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> December 12, 2012 Project No. ED1285

Via E-mail Original to remain on file

Focus Corporation 300, 9925-109 Street Edmonton, Alberta T5K 2J8

ATTN: Ms. Lisa Sharun, BA, MEDes, RPP, MCIP

Planner, Land Development

RE: Proposed Woodbend Estates Area Structure plan

W1/2 25-51-26 W4M, Parkland County, Alberta

Desktop Aquifer Study Addendum Letter

Dear Ms. Sharun:

This letter provides background information and elaborates on the desktop aquifer study performed for the proposed Woodbend Estates which was initially presented in the ParklandGEO report dated November 2, 2011 (File ED1285). This is intended to provide additional data and support for the conclusions originally presented.

Hydrogeological information used in this desktop study was obtained from the Alberta Environment (AENV) water well record database, published geological and hydrogeological reports, and several other sources.

1.0 SITE DESCRIPTION

The proposed project will consist of the development of two quarter sections into a rural residential subdivision within Parkland County, Alberta. Access to the property was from Range Road 261 to the west of the site, and Township Road 514 to the south of the site.

The quarter sections consisted mostly of relatively flat agricultural land with an oil well lease site towards the north, a residence to the west, and an undeveloped low-lying area in the southwest corner of the site (Photographs 1 to 4). At the time of investigation, NW½-25-51-26-W4M had been harvested and SW½-25-51-26-W4M was an unharvested wheat field. The low-lying area in the southwest encompassed about 10 percent of the developable area. The vegetation in this area consisted primarily of native grasses, thistles, and stands of deciduous trees.

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The surrounding quarter sections generally consisted of agricultural land and undeveloped treed areas, with existing rural residential subdivisions located to the west and northwest of the property. The nearest major water body is the North Saskatchewan River located approximately 2.75 km to the east of the site.

It is understood that the proposed development will make use of private sewage disposal systems such as septic tanks and disposal fields, as applicable. If feasible, it is proposed to use the local groundwater aquifer for potable water supply.

2.0 REGIONAL GEOLOGY AND HYDROGEOLOGY

The Property is located in the Edmonton Plain region which lies north of the North Saskatchewan River (Bedrock Topography Map of the Edmonton-Calgary Corridor, Government of Alberta). Surficial soils consisting of unconsolidated quaternary deposits extend from surface to approximately 20 to 30 m. These surficial soils consist of fine sands, silts and clay deposits.

The Property is underlain largely by Lake Edmonton silts and clays, which is not expected to be a viable producing aquifer. Areas to the north and west of the Property are expected to be underlain by North Saskatchewan River alluvium consisting of some sands and gravels, which is expected to be the dominant aquifer in the area (Bedrock Topography and Surficial Aquifers of the Edmonton District, Alberta by V.A. Carlson for the Research Council of Alberta, 1967). The early North Saskatchewan River alluvium is located in a pre-glacial buried valley with water bearing sand and gravels located from approximately 40 to 70 m below surface. Although this deposit is estimated to have a capacity of between 25 and 100 igpm, the Subject Property is located on the fringes of this valley and is only estimated to have a capacity of between 5 and 25 igpm (Hydrogeology of the Southwest Segment, Edmonton Area, Alberta by W. Ceroici for the Alberta Research Council, 1979). This converts to yields between 0.19 and 0.38 m³/min for the Property and surrounding areas.

The bedrock in the area is located at an approximate elevation of 670 to 700 mASL, and the cetaceous era Wapiti Formation, which is described as alternating sandstone and mudstone with bentonitic layers and occasional coal beds (Hydrogeology of the Southwest Segment, Edmonton Area, Alberta by W. Ceroici for the Alberta Research Council, 1979).

A review of the local groundwater use was completed using Alberta Environment's groundwater well database. A total of 347 water wells are listed for the Subject Property and within two quarter section of the Property. Of these wells, approximately 66 water well records provided pump test information. Based on these records, safe well yield was calculated for nine wells, with the results showing an average Q_{20} safe yield of 0.492 m³/min. The selected well records and the yield analysis sheets are included as an attachment.



3.0 CURRENT AND PROPOSED GROUNDWATER USE

3.1 Current Use

The Province of Alberta Water Act states that each household requires a diversion of 1,250 m³/year, and that this shall not interfere with other users in the area. This equates to a water usage of 3.42 m³/day for each household, or approximately 0.024 m³/min.

From aerial photographs, it was determined that approximately 195 residences and one golf course were located within two quarter sections of the Property. Based on the average water use per household required by The Water Act, current use in the area is estimated to be approximately 0.464 m³/min, or approximately 670 m³/day.

3.2 Proposed Use

The proposed development is to include 103 new lots with an average water use of 3.42 m³/lot/day. Based on the proposed lots, it is estimated that 352 m³/day of additional water demand is proposed through the development of the subdivision. Based on this, the increase in water demand would be approximately 0.245 m³/min.

4.0 DISCUSSION AND RECOMMENDATIONS

If the proposed 103 new residential users were added to the existing water usage in the area, the total water required from the aquifer would be approximately 0.71 m³/min, which is greater than the estimated local aquifer yield of between 0.19 and 0.38 m³/min based on historical hydrogeological reports and the local groundwater well database.

Based on the number of existing wells and users in the area relying on the groundwater aquifer, it is recommended that individual cisterns water supplies or other water supply not relying on the local aquifer be utilized for the proposed development. If individual lots wish to use the existing aquifer, it is recommended that they engage a hydrogeologist to perform a full scale pump test and groundwater availability assessment on each proposed well development in order to determine the ability of the aquifer to sustain water supply to the proposed new residences.



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5.0 LIMITATIONS AND CLOSURE

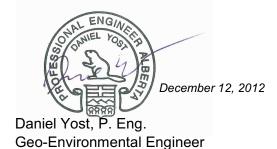
This report has been prepared for the exclusive use of **1285827 Alberta Ltd.**. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. PARKLAND GEO-ENVIRONMENTAL LTD., and The ParklandGEO Consulting Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. No other warranty, expressed or implied, is made. The General Terms and Conditions of this report are attached and should be considered part of this report.

We trust that this report meets with your current requirements. If there are any questions or comments regarding this information, please contact the undersigned at 780 / 416 - 1755.

Respectfully submitted,

PARKLAND GEO-ENVIRONMENTAL LTD.

APEGA Permit to Practice No. P - 8867



Reviewed by:

Michael McCormick, M.Eng., P.Eng. Principal Geo-Environmental Engineer

Attached: Groundwater Wells with Pump Test Information

Analysis Sheets



Government of Alberta

Government Water Well Drilling Report

View in Metric

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.

GIC Well ID GoA Well Tag No. Date Report Received

1715072

1. Well Identifi	ication a	nd Location									Measu	rement in Imperia
Owner Name SOUMAKO, F		JEDVI		dress	VP RD 512A		Town SPRUCE	SPOVE	Provinc AB	се	Postal	l Code
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Measured from				20		es in D 437710	Decimal Degrees Longitue	(NAD 83)	How	ation Elevation Ob Obtained		<u>ft</u>
2. Drilling Info	rmation											
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	Water				urement in Impe	erial	4. Well Com Total Depth 70.00 ft Borehole		shed Well Depth	Start Date 2002/06/12		rement in Imperia End Date 2002/06/12
level (ft) E	Bearing	Silty Sand	Lithology	Descriptio	n	-		eter (in) 0.00	From 0.0			To (ft) 70.00
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							From (To (ft)	Diameter	(in)	Interval (in)
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							Screen Typ	e Steel	24.00 in_		(•	,

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well DAVE SUMMERS

Company Name

SUMMERS DRILLING LTD.

Certification No 5286Q

From (ft)

42.00

Type Artificial

Amount _

Pack

Top Fittings Coupler

Attachment Attached To Casing

9.00 Yards

Copy of Well report provided to owner Date approval holder signed

To (ft)

Slot Size (in)

0.010

Bottom Fittings Other

Grain Size COARSE

Government Water Well Drilling Report

View in Metric

GIC Well ID GoA Well Tag No. Date Report Received

1715072

Well Identification and I		Jimadon on tine	o roport un	I be retained in a pub		•				Measurement in Imp
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ditional Information										Measurement in Imp
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Additional Comments of SCREEN TYPE: LOW CA		EL, FITTING	BOTTON	И: COUPLER		Sa	ample Colle			Result Attached
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SCREEN TYPE : LOW CA	RBON STEE	EL, FITTING						ected for Po	tability	
SCREEN TYPE : LOW CA Yield Test Test Date	RBON STEE	EL, FITTING		: Water Level		N		ected for Po	erial	Result Attached
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7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

DAVE SUMMERS

Company Name SUMMERS DRILLING LTD. Certification No

Government Water Well Drilling Report

View in Metric

GIC Well ID 1495278

)	I AII	jerta	d 📕	accuracy	y		tained in this report. Il be retained in a pu				isidility to	rits	GoA Well Tag N Date Report Re		
1	. Well Iden Owner Nar FORNARA	ne		tion		dress i, 51514 F	RANGE RD. 261			Town SPRUCE GR	ROVE	Pr AE	ovince 3		s <mark>urement in Imperia</mark> al Code 1B3
	Location	1/4 or SE		SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4	Lot	t	Block	Plan		nal Description EMING PARK		
	Measured i	from Bound	lary of ft fro				GPS Coordina Latitude 53 How Location Not Verified	.44310	0	imal Degrees (I Longitude		20000	Elevation How Elevation O Not Obtained		ft
2	. Drilling In Method of Rotary					oe of Wor v Well	·k					Proposed Domestic	Well Use		
3	Depth from ground	Water					surement in Imp	perial	4	1. Well Compl Total Depth D 161.00 ft Borehole		inished Well E	Depth Start Dat 2006/10/0	е	urement in Imperial End Date 2006/10/06
	level (ft) 17.00	Bearing	Brown C	Clay	Lithology	Description	on		Diameter (in) From			From (ft) 0.00		To (ft) 161.00	
	112.00 160.00 161.00		Gray Cla Gray Med Gray Sai	dium Gra	ained Sand						OD :	6.00 in		re OD : _	<u>in</u>
										Wall Thickne Bottom	_	0.500 in 155.00 ft	7	op at :	in ft ft
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											Bento	0.00 ft to	112.00 ft		(0)
									- 1		Type	`		Λ+ /	(ft)

7.	Con	tracto	r Ce	rtifica	itior

Name of Journeyman responsible for drilling/construction of well

TERRY BERGSTREISER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No

Screen Type Stainless Steel Size OD:

Top Fittings Coupler

Amount 650.00 Pounds

Attachment Attached To Casing

From (ft)

155.00

Type Washed Sand

5.00 in

To (ft)

160.00

Bottom Fittings Plug

Grain Size GRIT 3

Slot Size (in)

0.100

Copy of Well report provided to owner Date approval holder signed

Printed on 11/1/2011 9:49:21 AM Page: 1 / 2

Government Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its

View in Metric

GoA Well Tag No. Date Report Received

GIC Well ID 1495278

, , , , , , , , , , , , , , , , , , ,		The info		report will	be retained in a pub	olic databas	e.			Date Report R	eceived
1. Well Iden	tification and Lo	ocation									Measurement in Imperia
Owner Nan		000.011	Addı	ress			Town			Province	Postal Code
FORNARA	BERNARD		#36,	51514 R	ANGE RD. 261		SPRUCE	GROVE		AB	T7Y 1B3
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4			Plan		tional Description FLEMING PARK	
Measured t	rom Boundary of				GPS Coordinat	es in Dec	imal Degrees	(NAD 83)			
	ft	t from			Latitude 53.	443100	Longitu	de <u>-113.720</u>	000	Elevation	ft
	ft	t from			How Location (Obtained				How Elevation (Obtained
					Not Verified					Not Obtained	
Additional Ir	formation										Measurement in Imperia
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	n Flow				17.72 111	15	s Flow Contro	ol Installed			
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			<u>тургіі</u>								
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Recomme	nded Pump Intak	e Depth (Fr	rom TOC)		144.36 ft	Туре		/	Model		Н.Р
Did vou	Encounter Saline	Water (>40	000 ppm TDS	3)	Depth		ft	Well Disinfed	ted Upor	Completion	
,											
			Ou				- 10				
								, , ,	Submitte	110 GIC	D (1.4.)
Addition	al Comments on	Well					Sar	mple Collecte	ed for Pot	ability	Result Attached
5. Yield Tes	t						Me	easuremen	t in Impe	erial	Taken From Ground Level
Test Date		Start Time		Statio	Water Level				Dep	th to water level	
2006/10/06		12:00 AM		Static	66.80 ft			own (ft)		Elapsed Time Minutes:Sec	Recovery (ft)
Mothod o	f Water Removal	ı					66	0.80		0:00	111.55
wethou of										1:00 2:00	87.96 78.08
	Type Air					-				3:00	73.13
F	Removal Rate	19.	<u>.00 igpm</u>							4:00	70.80
Depth Wit	hdrawn From	157.	.48 ft							5:00	69.62
						- 1				6:00	68.96
If water rea	moval period was	< 2 hours,	explain why							7:00	68.60
										8:00	68.41
										9:00	68.27
										10:00	68.18
									-	12:00	68.08
									_	14:00 16:00	68.08 68.08
										20:00	68.08
										25:00	68.08
									+	30:00	68.08
										35:00	68.08
									1	40:00	68.08
									1	50:00	68.08
									1	60:00	68.08
										75:00	68.08
										90:00	68.08
										105:00	68.08
										120:00	68.08
6 Water Div	erted for Drillin	\a									
Water Soul		ig		1000	unt Taken				Divorsi	on Date & Time	
vvater Soul	C C			AIIIO	unt raken ig				Diversion	ni Date & Titile	
					.9						

7	Contractor	Certification
1.	Contractor	Certification

Name of Journeyman responsible for drilling/construction of well

TERRY BERGSTREISER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No

Government Water Well Drilling Report

View in Metric

GoA Well Tag No. Date Report Received

GIC Well ID 1495257

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.

1. Well Identif	ication and Lo	cation								Measurement in Imperial
Owner Name LEENTVAAR				lress -51514 R	ANGE RD 261	Town SPRUCE GROVE			Province AB	Postal Code T7Y 1B3
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	<i>RGE</i> 26	W of MER 4	<i>Lot</i> 31	Block 3	Plan 1891TR	Additional Description	
Measured fro		from	_		GPS Coordina Latitude 53. How Location (443100	•	(NAD 83) le <u>-113.72000</u> 0	Elevation How Elevation O Not Obtained	ftbtained

2. Drilling Information Method of Drilling Type of Work **Proposed Well Use** Rotary New Well Domestic

3	Formation	n Log	Measurement in Imperial
	Depth from ground level (ft)	Water Bearing	Lithology Description
	12.00		Brown Clay
	90.00		Gray Silty Clay
	130.00		Gray Till
	143.00		Clay & Sand
	157.00		Gray Clay
	172.00		Sand
	173.00		Shale

		NΛa	easurement in Impe
I. Well Completion Total Depth Drilled Finis	hed Well Denth		End Date
173.00 ft		2006/05/29	2006/05/29
Borehole			
Diameter (in)	From	(ft)	To (ft)
7.88	0.0		173.00
Surface Casing (if application Plastic	,	Well Casing/Line Unknown	er
Size OD :	6.00 in	Size OD) : in
Wall Thickness :	0.500 in	Wall Thickness	s:in
Bottom at : 1	65.00 ft	Top at	t:ft_
		Bottom at	t:ft
Perforations			
From (ft)	To (ft)	Diameter (in)	Interval (in)
Annular Seal Bentonite	Chips/Tablets	140.00 ft	
,	Chips/Tablets		
Annular Seal Bentonite Placed from 0. Amount Other Seals	Chips/Tablets	_	At (ft)
Annular Seal Bentonite Placed from 0.0	Chips/Tablets	_	At (ft)
Annular Seal Bentonite Placed from 0. Amount Other Seals	Chips/Tablets	_	At (ft)
Annular Seal Bentonite Placed from 0.4 Amount Other Seals Type	Chips/Tablets 00 ft to	_	At (ft)
Annular Seal Placed from 0.1 Amount Other Seals Type Screen Type Stainless Size OD: From (ft)	Chips/Tablets 00 ft to Steel 5.00 in	fft)	Slot Size (in)
Annular Seal Placed from 0.1 Amount Other Seals Type Screen Type Stainless Size OD: From (ft) 165.00	Chips/Tablets 00 ft to Steel 5.00 in To (fft)	` '
Annular Seal Placed from Amount Other Seals Type Screen Type Stainless Size OD: From (ft) 165.00 Attachment Attache	Chips/Tablets 00 ft to Steel 5.00 in To (170 ed To Casing	(ft) 000	Slot Size (in) 0.010
Annular Seal Placed from 0.1 Amount Other Seals Type Screen Type Stainless Size OD: From (ft) 165.00	Chips/Tablets 00 ft to Steel 5.00 in To (170 ed To Casing	fft)	Slot Size (in) 0.010
Annular Seal Placed from Amount Other Seals Type Screen Type Stainless Size OD: From (ft) 165.00 Attachment Attache	Chips/Tablets 00 ft to Steel 5.00 in To (170 ed To Casing	(ft) 000	Slot Size (in) 0.010
Annular Seal Placed from Amount Other Seals Screen Type Stainless Size OD: From (ft) 165.00 Attachment Top Fittings Couple	Chips/Tablets OO ft to Steel 5.00 in To (170 ed To Casing	(ft) 000	Slot Size (in) 0.010

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

TERRY BERGSTREISER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No

Copy of Well report provided to owner Date approval holder signed

Printed on 11/1/2011 9:48:44 AM Page: 1 / 2

Government Water Well Drilling Report

View in Metric

The driller supplies the data contained in this report. The Province disclaims responsibility for its

1495257

GIC Well ID GoA Well Tag No.

accuracy. The information on this report will be retained in a public database. Date Report Received 1. Well Identification and Location Measurement in Imperial Owner Name Province Postal Code Address Town LEENTVAAR, HUGO #31-51514 RANGE RD 261 SPRUCE GROVE T7Y 1B3 AB Location 1/4 or LSD SEC TWP RGE W of MER Block Additional Description 051 26 31 1891TR GPS Coordinates in Decimal Degrees (NAD 83) Measured from Boundary of Latitude 53.443100 Longitude -113.720000 Elevation ___ ft from How Location Obtained How Elevation Obtained ft from Not Verified Not Obtained Additional Information Measurement in Imperial Distance From Top of Casing to Ground Level 15.75 in Is Artesian Flow Is Flow Control Installed Rate Describe igpm Recommended Pump Rate 20.00 igpm Pump Installed ft Recommended Pump Intake Depth (From TOC) 137.79 ft H.P. ft Well Disinfected Upon Completion Did you Encounter Saline Water (>4000 ppm TDS) Depth Depth ft Geophysical Log Taken Submitted to GIC _____ Additional Comments on Well Sample Collected for Potability _____ Result Attached _ FILTER PACK WASHED. WELL LOCATION FLEMING PARK 5. Yield Test Measurement in Imperial Taken From Ground Level Depth to water level Test Date Start Time Static Water Level Drawdown (ft) Elapsed Time Recovery (ft) 2006/05/29 12:00 AM 72.18 ft Minutes:Sec 0:00 111.55 Method of Water Removal 1:00 91.57 2:00 78.77 Type Air 3:00 77.46 Removal Rate 20.00 igpm 4:00 76.05 Depth Withdrawn From 167.32 ft 5:00 75.53 6:00 75.43 If water removal period was < 2 hours, explain why 7:00 75.36 8:00 75.36 9.00 75.33

6. Water Diverted for Drilling			
Water Source	Amount Taken	Diversion Date & Time	
	ig		

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

TERRY BERGSTREISER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No.

Copy of Well report provided to owner Date approval holder signed

10:00

12:00

75.33 75.30

Government Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its

View in Metric

GIC Well ID

296997

GoA Well Tag No.
Date Report Received

		The info	rmation on thi		Date Report Received 2001/06/14							
. Well Identi	fication and Lo	cation									Measurement in I	mperial
Owner Name OSWALD, S		dress 8 8 ST, N	ISKU		Town			Province	Postal Code T9E 7Z2			
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4	Lot 32	Block	Plan	Add	ditional Description		
Measured fro	om Boundary of				GPS Coordinates in Decimal Degrees (NAD 83)			(NAD 83)				
	ft	from			Latitude 53.	.443092	Longitud	de <u>-113.71967</u>	0	Elevation	ft	
	ft	from			How Location	Location Obtained				How Elevation Obtained		
					Not Verified					Not Obtained		

2. Drilling Information Method of Drilling Type of Work **Proposed Well Use** Rotary New Well

3	. Formation	n Log	Measurement in Imperial
	Depth from ground level (ft)	Water Bearing	Lithology Description
	19.00		Brown Clay
	69.00		Gray Silty Clay
	122.00		Gray Sandy Clay
	154.00		Clay & Sand
	190.00		Gray Coarse Grained Sand
	195.00		Sand
	196.00		Gravel

		Domestic			
4	1. Well Completion			Meas	surement in Imperia
ı	Total Depth Drilled	Finished Well Dept	h Start Date		End Date
ı	196.00 ft		2001/06/2	1	2001/06/21
ı	Borehole				
ı	Diameter (in)		n (ft)		To (ft)
ı	0.00		00	, .	196.00
	Surface Casing (if ap Plastic	рисавіе)	Well Casing/	Liner	
ı	Size OD:	6.00 in	Size	OD:	0.00 in
ı	Wall Thickness :	0.500 in	Wall Thickr	ness:	0.000 in
ı	Bottom at :	190.00 ft	To	p at : _	0.00 ft
ı			Bottoi	n at : _	0.00 ft
ı	Perforations	_ (2)			
ı	From (ft)	To (ft)	Diameter	(in)	Interval (in)
		onite Chips/Tablets 0.00 ft to		-	
ı	Тур	ре		At	(ft)
	Screen Type Stair Size OD:	nless Steel 4.00 in			
ı	From (ft)		(ft)		Slot Size (in)
ı	190.00		5.00		0.010
ı		tached To Casing			
ı	Top Fittings <u>Co</u>	oupler	Bottom Fitt	ings <u>F</u>	Plug
ı	Pack				
	Type Washed Sa	nd	Grain Size	.275	
	Amount 900	.00 Pounds	-		
_					

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No

Government Water Well Drilling Report

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.

View in Metric

GIC Well ID

296997

GoA Well Tag No.
Date Report Received 2001/08/14

1. Well Ident	ification and Lo	cation									Measurement in Imperia
Owner Nam			Addre				Town			Province	Postal Code
OSWALD, S	SHAWN		2308	8 ST, NIS	SKU						T9E 7Z2
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4	32	Block	Plan	Add	itional Description	
Measured fi	rom Boundary of	f			GPS Coordinat		_		670	Elevation	ft
		from			How Location (How Elevation (
	ft	from			Not Verified	Dotairied				Not Obtained	obtained
Additional In	formation								l		Measurement in Imperia
Distance F	rom Top of Casin	g to Groun	d Level		in						
Is Artesiai	n Flow					Is	Flow Contro	ol Installed			
	Rate										
Recommer	nded Pump Rate				20.00 igpm	Pump	Installed Ye				ft
Recommer	nded Pump Intake	Depth (Fr	om TOC)		115.00 ft	Туре	SUB		Model		H.P. <u>.75</u>
Did you E	Encounter Saline	Water (>40	000 ppm TDS))	Depth		ft	Well Disinfed	ted Upor	n Completion	
				3							
					_ · -				suhmitte.	d to GIC	
Addition	al Comments on \	Noll					Sor	mala Callaata	od for Do	tobility	Result Attached
l			4.700.05.04	OINIO TO	00011100151	EL 05.014		•		ability	Nesult Attached
DRILLER	REPORTS DISTA	NCE FROI	VI TOP OF CA	ASING TO	GROUND LEV	EL: 35 CIVI	S. FLEMING	PARK EST	•		
5. Yield Test							Me	easuremen			Taken From Ground Leve
Test Date	S	Start Time		Static V	Vater Level					th to water level	
2001/06/21	1	2:00 AM			67.00 ft		Drawde	own (ft)		Elapsed Time Minutes:Sec	Recovery (ft)
88-411	Mater Demonst									0:00	91.90
Wethod of	Water Removal					-				1:00	81.04
	Type Air									2:00	71.72
R	emoval Rate	21.	00 igpm			-				3:00	69.42
	hdrawn From					-				4:00 5:00	68.44
		0.				<u> </u>			_	6:00	68.04
If water rer	noval period was	< 2 hours	explain why							7:00	67.91
	porrou muo	,								8:00	67.91
										9:00	67.91
										10:00	67.88
										12:00	67.85
										14:00	67.85
6 Water Div	erted for Drilling	7									
Water Sour	•	9		Amous	nt Taken				Diversi	on Date & Time	
valer 30ur				AIIIOUI	ig				וסויסוים	on bate & fille	
					.9						

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

MAR-WAYNE WATER WELL DRILLING SERVICES LTD.

Certification No

Government Water Well Drilling Report

View in Metric

GIC Well ID

289029

of Alb	erta 🗖	The dril accurac The info	oonsibility for its	s GoA Well Tag No.			1998/05/28						
1. Well Identif	ication and Lo	cation									Meas	surement in Ir	nperial
Owner Name HAARSMA, G				dress 1 199 ST,	EDMONTON		Town			Province		tal Code 6E8	
Location	1/4 or LSD NE	SEC 25	<i>TWP</i> 051	RGE 26	W of MER 4	Lot	Block	Plan	Addi	itional Description			
Measured fro		rom			GPS Coording Latitude 53 How Location Not Verified	3.435847	O	(NAD 83) de <u>-113.69522</u> 4	4	Elevation How Elevation O Not Obtained	btained	ft	
2 Drilling Info	rmation												

Method of Drilling Type of Work **Proposed Well Use** Rotary New Well

3.	. Formatio	n Log	Measurement in Imperial
	Depth from ground level (ft)	Water Bearing	Lithology Description
	18.00		Yellow Sandy Clay
	104.00		Blue Sandy Clay
	162.00		Sand
	170.00		Gray Shale

. Well Completion			Measurement in Impe
	Finished Well Depth	Start Date	End Date
170.00 ft		1998/04/21	1998/04/21
Borehole			
Diameter (in)	From	(ft)	To (ft)
0.00	0.0	0	170.00
Surface Casing (if ap Plastic	oplicable)	Well Casing/L	iner
Size OD:	6.00 in	Size	OD: 0.00 in
Wall Thickness:	0.390 in	Wall Thickne	ess: 0.000 in
Bottom at :	158.00 ft	Top	o at : 0.00 ft
		Bottom	n at : 0.00 ft
Perforations			
From (ft)	To (ft)	Diameter (in) Interval (in)
Annular Seal Bent	•	102.00 #	
Annular Seal Bent	tonite Chips/Tablets 0.00 ft to		
Annular Seal Bent Placed from Amount Other Seals	0.00 ft to		At (ft)
Annular Seal Bent Placed from Amount	0.00 ft to		At (ft)
Annular Seal Bent Placed from Amount Other Seals	0.00 ft to		At (ft)
Annular Seal Bent Placed from Amount Other Seals Type Screen Type Stair	0.00 ft to		At (ft)
Annular Seal Bent Placed from Amount Other Seals Screen Type Stair Size OD: From (ft)	oe less Steel 5.00 in To (ft)	Slot Size (in)
Annular Seal Bent Placed from Amount Other Seals Screen Type Stair Size OD: From (ft) 158.00	0.00 ft to	ft) 00	
Annular Seal Placed from Amount Other Seals Screen Type Stair Size OD: From (ft) 158.00 Attachment At	o.00 ft to	ft) 00	Slot Size (in) 0.010
Annular Seal Placed from Amount Other Seals Screen Type Stair Size OD: From (ft) 158.00 Attachment At	0.00 ft to	ft) 00	Slot Size (in) 0.010
Annular Seal Placed from Amount Other Seals Screen Type Stair Size OD: From (ft) 158.00 Attachment At	o.00 ft to	ft) 00	Slot Size (in) 0.010
Annular Seal Placed from Amount Other Seals Screen Type Stair Size OD: From (ft) 158.00 Attachment Att Top Fittings Co	o.00 ft to	ft) 00 Bottom Fittii	Slot Size (in) 0.010 ngs Plug

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

D&D WATER WELL DRILLING & SERVICING LTD.

Certification No

Government Water Well Drilling Report

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.

View in Metric

GIC Well ID

289029

GoA Well Tag No.
Date Report Received 1998/05/28

Owner Nam		ocation									Measurement in Imperia
HAARSMA,	-		Add 871		EDMONTON		Town		1	Province	Postal Code T5T 6E8
Location	1/4 or LSD NE	SEC 25	<i>TWP</i> 051	RGE 26	W of MER 4	Lot	Block	Plan	Addit	tional Description	
Measured fi		from from			GPS Coordina Latitude 53. How Location Not Verified	435847	_		224	Elevation How Elevation C	ft Obtained
Additional In	formation										Measurement in Imperia
	rom Top of Casin n Flow Rate				•	Is	Flow Contro	ol Installed Describe			
	nded Pump Rate				5.00 igpm	Pump	Installed			Depth	ft
Recommer	nded Pump Intake	e Depth (Fro	om TOC)		140.00 ft	Туре		^	Nodel		Н.Р.
Did you E	Encounter Saline	Water (>400			Depth _ Depth _			Geophy	ysical Log		
Additiona	al Comments on	Well					Saı				Result Attached
	al Comments on REPORTS DISTA		1 TOP OF C	ASING TO) GROUND LEV	'EL: 30 CM					
DRILLER F	REPORTS DISTA	ANCE FROM	1 TOP OF C			'EL: 30 CM	1.		t in Impe	ability	
DRILLER F	REPORTS DISTA		1 TOP OF C		O GROUND LEV Water Level 89.00 ft	'EL: 30 CM	1. M	mple Collecte	t in Impe	rial	Result Attached
5. Yield Test Test Date 1998/04/21 Method of	Water Removal Type Air Pemoval Rate	Start Time 12:00 AM	igpm	Static \	Water Level	'EL: 30 CM	1. M	mple Collecte	t in Impe	rial h to water level clapsed Time Winutes: Sec 0:00 1:00 2:00 3:00 4:00	Result Attached Recovery (ft) 116.57 98.00 92.52 90.68 89.99
5. Yield Test Test Date 1998/04/21 Method of R Depth With	REPORTS DISTA	Start Time 12:00 AM	igpm 00 ft	Static \	Water Level	TEL: 30 CM	1. M	mple Collecte	t in Impe	rial th to water level clapsed Time Winutes: Sec 0:00 1:00 2:00 3:00	Result Attached

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

D&D WATER WELL DRILLING & SERVICING LTD.

Certification No

Government Water Well Drilling Report

View in Metric

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.

GIC Well ID 286934

GoA Well Tag No. Date Report Received 1997/03/20

1. Well Identif Owner Name FINDLAY, ED		cation		dress 1514 RNG	S 261, SPRUCE G	ROVE	Town			Province	Measurement in Ir Postal Code T7Y 1B3	nperial
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4	Lot 2	Block	Plan	Add	ditional Description		
Measured fro		from			GPS Coordinate Latitude 53.4 How Location Country Not Verified	443092	•	(NAD 83) le -113.7196	70	Elevation How Elevation O	ft btained	
2. Drilling Info	rmation											

Method of Drilling Type of Work **Proposed Well Use** Rotary New Well

느			
3	. Formation	n Log	Measurement in Imperial
	Depth from ground level (ft)	Water Bearing	Lithology Description
	11.00		Yellow Clay
	79.00		Blue Sandy Clay
	89.00		Sand
	111.00		Blue Sandy Clay
	124.00		Fine Grained Sand
	127.00		Blue Sandy Clay
	142.00		Coarse Grained Sand
	146.00		Blue Clay
L	150.00		Gray Shale

	Domestic		
4. Well Completion		N	leasurement in Imperial
Total Depth Drilled	Finished Well Depth	Start Date	End Date
150.00 ft		1997/02/13	1997/02/13
Borehole			
Diameter (in)	From		To (ft)
0.00 Surface Casing (if a	0.00		150.00
Plastic	орисавіе) і	Nell Casing/Lir	ier
Size OD :	6.00 in	Size O	D: 0.00 in
Wall Thickness:	0.395 in	Wall Thicknes	ss: 0.000 in
Bottom at :	137.00 ft	Тора	at: 0.00 ft
		Bottom a	at: 0.00 ft
Perforations	- (6)		
From (ft)	To (ft)	Diameter (in	n) Interval (in)
	tonite Chips/Tablets 0.00 ft to	127.00 ft	
Ту	oe		At (ft)
Screen Type Stair	nless Steel 5.00 in		
From (ft)	To (f	,	Slot Size (in)
137.00	142.0	00	0.012
	tached To Casing		
Top Fittings C	oupler	Bottom Fitting	gs Plug
Pack			
Type Washed Sa		Grain Size	
Amount 1400	0.00 Pounds		

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

D&D WATER WELL DRILLING & SERVICING LTD.

Certification No

Copy of Well report provided to owner Date approval holder signed

Printed on 11/1/2011 9:51:15 AM Page: 1 / 2

Government Water Well Drilling Report

The driller supplies the data contained in this report. The Province disclaims responsibility for its

View in Metric

GIC Well ID

286934

GoA Well Tag No.
Date Report Received 1997/03/20

JI AID	Gita			s report will	be retained in a pub	olic database				Report Re	eceived 1997/03/20
1. Well Identif	fication and Lo	cation									Measurement in Imperia
Owner Name FINDLAY, EI				lress I514 RNG	Town RNG 261, SPRUCE GROVE					•	Postal Code T7Y 1B3
Location	1/4 or LSD SE	SEC 35	<i>TWP</i> 051	RGE 26	W of MER 4	Lot 2	Block	Plan	Additional De	escription	
Measured fro		from from	_		GPS Coordinate Latitude 53. How Location Country Not Verified	443092			How E	tion Elevation (btained	
Additional Info	ormation								•		Measurement in Imperia
Is Artesian	om Top of Casin Flow Rate				in		Flow Contro				
Recommend Recommend	ded Pump Rate ded Pump Intake	e Depth (Fro	om TOC)		5.00 igpm 90.00 ft	Pump Type	Installed		Model	Pepth	ft
Additiona	l Comments on \	Well	Gá	as			ft Sa.	Geopl	Submitted to GIC		Result Attached
5. Yield Test							M	easuremer	nt in Imperial	or loval	Taken From Ground Leve
Test Date 1997/02/13		Start Time 12:00 AM		Static	Water Level 63.00 ft		Drawd	own (ft)	Depth to wate Elapsed ⁵ Minutes:	Гіте	Recovery (ft)
Re	emoval Rate		igpm			-			0:00 1:00 2:00 3:00 4:00		105.15 90.65 81.30 74.64 70.01
	drawn From					_			5:00 6:00 7:00 8:00 9:00 10:00)	67.19 65.49 64.47 63.91 63.58 63.42 62.99
6. Water Dive	erted for Drilling	g		Атог	<i>ınt Taken</i> ig	•			Diversion Date 8		

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

UNKNOWN NA DRILLER

Company Name

D&D WATER WELL DRILLING & SERVICING LTD.

Certification No

Government Water Well Drilling Report

View in Metric

GIC Well ID GoA Well Tag No.

1715074

of All	berta	The driller supplies the data contained in this report. The Province disaccuracy.	sclaims respons	sibility for its

The information on this report will be retained in a public database.					base. Date Report Received							
1. Well Identi Owner Name WOLOSHYN	-	cation		dress 13 - RGE	RD 262		Town SPRUCE (GROVE		Province AB	Measurement in Im Postal Code T7Y 1B4	perial
Location	1/4 or LSD SE	SEC 26	<i>TWP</i> 051	RGE 26	W of MER 4	Lot 2	Block	Plan 5661RS	Addit	ional Description		
Measured fro		from from	_		GPS Coordinat Latitude 53. How Location (Not Verified	428600	· ·	(NAD 83) de113.72000	00	Elevation How Elevation Or Not Obtained	ft btained	
2. Drilling Info			Тур	e of Worl	k			P	roposed	I Well Use		
Rotary			Nev	v Well		·	4 144 11 0		omestic			
Formation	Log			ivleasi	urement in Impe	eriai	4. Well Com	oletion			Measurement in Im	perial

3. Formation Log			Measurement in Imperial
	Depth from ground level (ft)	Water Bearing	Lithology Description
	12.00		Silt
	86.00		Clay & Silt
	140.00		Sand
	167.00		Coarse Grained Sand

Measurement in Imperial			
Diameter (in)	1. Well Completion	Measu	urement in Imperial
Diameter (in)	Total Depth Drilled Finished Well Depth	Start Date	End Date
Diameter (in)	167.00 ft	2002/03/22	2002/03/23
T.88	Borehole		
Surface Casing (if applicable) Well Casing/Liner Unknown Size OD : 6.00 in Size OD : in Wall Thickness : 0.390 in Wall Thickness : in Bottom at : 162.00 ft Top at : ft Bottom at : ft	Diameter (in) From	(ft)	To (ft)
Plastic	7.88 0.0	00	167.00
Wall Thickness:	Plastic	Unknown	
Bottom at :	Size OD: 6.00 in	Size OD:	in
Perforations	Wall Thickness: 0.390 in	Wall Thickness :	in
Perforations From (ft) To (ft) Diameter (in) Interval (in) Perforated by Unknown Annular Seal Bentonite Chips/Tablets Placed from	Bottom at : 162.00 ft	Top at :	ft
From (ft) To (ft) Diameter (in) Interval (in) Perforated by Unknown Annular Seal Bentonite Chips/Tablets Placed from 0.00 ft to 150.00 ft Amount Other Seals Type At (ft) Screen Type Stainless Steel Size OD: 4.00 in From (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug		Bottom at :	ft
Perforated by Unknown Annular Seal Bentonite Chips/Tablets Placed from 0.00 ft to 150.00 ft Amount Other Seals Type At (ft) Screen Type Stainless Steel Size OD: 4.00 in From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug			
Annular Seal Bentonite Chips/Tablets Placed from 0.00 ft to 150.00 ft Amount Other Seals Type At (ft) Screen Type Stainless Steel Size OD: 4.00 in From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	From (ft) To (ft)	Diameter (in)	Interval (in)
Screen Type Stainless Steel Size OD: 4.00 in From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	Amount	150.00 ft	
Screen Type Stainless Steel Size OD: 4.00 in From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	Tyne	Λ+ ('ft)
Size OD:4.00_ in From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	Туре	At (iti
From (ft) To (ft) Slot Size (in) 162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	Screen Type Stainless Steel		
162.00 167.00 0.012 Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	Size OD : 4.00 in		
Attachment Attached To Casing Top Fittings Coupler Bottom Fittings Plug	From (ft) To	(ft)	Slot Size (in)
Top Fittings Coupler Bottom Fittings Plug	162.00 167	7.00 0.012	
	Attachment Attached To Casing		
Pack	Top Fittings Coupler	Bottom Fittings Pl	ug
	Pack		
Type Artificial Grain Size COARSE	Type Artificial	Grain Size COAR	<u>SE</u>
Amount 3000.00 Pounds	Amount 3000.00 Pounds		

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well DAVE SUMMERS

Company Name

SUMMERS DRILLING LTD.

Certification No

Government Water Well Drilling Report

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.

View in Metric

GIC Well ID GoA Well Tag No. Date Report Received

1715074

1. Well Identif	fication and Lo	cation									Measurement in Imperial
Owner Name			Ada	Iress			Town			Province	Postal Code
WOLOSHYN	I, PETE		514	13 - RGE	RD 262		SPRUCE	GROVE		AB	T7Y 1B4
Location	1/4 or LSD SE	SEC 26	<i>TWP</i> 051	RGE 26	W of MER	Lot 2	Block	Plan 5661RS	Addi	tional Description	
Measured fro		from from			GPS Coordinate Latitude 53. How Location (Not Verified	428600	•	s (NAD 83) ude <u>-113.7200</u>	000	Elevation How Elevation C	ft Dbtained
Additional Info	ormation										Measurement in Imperial
Is Artesian	om Top of Casin Flow Rate				12.00 in	Is	s Flow Contr	rol Installed Describe			
Recommend	ded Pump Rate		_		10.00 igpm	Pump	Installed Y	es		Depth	ft
Recommend	ded Pump Intake	e Depth (Fr	om TOC)		120.00 ft	Туре	SUB @ 12	.0' M	1odel		Н.Р
	l Comments on \			S) as			ft	Geophy S	vsical Log Submitted	d to GIC	Result Attached
5. Yield Test							N	Measurement	in Impe	erial	Taken From Ground Level
		D4		04-41-	14/					th to water level	
Test Date 2002/03/23		Start Time 12:00 AM		Static	Water Level 26.00 ft		Drawo	down (ft)		Elapsed Time Minutes:Sec	Recovery (ft)
14-41-61	Water Removal									0:00	120.00
wethod of t										1:00 2:00	76.00 56.00
_						-				3:00	47.00
	emoval Rate									4:00	36.00
Depth With	drawn From	120.	00 ft							5:00	32.00
15		0.1								6:00	27.00
If water rem	oval period was	< 2 hours,	explain why							7:00	26.00
6. Water Dive	erted for Drillin	q									
Water Source				Amo	unt Taken ig				Diversion	on Date & Time	

7. Contractor Certification

Name of Journeyman responsible for drilling/construction of well

DAVE SUMMERS

Company Name

SUMMERS DRILLING LTD.

Certification No



Slug Test Analysis Report

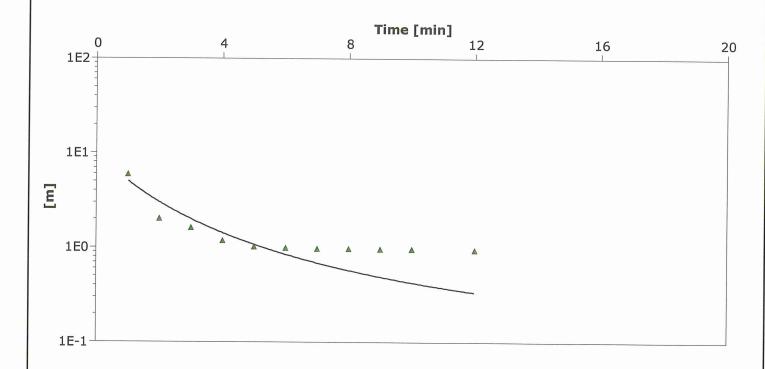
Project: Focus ASP

Number: ED1285

Client: 1285827 Alberta Ltd.

Location: Near Devon, AB Slug Test: Well 1495257		Test Well: Well 3
Test Conducted by:		Test Date: 8/11/2011
Analysis Performed by: New analysis 1		Analysis Date: 8/11/2011
A		

Aquifer Thickness: 4.58 m



Observation Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
	[m²/d]	[m/d]		
Well 3	8.36 × 10 ⁰	1.83 × 10 ⁰	2.64 × 10 ⁻²	
Well 3			2.64 × 10 ⁻²	



Slug Test Analysis Report

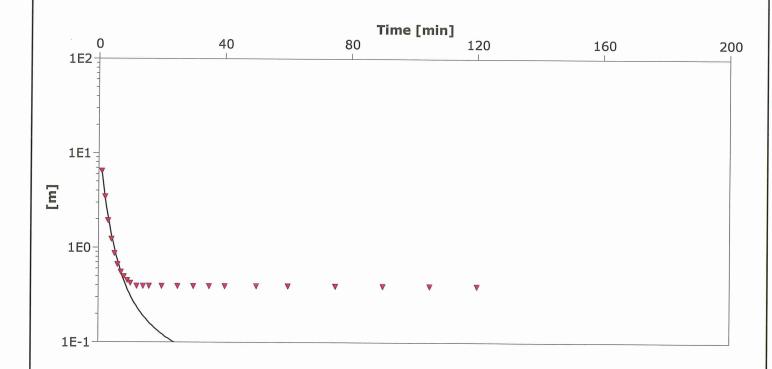
Project: Focus ASP

Number: ED1285

Client: 1285827 Alberta Ltd.

Location: Near Devon, AB	Slug Test: Well 1495278	Test Well: Well 4			
Test Conducted by:	Test Date: 8/11/2011				
Analysis Performed by:	New analysis 1	Analysis Date: 8/11/2011			
A 15 THE 44 CO					

Aquifer Thickness: 14.63 m



Observation	Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
		[m²/d]	[m/d]		
Well 4		9.53 × 10 ⁰	6.51 × 10 ⁻¹	5.64 × 10 ⁻⁴	



Slug Test Analysis Report

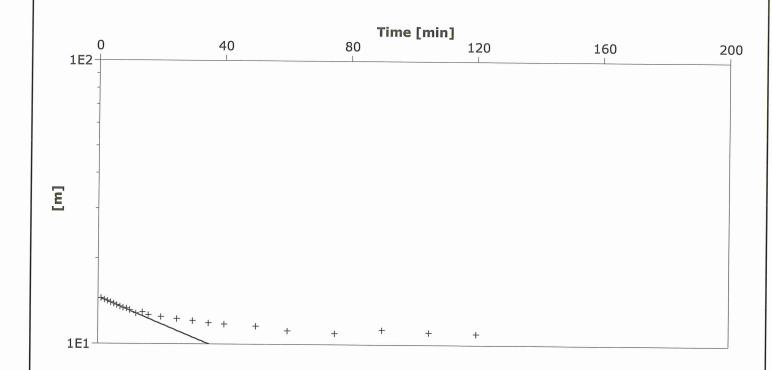
Project: Focus ASP

Number: ED1285

Client: 1285827 Alberta Ltd.

Location: Near Devon, AB	Slug Test: Well 1715072	Test Well: Well 5
Test Conducted by:		Test Date: 8/11/2011
Analysis Performed by:	New analysis 1	Analysis Date: 8/11/2011

Aquifer Thickness: 2.44 m



	Observation Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
		[m²/d]	[m/d]		
	Well 5	2.44 × 10 ¹	9.98 × 10 ⁰	3.43 × 10 ⁻²⁹	
- 1					



Slug Test Analysis Report

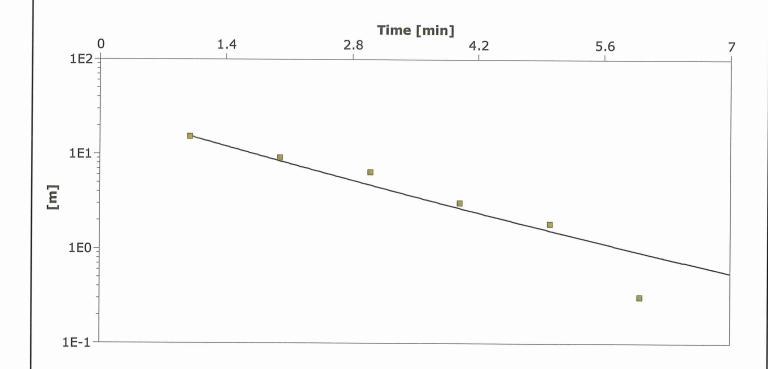
Project: Focus ASP

Number: ED1285

Client: 1285827 Alberta Ltd.

Slug Test: Well 1715074	Test Well: Well 6		
	Test Date: 8/11/2011		
New analysis 1	Analysis Date: 8/11/2011		

Aquifer Thickness: 24.69 m



Observation Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
	[m²/d]	[m/d]		
Well 6	1.09 × 10 ²	4.41 × 10 ⁰	1.00 × 10 ⁻³⁵	



Slug Test Analysis Report

Project: Focus ASP

Number: ED1285

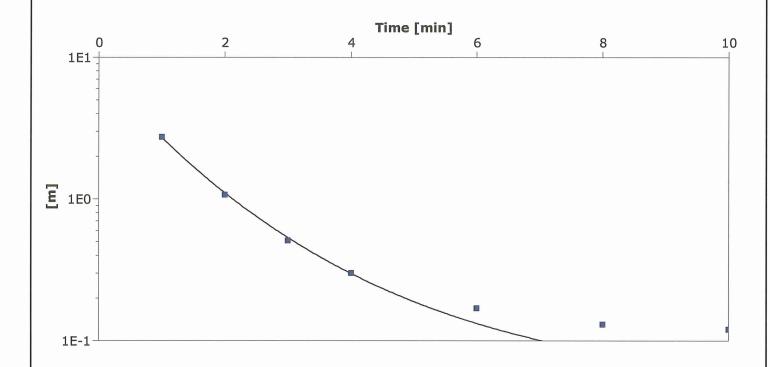
Client: 1285827 Alberta Ltd.

 Location: Near Devon, AB
 Slug Test: well 289029
 Test Well: Well 1

 Test Conducted by:
 Test Date: 8/11/2011

 Analysis Performed by:
 New analysis 1
 Analysis Date: 8/11/2011

Aquifer Thickness: 17.68 m



Observation Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
	[m²/d]	[m/d]		
Well 1	3.53 × 10 ¹	1.99 × 10 ⁰	3.67 × 10 ⁻⁶	



Slug Test Analysis Report

Project: Focus ASP

Number: ED1285

Client: 1285827 Alberta Ltd.

Location: Near Devon, AB

Slug Test: Well 296997

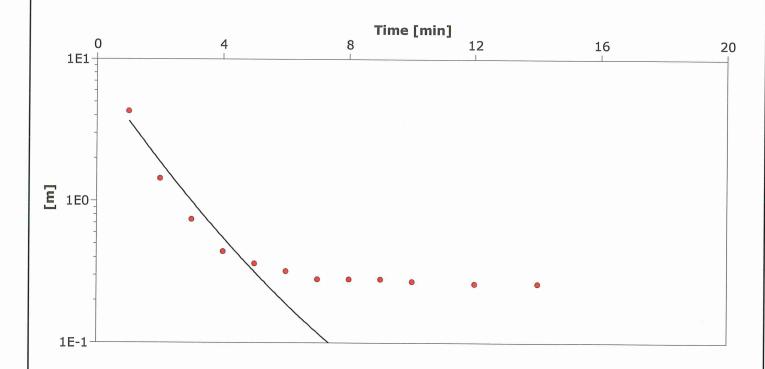
Test Conducted by:

Analysis Performed by:

New analysis 1

Analysis Date: 8/11/2011

Aquifer Thickness: 12.80 m



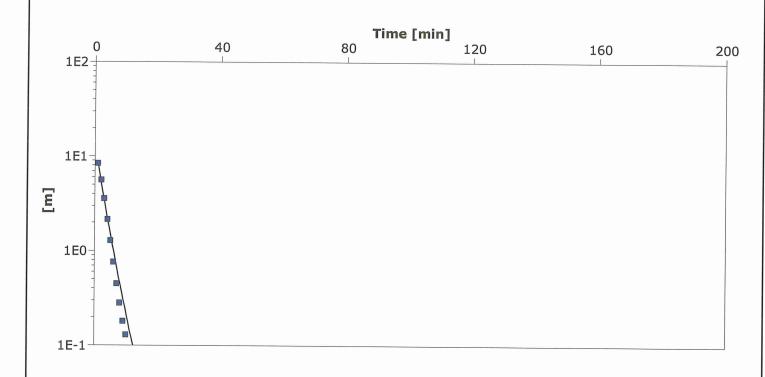
Observation Well	Transmissivity	Hydraulic Conductivity	Well-bore storage coefficient	
	[m²/d]	[m/d]		
Well 2	6.35 × 10 ¹	4.96 × 10 ⁰	7.07 × 10 ⁻¹⁸	



Slug Test Analysis Report		
Project:		
Number:		
Client:		

Location:	Slug Test: Well 286934	Test Well: Well 1		
Test Conducted by:	Test Date: 8/11/2011			
Analysis Performed by:	New analysis 1	Analysis Date: 8/11/2011		
Assistan This language 5, 40				

Aquifer Thickness: 5.48 m



Observation Well	Transmissivity	Hydraulic Conductivity	uctivity Well-bore storage coefficient	
	[m²/d]	[m/d]		
Well 1	7.76 × 10 ¹	1.42 × 10 ¹	1.00 × 10 ⁻³⁵	



The use of this attached report is subject to acceptance of the following general terms and conditions.

- STANDARD OF CARE In the performance of professional services, ParklandGEO will use that degree of care and skill ordinarily exercised under similar circumstances by reputable members of its profession practicing in the same or similar localities. No other warranty expressed or implied is made or intended by this agreement or by furnishing oral or written reports of the findings made. ParklandGEO is to be liable only for damage directly caused by the negligence of ParklandGEO.
- 2. INTERPRETATION OF THE REPORT The CLIENT recognizes that subsurface conditions will vary from those encountered at the location where borings, surveys, or explorations are made and that the data, interpretations and recommendation of ParklandGEO are based solely on the information available to him. Classification and identification of soils, rocks, geological units, contaminated materials and contaminant quantities will be based on commonly accepted practices in geotechnical or environmental consulting practice in this area. ParklandGEO will not be responsible for the interpretation by others of the information developed.
- 3. SITE INFORMATION The CLIENT agrees to fully cooperate with ParklandGEO and provide all information with respect to the past, present and proposed conditions and use of the Site whether specifically requested or not. The CLIENT acknowledges that in order for ParklandGEO to properly advise and assist the CLIENT in respect of the investigation of the Site, ParklandGEO is relying upon full disclosure by the CLIENT of all matters pertinent to an investigation of the Site.

Where specifically stated in the scope of work, ParklandGEO will perform a review of the historical information obtained or provided by the Client to assist in the investigation of the Site unless and except to the extent that such a review is limited or excluded from the scope of work.

4. COMPLETE REPORT - The Report is of a summary nature and is not intended to stand alone without reference to the instructions given to ParklandGEO by the CLIENT, communications between ParklandGEO and the CLIENT, and to any other reports, writings or documents prepared by ParklandGEO for the CLIENT relative to the specific Site, all of which constitute the Report. The word "Report" shall refer to any and all of the documents referred to herein. In order to properly understand the suggestions, recommendations and opinions expressed by ParklandGEO, reference must be made to the whole of the Report. ParklandGEO cannot be responsible for use of any part or portions of the report without reference to the whole report. The CLIENT agrees to the following statement:

"This report has been prepared for the exclusive use of the named CLIENT. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. ParklandGEO accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report."

The CLIENT agrees that in the event that any such report is released to a third party, such disclaimer shall not be obliterated or altered in any manner. The CLIENT further agrees that all such reports shall be used solely for the purposes of the CLIENT and shall not be released or used by others without the prior written permission of ParklandGEO.

- 5. LIMITATIONS ON SCOPE OF INVESTIGATION AND WARRANTY DISCLAIMER There is no warranty, expressed or implied, by ParklandGEO that:
 - a) the investigation shall uncover all potential geo-hazards, contaminants or environmental liabilities on the Site; or
 - b) the Site will be entirely free of all geo-hazards or contaminants as a result of any investigation or cleanup work undertaken on the Site, since it is not possible, even with exhaustive sampling, testing and analysis, to document all potential geo-hazards or contaminants on the Site.

The CLIENT acknowledges that:

a) the investigation findings are based solely on the information generated as a result of the specific scope of the investigation authorized by the CLIENT;



- b) unless specifically stated in the agreed Scope of Work, the investigation will not, nor is it intended to assess or detect potential contaminants or environmental liabilities on the Site;
- c) any assessment regarding geological conditions on the Site is based on the interpretation of conditions determined at specific sampling locations and depths and that conditions may vary between sampling locations, hence there can be no assurance that undetected geological conditions, including soils or groundwater are not located on the Site;
- d) any assessment is also dependent on and limited by the accuracy of the analytical data generated by the sample analyses;
- e) any assessment is also limited by the scientific possibility of determining the presence of unsuitable geological conditions for which scientific analyses have been conducted; and
- f) the laboratory testing program and analytical parameters selected are limited to those outlined in the CLIENT's authorized scope of investigation; and
- g) there are risks associated with the discovery of hazardous materials in and upon the lands and premises which may inadvertently discovered as part of the investigation. The CLIENT acknowledges that it may have a responsibility in law to inform the owner of any affected property of the existence or suspected existence of hazardous materials and in some cases the discovery of hazardous conditions and materials will require that certain regulatory bodies be informed. The CLIENT further acknowledges that any such discovery may result in the fair market value of the lands and premises and of any other lands and premises adjacent thereto to be adversely affected in a material respect.
- 6. CONTROL OF WORK SITE AND JOBSITE SAFETY ParklandGEO is only responsible for the activities of its employees on the jobsite. The presence of ParklandGEO personnel on the Site shall not be construed in any way to relieve the CLIENT or any contractors on Site from their responsibilities for Site safety. The CLIENT undertakes to inform ParklandGEO of all hazardous conditions, or possible hazardous conditions which are known to him.
- 7. COST ESTIMATES Estimates of remediation or construction costs can only be based on the specific information generated and the technical limitations of the investigation authorized by the CLIENT. Accordingly, estimated costs for construction or remediation are based on the known site conditions, which can vary as new information is discovered during construction. As some construction activities are an iterative exercise, ParklandGEO shall therefore not be liable for the accuracy of any estimates of remediation or construction costs provided.
- 8. LIMITATION OF LIABILITY The CLIENT hereby agrees that to the fullest extent permitted by the law ParklandGEO's total liability to CLIENT for any and all injuries, claims, losses, expenses or damages whatsoever arising out of or in anyway relating to the Project, the Site, or this agreement from any cause or causes including but not limited to ParklandGEO 's negligence, errors, omissions, strict liability, breach of contract, or breach of warranty shall not exceed the total amount paid by the CLIENT for the services to ParklandGEO under this contract or \$50,000, whichever is lessor, or as otherwise agreed to in writing.
- 9. NO SPECIAL OR CONSEQUENTIAL DAMAGES The CLIENT and ParklandGEO agree that to the fullest extent permitted by law ParklandGEO shall not be liable to the CLIENT for any special, indirect or consequential damages whatsoever, whether caused by ParklandGEO's negligence, errors, omissions, strict liability, breach of contract, breach of warranty or other cause of causes whatsoever.
- 10. INDEMNIFICATION To the fullest extent permitted by law, the CLIENT agrees to defend, indemnify and hold ParklandGEO, its directors, officers, employees, agents and subcontractors, harmless from and against any and all claims, defence costs, including legal fees on a full indemnity basis, damages, and other liabilities arising out of or in any way related to ParklandGEO's reports or recommendations concerning this Agreement, ParklandGEO's work and presence on the project property, or the presence, release, or threatened release of hazardous substances or pollutants on or from the Site; provided that the CLIENT shall not indemnify ParklandGEO against liability for damages to the extent caused by the negligence or intentional misconduct of ParklandGEO, its agents or subcontractors.