

# WELL DRILLER'S REPORT

State of Utah

## Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

### Well Identification

Non-Production Well: 1249007M00

WIN: 435966

### Owner

*Note any changes*

US Oil Sands  
Suite 950, 633 Avenue SW  
Calgary, Alberta, Canada  
T2P 2Y5

Contact Person/Engineer: BOB LEWIS

### Well Location

*Note any changes*

S 570 W 1700 from the W4 corner of section 34, Township 15S, Range 23E, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

### Drillers Activity

Start Date: JULY 13, 2012

Completion Date: AUGUST 12, 2012

Check all that apply:  New  Repair  Deepen  Clean  Replace  Public Nature of Use: MONITORING WELL

If a replacement well, provide location of new well. \_\_\_\_\_ feet north/south and \_\_\_\_\_ feet east/west of the existing well.

DEPTH (feet) FROM TO	BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0 58'	1 7/2"	CONVENTIONAL AIR ROTARY	602 Polymer
58' 1289'	9 1/2"	REVERSE CIRCULATION	602 Polymer
1289' 1900'	8 3/4"	REVERSE CIRCULATION	602 Polymer
1900' 2517'	5 3/4"	CONVENTIONAL MUD ROTARY	602 Polymer

### Well Log

DEPTH (feet) FROM TO	WATER PERMEABILITY High Low	UNCONSOLIDATED						CONSOLIDATED	ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistency, water bearing, odor, fracturing, mineralogy, texture, degree of weathering, hardness, water quality, etc.)
		CLAY	SAND	GRAVEL	COBBLES	OTHER					
										SEE ATTACHED	

**RECEIVED**  
OCT 05 2012 JH  
WATER RIGHTS  
SALT LAKE

### Static Water Level

Date AUGUST 12, 2012 Water Level 1537 feet Flowing?  Yes  No  
 Method of Water Level Measurement TRANSDUCER If Flowing, Capped Pressure N/A PSI  
 Point to Which Water Level Measurement was Referenced GROUND LEVEL Elevation \_\_\_\_\_  
 Height of Water Level reference point above ground surface 0 feet Temperature \_\_\_\_\_ degrees  C  F

**Construction Information**

DEPTH (feet)		CASING			DEPTH (feet)		<input type="checkbox"/> SCREEN	<input checked="" type="checkbox"/> PERFORATIONS	<input type="checkbox"/> OPEN BOTTOM
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
+ 2	58'	STEEL A-53 GRADE B	.375	12 3/4"	1900'	2515'	.030"	3"	6 per foot
+ 2	1900'	STEEL A-53 GRADE B	.322	6 3/8"					

Well Head Configuration: PIPE STICK UP Access Port Provided?  Yes  No  
 Casing Joint Type: WELDED Perforator Used: NO  
 Was a Surface Seal Installed?  Yes  No Depth of Surface Seal: 1900' feet Drive Shoe?  Yes  No  
 Surface Seal Material Placement Method: PUMPED VIA TRIMMIE PIPE  
 Was a temporary surface casing used?  Yes  No If yes, depth of casing: \_\_\_\_\_ feet diameter: \_\_\_\_\_ inches

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	1900'	NEAT CEMENT	565 SACKS	15# - 6 GAL. H <sub>2</sub> O
0	58'	NEAT CEMENT	37 SACKS	15# - 6 GAL H <sub>2</sub> O

**Well Development and Well Yield Test Information**

DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
7/29/12	AIRLIFT SURGE DEVELOPMENT	40	X		UNKNOWN	

**Pump (Permanent)**

Pump Description: N/A Horsepower: \_\_\_\_\_ Pump Intake Depth: \_\_\_\_\_ feet  
 Approximate Maximum Pumping Rate: \_\_\_\_\_ Well Disinfected upon Completion?  Yes  No

**Comments**

Description of construction activity, additional materials used, problems encountered, extraordinary Circumstances, abandonment procedures. Use additional well data form for more space.

THE WELL WAS NOT PUMP TESTED. THERE IS NOT A PERMANENT PUMP

**Well Driller Statement**

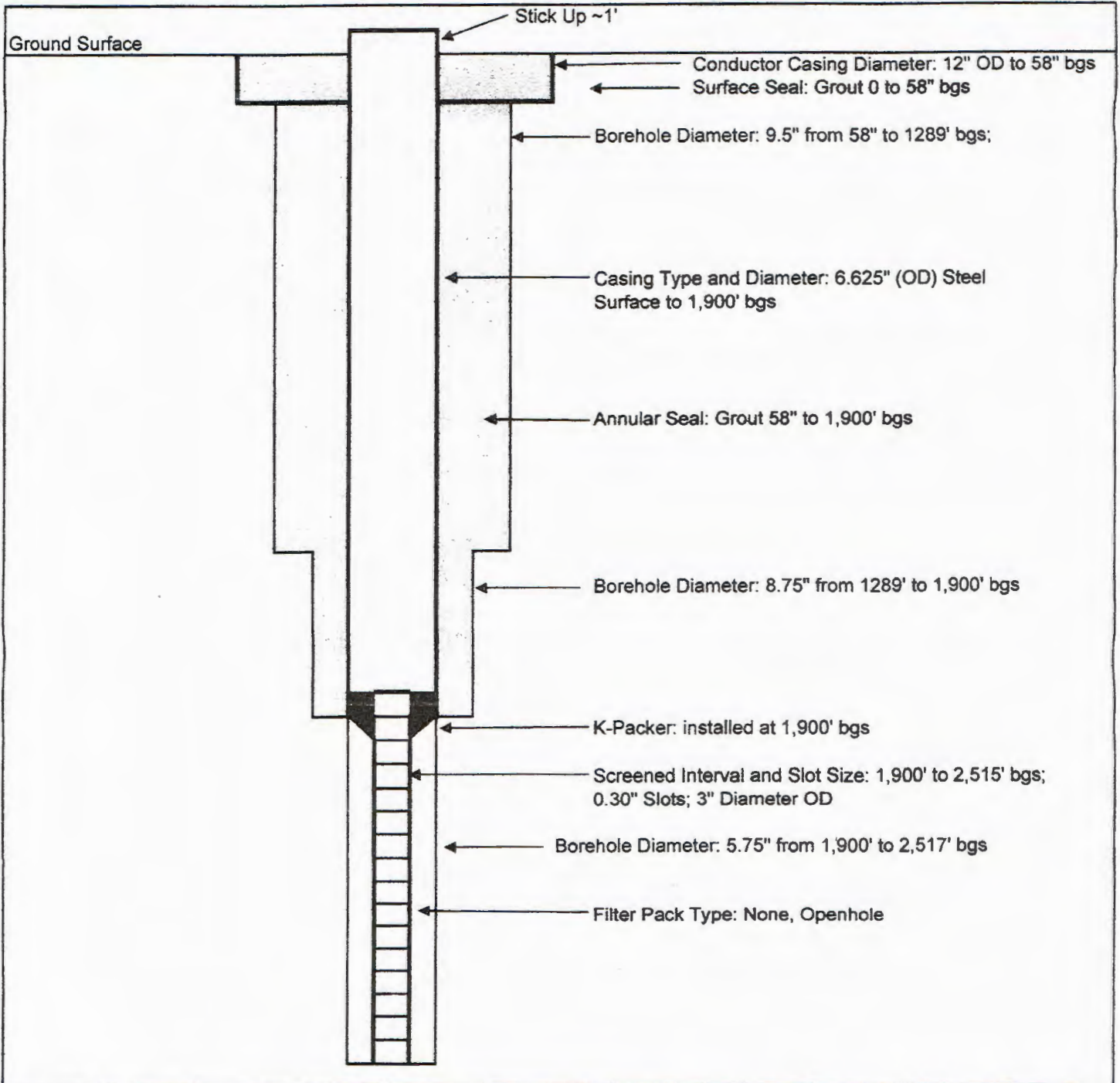
This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANY License No. 815  
 Signature [Signature] Date 9/14/2012  
(Licensed Well Driller)

AQUI-VER, Inc.  
 4800 Wadsworth Blvd, Suite 400  
 Wheat Ridge, Co 80033

**Well Schematic: USO-6**  
 (Not to Scale)

Date(s) Drilled: 7/13/12 to 7/29/12	Ground Surface Elevation:
Drilling Method: Mud Rotary	Initial Water Level: NA
Drilling Contractor: Layne	Static Water Level: ~1,537
Well Depth: 2,515'	Total Depth: 2,517'
Geologists: Nat Beal, Nick Drane	Reviewer: Bob Lewis















AQUI-VER, Inc.  
 4800 Wadsworth Blvd, Suite 400  
 Wheat Ridge, Co 80033

**Adjusted Lithologic Log of Well/Boring USO-6**

Project Name: US Oil  
 Project Location: PR Spring

Date(s) 7/13/12 to 7/29/12	Ground Surface Elevation:
Drilling Method: Mud Rotary	Initial Water Level:
Drilling Contractor: Layne	Static Water Level:
Sampling Method: Grab	Total Depth: 2,517' Well Depth: 2,515'
Geologists: N. Beal, N. Drane	Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
0	9.5" bit air rotary		
50			Not Sampled. Unknown.
100			MUDSTONE. Greenish Gray. (Gley1, 5/5GY). Some vf Grained Sand.
150			SANDSTONE with Silt (10-15%). Light Olive Brown (2.5 Y 5/4). vf - med Grained, Trace coarse Grained. Slight HCL react.
200			Becomes finer, vf grained trace coarse, Dark Greenish Gray (Gley1, 4/10GY). Becomes Dark Grayish Brown (10YR, 4/2). Strong HCL react.
250			Becomes Light Brownish Gray (10YR, 6/2). No HCL react.
300			Becomes Greenish Gray (Gley1, 5/10Y). Silt reduces to 8-10%.
350			Becomes Light Yellow Brown (2.5Y, 6/4). Silt increases to 10-15%. Strong HCL react.
400			Becomes Greenish Gray. Silt reduces to 8-10%. Strong HCL react.
400			SILTSTONE. Some vf Grained Sand (15-20%). Greenish Gray (Gley1, 5/10Y) to Olive Gray (5Y, 5/2), strong HCL react.
400			SANDSTONE
400			SILTSTONE. Same as above.
450			SANDSTONE. Light Olive Brown (2.5Y, 5/4). Vf Grained.
450			SILTSTONE. Light Olive Brown (2.5Y, 5/4).

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Adjusted Lithologic Log of Well/Boring USO-6

Project Name: US Oil  
 Project Location: PR Spring

Date(s) 7/13/12 to 7/29/12  
 Drilling Method: Mud Rotary  
 Drilling Contractor: Layne  
 Sampling Method: Grab

Ground Surface Elevation:  
 Initial Water Level:  
 Static Water Level:  
 Total Depth: 2,517' Well Depth: 2,515'

Geologists: N. Beal, N. Drane  
 Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
450			
			SANDSTONE with silt (30%). Dark Olive Gray (5Y, 3/2). Vf to f Grained.
500			Silt reduces to 20%. Olive Brown (2.5Y, 4/4) SANDSTONE. Olive Brown (2.5Y, 4/4). Vf Grained
550			Some Siltstone (20%). Olive Gray (5Y, 4/3). Trace pyrite
600			SILTSTONE. Olive Gray. Some Oolitic Limestone (10%), Dark Gray SANDSTONE. Greenish Gray (Gley1, 5/10Y), 4/2)
650			SILTSTONE. Dark Greenish Gray (Gley1, 4/5GY) Becomes Sandy (30%). Vf Grained. Strong HCL react.
700	@671' Switched to mud rotary 9.5" bit		SANDSTONE. Gray (2.5Y, 6/1). Vf to f Grained. ~ 5% Siltstone. Damp. at ~670' Strong HCL react. Becomes finer - Vf Grained.
750			MUDSTONE. No HCL React. SANDSTONE. Grayish Brown.
800			MUDSTONE. Gray (Gley1, 5/N) with Sandstone, vf grained, greenish brown. SILTSTONE. Dark Greenish Gray (Gley1, 4/5GY) Some Vfg sand (~5%). Strongly cemented with no HCL react.
850			SANDSTONE. Greenish Gray (Gley1, 6/56Y). Vf to f Grained. Some Silt (5%). SILTSTONE. Dark Greenish Gray (Gley2 4/10G). Some Mudstone (20%)
900			LIMESTONE. Brownish Gray. Oolitic/Micritic. Strong HCL react. SILTSTONE, Dark Greenish Gray (Gley1, 4/5GY)

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 Drilling Contractor: Layne  
 Sampling Method: Grab  
 Geologists: N. Beal, N. Drane

Ground Surface Elevation:  
 Initial Water Level:  
 Static Water Level:  
 Total Depth: 2,517' Well Depth: 2,515'  
 Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
900			SILTSTONE, Dark Greenish Gray (Gley1, 4/5GY) and MUDSTONE, Gray (Gley1, 7/N).
950			LIMESTONE, Gray (2.5Y, 6/1). Micritic.
1000			Silty SANDSTONE. Light Gray to Gray. 25-35% Silt. Some Clay (5%). Strong HCL react.
1050			SILTSTONE. Dark Gray (5Y, 4/1). Trace Vf grained Sand. Some Clay (5-10%) Moderate HCL react. Moderate to strong cementation.
			LIMESTONE
			MUDSTONE, SILT, CLAY. Gray (GLE1, 5/N) Trace Sand. Slight HCL react.
			LIMESTONE. White (2.5Y, 8/1). Oolitic. Strong HCL React.
			SILTSTONE. Light Brownish Gray (2.5Y, 6/2). Some Vf grained sand. Moderate HCL react.
			LIMESTONE. White (2.5Y, 8/1). Oolitic. Strong HCL React.
1100			SILTSTONE. Dark Gray (2.5Y, 4/1). 5-10% Sand. Moderate HCL React.
1150			SANDSTONE
1200			SILTSTONE/MUDSTONE. Gray. @1,198 % sand increases to 10-15% fine - Vfgr grained
			MUDSTONE. 50-60% clay, 40 to 50% silt. Trace fine sand.
1250			Silty SANDSTONE
			SILTSTONE and MUDSTONE. Interbedded. Greenish Gray. 10% fine sand.
1300	@ 1,280' Change bit (mill tooth)		Silty SANDSTONE. Dark Greenish Brown (2.5Y, 4/2). Vfgr.
	@ 1,289'		SANDSTONE. Gray (2.5YR 5/1). Coarse grained with 25% fine to med. ~5% silt. Strg HCL react.
	Change bit 8.75" button		DOLOMITE
1350			SILTSTONE. Gray (2.5Y, 5/1). Trace Sand. Slight HCL react. Well Cemented.

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Date(s) 7/13/12 to 7/29/12  
 Drilling Method: Mud Rotary  
 Drilling Contractor: Layne  
 Sampling Method: Grab  
 Geologists: N. Beal, N. Drane  
 Ground Surface Elevation:  
 Initial Water Level:  
 Static Water Level:  
 Total Depth: 2,517' Well Depth: 2,515'  
 Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
1350			SANDSTONE. Gray (2.5Y, 4/1). F-m Grained.
			Becomes Silty. Vf Grained with 30-40% Silt.
1400			SILTSTONE and MUDSTONE. Interbedded. Siltstone Gray (2.5Y 5/1), Mudstone Reddish Brown With Vf-f Sand (10-20%)
			Silty SANDSTONE. Gray (2.5Y, 6/1). Fine-med Grained.
1450			SILTSTONE. Dark Brown (7.5YR, 3/2). Some Interbedded Mudstone Greenish Gray (Gley1 5/1). Some vf Grained Sand. No HCL react.
			SANDSTONE. Gray (2.5Y, 6/1). Vf-f Grained.
1500			Becomes finer. Silty SANDSTONE. Dark Reddish Gray (5YR 4/2)
1550			MUDSTONE. Reddish Brown (5YR, 4/3). 30% Silt.
			SANDSTONE. Gray (2.5Y, 5/1). F Grained. Trace silt. Slight HCL react. Becomes Coarser (med). Moderate HCL react. Dark Gray (2.5Y 4/1).
1600			SILTSTONE/MUDSTONE. Dark Reddish Brown (5YR, 3/2). Some Vf Grained Sand (15%). Slight HCL react.
			SANDSTONE. Gray to Dark Gray. Vf-f Grained. Slight to moderate HCL react.
1650			SILTSTONE
	Slow drilling		SANDSTONE. Gray to Dark Gray. Vf-f Grained. Slight to moderate HCL react.
1750			SILTSTONE and MUDSTONE. Interbedded. Greenish Gray (Gley1, 5/1). Slight to Mod HCL react.
			SANDSTONE. Light Brownish Gray (2.5Y, 6/2). Fine Grained. Trace Silt/Clay. Slight to mod HCL react.
1800			MUDSTONE. Greenish Gray (GLE1, 6/1). Slight to mod HCL react.

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Drilling Method: Mud Rotary	Initial Water Level:
Drilling Contractor: Layne	Static Water Level:
Sampling Method: Grab	Total Depth: 2,517' Well Depth: 2,515'
Geologists: N. Beal, N. Drane	Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
1800			SANDSTONE. Gray (2.5Y, 6/1). Vf-f Grained.
1850			SILTSTONE and MUDSTONE. Interbedded. Siltstone Dark Gray (Gley1, 4/1). Mudstone Greenish Gray (Gley1, 6/1). Slight to mod HCL react.
1900	@1,900' Changed to 5.75" bit - Conventional mud circ.		SANDSTONE. Vf - m Grained. Gray (2.5Y 6/1) to Greenish Gray (Gley1 4/1).
1950			SILTSTONE
2000			SANDSTONE. Grayish Brown (2.5Y, 5/2). Vf-f Grained. Slight to mod HCL react. Becomes Silty (30%).
2050			SILTSTONE. Dark Greenish Gray (Gley1, 4/1). Slight to mod HCL react.
			SANDSTONE. Greenish Gray (Gley1, 5/1). F-m Grained. Trace Silt. Slight to Mod HCL React.
2100			SILTSTONE. Dark Grayish Brown (10YR, 4/2), Slight HCL React.
2150			SANDSTONE. Gray (2.5Y, 5/1). Vf-m Grained. Slight to Mod HCL React. Occasional Silty Intervals.
2200			SILTSTONE and MUDSTONE. Interbedded. Siltstone Dark Gray (Gley1, 4/1). Mudstone Grayish Brown (10YR, 5/2). No HCL React.
2250			










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 Project Location: PR Spring

Date(s) 7/13/12 to 7/29/12	Ground Surface Elevation:
Drilling Method: Mud Rotary	Initial Water Level:
Drilling Contractor: Layne	Static Water Level:
Sampling Method: Grab	Total Depth: 2,517' Well Depth: 2,515'
Geologists: N. Beal, N. Drane	Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
2250			Same as above.
2300			SANDSTONE and Silty SANDSTONE. Gray (Gley1, 5/ ). Vf Grained. Occasional thin Mudstone interbeds.
2350			
2400			MUDSTONE and SILTSTONE. Gray (Gley1, 5/ ). With Vfgr Sand (-20%) Slight HCL React.
2450			SANDSTONE. Dark Gray Green. Vf-coarse Grained. Brown Siltstone (10%). Less fines.
2500			MUDSTONE with vf Grained Sandstone and
2500			SILTSTONE. Dark Gray. Some Fine Sand (~10%) Becomes Sandy. 40% f-m Grained Sand
2550			END OF BOREHOLE - 2,517 Feet bgs.
2600			
2650			
2700			

# WELL DRILLER'S REPORT

State of Utah  
Division of Water Rights

For additional space, use "Additional Well Data Form" and attach

**Well Identification**

Non-Production Well: 1249008M00

WIN: 436209

**Owner**

*Note any changes*

US Oil Sands  
Suite 950, 633 6th Avenue SW  
Calgary, Alberta, Canada

Contact Person/Engineer: BOB LEWIS

**Well Location**

*Note any changes*

S 650 W 1700 from the W4 corner of section 34, Township 15S, Range 23E, SL B&M

Location Description: (address, proximity to buildings, landmarks, ground elevation, local well #)

**Drillers Activity**

Start Date: August 17, 2012 Completion Date: September 21, 2012

Check all that apply:  New  Repair  Deepen  Clean  Replace  Public Nature of Use: Water Well

If a replacement well, provide location of new well. N/A feet north/south and N/A feet east/west of the existing well.

DEPTH (feet) FROM TO		BOREHOLE DIAMETER (in)	DRILLING METHOD	DRILLING FLUID
0	60'	24"	AIR ROTARY	FOAM
60'	1000'	17 1/2	AIR HAMMER	FOAM
1000'	2549'	17 1/2	FLOODED REVERSE	Poly MGR GEL

**Well Log**

DEPTH (feet) FROM TO	WATER	PERMEABILITY	UNCONSOLIDATED							CONSOLIDATED	ROCK TYPE	COLOR	DESCRIPTION AND REMARKS (e.g., relative %, grain size, sorting, angularity, bedding, grain composition density, plasticity, shape, cementation, consistency, water bearing, odor, fracturing, mineralogy, texture, degree of weathering, hardness, water quality, etc.)
			CLAY	SAND	GRAVEL	COBBLES	BOULDER	OTHER					
													<p><b>SEE ATTACHED</b></p> <p><b>RECEIVED</b> NOV 05 2012 JH WATER RIGHTS SALT LAKE</p>

**Static Water Level**

Date: September 21, 2012 Water Level 1513' feet Flowing?  Yes  No  
 Method of Water Level Measurement TRANSDUCER If Flowing, Capped Pressure N/A PSI  
 Point to Which Water Level Measurement was Referenced Top of CASING Elevation 7881  
 Height of Water Level reference point above ground surface 2 feet Temperature \_\_\_\_\_ degrees  C  F

**Construction Information**

DEPTH (feet)		CASING			DEPTH (feet)		<input checked="" type="checkbox"/> SCREEN	<input type="checkbox"/> PERFORATIONS	<input type="checkbox"/> OPEN BOTTOM
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)
0	50	STEEL A-53 GRADE B	.375"	20"	1957	1,997	.030"	10"	WIRE WRAP
+2	1,967	STEEL A-53 GRADE B	.365	10"	2,138	2,178	.030"	10"	WIRE WRAP
1,997	2,138	STEEL A-53 GRADE B	.365"	10"	2,309	2,349	.030"	10"	WIRE WRAP
2,178	2,309	STEEL A-53 GRADE B	.365"	10"	2,419	2,499	.030"	10"	WIRE WRAP
2,349	2,419	STEEL A-53 GRADE B	.365"	10"					

Well Head Configuration: 2" STICK UP WITH A PLATE WELDED ON Access Port Provided?  Yes  No

Casing Joint Type: WELDED Perforator Used: NO

Was a Surface Seal Installed?  Yes  No Depth of Surface Seal: 60 feet Drive Shoe?  Yes  No

Surface Seal Material Placement Method: VIA TRIMMIE PIPE

Was a temporary surface casing used?  Yes  No If yes, depth of casing: \_\_\_\_\_ feet diameter: \_\_\_\_\_ inches

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)
0	1,005'	Premium Cement Type G	800 SACKS	11 LB/GAL. 12 GAL. H2O
1,005'	1,457'	Premium Cement Type IV	400 SACKS	15.8 LB/GAL 3 GAL H2O
1,457'	1,462	3/8" BENTONITE PELLETS	6 SACKS	N/A
1,462	2,550'	1/8" x 1/4" Pea GRAVEL	37 SUPER SACKS	N/A

**Well Development and Well Yield Test Information**

DATE	METHOD	YIELD	Units Check One		DRAWDOWN (ft)	TIME PUMPED (hrs & min)
			GPM	CFS		
9/18/12	CONVENTIONAL AIRLIFT	40	X		100'	48 HRS
9/21/12	Pump Test	98	X		244'	119 HRS

**Pump (Permanent)**

Pump Description: N/A Horsepower: \_\_\_\_\_ Pump Intake Depth: \_\_\_\_\_ feet

Approximate Maximum Pumping Rate: \_\_\_\_\_ Well Disinfected upon Completion?  Yes  No

**Comments**

Description of construction activity, additional materials used, problems encountered, extraordinary Circumstances, abandonment procedures. Use additional well data form for more space.

**Well Driller Statement**

This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANY

License No. 815

Signature [Signature]

Date 10/31/12

(Licensed Well Driller)

**Construction Information (con't)**

DEPTH (feet)		CASING				DEPTH (feet)		<input type="checkbox"/> SCREEN	<input type="checkbox"/> PERFORATIONS	<input type="checkbox"/> OPEN BOTTOM
FROM	TO	CASING TYPE AND MATERIAL/GRADE	WALL THICK (in)	NOMINAL DIAM. (in)	FROM	TO	SCREEN SLOT SIZE OR PERF SIZE (in)	SCREEN DIAM. OR PERF LENGTH (in)	SCREEN TYPE OR NUMBER PERF (per round/interval)	
2499	2550	5.862 A-53 GRADE B	.365"	10"						

DEPTH (feet)		SURFACE SEAL / INTERVAL SEAL / FILTER PACK / PACKER INFORMATION		
FROM	TO	SEAL MATERIAL, FILTER PACK and PACKER TYPE and DESCRIPTION	Quantity of Material Used (if applicable)	GROUT DENSITY (lbs./gal., # bag mix, gal./sack etc.)

**Comments (con't)**

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**Well Driller Statement** This well was drilled and constructed under my supervision, according to applicable rules and regulations, and this report is complete and correct to the best of my knowledge and belief.

Name LAYNE CHRISTENSEN COMPANY License No. 815  
(Person, Firm, or Corporation - Print or Type)













Signature  Date 10/31/12  
(Licensed Well Driller)

AQUI-VER, Inc.  
 4800 Wadsworth Blvd, Suite 400  
 Wheat Ridge, Co 80033

Adjusted Lithologic Log of Well/Boring USO-PW-1

Project Name: US Oil  
 Project Location: PR Spring

Date(s) Drilled: 8/17/12 to 9/17/12	Ground Surface Elevation: 7,880.9'
Drilling Method: Air & Mud Rotary	Initial Water Level: 1,540'
Drilling Contractor: Layne Christensen	Static Water Level: 1,513'
Sampling Method: Grab	Total Depth: 2,549.70' Well Depth: 2,549.70'
Geologists: Nat Beal	Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
0			
50			Not Sampled. Unknown.
100			MUDSTONE. Greenish Gray. (Gley1, 5/5GY). Some vf Grained Sand.
150			SANDSTONE with Silt (10-15%). Light Olive Brown (2.5 Y 5/4). vf - med Grained, Trace coarse Grained. Slight HCL react.
200			Becomes finer, vf grained trace coarse, Dark Greenish Gray (Gley1, 4/10GY). Becomes Dark Grayish Brown (10YR, 4/2). Strong HCL react.
250			Becomes Light Brownish Gray (10YR, 6/2). No HCL react.
300			Becomes Greenish Gray (Gley1, 5/10Y). Silt reduces to 8-10%.
350			Becomes Light Yellow Brown (2.5Y, 6/4). Silt increases to 10-15%. Strong HCL react.
400			Becomes Greenish Gray. Silt reduces to 8-10%. Strong HCL react.
400			SILTSTONE. Some vf Grained Sand (15-20%). Greenish Gray (Gley1, 5/10Y) to Olive Gray (5Y, 5/2), strong HCL react.
400			SANDSTONE
400			SILTSTONE. Same as above.
450			SANDSTONE. Light Olive Brown (2.5Y, 5/4). Vf Grained.
450			SILTSTONE. Light Olive Brown (2.5Y, 5/4).

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 Total Depth: 2,549.70' Well Depth: 2,549.70'  
 Reviewer: Bob Lewis

















Depth (ft)	Remarks	Graphic Log	Geologic Description
450			SANDSTONE with silt (30%). Dark Olive Gray (5Y, 3/2). Vf to f Grained.
500			Silt reduces to 20%. Olive Brown (2.5Y, 4/4) SANDSTONE. Olive Brown (2.5Y, 4/4). Vf Grained
550			Some Siltstone (20%). Olive Gray (5Y, 4/3). Trace pyrite
600			SILTSTONE. Olive Gray. Some Oolitic Limestone (10%), Dark Gray SANDSTONE. Greenish Gray (Gley1, 5/10Y), 4/2
650			SILTSTONE. Dark Greenish Gray (Gley1, 4/5GY) Becomes Sandy (30%). Vf Grained. Strong HCL react.
671	@671' Switched to mud rotary 9.5" bit		SANDSTONE. Gray (2.5Y, 6/1). Vf to f Grained. ~ 5% Siltstone. Damp. at ~670' Strong HCL react. Becomes finer - Vf Grained.
700			MUDSTONE. No HCL React.
750			SANDSTONE. Grayish Brown.
750			MUDSTONE. Gray (Gley1, 5/N) with Sandstone, vf grained, greenish brown.
800			SILTSTONE. Dark Greenish Gray (Gley1, 4/5GY) Some Vfg sand (~5%). Strongly cemented with no HCL react.
850			SANDSTONE. Greenish Gray (Gley1, 6/56Y). Vf to f Grained. Some Silt (5%). SILTSTONE. Dark Greenish Gray (Gley2 4/10G). Some Mudstone (20%)
900			LIMESTONE. Brownish Gray. Oolitic/Micritic. Strong HCL react.
			SILTSTONE, Dark Greenish Gray (Gley1, 4/5GY)

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 Wheat Ridge, Co 80033

Adjusted Lithologic Log of Well/Boring USO-PW-1

Project Name: US Oil  
 Project Location: PR Spring

Date(s) Drilled: 8/17/12 to 9/17/12  
 Drilling Method: Air & Mud Rotary  
 Drilling Contractor: Layne Christensen  
 Sampling Method: Grab  
 Ground Surface Elevation: 7,880.9'  
 Initial Water Level: 1,540'  
 Static Water Level: 1,513'  
 Total Depth: 2,549.70' Well Depth: 2,549.70'

Depth (ft)	Remarks	Graphic Log	Geologic Description
900			SILTSTONE, Dark Greenish Gray (Gley1, 4/5GY) and MUDSTONE, Gray (Gley1, 7/N).
950			LIMESTONE, Gray (2.5Y, 6/1). Micritic.
			Silty SANDSTONE. Light Gray to Gray. 25-35% Silt. Some Clay (5%). Strong HCL react.
1000			SILTSTONE, Dark Gray (5Y, 4/1). Trace Vf grained Sand. Some Clay (5-10%) Moderate HCL react. Moderate to strong cementation.
			LIMESTONE
			MUDSTONE, SILT, CLAY. Gray (GLE1, 5/N) Trace Sand. Slight HCL react.
1050			LIMESTONE, Light Gray (5Y, 7/1). Oolitic. Trace Fine Sand
1100			SILTSTONE, w/ Vf Grained Sand (15-20%). V Dark Greenish Gray (GLE1, 4/1) to Gray (5Y, 5/1) No - Slight HCL React. Mod - Weakly Cemented.
1150			SANDSTONE, Gray. Vf-f Grained. Some fines (5-10%). No HCL React. Weakly Cemented.
1200			Sandy SILTSTONE, Gray. Vf Grained (30-35%). Slight HCL React. Mod Cemented.
1250			SANDSTONE, Gray. Vf-f Grained. Some fines (5-10%). No - Slight HCL React. Weakly Cemented.
			SANDSTONE, Gray. Vf Grained. Some fines (~5%). No HCL React. Mod - Weakly Cemented.
1300			DOLOMITE
			Sandy SILTSTONE, Very Dark Gray (5Y, 3/1). Slight - Mod HCL React. Strongly Cemented.
			SILTSTONE, Dark Gray to Gray. Mod HCL React. Strongly Cemented.
1350			SANDSTONE, Gray. Vf Grained. Some fines (~5%). No HCL React. Mod - Weakly Cemented.

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













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Geologists: Nat Beal  
 Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
1350			As Above.
			SILTSTONE. Dark Gray to Gray. Mod HCL React. Strongly Cemented.
1400			Dark Reddish Brown (2.5 YR, 2.5/3). Strongly Cemented. No HCL React.
			Silty SANDSTONE. Gray. Vf Grained. 30-40 % Silt. Mod HCL React.
			MUDSTONE. Dark Red (2.5YR, 2.5/4). 50% Silt, 50%Clay. Slight HCL React.
1450			Silty SANDSTONE. Dark Brown (10YR, 3/3). Vf Grained. 25-30 % Silt. Mod HCL React. Mod Cemented.
1500			Becomes Dark Yellowish Brown (10YR, 4/4). No to Slight HCL React.
			Vf - Med Sand (1530' - 1545').
1550			MUDSTONE
			Silty SANDSTONE. Vf Grained. 20-25% Silt.
1600			Sandy SILTSTONE. Gray (5Y, 5/1). Vf Grained Sand (20-25%). Slight HCL React. Strongly Cemented.
			Silty SANDSTONE. Vf Grained. 20-25% Silt.
			Sandy SILTSTONE. Gray (5Y, 5/1). Vf Grained Sand (20-25%). Slight HCL React. Strongly Cemented.
1650			SANDSTONE w/ Silt (10-20%). Dark Yellowish Brown (10YR, 4/4). Vf Grained Sand. No HCL React.
1700			Becomes Pale Olive (5Y, 6/4) to Dark Gray (5Y, 4/1).
1750			SILTSTONE. Gray (5Y, 6/1). 10-15% Clay, Some Fine Sand 8-10%. Slight HCL react.
			Silty SANDSTONE. Olive Gray (5Y, 5/2). Vf Grained Sand. 25-30% Silt. Slight HCL React.
1800			MUDSTONE



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 Geologists: Nat Beal

Ground Surface Elevation: 7,880.9'  
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 Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
1800			SILTSTONE. Gray (5Y, 6/1). 10-15% Clay, Some Fine Sand 8-10%. Slight HCL react.
			MUDSTONE. Gray (5Y, 5/1). 60-70% Clay, 30-40% Silt. Mod HCL React.
			Sandy SILTSTONE. Gray (5Y, 6/1). 10-15% Clay, Some Fine Sand 20-25%. Slight HCL react.
1850			Silty SANDSTONE. Gray (5Y, 6/1). Vf Grained. 20-25% Silt. Slight HCL React.
			SILTSTONE w/ Sand (10-15%). Gray. Vf Grained. Strong HCL React.
			Silty SANDSTONE. Gray (5Y, 6/1). Vf Grained. 20-25% Silt. Slight HCL React.
			SILTSTONE w/ Sand (10-15%). Gray. Vf Grained. Strong HCL React.
1900			MUDSTONE. Dark Yellowish Brown (10YR, 4/4). 70-80% Clay, 20-30% Silt, Trace Fine Sand.
			SILTSTONE. Olive Gray (5Y, 5/2). 10-20% Clay, 10-15 % Vf Grained Sand. Mod HCL React.
			SANDSTONE. Gray (5Y, 5/1) to Olive Gray (5Y, 5/2). Vf - f Grained Sand. 5-10% Fines. Mod - Strong HCL React.
2000			Sandy MUDSTONE. Olive Gray (5Y, 4/2). 20-25% Fine Sand. No HCL React.
			SANDSTONE w/ Silt (10-15%). Gray (5Y, 6/1). Vf Grained.
			MUDSTONE. Olive Gray (5Y, 4/2). 20-30% Silt. Slight HCL React.
2050			SILTSTONE. Gray (5Y, 5/1). 10-15% Clay. Trace Fine Sand. Mod - Strong HCL React.
			MUDSTONE. Brown (10YR, 4/3). 50-60% Clay, 40-50% Silt. Mod HCL React.
			Silty SANDSTONE. Brown (10YR, 4/3). Some Vf Grained Sand (5-8%), 10-15% Clay. Mod HCL React. Becomes Gray (5Y, 6/1).
2150			Becomes Gray (5Y, 5/1). Vf Graind Sand. 20-25% Silt. % Silt decreases to 10-15%. % Silt increases to 25-30%.
			MUDSTONE. Brown (7.5YR, 4/3). 60-70% Clay, 30-40% Silt. Mod HCL React.
2250			

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Drilling Method: Air & Mud Rotary	Initial Water Level: 1,540'
Drilling Contractor: Layne Christensen	Static Water Level: 1,513'
Sampling Method: Grab	Total Depth: 2,549.70' Well Depth: 2,549.70'
Geologists: Nat Beal	Reviewer: Bob Lewis

Depth (ft)	Remarks	Graphic Log	Geologic Description
2250			Sandy SILTSTONE. Dark Gray (5Y, 4/1). 20-25% Vf Grained Sand. Mod - Strong HCL React.
2300			MUDSTONE. Gray (5Y, 6/1). 40% Silt, 60% Clay. Slight HCL React.
2350			SANDSTONE w/ Silt (15-20%). Gray (5Y, 6/1). Vf Grained Sand. Trace Fines
2400			MUDSTONE. Gray. 50% Silt, 50% Clay. Slight HCL React.
2450			Becomes Gray (5Y, 5/1). Mod HCL React. Becomes Silty (20-25% Silt). Dark Gray (5Y, 4/1) SANDSTONE. Gray (5Y, 5/1). F Grained Sand. Mod HCL React.
2500			MUDSTONE. V Dark Gray (5Y, 3/1). 60% Clay, 40% Silt. Some Fine Sand. Slight HCL React.
2550			SANDSTONE. Dark Gray (5Y, 4/1). Vf-f Grained. Slight HCL React. Becomes Gray (5Y, 5/1). VF Grained. Trace fines (2-5%). Mod Cemented.
2600			MUDSTONE. Very Dark Gray (5Y, 3/1). 70% Clay, 20% Silt, 10% Vf Grained Sand. Slight HCL React. Strong Cementation.
2650			Silty SANDSTONE. Gray (5Y, 5/1). Vf-f Grained Sand. 20-25% Silt. Slight HCL react. Mod Cemented.
2700			END OF BOREHOLE - 2,550 Feet bgs.