



**Well Interference Report
For Lund Water Permit Application
August 25, 2014
RMEA 14-0074**

Background

Mr. and Mrs. Gary and Julie Lund are applying for a water-right permit to irrigate 14 acres in the SW 1/4 of the NW 1/4 of Section 26, Township 15S Range 36E south of Malad, Idaho, well tag # D0065327. The location is illustrated in Figure 1 (attached). This report documents an analysis by Rocky Mountain Environmental Associates, Inc. (RMEA) of the possibility of interference with other wells from pumping Lund's proposed well.

Data

Two sources of data are utilized in this analysis. The first is a pumping test of a nearby well. The test was performed by Clearwater Geosciences LLP (Clearwater) in 2010, as described in the attached report from Idaho Department of Water Resources (IDWR) water-right file 15-7276.

"The best match to the data... found the volume averaged transmissivity of the aquifer to be $3.5 \times 10^4 \text{ ft}^2/\text{day}$ and the storativity to be 0.0012. This match to the data integrates a larger radial distance of the aquifer and is most appropriate for making large scale predictions for long term pumping."

However, to be conservative, Clearwater used a lower transmissivity value of $2.3 \times 10^4 \text{ ft}^2/\text{day}$ and storativity of 0.0012. The conservative values are used in this report, resulting in somewhat greater calculated drawdowns than would be obtained using the aquifer test result of $3.5 \times 10^4 \text{ ft}^2/\text{day}$.

The second source of data is a collection of well logs for the vicinity of the proposed well, obtained from IDWR. These are attached in Appendix B.

Methods

The Theis Equation was applied using image well theory, with an image well located northeast of the proposed well location to simulate an assumed no-flow boundary between valley alluvial materials and the eastern mountains bounding the valley. The locations of the presumed boundary and the assigned image well are illustrated in Figure 2. The Theis Equation assumes a confined aquifer with no recharge. It will therefore over-estimate drawdown at long time periods, but it is assumed to be reasonably accurate for a 215-day pumping period.

The volume of pumping was estimated by applying the seasonal IDWR standard 3.5 acre feet per acre gross pumping volume on 14 acres, to obtain 49 acre feet maximum pumping volume. This volume was

applied over the standard 215-day pumping period to obtain an average pumping rate of 0.1127 cfs. This average rate compensates for the fact that the water right volume limitations and typical irrigation practices do not contemplate operation 24 hours per day for 215 consecutive days. Using the standard water-right diversion rate would have over-estimated the pumping volume and therefore the drawdown effects.

Well logs were evaluated qualitatively to assess the nature of the subsurface in the vicinity of the proposed well. Reported depths, static water levels and first encounters of groundwater are noted on Table 1.

Results

Figure 3 shows the estimated drawdowns *in the pumped aquifer zone* at various locations of interest near and around the proposed point of diversion. The figure is marked with a circle defining a half-mile radius surrounding the proposed point of diversion. The IDWR water-rights data indicate seven wells, within this radius, for irrigation water rights: 15-7332, 15-7017, 15-2067, 15-2060, 15-7008, 15-4162, and 15-7019. Figure 3 also shows additional presumed domestic wells which were placed by identifying structures that appeared to be homes on the 2013 NAIP aerial photograph. The nearest presumed well to the new point of diversion would have a drawdown of approximately 0.491 feet *in the pumped aquifer zone*. The seven irrigation wells are estimated to experience a drawdown range from approximately 0.404 to 0.47 feet.

Table 1 shows the basic characteristics, reported depth, the static water level, and the depth at which water was first encountered (1st H2O), of the wells that were identified. All the logs showed alternating layers of clays or fine-grained materials reported to be non-water bearing, and coarse-grained water-bearing materials. The domestic wells generally were shallower, while irrigation wells were generally deeper. The locations of the listed wells in Table 1 did not correlate well with the aerial photo of the area; as such, we were not able to locate any of them on a map.

The majority of wells listed in Table 1 have a large difference between static level and the total depth of the well. There are only two wells in Table 1 that have less than 50 feet between static level and the total depth of the well; well 6 owned by Evelyn Gronou (37 feet difference) and well 11 owned by Lehn Brangham (39 feet difference). As the largest estimated drawdown is 0.491 feet, it is not anticipated that either of these wells will be greatly affected by Mr. Lund.

Discussion and Conclusions

The following factors are important in consideration of well interference issues from the proposed new point of diversion:

1. All well logs show a layered geologic configuration, with water-bearing zones in materials expected to be more transmissive separated by non-water-bearing clay or fine-grained zones.
2. With the exception of two wells, nearby wells have static water levels greater than 50 feet above the reported bottom of the well. The two exceptions 37 and 39 feet between static water levels and the reported bottom of the well.

3. With two exceptions, wells have static water levels less than 75 feet below land surface. The exceptions are reported to have static water levels less than 140 feet below land surface.

Based on these factors, RMEA concludes:

Drawdowns at irrigation and domestic wells, from pumping of the proposed well, are estimated to be approximately 0.5 feet or less. Given the relatively shallow groundwater levels and large depths of standing water within the wells, RMEA believes that this small increment of drawdown does not exceed a reasonable pumping lift standard.

Attachments:

Figure 1. Location Geometry

Figure 2. Theis Geometry

Figure 3. Theis Drawdown Calculations

Table 1. List of Well Logs and Characteristics

Appendix A: Pump test report from water-right file 15-7276

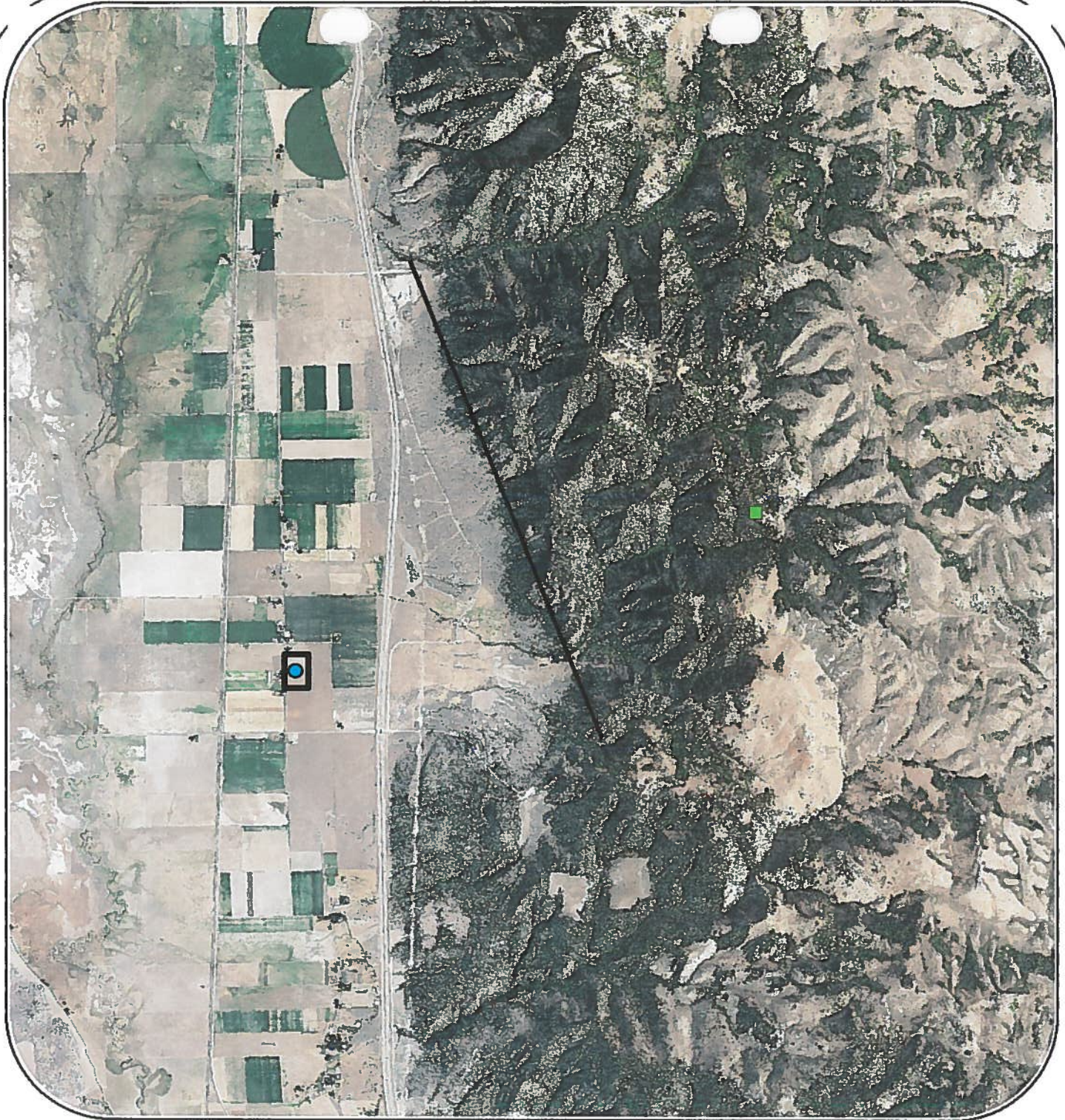
Appendix B: Well Logs


Rachel J Wood, Staff Geologist


Date


Reviewed by: Bryce A. Contor, Senior Hydrologist


Date



● Proposed POD

■ Image Well

— Theis Boundary

□ Approximate Property Boundary



0 0.25 0.5 1 Miles

Figure 2. Theis Geometry

6276 South Old Highway 191

Malad, Idaho 83252



Rocky Mountain
ENVIRONMENTAL
ASSOCIATES, INC.

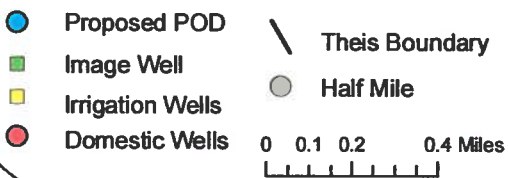
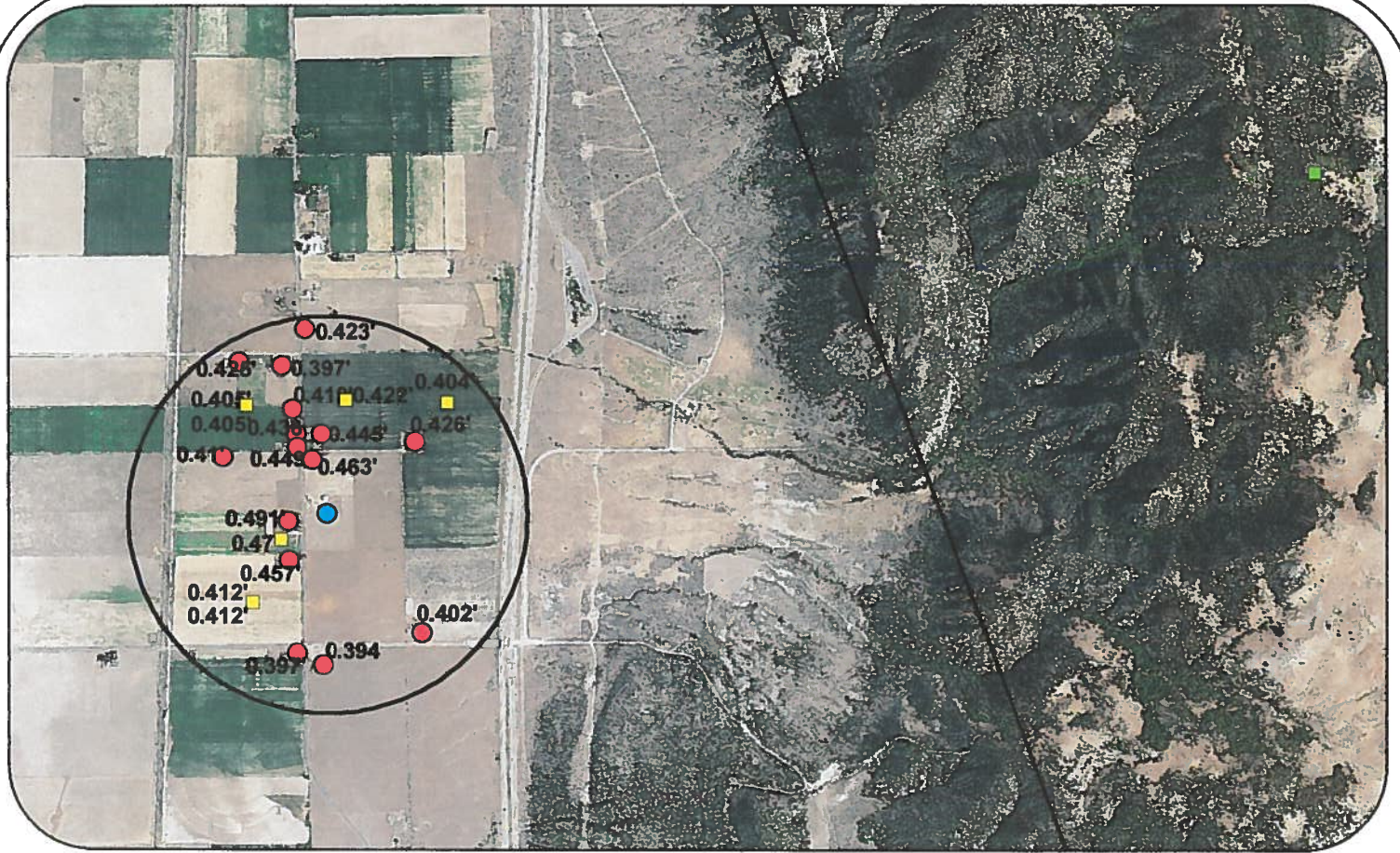


Figure 3. Theis Drawdown

6276 South Old Highway 191
Malad, Idaho 83252





Appendix A

Pump test report form

water-right file 15-7276

NOV 09 2010

Department of Water Resources
Eastern Region

Clearwater Geosciences, LLP
Ground Water Development and Exploration

November 5, 2010

Mr. James Cefalo
Idaho Department of Water Resources
900 North Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

RE: AQUIFER TEST REPORT FOR SCHOENENBERGER WATER RIGHTS 15-7259 & 15-7276

Dear Mr. Cefalo:

A pumping test was conducted on August 20, 2010 on the Richardson Well in Woodruff, Idaho. The purpose of the pumping test was to obtain representative aquifer parameters for use in computer modeling to ascertain if drawdown impacts from the Schoenenberger Water Rights might have an excessive impact on the Richardson's and neighboring wells. This letter transmits the results of my analysis.

The Richardson Well and three observation wells were equipped with INSITU brand downhole pressure transducers and data loggers for collecting automated water levels during the pumping test (Figure 1). The pumping test began at about 5 PM on August 20, 2010 and the Richardson well was pumped at a steady rate of 30 gpm for 2 hours. Because this well is shared by two households it was inconvenient for the residents to be without water during the test and it was not possible to conduct the pumping test for a longer period of time. Plots of the data for all wells can be found in Attachment 1 and the particulars regarding the wells can be found in Table 1. The Richardson well experienced about 2.5 ft of drawdown from static during the test. The observation well data are noisy primarily because they are also domestic house wells, which were in use at the time of the pumping test. There also appears to be some background aquifer fluctuations probably caused by irrigation pumping in nearby wells. No drawdown was observed in any of the observation wells.

The well logs for Wells OB1, OB2 and OB3 are presented in Attachment 2. The well log for the Richardson Well could not be found on file with the Idaho Department of Water Resources (IDWR). On the basis of the Smith Well log (OB 3), which is a high yield irrigation well, the aquifer is assumed to be 140 ft thick in this area. Several curve matching methods were conducted using the AQTESOLV aquifer test software. Output plots from the AQTESOLV analyses are presented in Attachment 3. Figure 3-1 shows the match of the data to the drawdown curve of the Smith well to the Theis confined solution. The calculated transmissivity is about 1.5×10^4 ft²/day and the storativity is unreliable because there is no observation well. The Theis solution does not match very well to the early time data, probably because of the affects of well bore storage, partial aquifer penetration and well skin affects. The Dougherty-Babu method accounts for these factors and the curve matched solution to this method is presented in Attachment 3 in Figure 3-2. The calculated transmissivity is about 9.9×10^3 ft²/day. Given the uncertainty of the two methods the actual transmissivity of the aquifer is about 1×10^4 ft²/day. The aquifer storativity cannot be determined accurately with only a single well pumping test.

I recently tested the Smith Well for a water right application assessment and to gain a better characterization of the aquifer than what is available from the test of the Richardson well, a financial arrangement was made between Lex Smith and Mr. Schoenenberger so that Mr. Schoenenberger can use the results of the Smith Pumping Test in this application. The Smith Pumping Test utilized the same wells as the Richardson Test but the Smith Well was pumped at 220 gpm for 24 hours providing a better test of the aquifer. The results of the Lex Smith Pumping are in Attachment 4. The best match to the data for the Smith Test found the volume averaged aquifer transmissivity to be 3.5×10^4 ft²/day and the



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Ground Water Development and Exploration

storativity to be 0.0012. This match to the data integrates a larger radial distance of the aquifer and is most appropriate for making large scale predictions for long term pumping. However to be conservative, I took the average between the Richardson and Smith transmissivity values. This resulted in an aquifer transmissivity of $2.3 \times 10^4 \text{ ft}^2/\text{day}$ and the storativity is 0.0012.

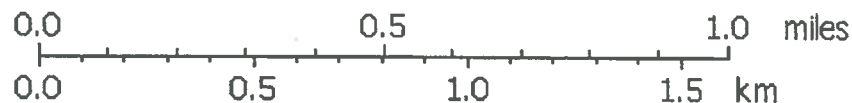
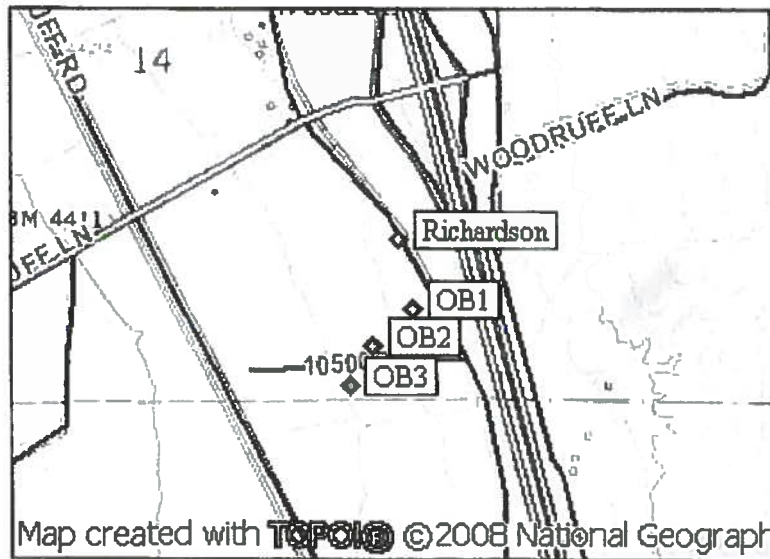


Figure 1. Map of pumped well (Richardson) and observation wells for the Richardson Pumping Test

Table 1 Wells used in the Richardson Pumping Test.

Well Name	Owner Name	Tag #	Coords	Elevation	Radial Distance
Richardson	Richardson	N/A	12 T 399677 4654204	4496 ft	0
OB1	Fullmer	D0026863	12 T 399708 4654040	4481 ft	500 ft
OB2	Allred	D0036075	12 T 399612 4653951	4455 ft	850 ft
OB3	Lex Smith	D0051338	12 T 399554 4653861	4437 ft	1200 ft



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Ground Water Development and Exploration

Two radial offsets of 2300 and 5280 ft were used in the predictive simulations. The width of the aquifer (i.e. distance between edges of the rectangle shown in Figure 5-1) was input as 12,000 ft, which is consistent with previous IDWR estimates. I employed four different diversion rates for each water right 100%, 50% and 25% of maximum and an optimal rate, the pumping was continuous for the duration of the application, i.e. 180 days/24 hours for the irrigation water right (15-7276) and 365 days/24 hours for the commercial water right (15-7259). Table 2 below shows the results of the analysis.

Table 2. Results of forward solution for predicting drawdown using the AQTESOLV Program.

Case	Water Right	Transmissivity (ft ² /day)	Time (days)	Storativity	Aquifer Thickness (ft)	Pumping Rate (gpm)	Draw-down 5280 (ft)	Draw-down 2300 (ft) Richardson
100% both	15-7259	23,000	365	0.00123	140	1347	12'	18'
	15-7276	23,000	180	0.00123	140	1796		
50% both	15-7259	23,000	365	0.00123	140	673	9'	11'
	15-7276	23,000	180	0.00123	140	898		
25% both	15-7259	23,000	365	0.00123	140	337	4.4'	5.5'
	15-7276	23,000	180	0.00123	140	449		
Optimal	15-7259	23,000	365	0.00123	140	100	5.7'	7'
	15-7276	23,000	180	0.00123	140	900		

Without a driller's well log, the pump intake depth and at least a years worth of water level data I cannot say how much drawdown is acceptable and would not interfere with the ability of the Richardson's to pump water. However, in my professional experience most domestic wells can tolerate an additional 7 ft of drawdown. As noted by our testing of the Richardson's well, the water level is only drawdown 2.5 ft when the pump is running. It is my professional opinion that if Mr. Schoenenberger reduces his agricultural right to 2 cfs (900 gpm) and reduces the commercial right to 0.23 cfs (100 gpm) (see last calculation in the table) there will be no impact to the Richardson's ability to pump water. I would like to point out that actual impact from Mr. Schoenenberger's water rights will probably be much less than I have estimated. This is because he will not pump the wells continually 24 hours per day, 7 days per week as I modeled and the actual aquifer transmissivity is probably 50% higher than what I used in the prediction (I used the average of the Richardson and Smith tests).

Respectfully,

Thomas R. Wood, PhD, PG



cc

Mr. Steve Fuller, P.O. Box 191, Preston, Idaho 83263

Neil Schoenenberger, 11577 South, Old Highway 191, Malad, ID 83252

Mr. Dennis Dunn, IDWR, 900 North Skyline Drive, Suite A, Idaho Falls, ID 83402-1718



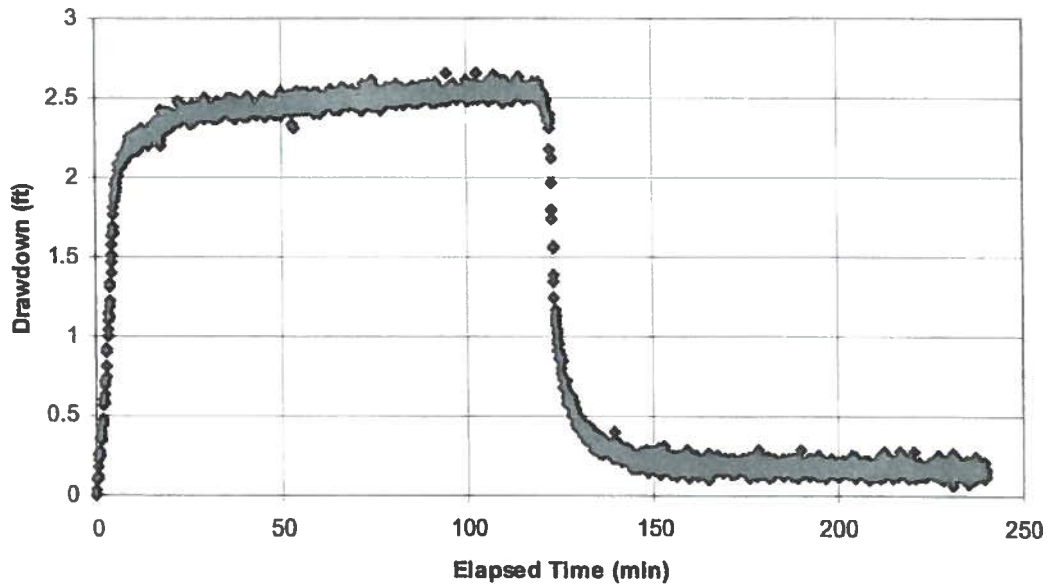
Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 1

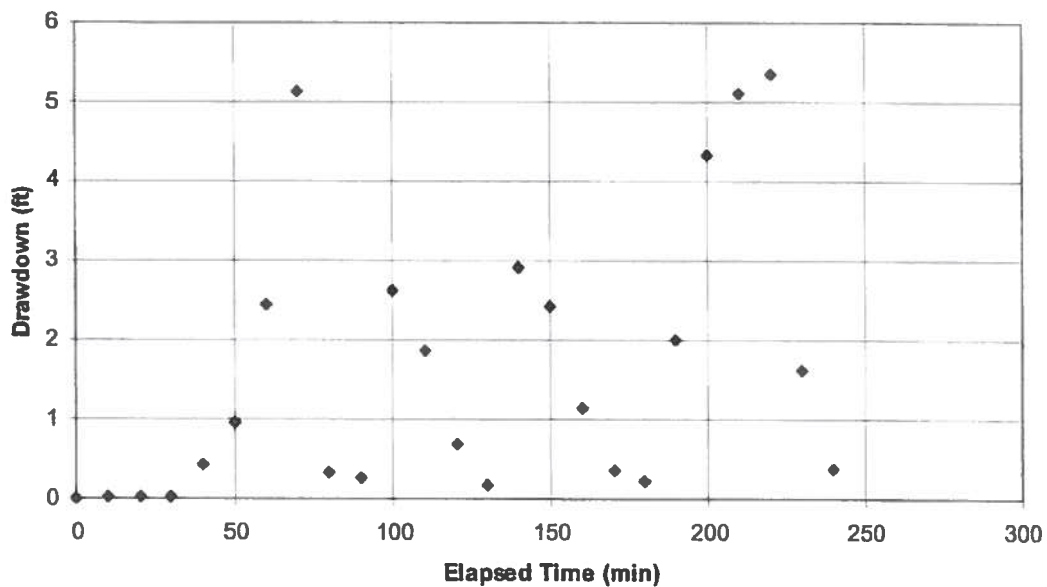
DATA PLOTS



Richardson Well 8-20-10 (pumped 30 gpm)

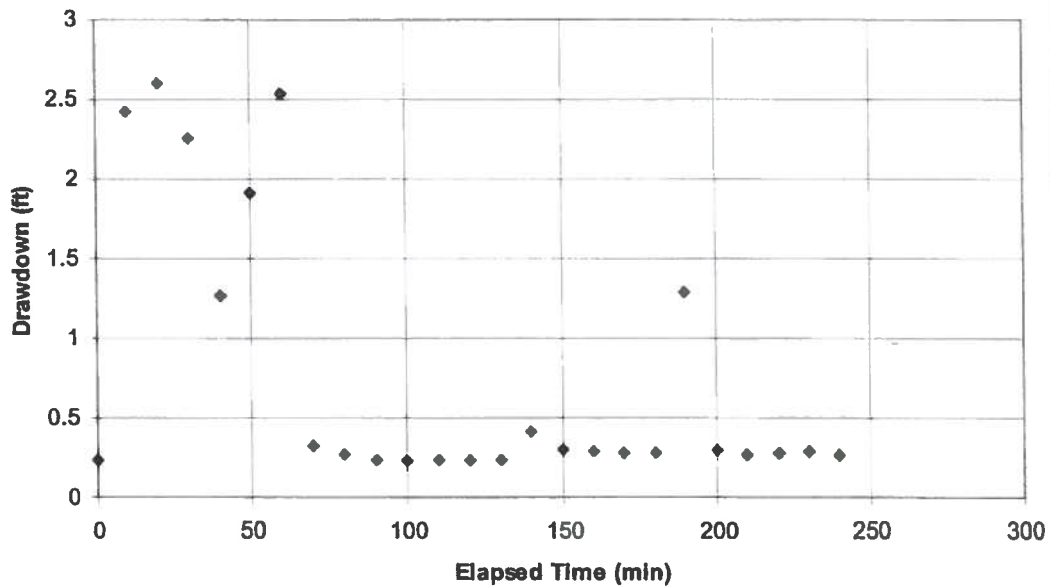


Well OB1 (Fullmer Well) for Richardson Pumping Test 8-20-10

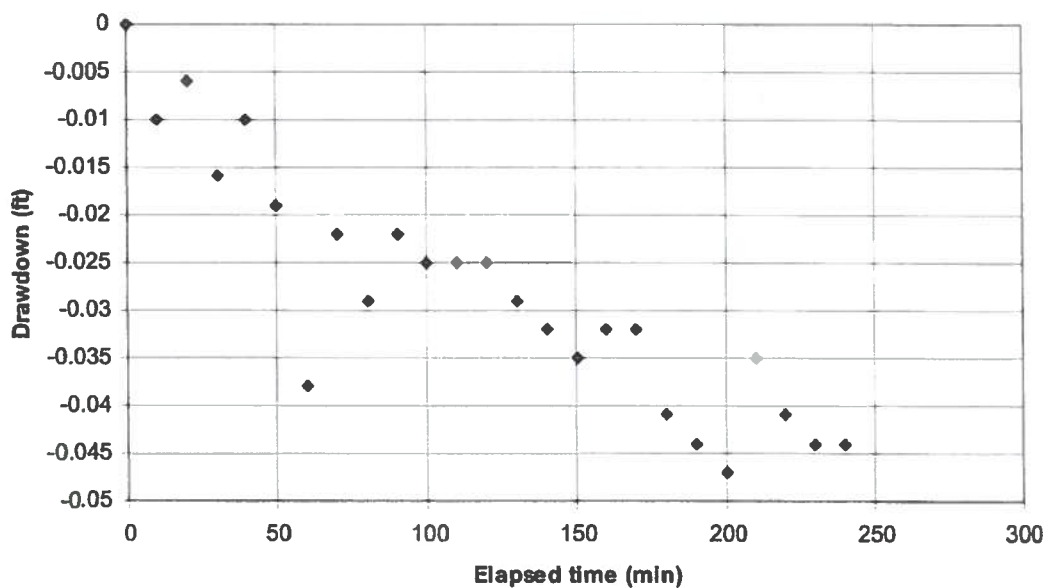




Well OB2 (Allred Well) for Richardson Pumping Test 8-20-10



Well OB3 (Smith Well) for Richardson Pumping Test 8-20-10





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Ground Water Development and Exploration

Attachment 2

WELL LOGS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

1. WELL TAG NO. D D0051338

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER: Lex Smith

Name Lex Smith

Address 1696 S 19000 W

City Moled State TD Zip 83252

3. WELL LOCATION:

Twp. 16 North ☐ or South ☒ Rge. 36 East ☒ or West ☐

Sec. 14 SE 1/4 SW 1/4 SE 1/4

Gov't Lot _____ County Oneida

Lat. _____ (Deg. and Decimal minutes)

Long. _____ (Deg. and Decimal minutes)

Address of Well Site 1696 S 19000 W

City M

Lot _____ Blk. _____ Sub Name _____

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation ☐ Thermal ☐ Injection

☐ Other _____

5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well

☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material From (ft) To (ft) Quantity (lbs or ft³) Placement method/procedure

Bentonite 1 78 27 bags Quincho

8. CASING/LINER:

Diameter (nominal) From (ft) To (ft) Gauge/Schedule Material Casing Liner Threaded Welded

9" +8 28 .250 Steel ☒ ☐ ☐ ☒

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 218

9. PERFORATIONS/SCREENS:

Perforations ☒ Y ☐ N Method Knife

Manufactured screen ☐ Y ☐ N Type _____

Method of installation _____

From (ft) To (ft) Slot size (inches) Number Material Gauge or Schedule

155 2116 4x4 1600 8" Steel .250

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter material From (ft) To (ft) Quantity (lbs or ft³) Placement method

NA _____ _____ _____

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) _____ Static water level (ft) 76'

Water temp (°F) _____ Bottom hole temp (°F) _____

Describe access point _____

Well test:

Drawdown (feet) Discharge or yield (gpm) Test duration (minutes) Test method:

☐ Pump ☐ Backer ☐ Air ☐ Flowing artesian

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Remarks, lithology or description of repairs or abandonment, water temp.

Water Y N

10" 1 18 CLAY ☐ ☒

18 30 CLAY ☐ ☒

30 55 CLAY ☐ ☒

55 60 CLAY ☐ ☒

60 78 CLAY ☐ ☒

78 98 CLAY ☐ ☒

98 98 CLAY ☐ ☒

98 95 CLAY ☐ ☒

95 100 CLAY ☐ ☒

100 110 CLAY ☐ ☒

110 130 CLAY ☐ ☒

130 145 CLAY ☐ ☒

145 218 CLAY ☐ ☒

RECEIVED

SEP 22 2008

Department of Water Resources
Eastern Region

Completed Depth (Measurements) 218'

Date Started 9-11-08 Date Completed 9-16-08

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name Volmer Drilling Co No 283

*Principal Driller [Signature] Date 9-19-08

*Driller _____ Date _____

*Operator II [Signature] Date 9/19/08

Operator I _____ Date _____

* Signatures of Principal Driller and rig operator are required



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 750-7
5/02 *DMO*

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

Office Use Only			
Well ID No. _____			
Inspected by _____			
Twp. _____	Rge. _____	Sec. _____	
1/4 _____	1/4 _____	1/4 _____	
Lat. _____	Long. _____		

1. WELL TAG NO. D 0036015
DRILLING PERMIT NO. _____
Water Right or Injection Well No. _____

2. OWNER:
Name Robert Alfred
Address 1115 E. Continental Circle, Idaho Falls
City Idaho Falls State ID Zip 83404

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 16 North ☐ or South ☒
Rge. 3E East ☒ or West ☐
Sec. 34 1/4 NE 1/4 NE 1/4
Gov't Lot _____
County Blaine
Lat: _____ Long: _____
Address of Well Site same City _____

City of Well, name of road, distance to Road or Intersection
Lt. _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Placement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Ben Seal</u>	<u>0</u>	<u>30</u>	<u>1 bag</u>	<u>Overhead</u>

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 160
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Length	Material	Casing	Liner	Weight	Threaded
<u>6"</u>	<u>0</u>	<u>160</u>	<u>25'</u>	<u>Steel</u>	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☒ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method torch
Screen Type & Method of Installation _____

From	To	Start Size	Number	Opening	Material	Casing	Filter
<u>140</u>	<u>160</u>	<u>27</u>	<u>1/4"</u>	<u>6"</u>	<u>Steel</u>	☒	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

8' ft. below ground Artesian pressure _____ ft.
Depth flow encountered _____ ft. Describe access port or control devices: _____

12. WELL TESTS:

Yield gal/min	Drawdown	Pumping Level	Time
<u>3000</u>			

Water Temp. cold Bottom hole temp. cold
Water Quality test or comments: good

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Core	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>10</u>	<u>0</u>	<u>20</u>	<u>Brown clay some gravel</u>	☒	☐
<u>20</u>	<u>20</u>	<u>40</u>	<u>Brown clay some gravel</u>	☒	☐
<u>40</u>	<u>40</u>	<u>60</u>	<u>Gravel cobbles clay ss.</u>	☒	☐
<u>60</u>	<u>60</u>	<u>80</u>	<u>Brown clay</u>	☒	☐
<u>80</u>	<u>80</u>	<u>100</u>	<u>Gravel Brown clay</u>	☒	☐
<u>100</u>	<u>100</u>	<u>120</u>	<u>Brown clay</u>	☒	☐
<u>120</u>	<u>120</u>	<u>140</u>	<u>Hard tan gravel clay</u>	☒	☐
<u>140</u>	<u>140</u>	<u>160</u>	<u>Brown clay</u>	☒	☐
<u>160</u>	<u>160</u>	<u>180</u>	<u>Gravel Br. clay</u>	☒	☐

RECEIVED

JUN 14 2005

Department of Water Resources
Eastern Region

Completed Depth 160 (Measurable)
Date Started 5-10-05 Completed 5-10-05

14. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name 1115 E. Continental Circle Drilling No. 503

Principal Driller Michael Frandson Date 5-15-05
and
Driller or Operator II Travis Frandson Date 5-15-05

Operator I _____ Date _____
Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II

FORWARD WHITE COPY TO WATER RESOURCES



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
6/02
DMS

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No. _____
Inspected by _____
Twp _____ Rge _____ Sec _____
1/4 _____ 1/4 _____ 1/4 _____
Lat' _____ : _____ : _____ Long _____ : _____ : _____

1. WELL TAG NO. D D0026863
DRILLING PERMIT NO. _____
Water Right or Injection Well No. _____

2. OWNER:
Name Darry Fullmer
Address 104605 old Hwy 191
City Malad State Id Zip 83252

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 16 North ☐ or South 13
Rge. 3E East ☐ or West 1
Sec. 17 SW 1/4 SE 1/4 1/4
Gov't Lot _____
County anada T18 S09E
Lat: _____ : _____ : _____ Long: _____ : _____ : _____
Address of Well Site Same
City _____

LL _____ Blk _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
Ben-seal	0	25	slurry	pour

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Usage	Material	Casing	Liner	Welded	Threaded
6	0	142	1/4	prim	☒	☐	☐	☒

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☒ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method N/A
Screen Type & Method of Installation _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

44 ft. below ground Artesian pressure _____ lb
Depth flow encountered _____ ft. Describe access port or control devices _____

12. WELL TESTS:

Yield gal./min.	Drawdown	Pumping Level	Time
40	25	71	1 hr.

Water Temp. Cold Bottom hole temp _____

Water Quality test or comments: Turns steel green
116' 2 106 PM → Depth first Water Encounter

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
10	0	3 Top soil		
3	98	white clay		
6	98	116 Sand gravel		
116	118	gravel		
118	137	Blue clay		
137	148	gravel		
148	160	Blue clay		

RECEIVED
AUG 11 2003
Department of Water Resources
Eastern Region

Completed Depth 142 (Measurable)
Date: Started 4-21-03 Completed 5-20-03

14. DRILLER'S CERTIFICATION

I/we certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name JC Green Drilling Firm No. 454

Principal Driller John Green Date Aug 4-03

Driller or Operator II _____ Date _____
Operator I _____ Date _____

Principal Driller and Rig Operator Required
Operator I must have signature of Driller/Operator II.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 3

AQTESOLV PLOTS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

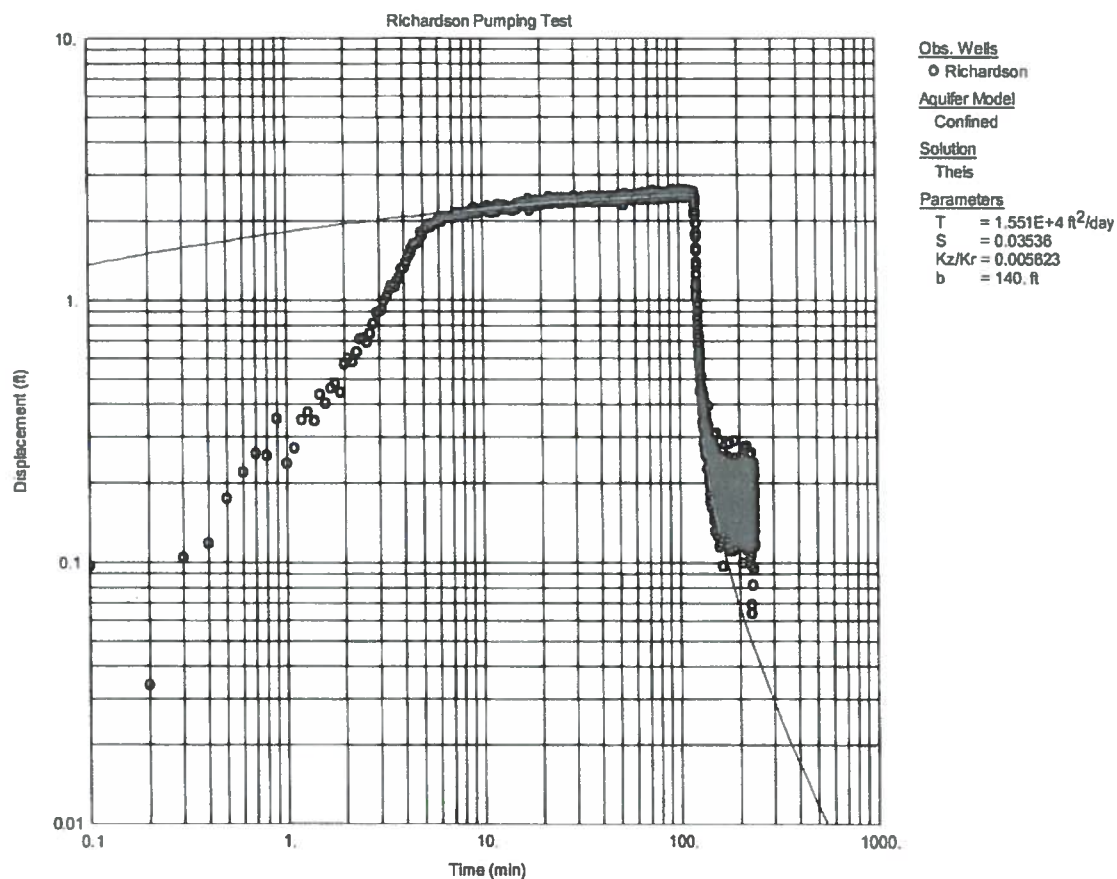


Figure 3-1 Theis confined solution matched to Richardson Well data.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

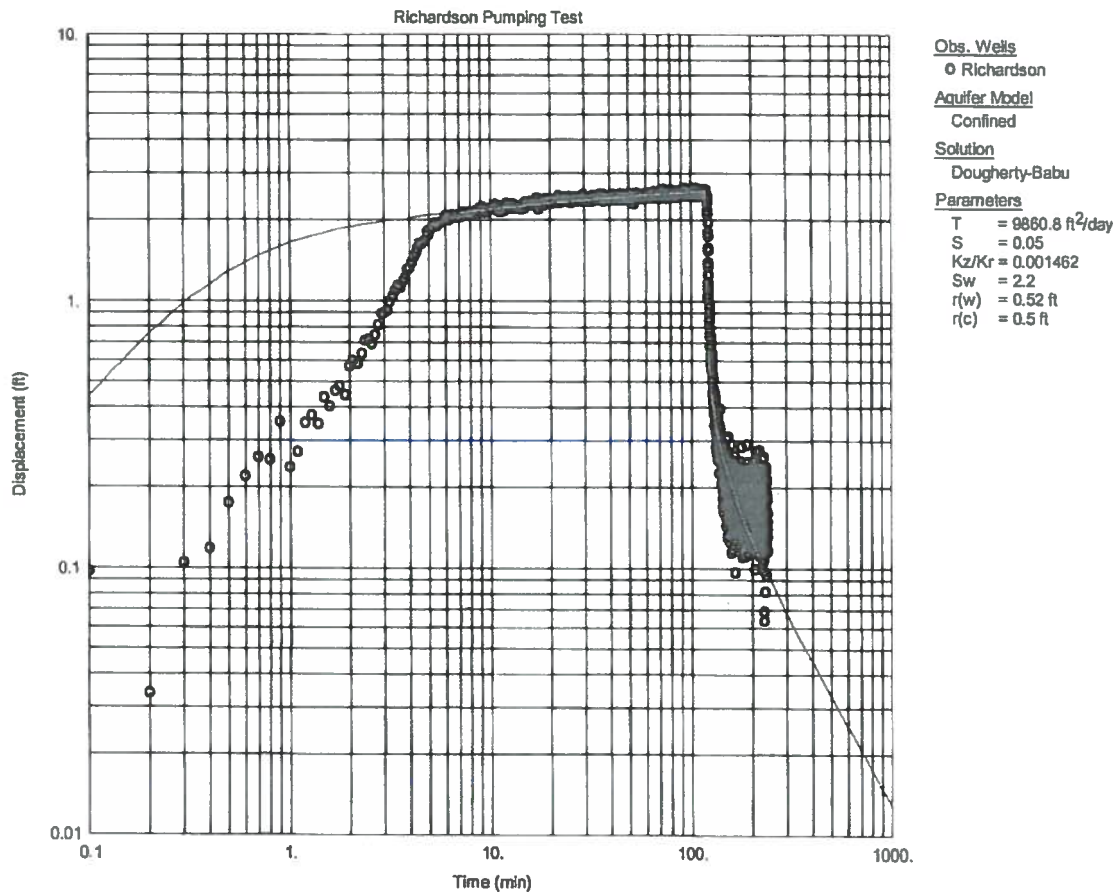


Figure 3-2 Dougherty-Babu confined solution match to Richardson Well Data. This solution takes into account well bore storage, skin affects and partial aquifer penetration.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 4

LEX SMITH PUMPING TEST RESULTS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

October 4, 2010

Mr. Dennis Dunn
Idaho Department of Water Resources
900 North Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

RE: AQUIFER TEST DATA FOR LEX SMITH WATER RIGHT PERMIT 15-7307, MALAD BASIN

Dear Mr. Dunn:

A pumping test was conducted on August 18, 2010 on the Lex Smith Well in Woodruff, Idaho. The purpose of the pumping test was to either confirm or deny aquifer properties used in computer modeling suggesting that the potential drawdown impacts from the Smith well on neighboring wells might be excessive if the water right is approved. This letter transmits the results of my analysis.

The Smith Well and three observation wells were equipped with INSITU brand downhole pressure transducers and data loggers for collecting automated water levels during the pumping test (Figure 1). The pumping test began at noon on August 18, 2010 and the Smith well was pumped at a steady rate of 220 gpm for 24 hours. Plots of the raw data for all wells can be found in Attachment 1 and the particulars regarding the wells can be found in Table 1. The Smith well experienced about 26 ft of drawdown from static during the test. The observation well data are noisy primarily because they are also domestic house wells, which were in use at the time of the pumping test. There also appears to be some background aquifer fluctuations probably caused by irrigation pumping in nearby wells. The observation wells were processed as follows. OB1 early time data was extremely noisy and the drawdown portion of the data was discarded in favor of the recovery data, which is more regular. Spikes in the OB1 data caused by the pump cycling on and off were removed and a plot of the processed OB1 data is presented in Attachment 1. OB2 drawdown data was better, having fewer cycles of the pump being turned on and off. The data from this well was processed by removing the spikes caused by the pump cycling. OB3 well data were the most problematic. This well services two households and the pump cycles frequently. After removing the major spikes in the data, a 5 point running average was taken of the data to smooth out the data as much as possible. The plot of the processed data for OB3 is presented in Attachment 1. The data are suspect and although they are included in the pumping test analyses the results are given less weight than wells OB1 and OB2.

The well logs for the Smith Well, OB1 and OB2 are presented in Attachment 2. The well log for OB3 could not be located. On the basis of the Smith well log, the aquifer was assumed to be 140 ft thick. Several curve matching methods were conducted using the AQTESOLV aquifer test software. Output plots from the AQTESOLV analyses are presented in Attachment 3. Figure 3-1 shows the match of the late time data to the drawdown curve of the Smith well to the Theis confined solution. The well appears to be somewhat inefficient as the drawdown distorts the match to the observation wells. The calculated transmissivity is about $3 \times 10^4 \text{ ft}^2/\text{day}$ and the storativity is meaningless because it is a match to only the pumping well data. The drawdown data for the Smith Well was removed from the AQTESOLV plots and matches were made to OB1 and OB2 using both the confined and unconfined Theis solutions. The results are presented in Figures 3-2 through 3-4. Transmissivity ranges from 1.9 to $3.9 \times 10^4 \text{ ft}^2/\text{day}$ and the storativity ranges from 3.6×10^{-7} to 0.0012 . In my opinion, the best match to the data at the largest radial distance is the confined Theis solution match to OB2, Figure 3-3. The larger radial distance integrates a larger volume of the aquifer and is more appropriate for making large scale predictions for long term pumping. In this case, the best measurement of aquifer transmissivity is $3.5 \times 10^4 \text{ ft}^2/\text{day}$ and the storativity is 0.0012 .



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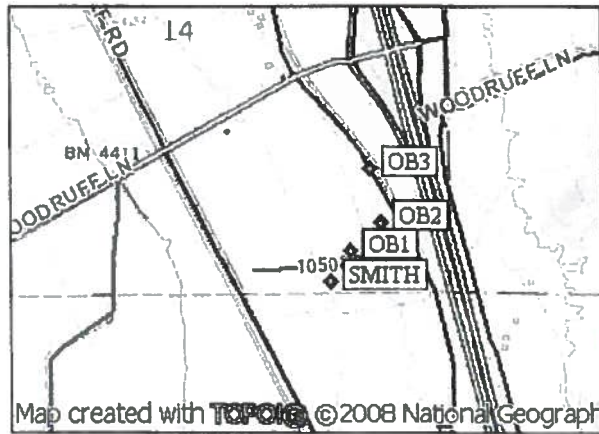


Figure 1. Map of pumped well (Smith) and observation wells for the Lex Smith Pumping Test

Table 1 Wells used in the Lex Smith Pumping Test.

Well Name	Owner Name	Tag #	Coords	Elevation	Radial Distance
Smith Well	Lex Smith	D0051338	12 T 399554 4653861	4437 ft	0
OB1	Allred	D0036075	12 T 399612 4653951	4455 ft	370 ft
OB2	Fullmer	D0026863	12 T 399708 4654040	4481 ft	800 ft
OB3	Richardson	N/A	12 T 399677 4654204	4496 ft	1200 ft



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Ground Water Development and Exploration

To estimate the long-term drawdown and impact to neighboring wells from pumping of the Smith Well I used the forward solution capabilities of the AQTESOLV program in a similar manner as has been presented to you in the past. I input an aquifer transmissivity is $3.5 \times 10^4 \text{ ft}^2/\text{day}$ and storativity of 0.0012. I also used the identical radial offsets, partial penetration and aquifer thickness of 140 feet as employed in the previously described aquifer test analysis. I assumed a fault spacing of 12,000 ft (Mr. McVay's number) and continuous pumping for 180 days at a rate of 290 gpm. As I described previously to you in my letter dated June 9, 2010, I think that these parameters are too conservative, but as you will see they have little impact on the calculated results. The AQTESOLV plot for this pumping and aquifer scenario is presented in Figure 3-5. The drawdown curves for the Smith, OB1, OB2 and OB3 are shown in the figure. The calculated drawdown for the Smith Well should be ignored because it assumes a perfectly efficient well and it will be greater. The calculated drawdown for the three observation wells is about 2 ft. The drawdown curves flatten at late time in the plot and I think this is because constant head boundaries were used to represent the north and south extent of the 12,000 ft wide neck in the mouth of the Malad Basin Aquifer created by the two bounding faults. To the north and the south the Malad Basin Aquifer opens up and the constant head boundary is a reasonable assumption for the behavior of the aquifer at the two ends of the model.

It is my professional opinion that Mr. Lex Smith's water right will not excessively impact his neighbors' right to divert water. For several reasons I believe that the calculated drawdown over estimates the actual drawdown to be expected. I present these reasons in my June 9, 2020 letter but basically they amount to the fact that no one pumps continuously during the irrigation season (thus 6 months continuous pumping is much too high), it is likely that Mr. Smith will pump at a lower rate than 290 gpm because he is only irrigating 20 acres and I believe that the fault spacing is more on the order of 15,000 ft than 12,000 ft.

On behalf of the Smith's I humbly request that you expedite approval of their water right application PERMIT 15-7307. Please do not hesitate to call me if you have any questions about this letter or the calculations presented herein. I will transmit to you electronically the data files collected during the test and the processed data.

Respectfully,

Thomas R. Wood, PhD, PG



cc Lex and Bo Smith, 1655 E 10500 S, Malad, Idaho 83252



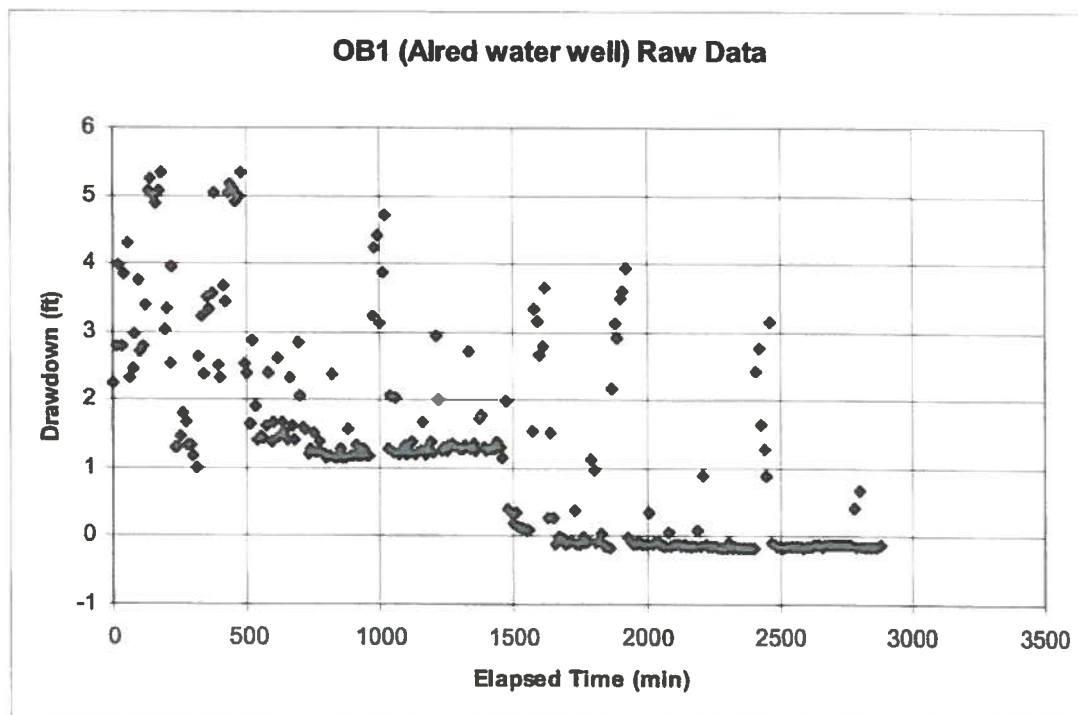
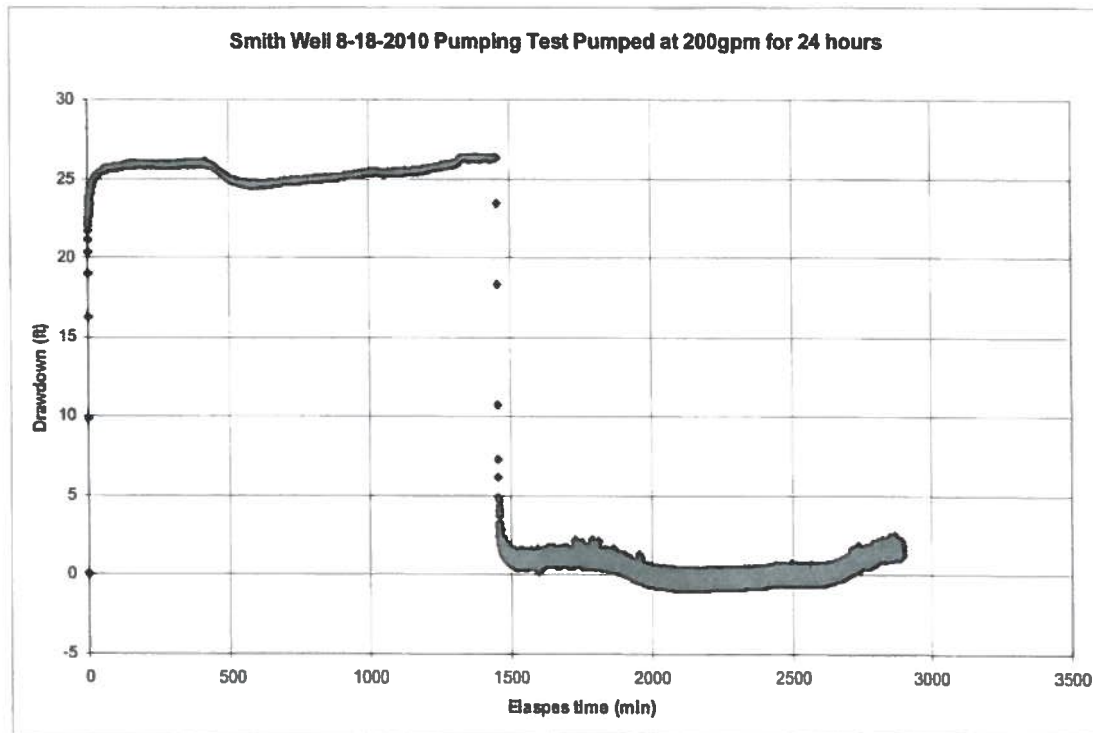
Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 1

DATA PLOTS

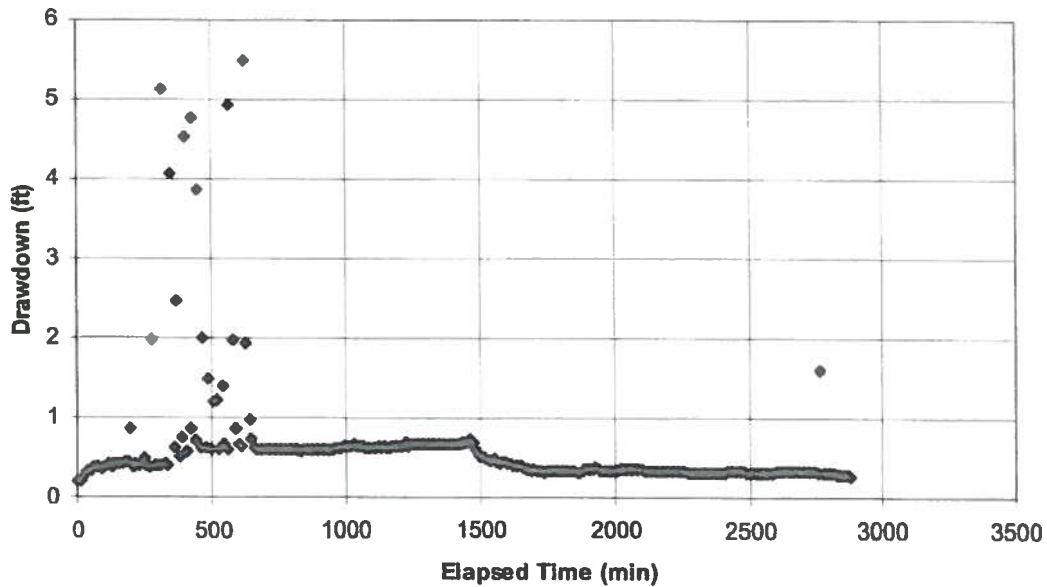


Clearwater Geosciences, LLP
Ground Water Development and Exploration

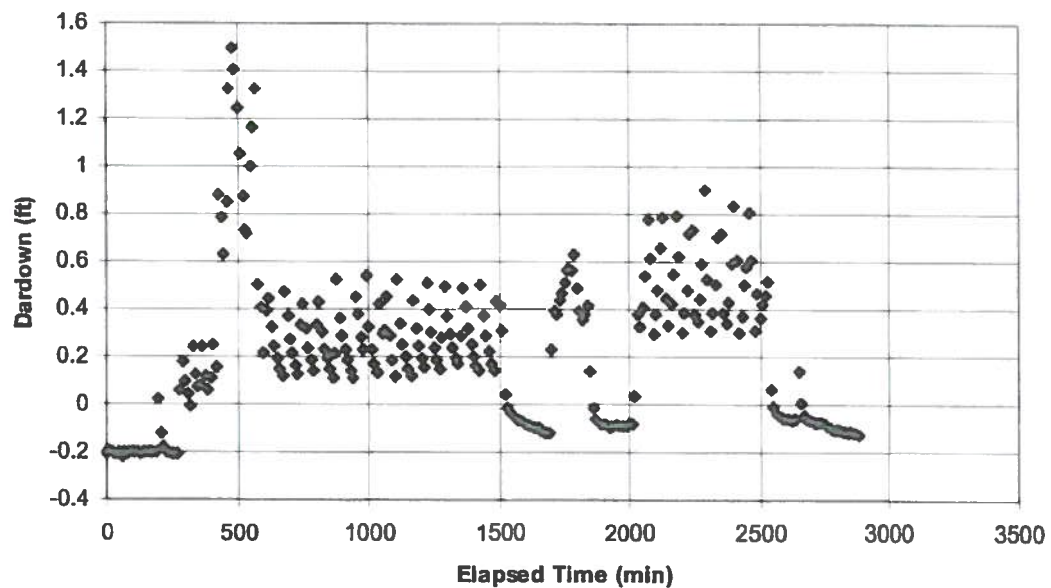




OB2 (Fullmer Water Well) Raw Data

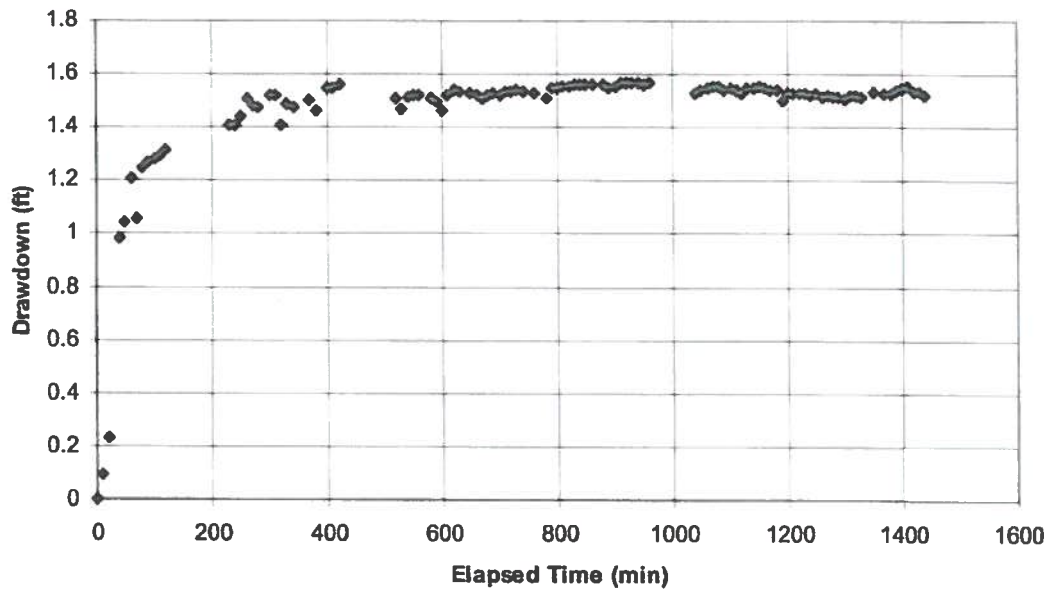


OB3 (Richardson Water Well) Raw Data

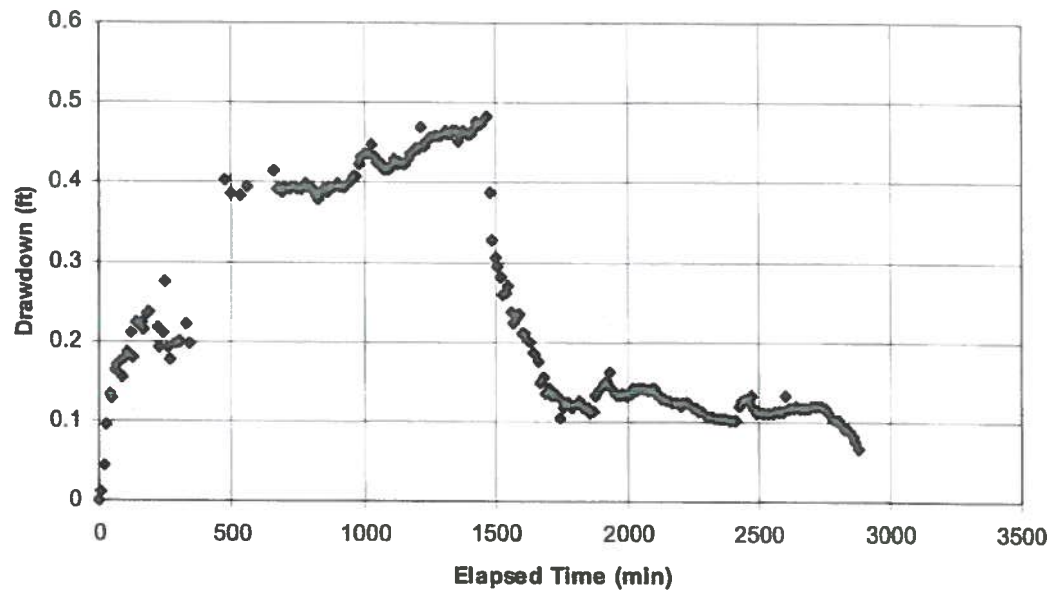


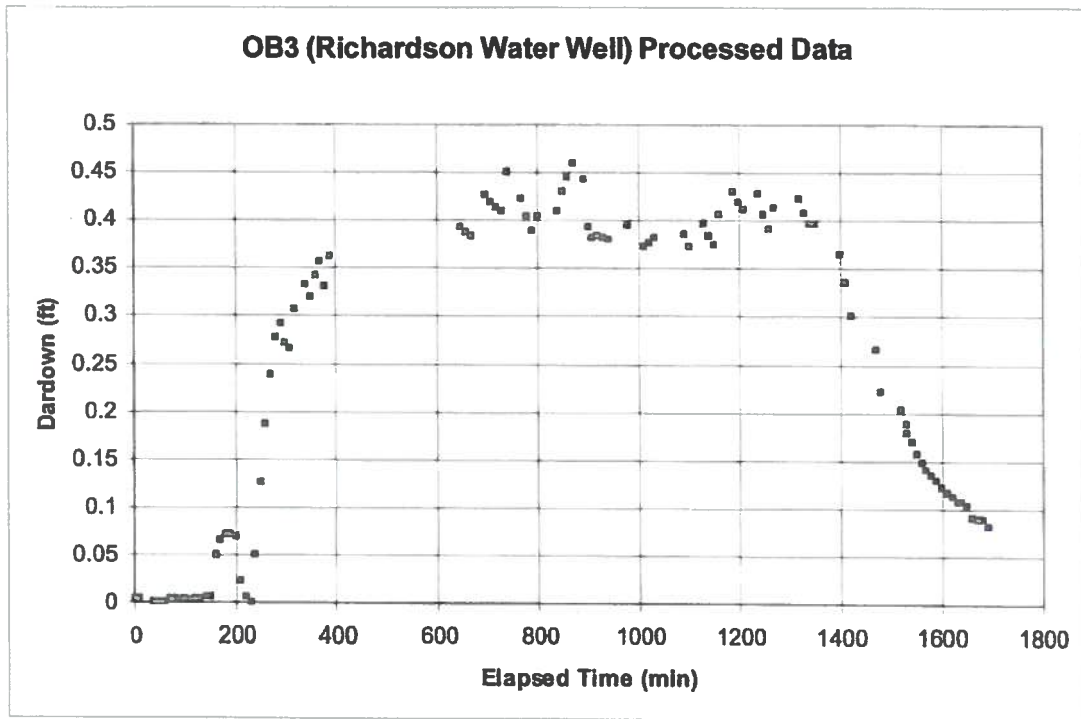


OB1 (Allred water well) Processed Recovery Data



OB2 (Fullmer Water Well) Processed Data







Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 2

WELL LOGS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
6/07

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

1. WELL TAG NO. D DW051338

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER: Lex Smith

Name Lex Smith

Address 1696 S 19000 W

City Moled State ID Zip 83252

3. WELL LOCATION:

Twp. 16 North ☐ or South ☒ Rge. 36 East ☒ or West ☐

Sec. 14 SE 1/4 S 1/4 SE 1/4

Gov't Lot _____ County Oneida

Lat. _____ (Deg. and Decimal minutes)

Long. _____ (Deg. and Decimal minutes)

Address of Well Site 1696 S 19000 W

City M

Lot _____ Blk. _____ Sub Name _____

4. USE:

☒ Domestic ☐ Municipal ☐ Monitor ☒ Irrigation ☐ Thermal ☐ Injection

☐ Other _____

5. TYPE OF WORK:

☒ New well ☐ Replacement well ☐ Modify existing well

☐ Abandonment ☐ Other _____

6. DRILL METHOD:

☒ Air Rotary ☐ Mud Rotary ☐ Cable ☐ Other _____

7. SEALING PROCEDURES:

Seal material From (ft) To (ft) Quantity (lbs or ft³) Placement method/procedure

Bentonite 17 78 27 bags Overbore

8. CASING/LINER:

Diameter (nominal) From (ft) To (ft) Gauge/Schedule Material Casing Liner Threaded Welded

8" 48 28 .250 Steel ☒ ☐ ☐ ☒

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

☐ ☐ ☐ ☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 218

9. PERFORATIONS/SCREENS:

Perforations ☒ Y ☐ N Method Knife

Manufactured screen ☐ Y ☐ N Type _____

Method of installation _____

From (ft) To (ft) Slot size Number/ft Diameter (nominal) Material Gauge or Schedule

155 2110 4x4 1600 8" Steel .250

☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐ ☐

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter Material From (ft) To (ft) Quantity (lbs or ft³) Placement method

NA _____ _____ _____

☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐ ☐

☐ ☐ ☐ ☐ ☐ ☐

11. FLOWING ARTESIAN:

Flowing Artesian? ☐ Y ☒ N Artesian Pressure (PSIG) _____

Describe control device _____

12. STATIC WATER LEVEL and WELL TESTS:

Depth first water encountered (ft) _____ Static water level (ft) 76

Water temp. (°F) _____ Bottom hole temp. (°F) _____

Describe access point _____

Well test:

Drawdown (feet) Discharge or yield (gpm) Test duration (minutes) Test method:

Pump ☐ ☐ ☐ ☐ ☐ ☐ ☐ ☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Remarks, lithology or description of repairs or abandonment, water temp.

10" 17 18 Clay

18 30 Cemented gravel

30 35 Clay

35 60 Cemented gravel

60 78 Clay

78 98 Cemented gravel

98 93 Clay

93 95 Clay

95 100 Cemented gravel

100 110 Clay

110 130 Cemented gravel

130 145 Clay

145 218 Cemented gravel

RECEIVED

SEP 22 2008

Department of Water Resources
Eastern Region

Completed Depth (Measurable) 218'

Date Started 9-11-08

Date Completed 9-16-08

14. DRILLER'S CERTIFICATION:

I/We certify that all minimum well construction standards were complied with at the time the rig was removed

Company Name Volmer Drilling Co No. 383

*Principal Driller [Signature] Date 9-19-08

*Driller _____ Date _____

*Operator II Jerry Wallace Date 9/19/08

Operator I _____ Date _____

* Signature of Principal Driller and rig operator are required



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 876-7
8/02
DMO

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

Office Use Only
Well ID No. _____
Inspected by _____
Twp _____ Rge _____ Soc _____
14 14 4
Lat _____ Long _____

1. WELL TAG NO. D 0036075
DRILLING PERMIT NO. _____
Water Right or Injector Well No. _____

2. OWNER
Name Robert Arnold
Address 1425 E. Continental Circle
City Meridian State ID Zip 83258

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 16 North 1 or South 1
Rge. 3E East X or West 1
Sec. 3E 1/4 NE 1/4 NE 1/4
Gov't Lot _____ Country Idaho
Lat: _____ Long: _____
Address of Well Site Same City _____

LL _____ Blk. _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Air Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
<u>Ben Seal</u>	<u>0</u>	<u>20</u>	<u>LaBags</u>	<u>Overhead</u>

Was drive shoe used? ☒ ☐ ON Shoe Depth(s) 160
Was drive shoe seal tested? ☒ ☐ LIN How? _____

8. CASING/LINER:

Diameter	From	To	Quantity	Material	Casing	liner	We used	Threaded
<u>12"</u>	<u>0</u>	<u>160</u>	<u>25</u>	<u>100</u>	<u>X</u>	<u>1</u>	<u>X</u>	<u>1</u>

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☐ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method Touch
Screen Type & Method of Installation

From	To	Slot Size	Number	Diameter	Material	Casing	liner
<u>140</u>	<u>160</u>	<u>27</u>	<u>14-6</u>	<u>16"</u>	<u>Steel</u>	<u>X</u>	<u>1</u>

10. FILTER PACK

Filter Material	From	To	Weight	Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

88 ft. below ground Artesian pressure _____ ft.
Depth flow encountered _____ ft. Describe access port or control devices: _____

12. WELL TESTS:

☐ Pump ☐ Bailor ☐ Air ☐ F ng A esian

Void gain/air	Drawdown	Pumping Level	Time
<u>3000</u>			

Water Temp cold Bottom hole temp. cold
Water Quality (test or comments) good

Depth First Water Encounter 95

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Down	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
10	0	20	Brown clay some gravel	X	
16	20	60	Brown clay some gravel		X
16	60	85	Gravel cobbles clay Br.		X
16	85	95	Brown clay		X
16	95	120	Hard brown clay	X	
16	120	130	Brown clay		X
16	130	142	Hard brown gravel clay	X	
16	142	150	Brown clay		X
16	150	160	Gravel Br. clay	X	

RECEIVED

JUN 14 2005

Department of Water Resources
Eastern Region

Completed Depth 160 (Measurable)
Date Started 5-10-05 Completed 5-10-05

14. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed

Company Name 1st Great Lakes Drilling Firm No. 543

Principal Driller Michael Frazier Date 5-15-05
and
Driller or Operator I Phil Frazier Date 5-15-05

Operator I _____ Date _____
Principal Driller and Rig Operator Required
Operator I must have signature of Driller/Operator II

FORWARD WHITE COPY TO WATER RESOURCES



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Well ID No. _____
Inspected by _____
Twp _____ Rge _____ Sec _____
1/4 _____ 1/4 _____ 1/4 _____
Lat: _____ Long: _____

1. WELL TAG NO. D D0026863
DRILLING PERMIT NO. _____
Water Right or Injection Well No. _____

2. OWNER:
Name Darryl Fullmer
Address 10405 Old Hwy 191
City Malden State ID Zip 83252

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 36 North ☐ or South ☒
Rge. 14 East ☐ or West ☐
Sec. 14 SW 1/4 SW 1/4 NE 1/4
Gov't Lot _____ Township _____ Range _____
County Blaine State ID
Lat: _____ Long: _____
Address of Well Site Same City _____

LL _____ Blk _____ Sub. Name _____

4. USE:
☒ Domestic ☐ Municipal ☐ Monitor ☐ Irrigation
☐ Thermal ☐ Injection ☐ Other _____

5. TYPE OF WORK check all that apply (Replacement etc.)
☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

6. DRILL METHOD:
☒ Rotary ☐ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

Seal Material	From	To	Weight / Volume	Seal Placement Method
Ben-seal	0	25	slurry	pour

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) _____
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	0	142	14	prim	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____
Packer ☐ Y ☒ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method N/A
Screen Type & Method of Installation _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

44 ft. below ground Artesian pressure _____ lb
Depth flow encountered _____ ft. Describe access port or control devices: _____

12. WELL TESTS:

Yield gal./min.	Drawdown	Pumping Level	Time
40	25	71	1 hr.

Water Temp. Cold Bottom hole temp. _____
Water Quality test or comments: Turns steel green

116' 2 106 PM → Depth first Water Encounter _____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
10	0	3	Top soil		
3	98		white clay		
6	98	116	Sand gravel		
116	116		gravel		
116	137		Blue clay		
137	148		gravel		
148	160		Blue clay		

RECEIVED
AUG 11 2003

Department of Water Resources
Eastern Region

Completed Depth 142 (Measurable)

Date: Started 4-21-03 Completed 5-20-03

14. DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with at the time the rig was removed.

Company Name JC Green Dully Firm No. 454

Principal Driller JC Green Date Aug 4-03
and Cal Palmer
Driller or Operator II _____ Date _____

Operator I _____ Date _____

Principal Driller and Rig Operator Required.
Operator I must have signature of Driller/Operator II.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 3

AQTESOLV PLOTS

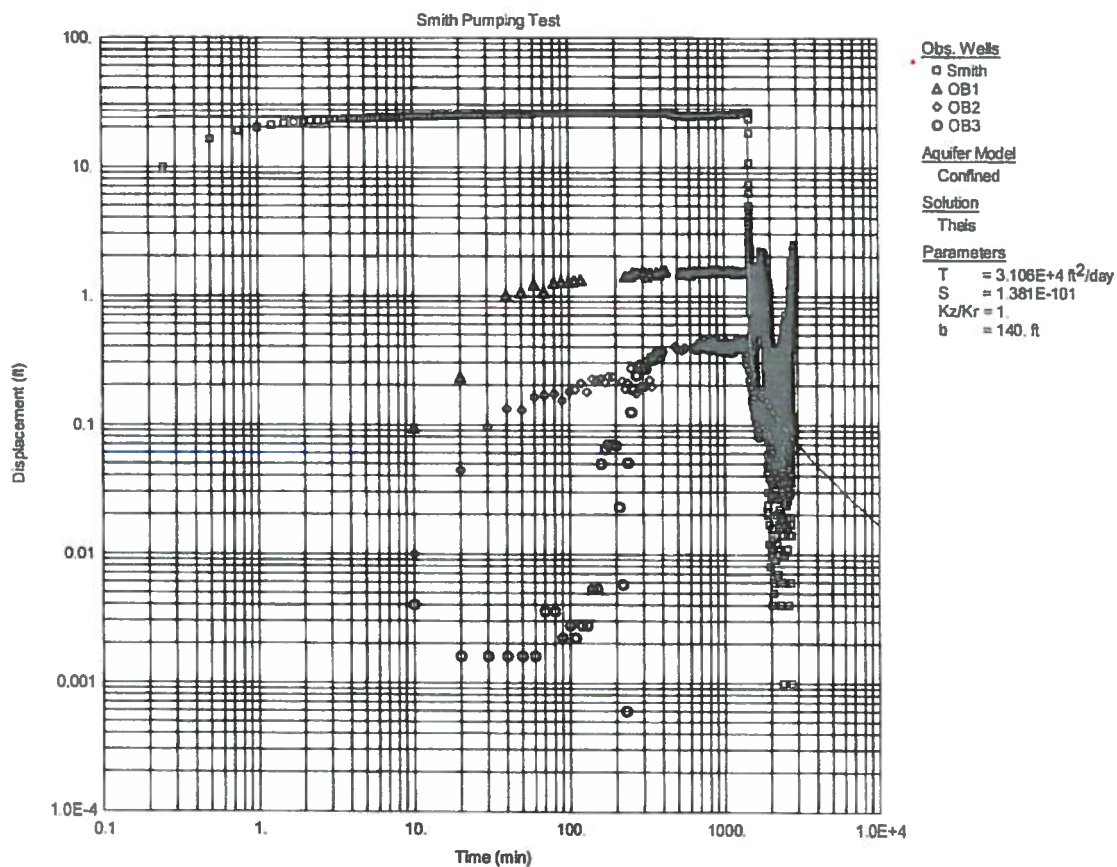


Figure 3-1 Theis confined solution matched to Smith Well.

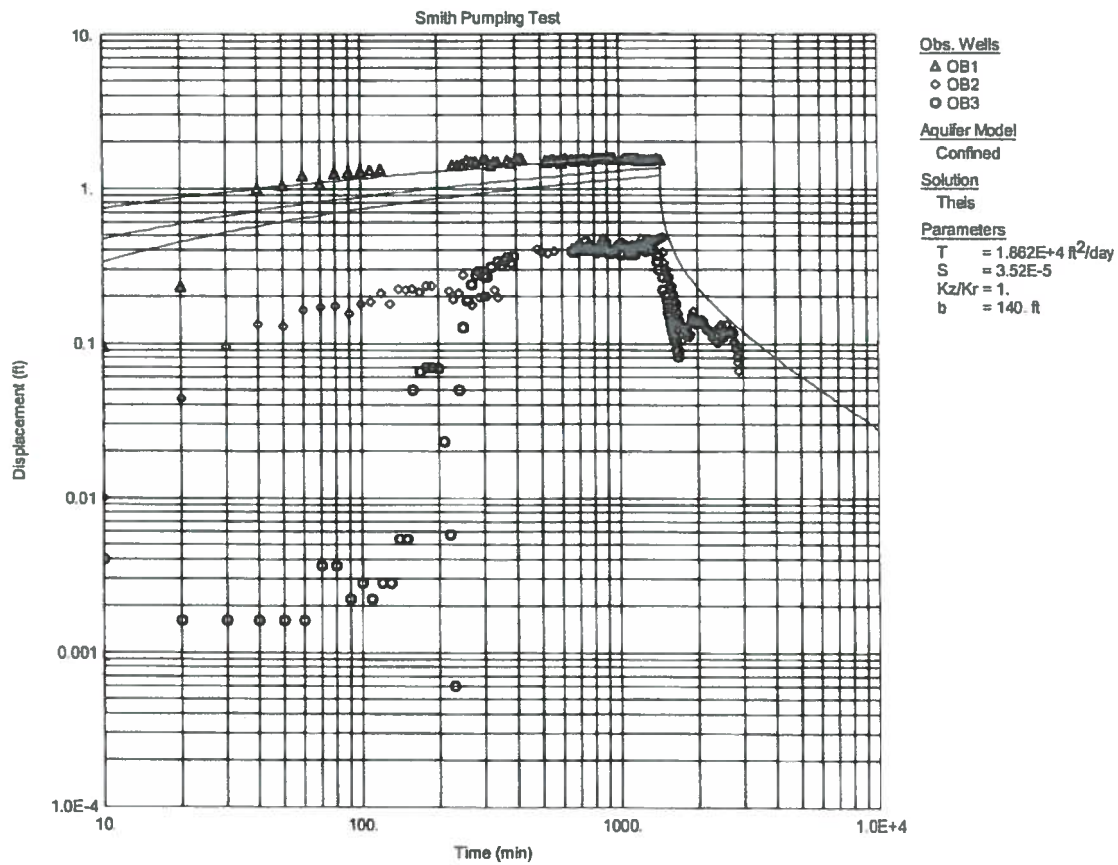


Figure 3-2 Theis confined solution matched to OB1.



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Ground Water Development and Exploration

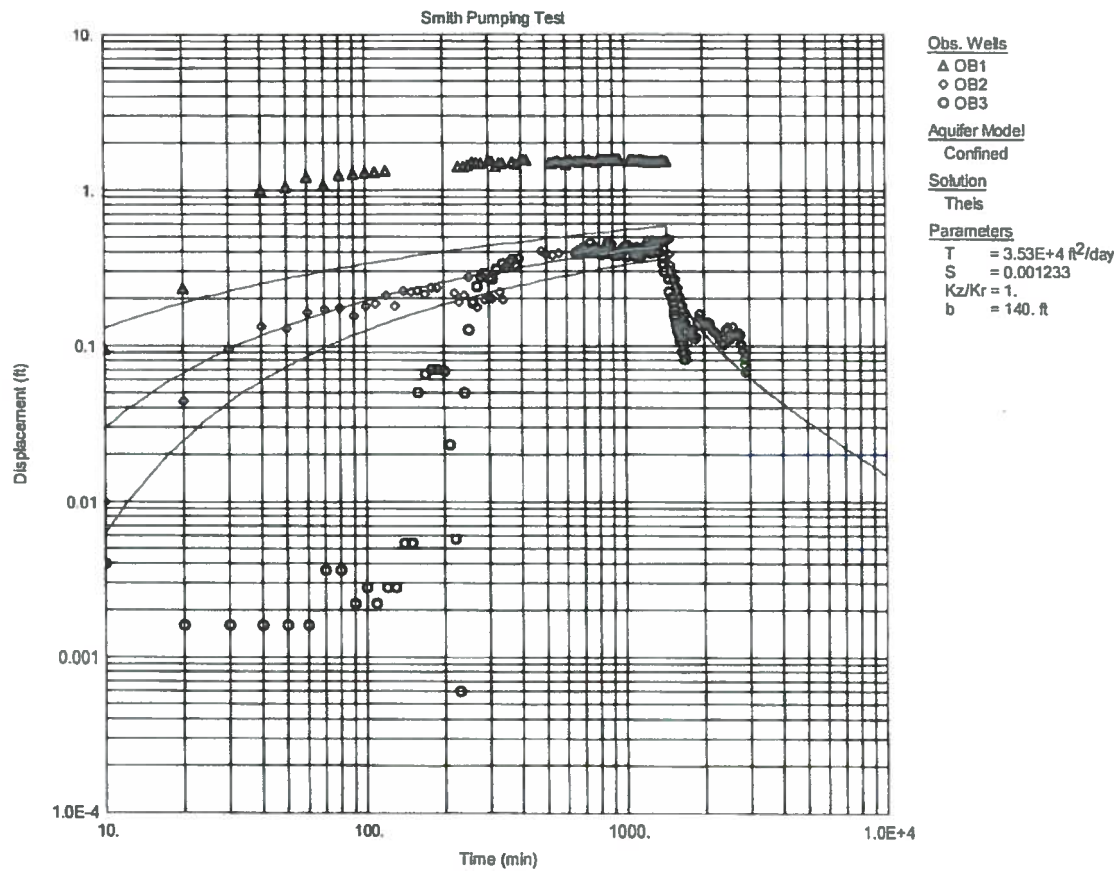


Figure 3-3 Theis confined solution matched to OB2.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

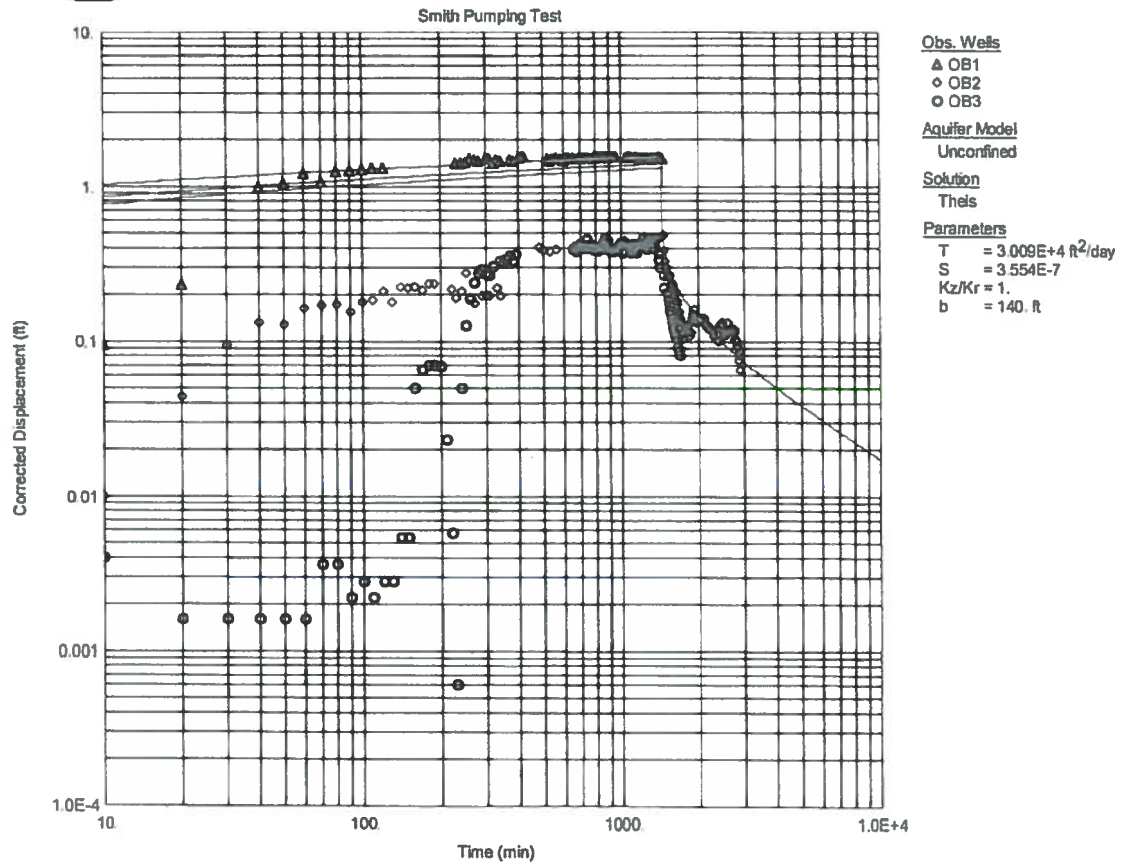


Figure 3-4 Theis unconfined solution matched to OB1



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Ground Water Development and Exploration

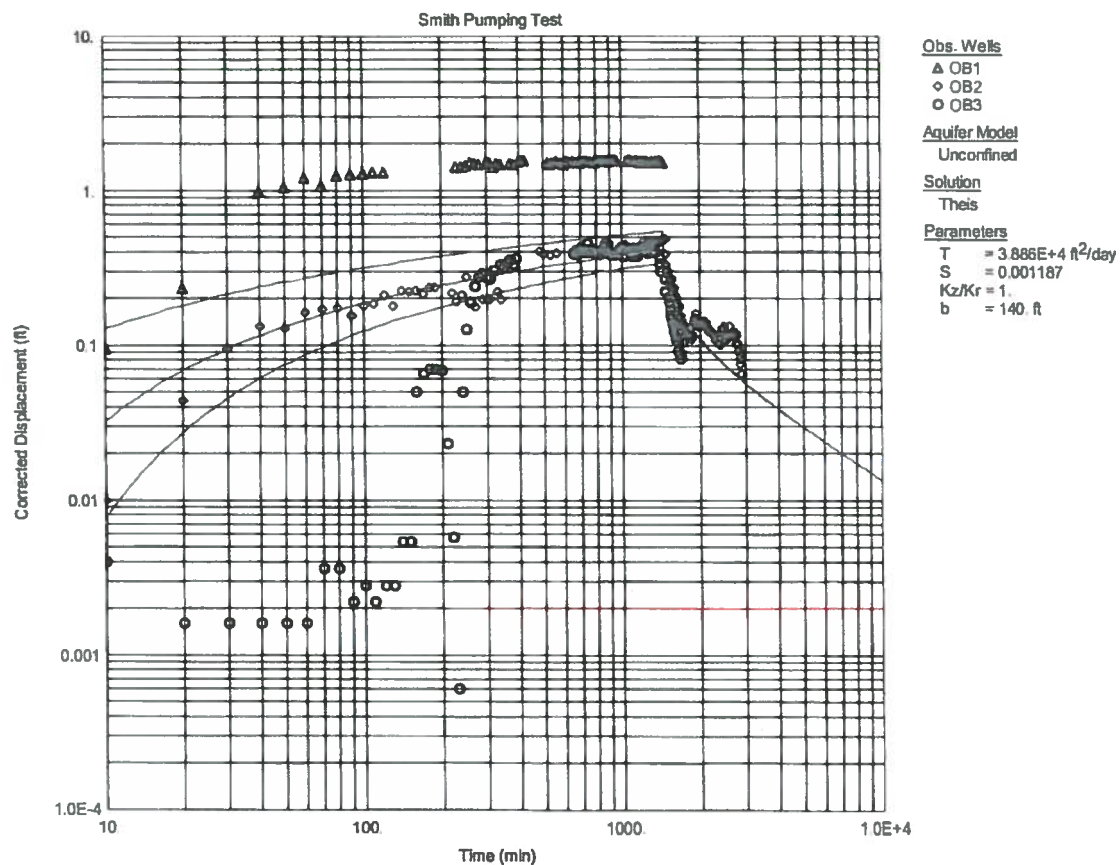


Figure 3-5 Theis unconfined solution matched to OB2.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

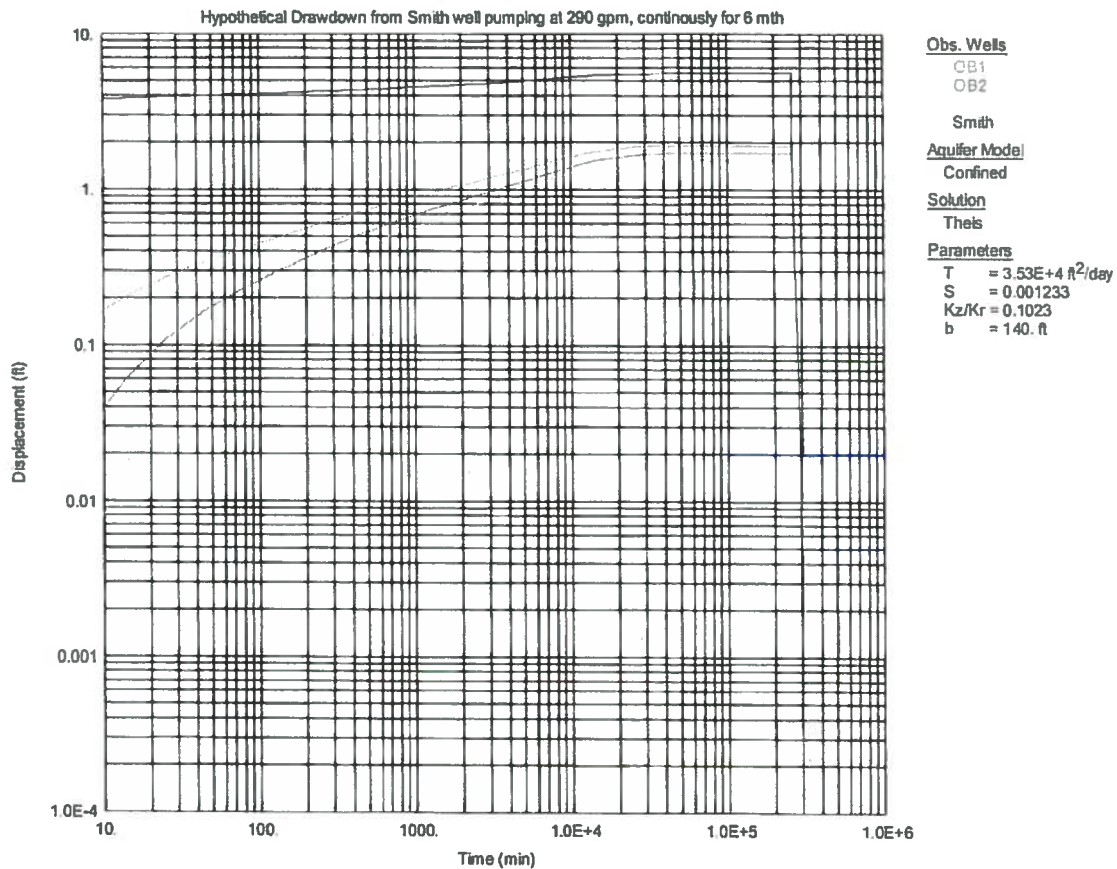


Figure 3-5 Calculated drawdown for Smith Irrigation well pumping at 290 gpm continuously for 6 months. Observation well radial distances are the same as listed in Table 1.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 5

AQUIFER IMPACT ANALYSIS

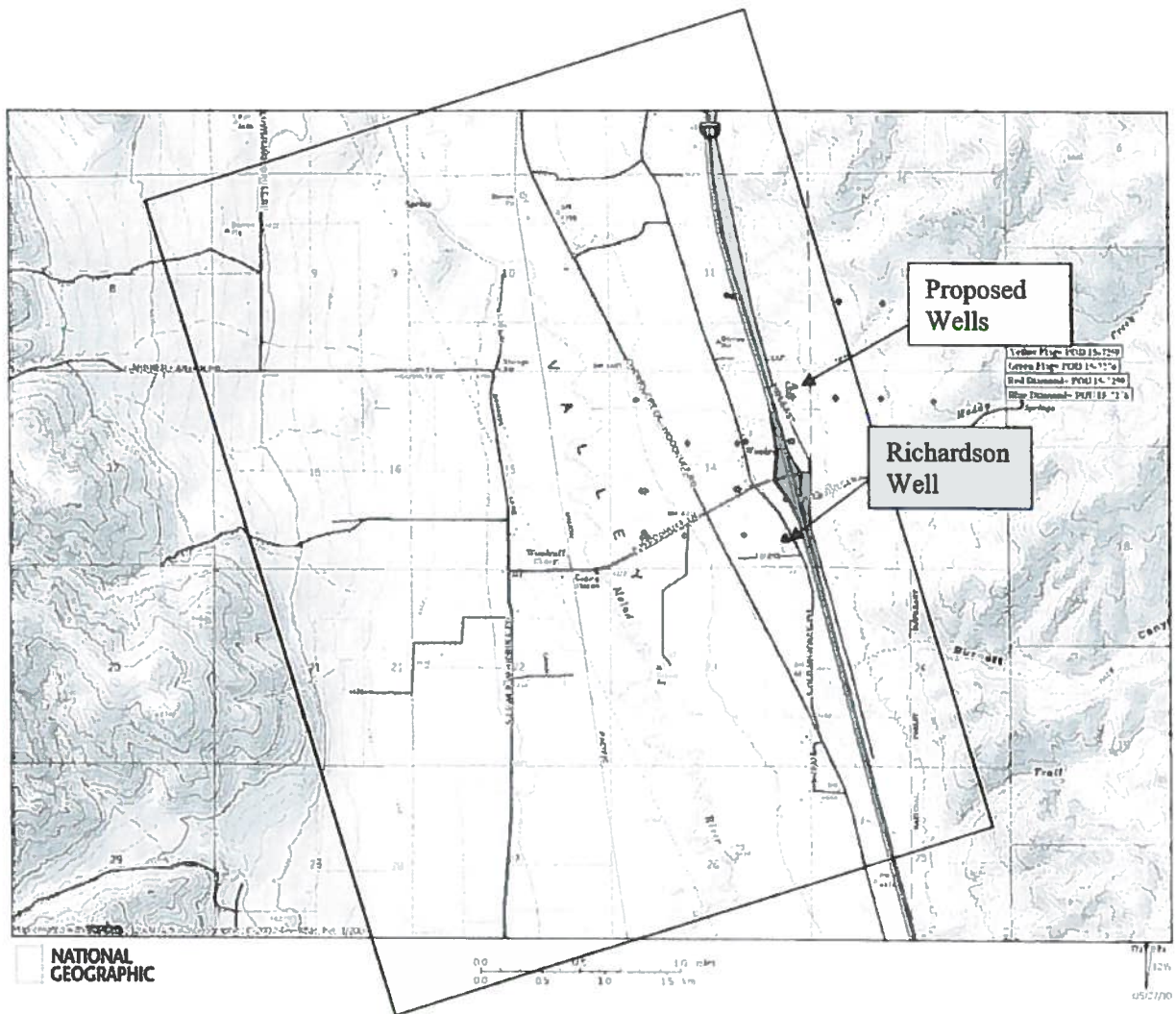


Figure 5-1 Location of proposed points of diversion for water rights, there Richardson's well and the outline of the conceptual framework used in the forward solution calculations in AQTESOLV.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

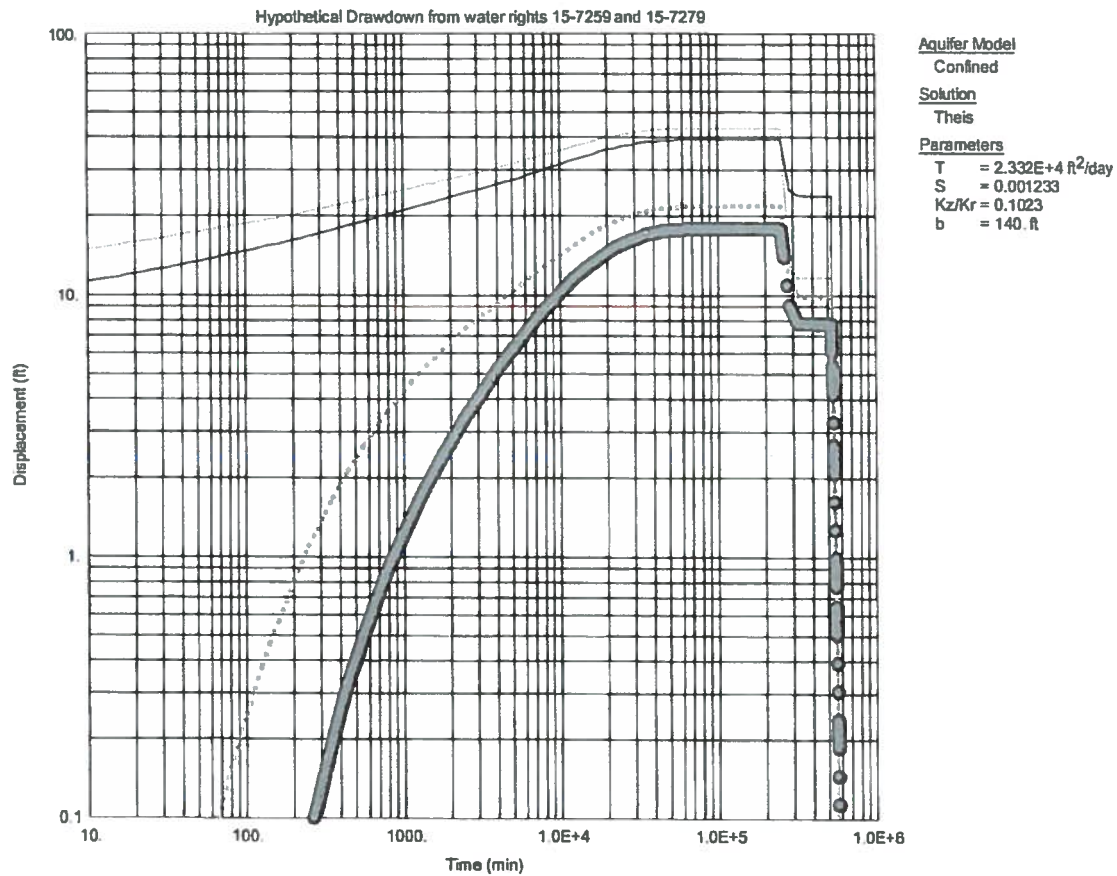


Figure 5-2 Predictive plot of drawdown at 100% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

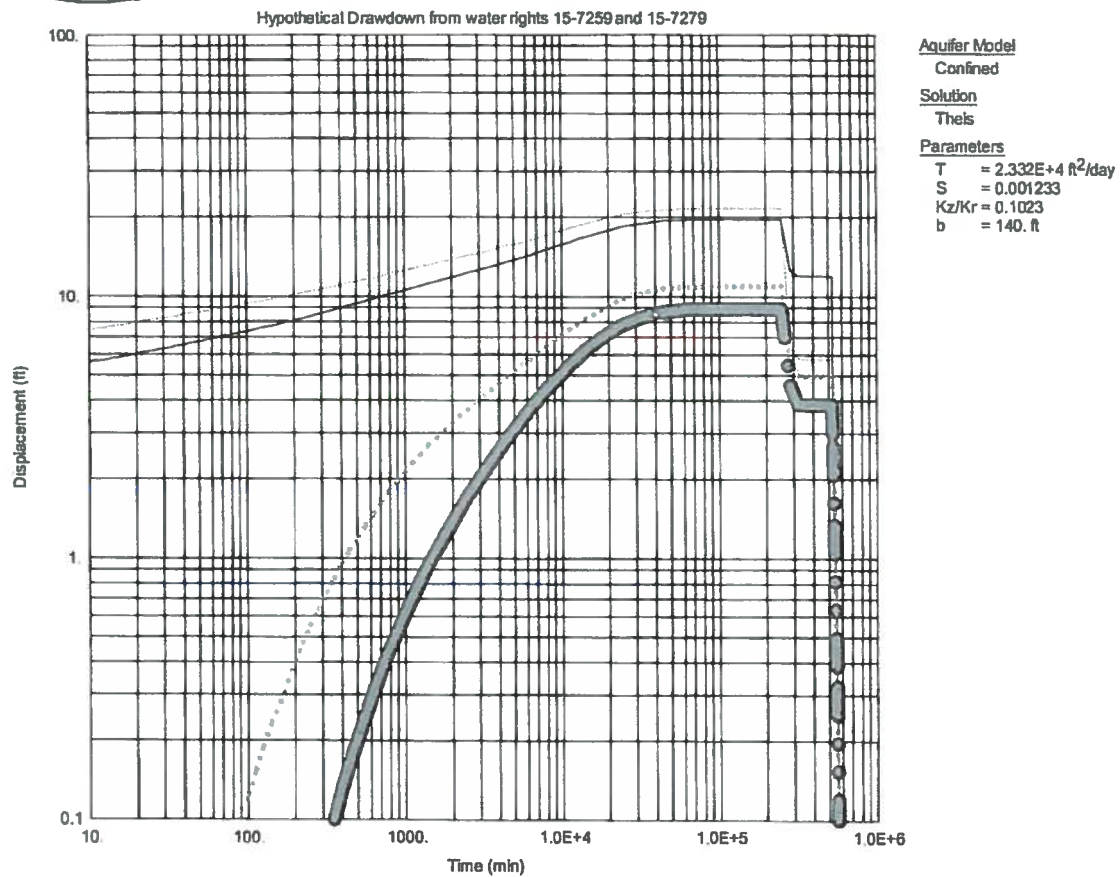


Figure 5-3 Predictive plot of drawdown at 50% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

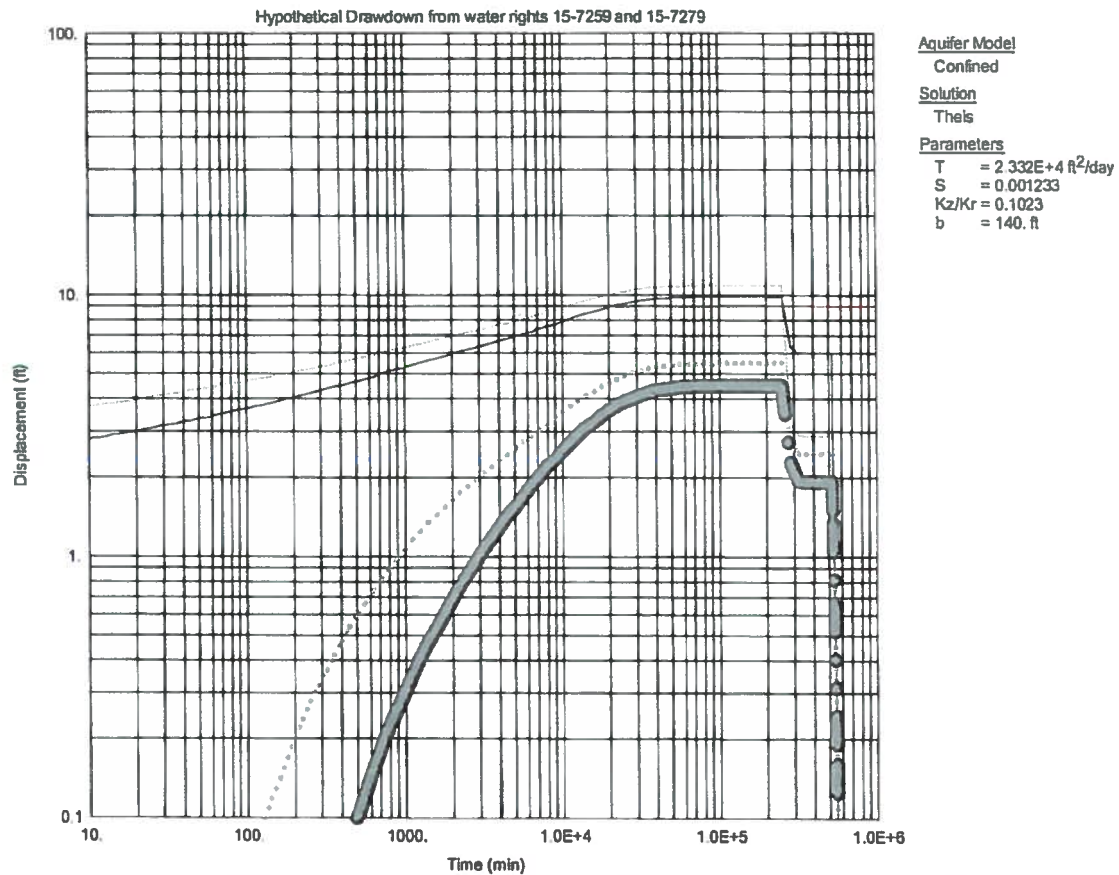


Figure 5-4 Predictive plot of drawdown at 25% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

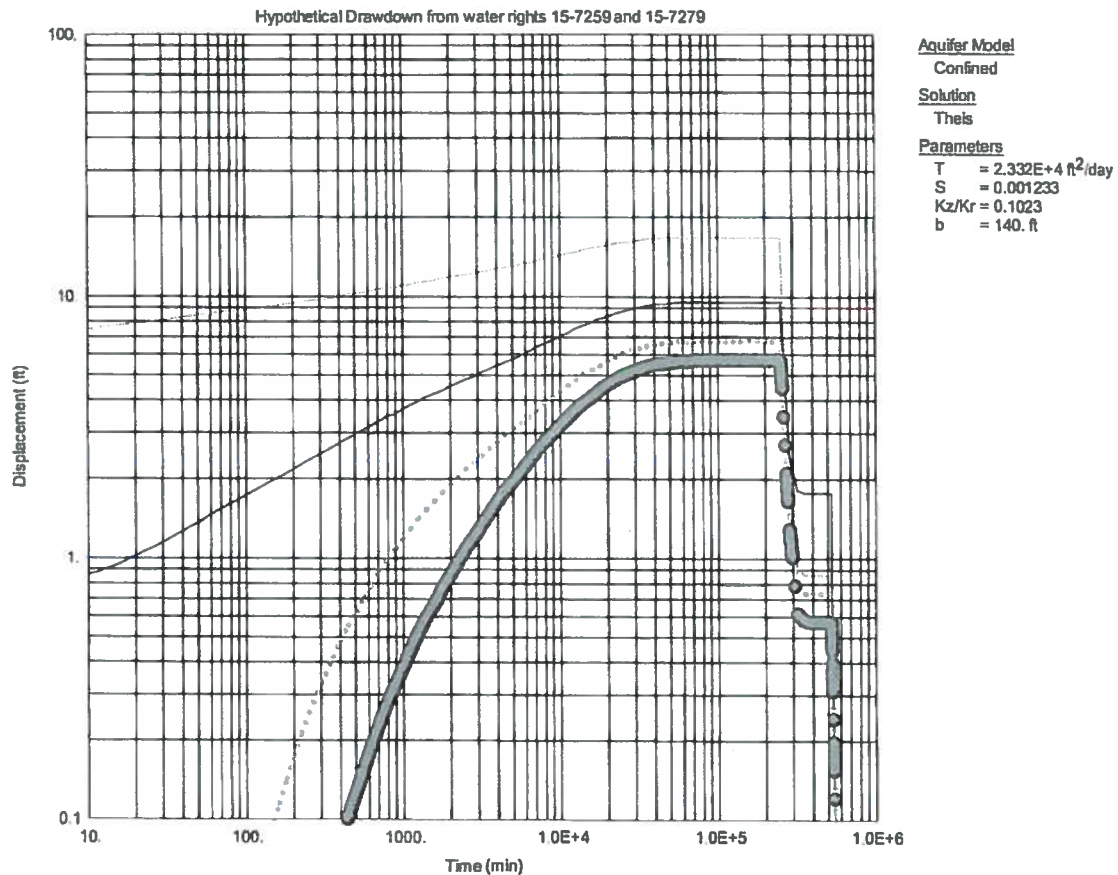


Figure 5-5 Predictive plot of drawdown for diversion rates of 900 gpm for the irrigation well and 100 gpm for the commercial well. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Appendix B

Well Logs

Table 1:

No.	Name	Depth (ft)	T	R	S	QQ	Use¹	Static	FirstH2O	Notes
1	Dean Abplanalapos	120	15S	36E	26	SWNW	Domestic	56	32	
2	Jeff Bringham	200	15S	36E	26	NESW	Domestic	135	190	
3	Robert Broadhead	135	15S	36E	26	NENW	Domestic	65	80	
4	Verlin Moon	300	15S	36E	26	NENW	Irrigation	100	23	
5	Ben and Natalie Ogden	200	15S	36E	26	NWSW	Domestic	74	85	
6	Evelyn Gronou	94	15S	36E	27	SESE	Domestic	57	75	
7	Leland Jones	145	15S	36E	27	NENE	Domestic?	52	137	Well use unclear
8	Ervin Jones	125	15S	36E	27	SESW	Irrigation	4?		Static level hard to read, no first H2O encountered listed
9	Donald Vaughan	269	15S	36E	27	NESE	Irrigation	51	69	
10	Cordell Williams	204	15S	36E	27	NENE	Irrigation	50	14	
11	Lehn Brangham	50	15S	36E	27	SWSE	Domestic	11?	11	Static level hard to read
12	Cleland Jones	100	15S	36E	23	SWSW	Domestic	45	1	
13	D Perry Jones	385	15S	36E	23	SWNW	Irrigation	17	78	
14	Dave Jones	152	15S	36E	23	NWSW	Domestic	50	60	

¹ Use was obtained from field "LotBlockUse" in the IDWR well-log database or from notations in the logs.

No.	Name	Depth (ft)	T	R	S	QQ	Use ¹	Static	FirstH2O	Notes
15	Tresia Jones	120	15S	36E	23	SWSW	Domestic	45	80	
16	Albert Millward	300	15S	36E	23	NESW	Irrigation	17	70	