



# Water Well Drilling Report

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GIC Well ID 1106469

GoA Well Tag No.

Drilling Company Well ID

Date Report Received 2013/03/04

GOWN ID 990

The driller supplies the data contained in this report. The Province disclaims responsibility for its accuracy. The information on this report will be retained in a public database.

## Well Identification and Location

Owner Name	Address				Town	Province	Country	Postal Code
ALBERTA ENVIRONMENT	111-4999 98 AVE				EDMONTON	ALBERTA	CANADA	T6B 2X3
<b>Location</b>	1/4 or LSD 4	SEC 15	TWP 46	RGE 7	W of MER 5	Lot	Block	Plan
							Additional Description BUCK LAKE DEEP OBSERVATION WELL FRACKING WELL PROJECT 307076-044	
Measured from Boundary of ft from ft from	GPS Coordinates in Decimal Degrees (NAD 83) Latitude 52.960579 Longitude -114.943325 How Location Obtained Surveyed GPS <1m				Elevation 2969.02 ft How Elevation Obtained Surveyed GPS <1m			

## Drilling Information

### Method of Drilling

Rotary - Air

### Type of Work

New Well

### Proposed Well Use

Observation

Formation Log			Measurement in Imperial
Depth from ground level (ft)	Water Bearing	Lithology Description	
1.97		Black Loamy Topsoil	
2.95		Light Brown Silty Clay	
4.92		Brown Moist Till	
29.98		Brown Clay & Rocks	
35.00		Brown Clayey Till	
50.20		Brown Moist Clay & Rocks	
57.40		Brown Moist Sand & Gravel	
89.57		Brown Clayey Till	
119.75		Light Gray Fine Grained Sandstone	
122.05		Gray Dry Shale	
141.08	Yes	Light Gray Medium Grained Sandstone	
145.01		Gray Hard Shale	
160.10		Light Gray Fine Grained Sandstone	
168.31		Green Hard Shale	
187.34	Yes	Light Gray Fine Grained Sandstone	
197.51		Green Firm Shale	
261.48	Yes	Light Gray Coarse Grained Sandstone	
266.40		Gray Firm Shale	
294.29	Yes	Light Gray Fine Grained Sandstone	
295.93		Brownish Gray Firm Shale	
346.13	Yes	Light Gray Fine Grained Sandstone	
363.52		Gray Firm Shale	
368.11		Light Gray Hard Sandstone	
377.95		Gray Hard Shale	
380.58	Yes	Light Gray Fine Grained Sandstone	
390.42		Gray Firm Shale	
396.98	Yes	Light Gray Very Fine Grained Sandstone	
416.50		Gray Firm Shale	
418.00		Light Gray Fine Grained Sandstone	

Yield Test Summary					Measurement in Imperial					
Recommended Pump Rate		1.00 igpm								
Test Date		Water Removal Rate (igpm)		Static Water Level (ft)						
2013/02/16		1.09		364.20						
Well Completion					Measurement in Imperial					
Total Depth Drilled		Finished Well Depth		Start Date						
418.00 ft		408.79 ft		2013/02/06						
Borehole										
Diameter (in)		From (ft)		To (ft)						
7.88		0.00		33.00						
6.25		33.00		353.00						
5.00		353.00		418.00						
Surface Casing (if applicable)			Well Casing/Liner							
Steel			Plastic							
Size OD : 5.56 in			Size OD : 4.50 in							
Wall Thickness : 0.258 in			Wall Thickness : 0.213 in							
Bottom at : 353.51 ft			Top at : 327.13 ft							
			Bottom at : 408.79 ft							
Perforations										
From (ft)		To (ft)		Diameter or Slot Width(in)						
348.98		408.79		2.00						
				0.25						
Perforated by										
Machine										
Annular Seal										
Cement/Grout										
Placed from 0.00 ft to 353.00 ft										
Amount 26.00 Sacks										
Other Seals										
Type			At (ft)							
Driven			353.51							
K-Packer			327.13							
Screen Type										
Size OD : in										
From (ft)			To (ft)							
			Slot Size (in)							
Attachment										
Top Fittings			Bottom Fittings							
Pack										
Type			Grain Size							
Amount										

## Contractor Certification

Name of Journeyman responsible for drilling/construction of well  
DOUG SMITH

Company Name  
ASHBURN DRILLING LTD.

Certification No  
VB3650

Copy of Well report provided to owner  
Yes Date approval holder signed  
2013/03/03



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Well Identification and Location								Measurement in Imperial			
Owner Name ALBERTA ENVIRONMENT		Address 111-4999 98 AVE			Town EDMONTON		Province ALBERTA		Country CANADA	Postal Code T6B 2X3	
Location 4	1/4 or LSD 15	SEC 46	TWP 7	RGE 5	Lot	Block	Plan	Additional Description BUCK LAKE DEEP OBSERVATION WELL FRACKING WELL PROJECT 307076-044			
Measured from Boundary of ft from ft from			GPS Coordinates in Decimal Degrees (NAD 83) Latitude 52.960579 How Location Obtained Surveyed GPS <1m			Elevation 2969.02 ft How Elevation Obtained Surveyed GPS <1m					
Additional Information										Measurement in Imperial	
Distance From Top of Casing to Ground Level 36.00 in					Is Artesian Flow _____					Is Flow Control Installed _____	
Rate _____ igpm					Describe _____						
Recommended Pump Rate 1.00 igpm					Pump Installed _____			Depth _____ ft			
Recommended Pump Intake Depth (From TOC) 400.00 ft					Type _____			Make _____ H.P. _____		Model (Output Rating) _____	
Did you Encounter Saline Water (>4000 ppm TDS) Gas _____					Depth _____ ft			Well Disinfected Upon Completion Yes _____			
					Depth _____ ft			Geophysical Log Taken Electric, Gamma _____			
Remedial Action Taken					Submitted to ESRD Electric Gamma						
					Sample Collected for Potability Yes _____					Submitted to ESRD Yes _____	
Additional Comments on Well BOTTOM OF HOLE FROM 127.41 MBGS TO 124.6 MBGS WAS FILLED WITH ENVIROPLUG AND SAND CASING WAS DRIVEN FROM 107.5 MBGS TO 107.75 MBGS, A LOCKABLE CAP WAS INSTALLED ON THE TOP OF THE WELL. 2019 SURVEY UPDATED BY CAROLE HOLT LAT 52.960578775 LONG -114.943325327 BY RTN GNSS NAD 83 +/- 2 CM ELEV 904.9566M BY RTN GNSS CGVD2013 +/- 5 CM PREVIOUS LAT 52.960580 LONG -114.943320 BY HAND HELD AUTONOMOUS GPS 20 - 30 M PREVIOUS ELEV M BY NOT OBTAINED											

Yield Test			Taken From Ground Level		Measurement in Imperial																																																			
			Depth to water level																																																					
Test Date 2013/02/16	Start Time 12:40 PM	Static Water Level 364.20 ft	Pumping (ft)	Elapsed Time Minutes:Sec	Recovery (ft)																																																			
<b>Method of Water Removal</b>																																																								
Type Pump																																																								
Removal Rate 1.09 igpm																																																								
Depth Withdrawn From 396.98 ft																																																								
If water removal period was < 2 hours, explain why																																																								
<table border="1"> <tr><td>0:00</td><td>396.98</td></tr> <tr><td>1:00</td><td>387.47</td></tr> <tr><td>1:15</td><td>380.25</td></tr> <tr><td>1:45</td><td>378.28</td></tr> <tr><td>2:08</td><td>375.33</td></tr> <tr><td>2:15</td><td>373.36</td></tr> <tr><td>2:30</td><td>371.72</td></tr> <tr><td>2:45</td><td>370.08</td></tr> <tr><td>3:00</td><td>368.77</td></tr> <tr><td>3:33</td><td>368.11</td></tr> <tr><td>4:00</td><td>367.78</td></tr> <tr><td>4:30</td><td>367.78</td></tr> <tr><td>5:00</td><td>367.45</td></tr> <tr><td>6:00</td><td>367.45</td></tr> <tr><td>8:00</td><td>367.13</td></tr> <tr><td>10:00</td><td>367.13</td></tr> <tr><td>15:00</td><td>366.80</td></tr> <tr><td>18:00</td><td>366.47</td></tr> <tr><td>20:00</td><td>366.47</td></tr> <tr><td>30:00</td><td>366.47</td></tr> <tr><td>40:00</td><td>366.47</td></tr> <tr><td>50:00</td><td>366.47</td></tr> <tr><td>80:00</td><td>366.47</td></tr> <tr><td>110:00</td><td>366.14</td></tr> <tr><td>140:00</td><td>366.14</td></tr> </table>							0:00	396.98	1:00	387.47	1:15	380.25	1:45	378.28	2:08	375.33	2:15	373.36	2:30	371.72	2:45	370.08	3:00	368.77	3:33	368.11	4:00	367.78	4:30	367.78	5:00	367.45	6:00	367.45	8:00	367.13	10:00	367.13	15:00	366.80	18:00	366.47	20:00	366.47	30:00	366.47	40:00	366.47	50:00	366.47	80:00	366.47	110:00	366.14	140:00	366.14
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Water Diverted for Drilling			
Water Source TOWN OF EDSON	Amount Taken 500.00 ig	Diversion Date & Time 2013/02/06 7:00 AM	

Contractor Certification			
Name of Journeyman responsible for drilling/construction of well DOUG SMITH	Certification No VB3650		
Company Name ASHBURN DRILLING LTD.	Copy of Well report provided to owner Yes		
	Date approval holder signed 2013/03/03		