



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

Drilling Information	
<b>Method of Drilling</b> Rotary - Air	<b>Type of Work</b> New Well
<b>Proposed Well Use</b> 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
<b>Recommended Pump Rate</b>			1.00 igpm
<b>Test Date</b>	<b>Water Removal Rate (igpm)</b>	<b>Static Water Level (ft)</b>	
2013/02/16	1.09	364.20	

Well Completion				Measurement in Imperial
<b>Total Depth Drilled</b>	<b>Finished Well Depth</b>	<b>Start Date</b>	<b>End Date</b>	
418.00 ft	408.79 ft	2013/02/06	2013/02/16	
<b>Borehole</b>				
<b>Diameter (in)</b>	<b>From (ft)</b>	<b>To (ft)</b>		
7.88	0.00	33.00		
6.25	33.00	353.00		
5.00	353.00	418.00		
<b>Surface Casing (if applicable)</b>		<b>Well Casing/Liner</b>		
Steel		Plastic		
<b>Size OD :</b> 5.56 in		<b>Size OD :</b> 4.50 in		
<b>Wall Thickness :</b> 0.258 in		<b>Wall Thickness :</b> 0.213 in		
<b>Bottom at :</b> 353.51 ft		<b>Top at :</b> 327.13 ft		
<b>Bottom at :</b> 408.79 ft				
<b>Perforations</b>				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Diameter or Slot Width (in)</b>	<b>Slot Length (in)</b>	<b>Hole or Slot Interval (in)</b>
348.98	408.79	0.020	2.00	0.25
<b>Perforated by</b> Machine				
<b>Annular Seal</b> Cement/Grout				
<b>Placed from</b> 0.00 ft to 353.00 ft				
<b>Amount</b> 26.00 Sacks				
<b>Other Seals</b>				
<b>Type</b>		<b>At (ft)</b>		
Driven		353.51		
K-Packer		327.13		
<b>Screen Type</b>				
<b>Size OD :</b> _____ in				
<b>From (ft)</b>	<b>To (ft)</b>	<b>Slot Size (in)</b>		
<b>Attachment</b> _____				
<b>Top Fittings</b> _____		<b>Bottom Fittings</b> _____		
<b>Pack</b>				
<b>Type</b> _____		<b>Grain Size</b> _____		
<b>Amount</b> _____				

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



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

Additional Information										Measurement in Imperial	
<b>Distance From Top of Casing to Ground Level</b> _____ <b>36.00 in</b>											
<b>Is Artesian Flow</b> _____					<b>Is Flow Control Installed</b> _____						
<b>Rate</b> _____ <b>igpm</b>					<b>Describe</b> _____						
<b>Recommended Pump Rate</b> _____ <b>1.00 igpm</b>					<b>Pump Installed</b> _____		<b>Depth</b> _____ <b>ft</b>				
<b>Recommended Pump Intake Depth (From TOC)</b> _____ <b>400.00 ft</b>					<b>Type</b> _____	<b>Make</b> _____	<b>H.P.</b> _____	<b>Model (Output Rating)</b> _____			
<b>Did you Encounter Saline Water (&gt;4000 ppm TDS)</b> _____					<b>Depth</b> _____ <b>ft</b>		<b>Well Disinfected Upon Completion</b> <u>Yes</u>				
<b>Remedial Action Taken</b>					<b>Gas</b> _____		<b>Depth</b> _____ <b>ft</b>		<b>Geophysical Log Taken</b> <u>Electric, Gamma</u>		
					<b>Submitted to ESRD</b> <u>Electric Gamma</u>						
					<b>Sample Collected for Potability</b> <u>Yes</u>		<b>Submitted to ESRD</b> <u>Yes</u>				
<b>Additional Comments on Well</b>											
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	
			<i>Depth to water level</i>			
<b>Test Date</b>	<b>Start Time</b>	<b>Static Water Level</b>				
2013/02/16	12:40 PM	364.20 ft				
<b>Method of Water Removal</b>						
<b>Type</b> <u>Pump</u>						
<b>Removal Rate</b> _____ <b>1.09 igpm</b>						
<b>Depth Withdrawn From</b> _____ <b>396.98 ft</b>						
<b>If water removal period was &lt; 2 hours, explain why</b>						
			<b>Pumping (ft)</b>	<b>Elapsed Time</b>	<b>Recovery (ft)</b>	
				<b>Minutes:Sec</b>		
				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	

Water Diverted for Drilling		
<b>Water Source</b>	<b>Amount Taken</b>	<b>Diversion Date &amp; Time</b>
TOWN OF EDSON	500.00 ig	2013/02/06 7:00 AM

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