odor
19			↓	↓			
20			↑	↑		ML	tan sandy silt, low plastic, fine gr., dry, no odor
21			↓	↓			
22			60% ↓	↓			
23			↓	↓			
24			↓	8.8 ↓		BH06-23-24' ML 1353	gray / olive green clayey silt, low plastic, dry, no odor
25							


Borehole Logging Form

BOREHOLE ID: BH08 SITE NAME: Warner 6-14 CLIENT NAME: PDC ENERGY
 Date Completed: 7/31/19 Location: N source boring
 Drilling Company: Site Services Surface Completion: Flush mount DTW: - TD: 29
 Type of Drill: CME 55 HSA Geologist: J McArthur Project Manager: C. Hamlin
 Bit Size: 6" Logging Method: Continuous split spoon
 Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted .010 Riser: Sch 40 PVC Blank

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
1			↑	↑		SM	Brn silty sand, fine-med gr., well graded, dry, no odor
2			40% ↓	2.1 ↓			
3							
4			↓	↓			
5			↑	9.2 ↓	CL		Dk gray silty clay, low plastic, dry, no odor
6			↑	↑			
7			100% ↓	4.3 ↓	SM		Brn silty sand, fine-coarse gr., well graded, dry, no odor
8							
9			↓	↓			
10			↑	7.7 ↓	SM		Same as above, some gravel
11							
12			100% ↓	↓			
13				3.4 ↓			
14			↓	↓			
15			↑	12.6 ↓	CL		Dk Brn silty clay, low plastic, dry, no odor
16			90% ↓	↓			
17				188.3 ↓	BH08E16-17 1503	CL	Olive green / brn silty clay, low plastic, dry, no odor
18				↓			
19			↓	117.9 ↓	CL		light gray silty clay, low plastic, dry, no odor
20			↑	↑	ML		gray clayey silt, low plastic, dry, no odor
21							
22			50% ↓	107.3 ↓			
23							
24			↓	↓	BH08E23-24 1510		
25			↑	↑			

Borehole Logging Form

BOREHOLE ID: BH08	SITE NAME: Warner 6-14	CLIENT NAME: PDC ENERGY
Date Completed: 7/31/14	Location: N source boring	
Drilling Company: Site Services	Surface Completion: Flush mount	DTW: - TD: 29
Type of Drill: CME 55 HSA	Geologist: J. McNamee	Project Manager: C. Hamlin
Bit Size: 6"	Logging Method: Continuous Split Spoon	
Well Const. Material: Diameter: 1" Screen: Sch 40 PVC Slotted .010 Riser: Sch 40 PVC Blank		

Depth (feet)	Well Completion	Sample Type	% Recovery	PID (ppm)	Laboratory Sample	USCS	Description
26			↑ 90% ↓	↑ 1706 ↓		CL ↓	Gray/brn silty clay, low plastic, dry, slight HC odor
27							
28							
29					BH0828-29 1536		
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							
41							
42							
43							
44							
45							
46							
47							
48							
49							
50							