

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT
To appropriate the public waters of the State of Idaho

1. Name of applicant(s) Travis and Heidi Burton Phone 435-881-9999
 Name connector (check one): ☐ and ☐ or ☒ and/or
 Mailing address PO Box 681 City Millville
 State UT Zip 84326 Email burttraa@yahoo.com

2. Source of water supply Ground Water which is a tributary of _____

3. Location of point(s) of diversion:

TWP	RGE	SEC	Govt Lot	1/4	1/4	1/4	County	Source	Local name or tag #
16S	36E	22			SW	NE	ONEIDA	GROUND WATER	

4. Water will be used for the following purposes:

Amount 3.98 cfs for Irrigation purposes from 04/01 to 10/31 (both dates inclusive)
 (cfs or acre-feet per year)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
 (cfs or acre-feet per year)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
 (cfs or acre-feet per year)

Amount _____ for _____ purposes from _____ to _____ (both dates inclusive)
 (cfs or acre-feet per year)

5. Total quantity to be appropriated is (a) 3.98 cubic feet per second (cfs) and/or (b) _____ acre feet per year (af).

6. Proposed diverting works:

a. Describe type and size of devices used to divert water from the source. Well to pump to pivot system.

b. Height of storage dam _____ feet; active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet. If the reservoir will be filled more than once each year, describe the refill plan in item 11. For dams 10 feet or more in height OR reservoirs with a total storage capacity of 50 acre-feet or more, submit a separate Application for Construction or Enlargement of a New or Existing Dam. Application required? ☐ Yes ☐ No

c. Proposed well diameter is 12-16 inches; proposed depth of well is 200-300 feet.

d. Is ground water with a temperature of greater than 85°F being sought? ☐ Yes ☒ No

e. If well is already drilled, when? _____; drilling firm _____;
 well was drilled for (well owner) _____; Drilling Permit No. _____.

7. Description of proposed uses (if irrigation only, go to item 8):

a. Hydropower; show total feet of head and proposed capacity in kW. _____

b. Stockwatering; list number and kind of livestock. _____

c. Municipal; complete and attach the Municipal Water Right Application Checklist.

d. Domestic; show number of households _____

e. Other; describe fully. _____

8. Description of place of use:

- If water is for irrigation, indicate acreage in each subdivision in the tabulation below.
- If water is used for other purposes, place a symbol of the use (example: D for Domestic) in the corresponding place of use below. See instructions for standard symbols.

TWP	RGE	SEC	NE				NW				SW				SE				TOTALS
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
16S	36E	22	3.8	12.2	38.3	16.3									22.4	38.9	39.4	27.8	199.1

Total number of acres to be irrigated: 199.1

9. Describe any other water rights used for the same purposes as described above. Include water delivered by a municipality, canal company, or irrigation district. If this application is for domestic purposes, do you intend to use this water, water from another source, or both, to irrigate your lawn, garden, and/or landscaping?

No other existing water rights.

- Who owns the property at the point of diversion? Applicant
- Who owns the land to be irrigated or place of use? Applicant
- If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing:

11. Describe your proposal in narrative form, and provide additional explanation for any of the items above. Attach additional pages if necessary.

Applicant proposes to irrigate the described property using a new well. Per IDWR requirements, a Water Supply Study has been included to show there is adequate ground water in the Malad Basin to support the development of this water right. A Well Interference Report is also included to show direct impacts from the proposed well on nearby existing wells.

12. Time required for completion of works and application of water to proposed beneficial use is 5 years (minimum 1 year).

13. **MAP OF PROPOSED PROJECT REQUIRED** - Attach an 8½" x 11" map clearly identifying the proposed point of diversion, place of use, section #, township & range. A photocopy of a USGS 7.5 minute topographic quadrangle map is preferred.

The information contained in this application is true to the best of my knowledge. I understand that any willful misrepresentations made in this application may result in rejection of the application or cancellation of an approval.

Travis Burton

Signature of Applicant

Travis Burton

Print Name (and title, if applicable)

Heidi Burton

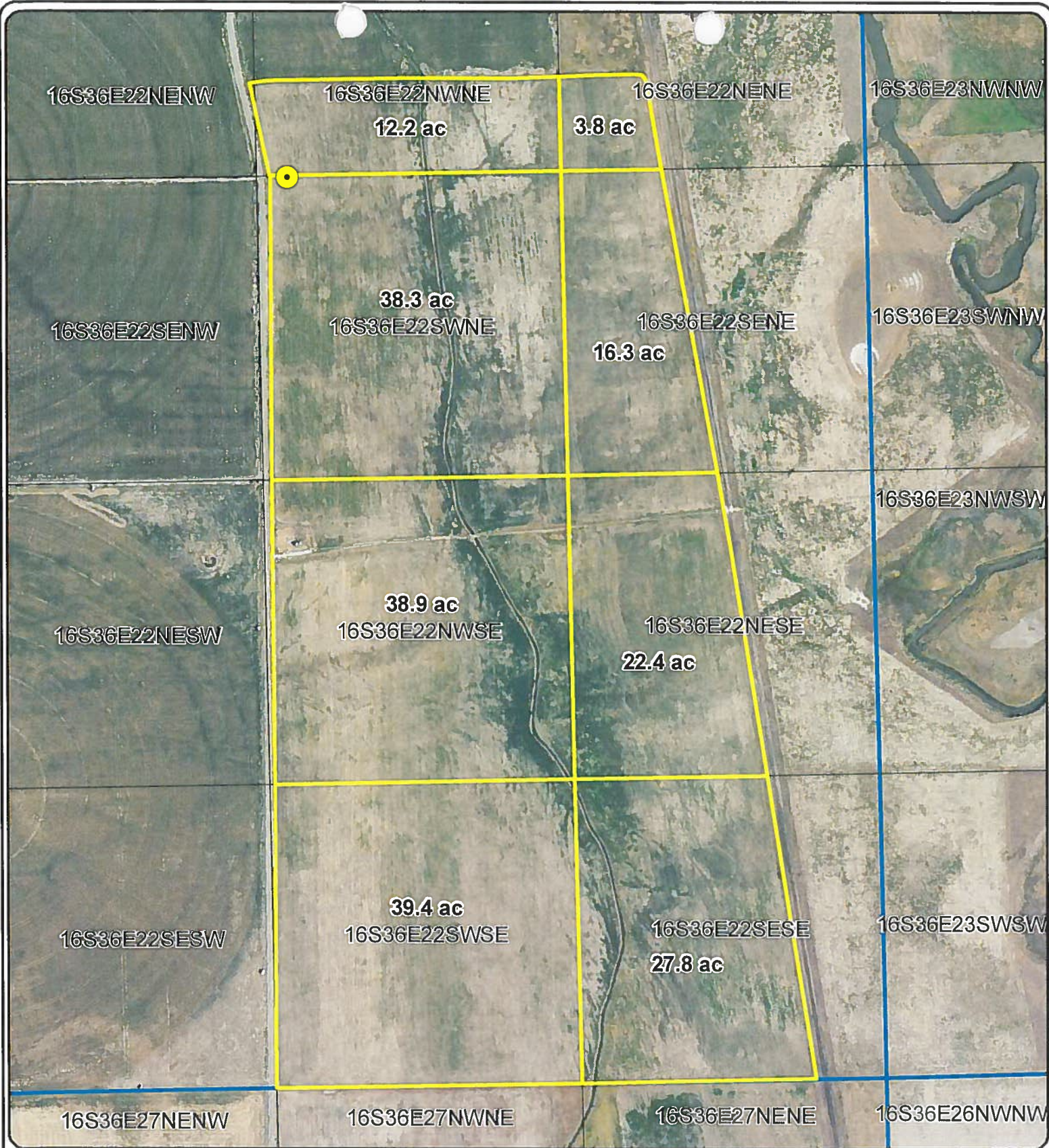
Signature of Applicant

Heidi Burton

Print Name (and title, if applicable)

For Department Use:

Received by 10/10/14 Date Time Preliminary check by
 Fee \$ 370 - Received by SC Receipt No. 2040331 Date 10/10/14



2013 NAIP Photography

Application for Permit

Travis and Heidi Burton

- Proposed POD
- Proposed POU
- Township and Range
- Section
- QQ

0 300 600 1,200 Feet

15-7389





Rocky Mountain
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ASSOCIATES, INC.

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OCT 10 2014
Department of Water Resources
Eastern Region

**Well Interference Analysis
"200 acre" Piece – Travis Burton
September, 2014
RMEA Project 14-0043**

Background

Travis Burton wishes to apply for a groundwater right to irrigate 199.1 acres from a well in Administrative Basin 15, Township 16S, Range 36E, Section 22, SWNE. A site map is provided as Figure 1, attached. This report describes analysis of potential well interference from the proposed pumping. It relies upon aquifer properties from 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.

Aquifer Test and Aquifer Properties

Clearwater reported that:

"The best match to the data... found the volume averaged transmissivity of the aquifer to be 3.5×10^4 ft²/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 2.3×10^4 ft²/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 3.5×10^4 ft²/day.

Geometric Configuration for Drawdown Calculation

Figure 2 shows an excerpt of a 2007 geologic map¹ identifying faults in the vicinity of the proposed Point of Diversion. Selected faults are emphasized with added red lines. Conceptually, faults may be considered potential barriers to propagation of drawdown in the perpendicular direction and potential conduits in parallel directions. Typical practice in drawdown analysis is to represent barriers using image wells, reflected across straight-line boundaries drawn to approximate the locations of barriers to flow. Of particular interest was the north-south fault in the center of the valley, mapped north of the proposed Point of Diversion, and with a short mapped continuation south of the proposed Point of Diversion.

Copies of drillers' well logs were obtained from IDWR for the area surrounding the proposed Point of Diversion. Figures 3 and 4 map the locations of these wells with considerable imprecision. The Public Land Survey legal description did not always match the geo-code location of the given street address, and sometimes neither appeared to correspond to any feature or structure in the aerial photograph. The well log of the northern most well in Figures 3 and 4 could not be found. A well log for a nearby well was used to analyze the stratigraphy in that area. Figures 3 and 4 show ground water rights (15-7143 and 15-7304) Points of Diversions for irrigation. Well logs for these ground water rights could not be located. Copies of available well logs are attached as Appendix A.

The well logs were reviewed to determine if there was evidence of significant vertical displacement of the contact between consolidated and unconsolidated materials along the north-south fault of interest. An elevation of consolidated materials west of the fault significantly greater than on the east would suggest that drawdown would not propagate to the west, and that a boundary should be drawn at the fault. The focus was on consolidated materials with the presumption that within unconsolidated materials there would be full communication across any expression of underlying faults.

Table 1, below, provides the total depth, static water level, and reported depth to the first water-bearing zone for the well logs found in Appendix A.

¹ Sean P Long and Paul K. Link. 2007. Geologic Map Compilation of the Malad City 30 x 60 Minute Quadrangle, Idaho. Idaho Geological Survey Technical Report 07-1

Table 1:

No.	Name	Depth (ft)	T	R	S	QQ	Use ²	Static	FirstH2O
1	Dave Harris	243	15S	36E	22	NENE	Irrigation	45	82
2	Jim Christensen	100	15S	36E	22	NENE	Domestic	10	82
3	Kelly Beckstrom	160	15S	36E	22	NENE	Domestic	13	85
4	Well log could not be found		15S	36E	15	SESW			
5	Perry Jones ³ (used in place of well #4)	400	15S	36E	15	NWSW	Domestic	-8	15
6	Russel and Joyce Stoddard	190	15S	36E	22	SENE	Domestic	15	80

Drawdown Calculations

Methodology. Drawdown was calculated using the Theis methodology for confined aquifers, with two image wells as represented in Figure 3. The image wells compensate for presumed lack of communication across the boundaries. The effect of image wells is increased calculated drawdown above what would be calculated using only the pumping well.

Pumping Rate. Rather than generate a hypothetical pumping schedule, the pumping rates for drawdown calculations were based upon an average rate of pumping sufficient to deliver the full-season volume of water, if pumping were to be distributed across 24 hours per day for the entire season. This reasonable approximation will produce the maximum drawdown from pumping, though it will result in some imprecision in the exact drawdown hydrograph at any location, and in the timing of maximum drawdown. The average pumping rate for calculations was based upon the IDWR standard volume of 3.5 acre feet per acre, yielding a pumping rate for analysis of 1.63 cfs for the 199.1 acres of proposed irrigation. Note that this is likely to exceed actual pumping volume

² Use was obtained from field "LotBlockUse" in the IDWR well-log database or from notations in the logs.

³ It is believed that this well is located outside of the half mile radius from the points of diversion. This well log was included because the well log of northern most well on Figures 3 and 4 (labeled 4 on the maps) could not be located. As Mr. Jones' well is located near the well with the missing well log, the stratigraphy in his well log was used for this analysis, however; the depth of this well was excluded in this analysis.

by nearly a factor of two. Therefore, actual expected drawdowns should be meaningfully less than estimated here.

Figure 4 illustrates that the expected drawdowns of approximately range from 7 to 7.7 feet for domestic, irrigation and water-right point of diversions. These potential drawdowns should be considered in light of the well logs shown in Table 1. These wells have a depth that ranges between 100 and 243 feet below land surface (bls). The static level within these wells ranges from 10 to 45 feet with the average depth to static level of 21 feet bls. The smallest difference between static level and bottom of the well is 90 feet.

Table 2, below, shows the historical statistics for four USGS monitoring wells in Administrative Basin 15. The water levels in these wells have been measured multiple times a year, generally in March and September, for the past several decades. The closest of these four wells, Well 15S36E-22ABA1, is 6 miles away from Mr. Burton's proposed point of diversion. The median seasonal variation in this well is 2.65 feet, with a maximum observation of 13.52 feet. The most distant well is over 13 miles away. Its median seasonal difference is 7.1 feet, though the maximum observation was over 40 feet.

The seasonal variation of the nearer wells is considered in light of the modest estimated drawdown and the depths of standing water generally represented in the well logs. These data suggest that it is unlikely for the development of the proposed water right to have a meaningful effect on domestic water supply at the presumed domestic well locations.

Table 2:

Well name	Smallest seasonal difference (feet)	Largest seasonal difference(feet)	Median of the seasonal difference (feet)	Distance from POD	Years
15S35E-22AAB1	0.06	16.85	0.91	6 miles	1963-2009
15S35E-01DAA1	0	26.87	10.14	9.2 miles	1943-2009
14S35E-13DBA1	0	44.15	7.1	12.92 miles	1943-2009
15S36E-22ABA1	0	13.52	2.265	6.6 miles	1943-2009

Conclusions

There are three wells located in the NENE of Section 22. Two of these wells are domestic and one of them is an irrigation well; however, it is unclear which of these is the irrigation well. These three wells have estimated drawdowns of approximately 7-

7.3 feet bls. Given that these three wells have more than 90 feet of difference between static water levels and the bottom of the well, it unlikely that drawdown at these locations will cause an exceedance of a reasonable pumping lift. This drawdown is unlikely to materially affect either well production or pumping cost. If the wells utilize constant-speed electric pump motors and supply systems equipped with pressure regulators or flow-control nozzles, this drawdown will have no appreciable effect on pumping costs.

Aerial photography indicates the potential of domestic wells within one half mile. Their calculations were used to estimate the possibility of drawdown for domestic wells, irrigation wells and water right point of diversions within one-half mile of the proposed Point of Diversion. Expected drawdowns at these locations range approximately from 7 to 7.7 feet for domestic, irrigation and water-rights. The probability of this causing practical difficulty is believed to be small as the surrounding wells appear to have at least 90 feet of difference between the static water level and the bottom of the well.

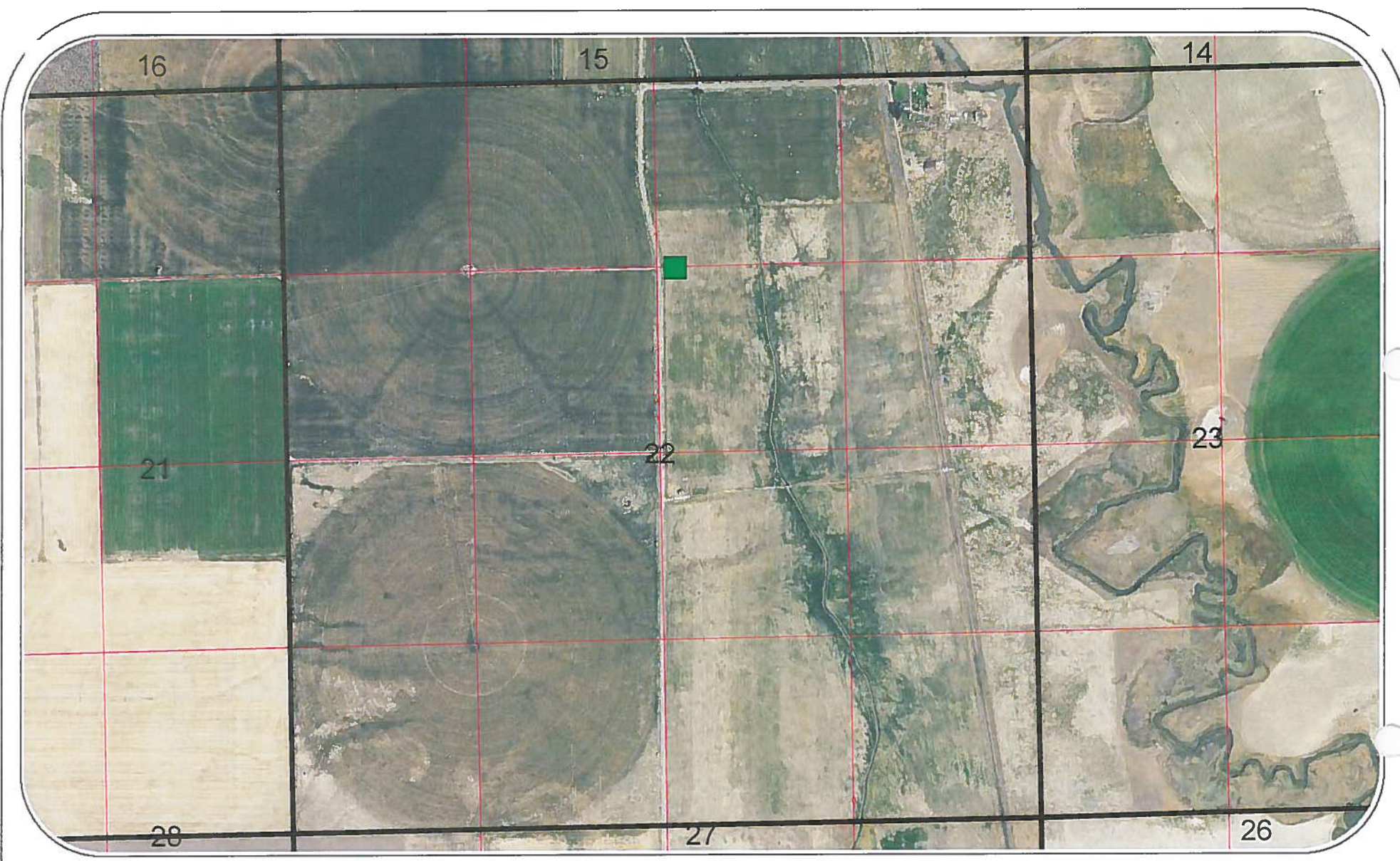
Rachel J. Wood
By Rachel J. Wood, Staff Geologist

September 22, 2014
Date

Bryce A. Contor
Reviewed by: Bryce A. Contor, Senior Hydrologist

22 Sept 2014
Date

Attachments: Figures 1 - 4
 Appendix A: Pump test report from water-right file 15-7276
 Appendix B: Well logs



Legend

-  Proposed POD
-  QQ
-  Section

0 0.1 0.2 0.4 Miles



Figure 1: Site Location

Malad City, Idaho

Township 16 South Range 36 East



Rocky Mountain
ENVIRONMENTAL
ASSOCIATES, INC.

[illegible]

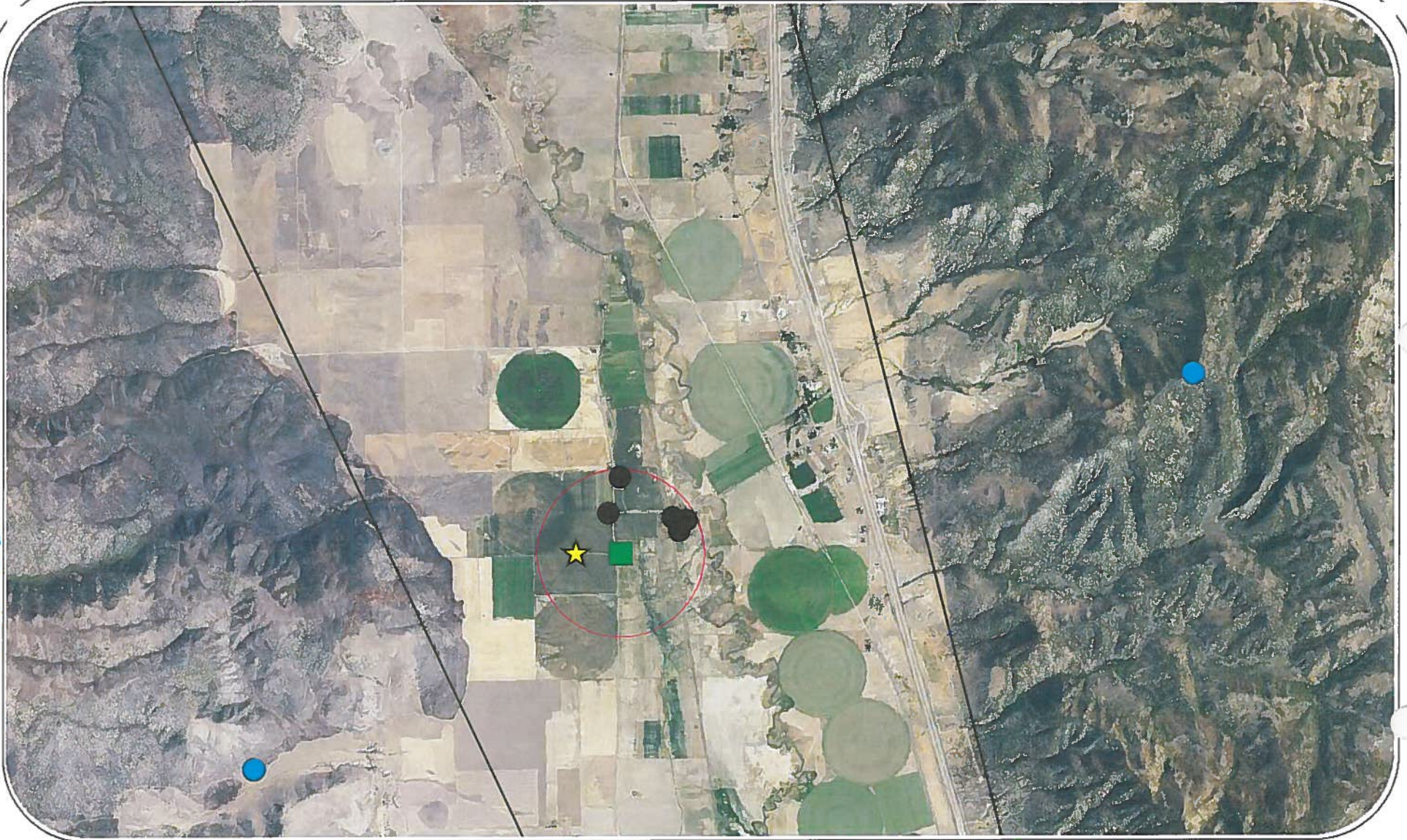
Malad City 30x60 Minute Quadrangle Idaho



Malad City, Idaho



Rocky Mountain
ENVIRONMENTAL™
ASSOCIATES, INC.



Legend

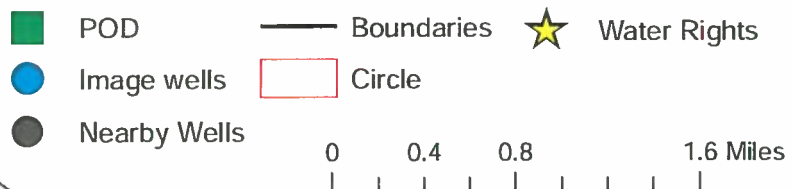
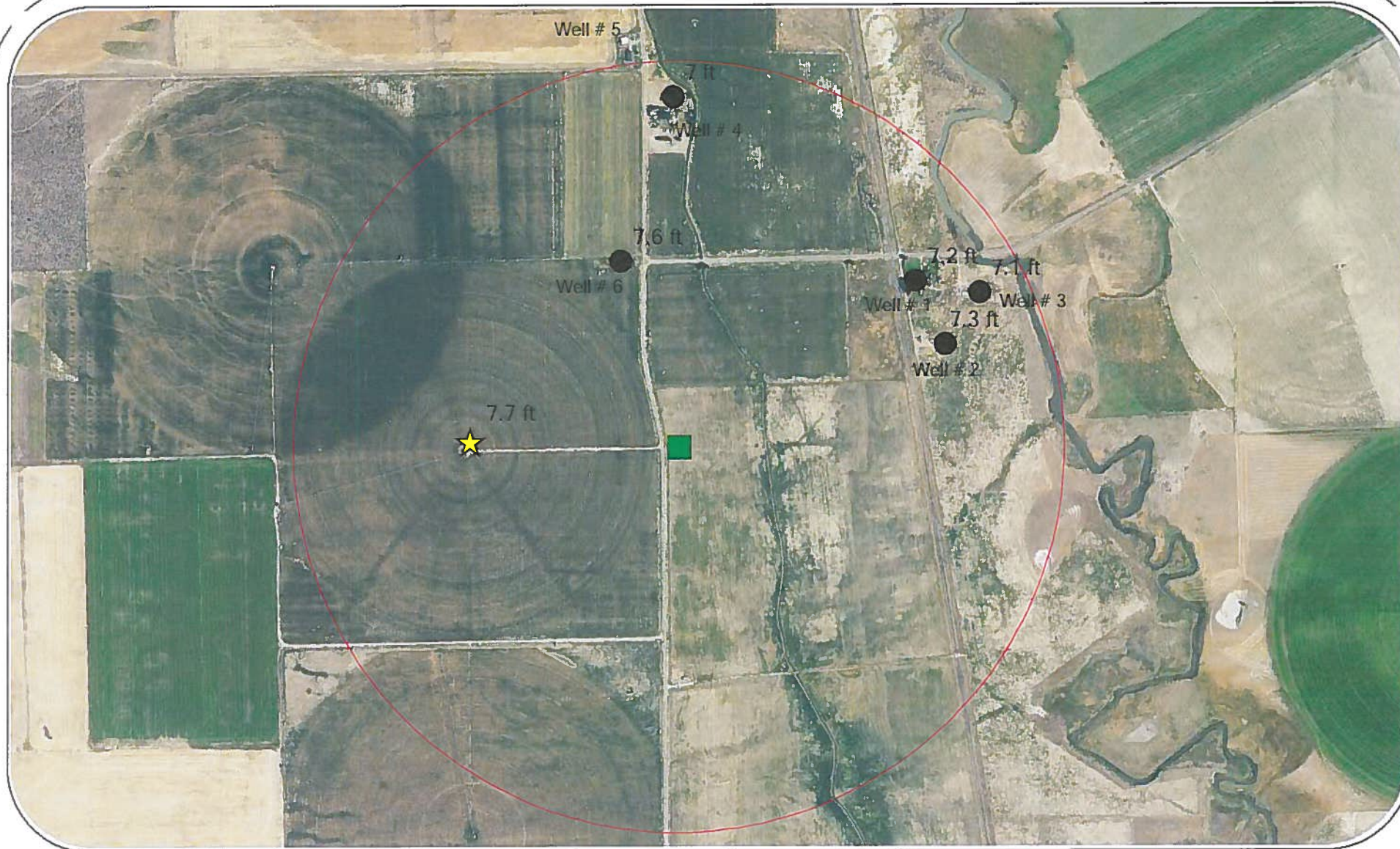


Figure 3: Theis Analysis
Malad City, Idaho



15-7300



Legend

- Proposed POD
- Circle
- Water Rights
- Nearby Wells
- 15-7143 and 15-7304
(may be in same well)

0 0.1 0.2 0.4 Miles



Figure 4: Calculated Drawdown
Malad City, Idaho





Appendix A

15-7276

Aquifer Test Report

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NOV 09 2010



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Department of Water Resources
Eastern Region

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 $1.5 \times 10^4 \text{ ft}^2/\text{day}$ 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 $9.9 \times 10^3 \text{ ft}^2/\text{day}$. Given the uncertainty of the two methods the actual transmissivity of the aquifer is about $1 \times 10^4 \text{ ft}^2/\text{day}$. 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 $3.5 \times 10^4 \text{ ft}^2/\text{day}$ and the



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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.

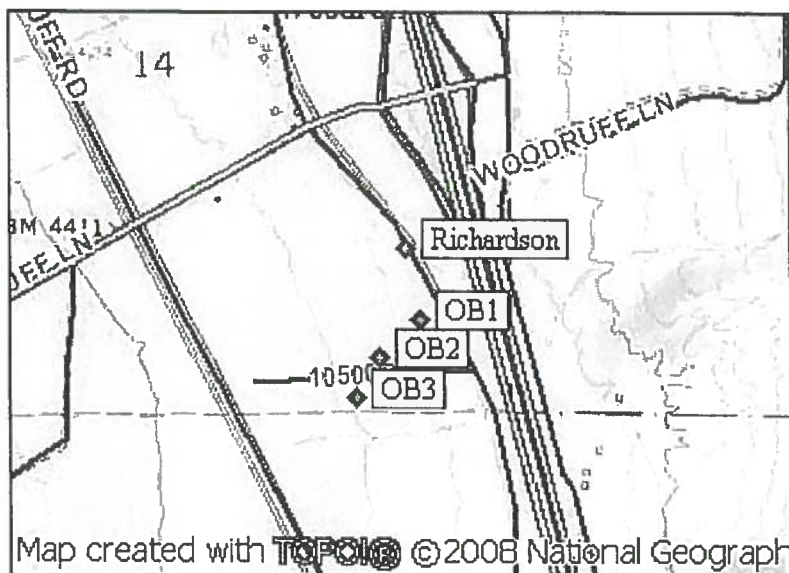


Figure 1. Map of pumped well (Richardson) and observation wells for the Richardson Pumping Test

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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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

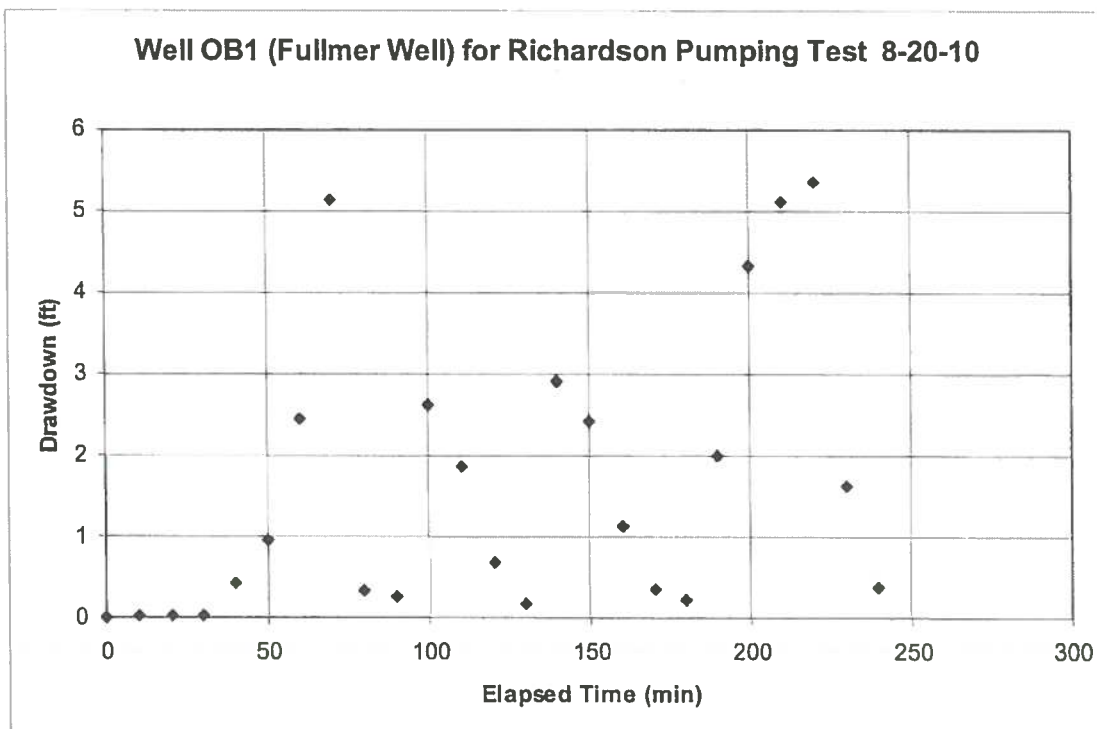
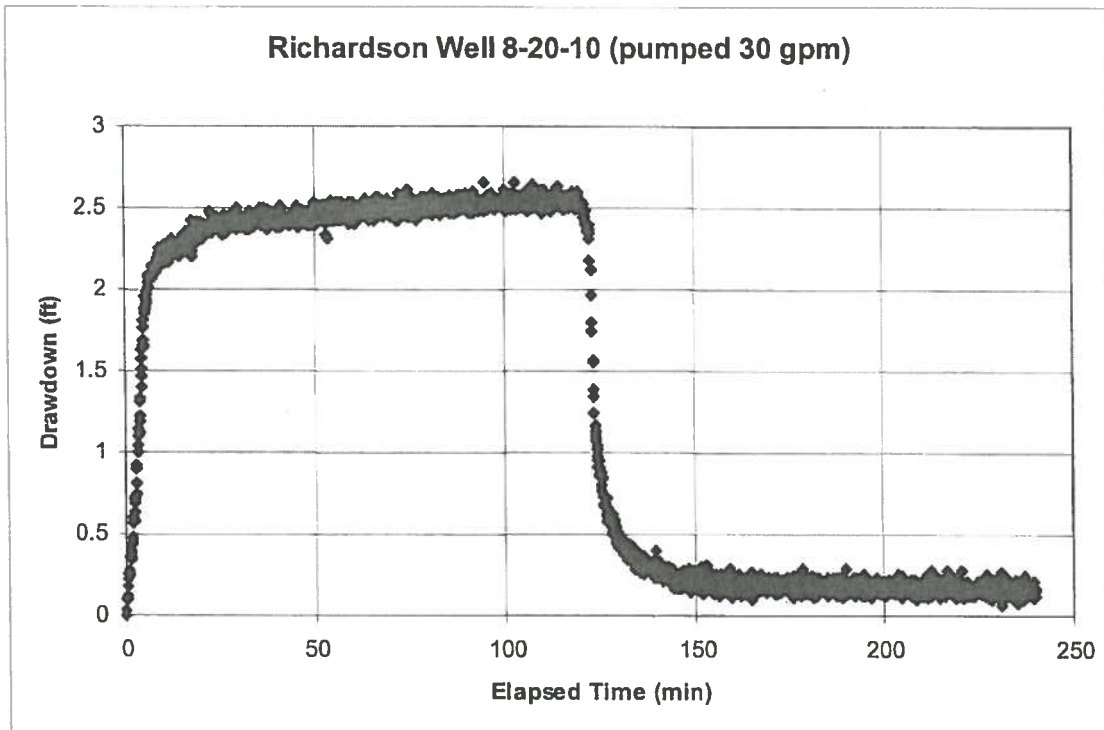
Neil Schoenenberger, 11577 South, Old Highway 191, Malad, ID 83252

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



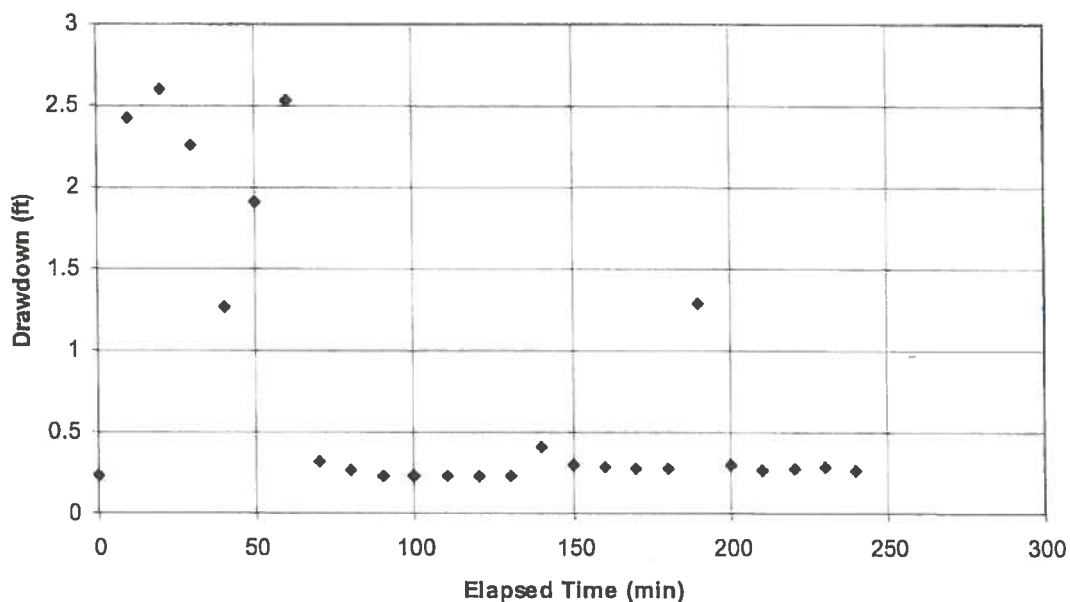
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Ground Water Development and Exploration

Attachment 1 DATA PLOTS

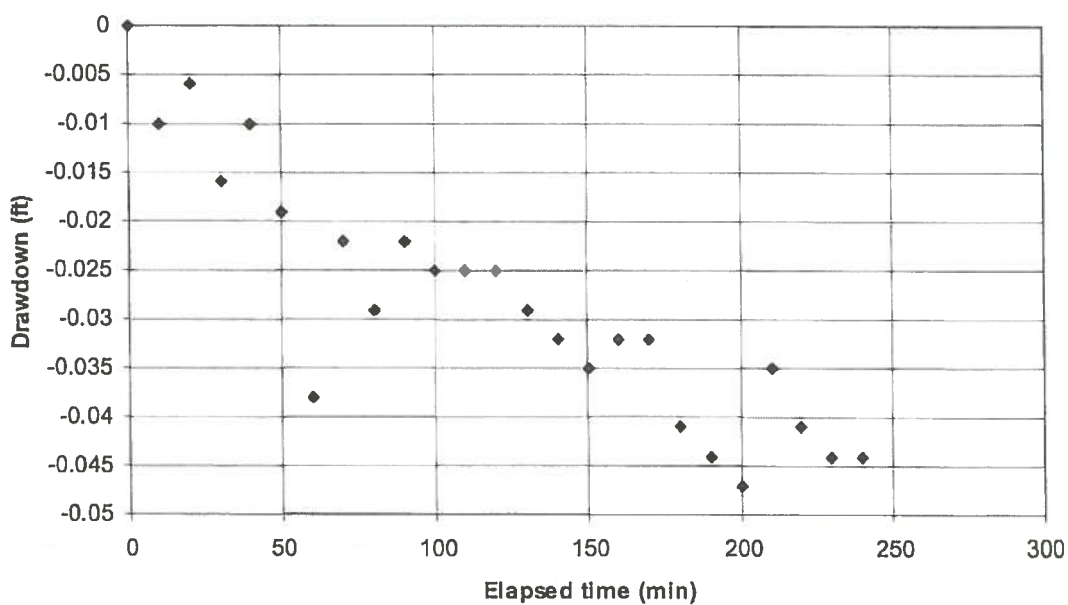




Well OB2 (Allred Well) for Richardson Pumping Test 8-20-10



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





Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 2

WELL LOGS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
8/07

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 Malden State ID Zip 83252

3. WELL LOCATION:

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

Sec. 14 SE 1/4 S10 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

(Give at least name of road - adjacent to Road or Location) 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 ft ³)	Placement method/procedure
Bentonite	10	78	27 bags	Overhead

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
8"	+2	218	.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	Thickness	Diameter (nominal)	Material	Gauge or Schedule
155	216	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 ft ³)	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 port _____

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)	Pump	Ball	Air	Flowing artesian
			☐	☐	☐	☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
10"	10	18	CLAY		X
	18	30	Cemented gravel		X
	30	55	CLAY		X
	55	60	Cemented gravel		X
	60	78	CLAY		X
8"	78	98	Cemented gravel	X	
	98	98	CLAY		X
	98	98	CLAY		X
	98	100	Cemented gravel	X	
	100	110	CLAY		X
	110	130	Cemented gravel	X	
	130	145	CLAY		X
	145	218	Cemented gravel	X	

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 Vallance Drilling Co. No. 383

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

*Driller: _____ Date _____

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

Operator I: _____ Date _____

* Signature of Principal Driller and rig operator are required.



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Ground Water Development and Exploration

Form 20-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

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

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

2. OWNER:
Name Robert Alfred
Address 1425 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 X or South X
Rge 3E East X or West X
Sec 3E 1/4 NE 1/4 NE 1/4
Gov't Lot _____ County Blaine
Lat: _____ Long: _____
Address of Well Site same
City _____
Lt. _____ 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>Benckhoff</u>	<u>0-30</u>	<u>Labpro</u>	<u>Gravel</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	Casing	Material	Casing	Inner	Yard	Thread
<u>12"</u>	<u>0</u>	<u>160</u>	<u>X</u>	<u>Steel</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</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	Slot Size	Number	Diameter	Material	Casing	Inner
<u>140</u>	<u>160</u>	<u>27</u>	<u>14-6</u>	<u>1/2"</u>	<u>Steel</u>	<u>X</u>	<u>X</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	☐ Flowing Artesian
--	---------------------------------	------------------------------	---

Yield gal/hr	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)

Core	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>10</u>	<u>0</u>	<u>20</u>	<u>Brn clay some gravel</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>20</u>	<u>100</u>	<u>Brn clay some gravel</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>100</u>	<u>85</u>	<u>Gravel cobbles clay Br.</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>85</u>	<u>95</u>	<u>Brn clay</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>95</u>	<u>120</u>	<u>Gravel Brn clay</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>120</u>	<u>130</u>	<u>Brn clay</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>130</u>	<u>142</u>	<u>Hard tan gravel clay</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>142</u>	<u>150</u>	<u>Brn clay</u>	<u>X</u>	<u>X</u>
<u>6</u>	<u>150</u>	<u>160</u>	<u>Gravel Brn clay</u>	<u>X</u>	<u>X</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 1425 E. Continental Drilling Firm No 54B

Principal Driller Michael F. Anderson Date 5-15-05

and Driller or Operator II Thilo F. Anderson Date 5-15-05

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

FORWARD WHITE COPY TO WATER RESOURCES



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Attachment 3

AQTESOLV PLOTS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

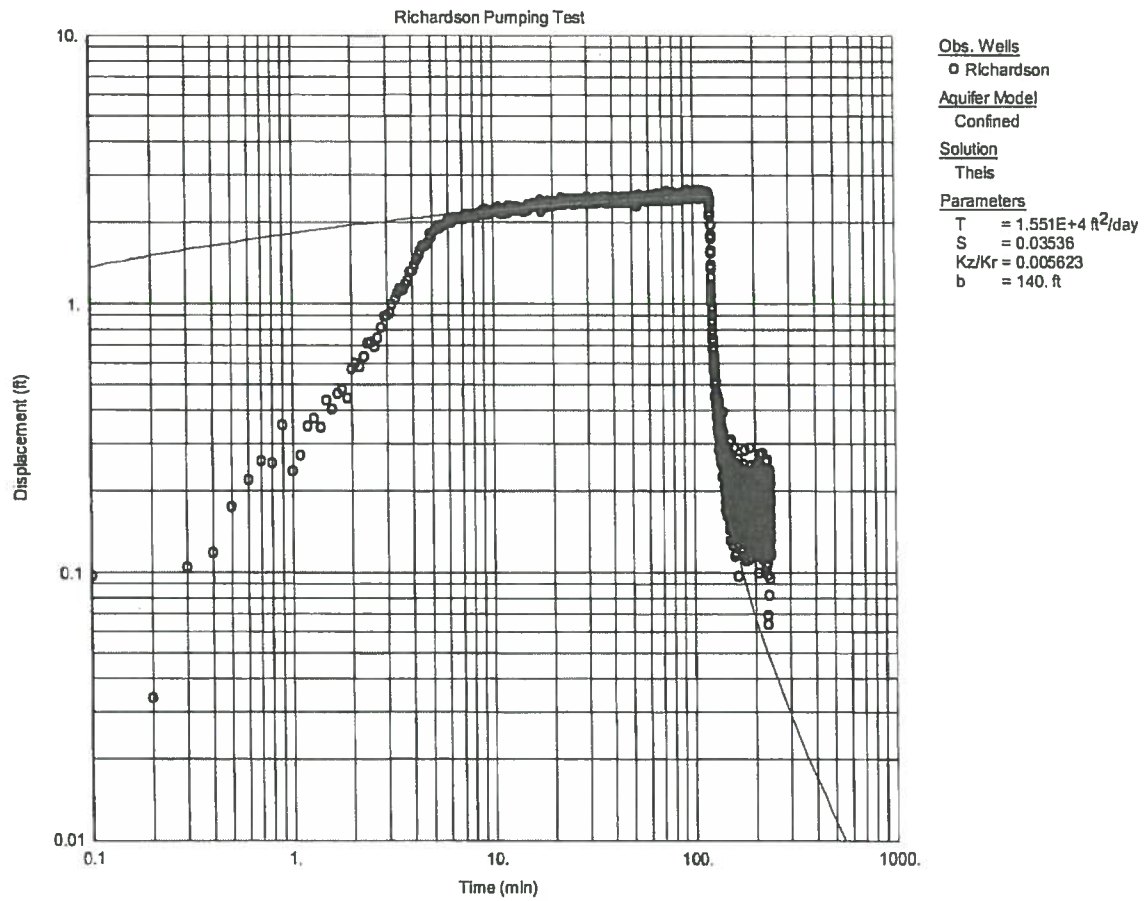


Figure 3-1 Theis confined solution matched to Richardson Well data.



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Ground Water Development and Exploration

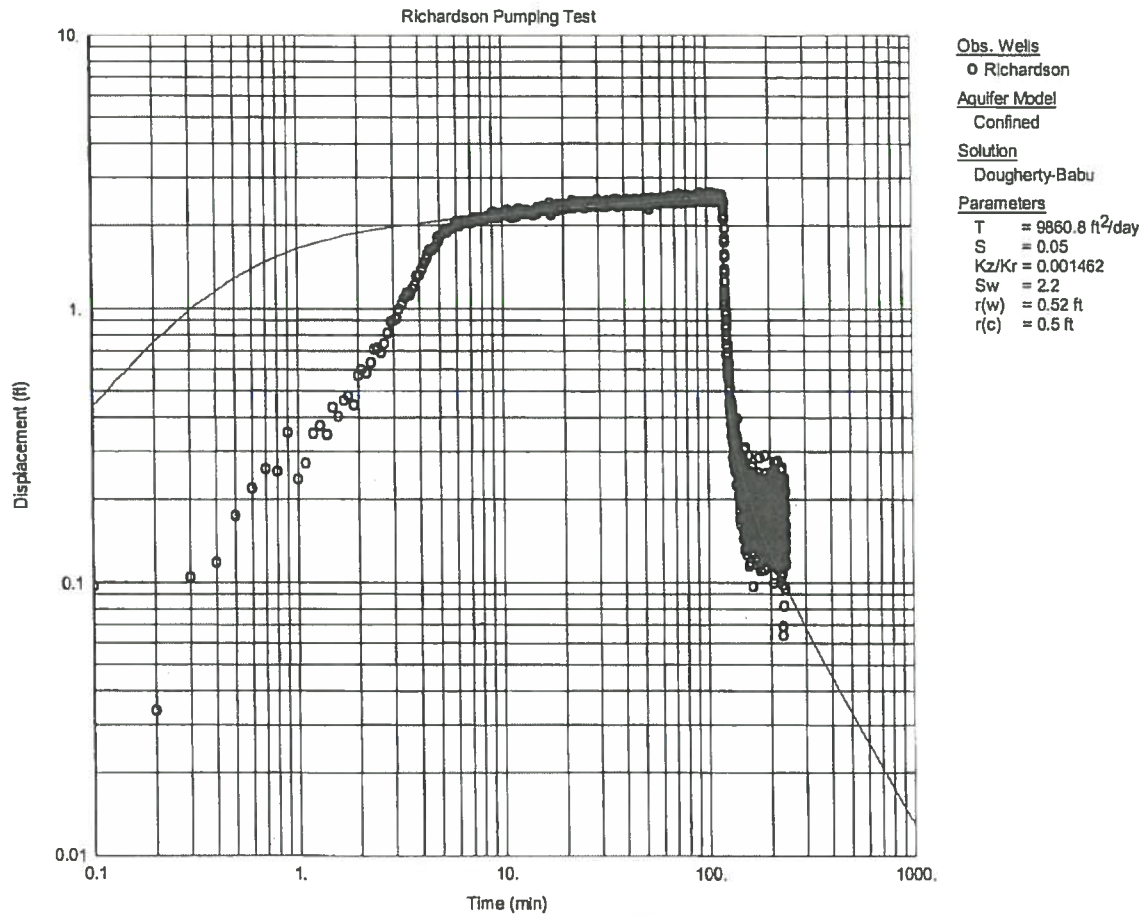


Figure 3-2 Dougherty-Babu confined solution match to Richardson Well Data. This solution takes into account well bore storage, skin affects and partial aquifer penetration.



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 3×10^4 ft²/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 3.9×10^4 ft²/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 3.5×10^4 ft²/day and the storativity is 0.0012 .

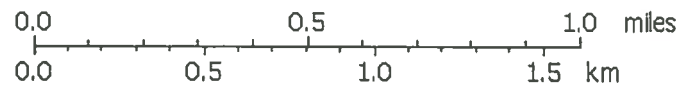


Figure 1. Map of pumped well (Smith) and observation wells for the Lex Smith Pumping Test

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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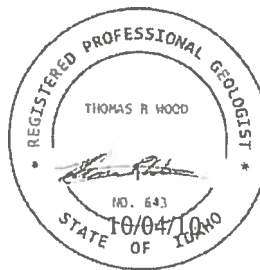
To estimate the long-term drawdown and impact to neighboring wells from pumping of the Smith Well I used the forward solution capabilities of the AQTESOLV program in a similar manner as has been presented to you in the past. I input an aquifer transmissivity is $3.5 \times 10^4 \text{ ft}^2/\text{day}$ 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



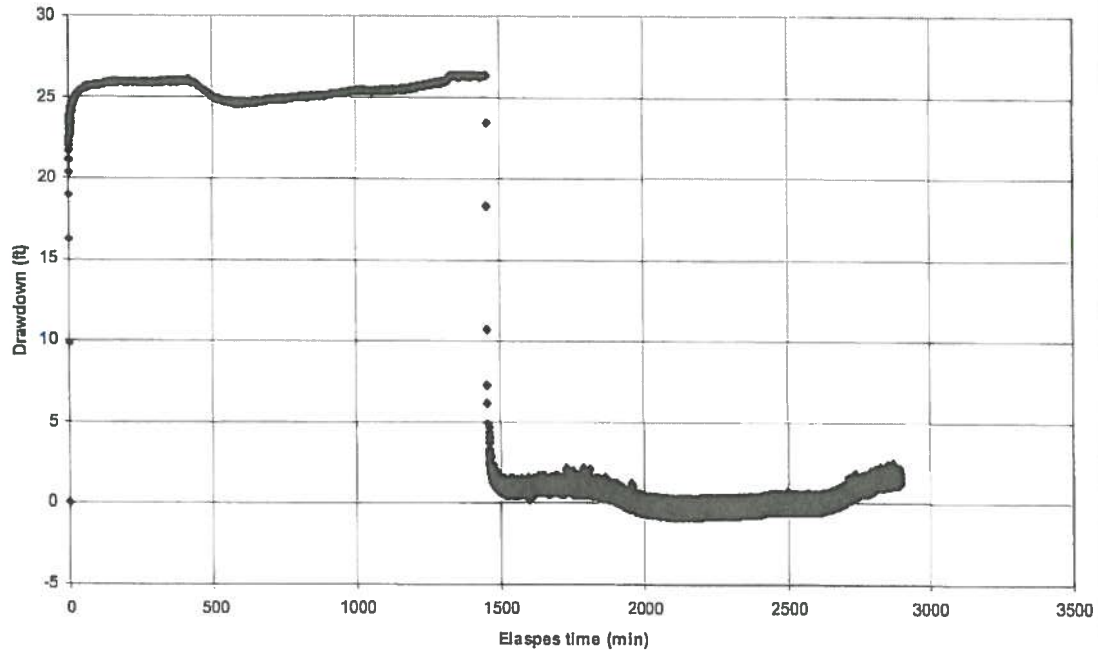
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Ground Water Development and Exploration

Attachment 1 DATA PLOTS

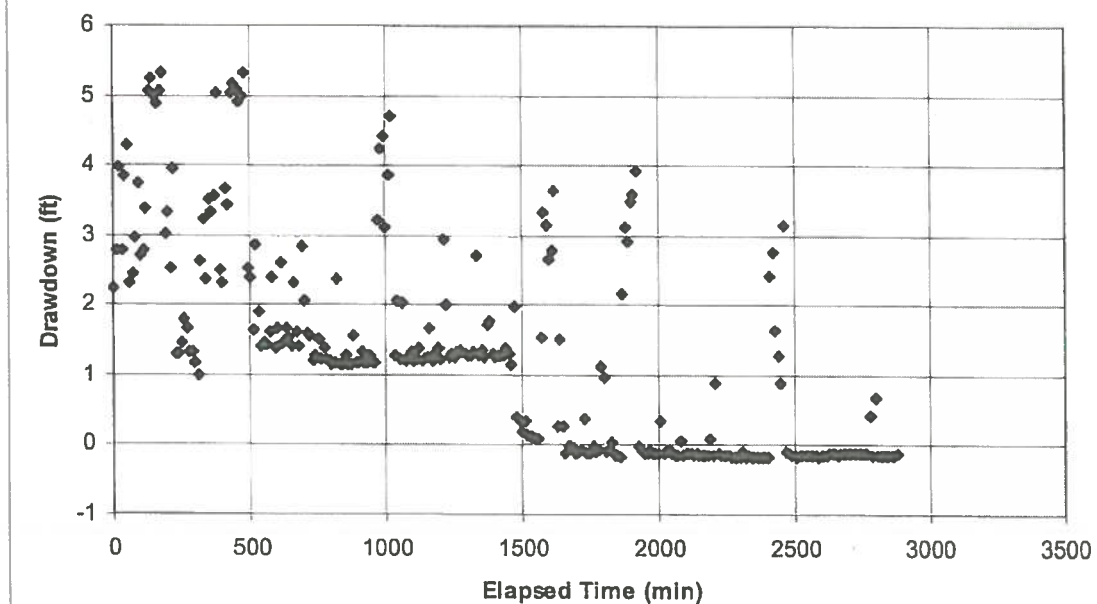


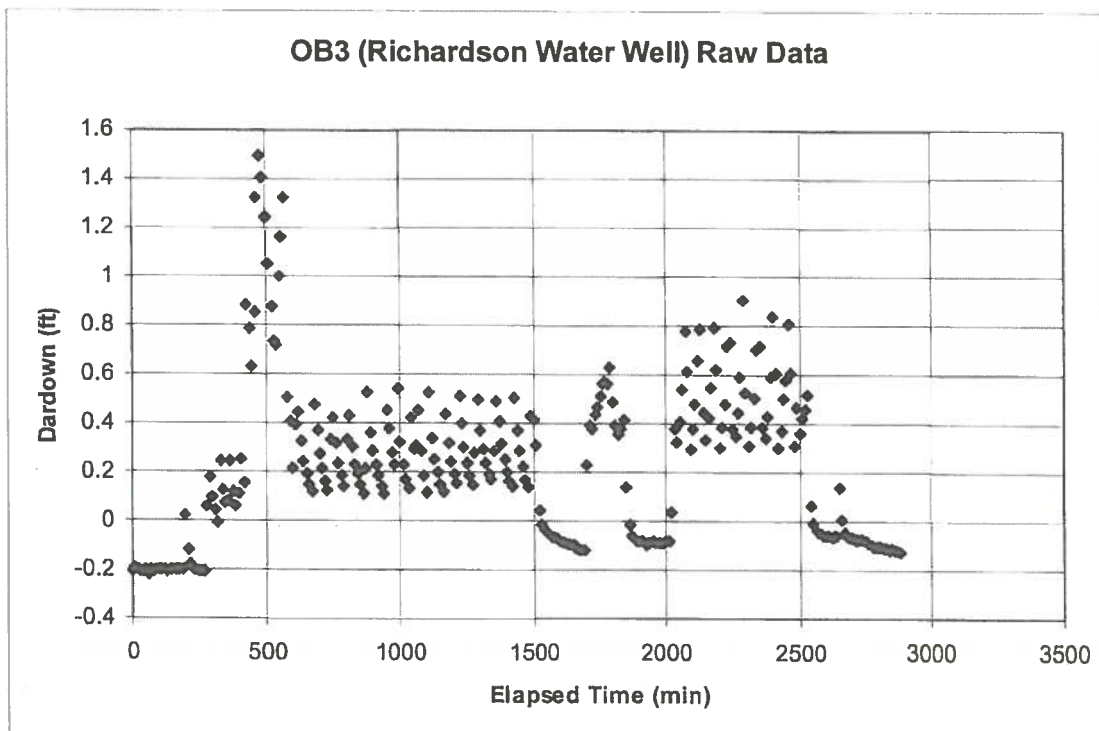
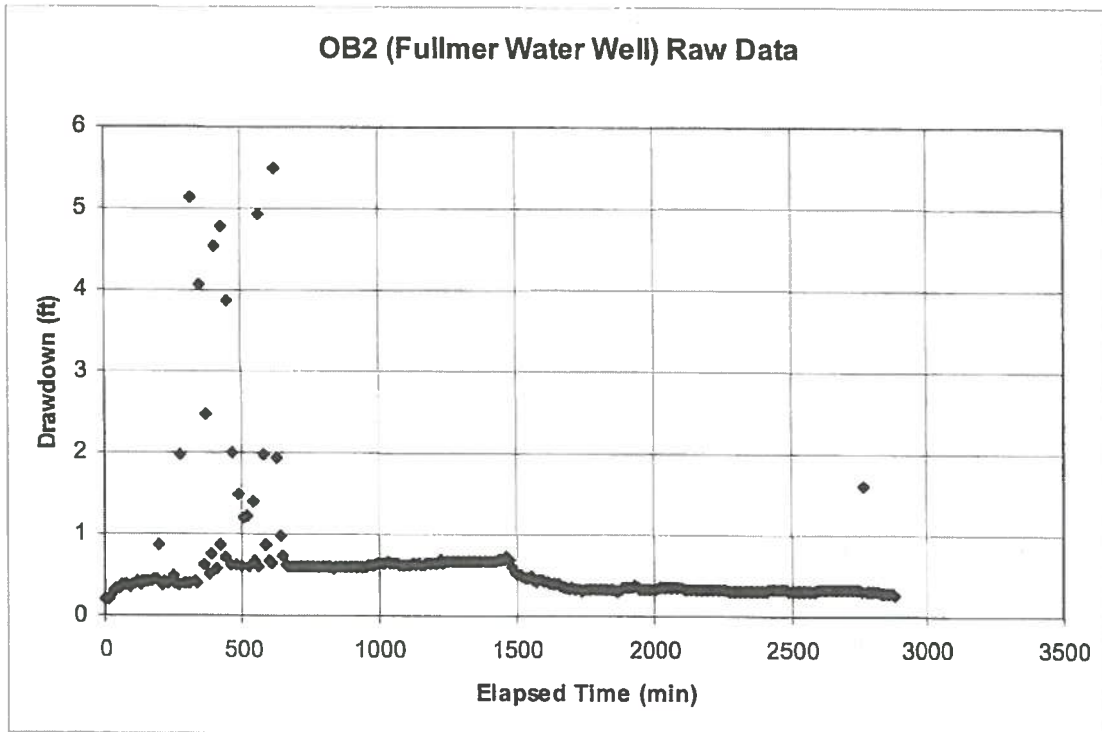
Clearwater Geosciences, LLP
Ground Water Development and Exploration

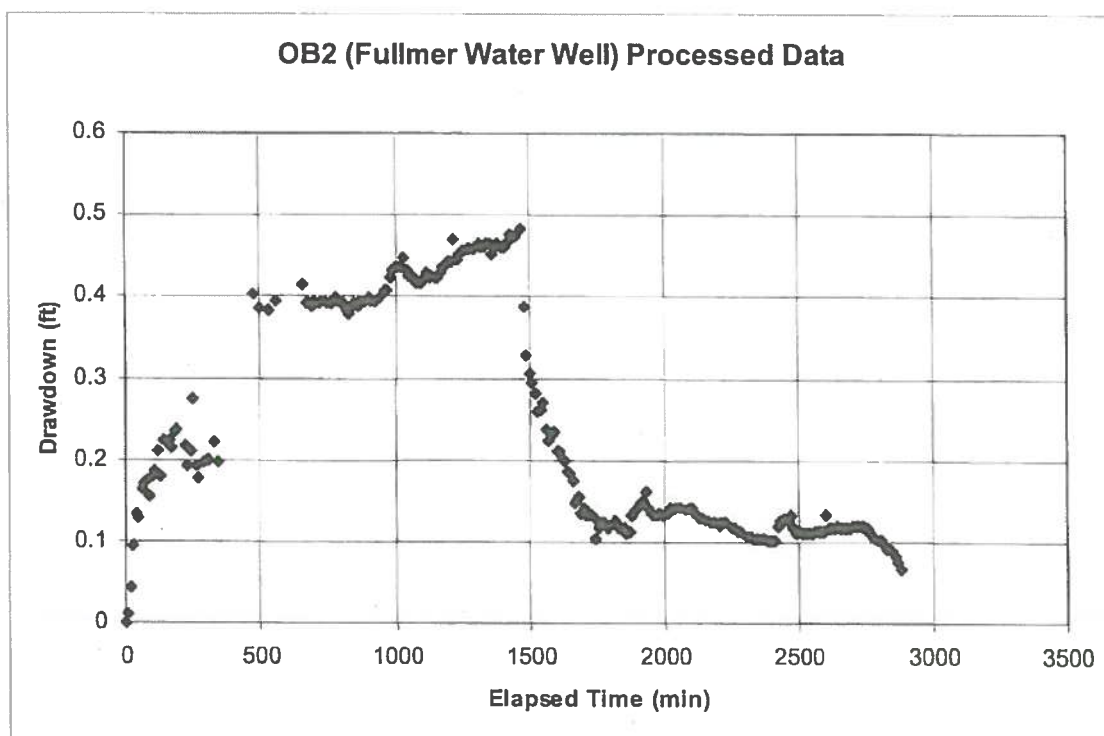
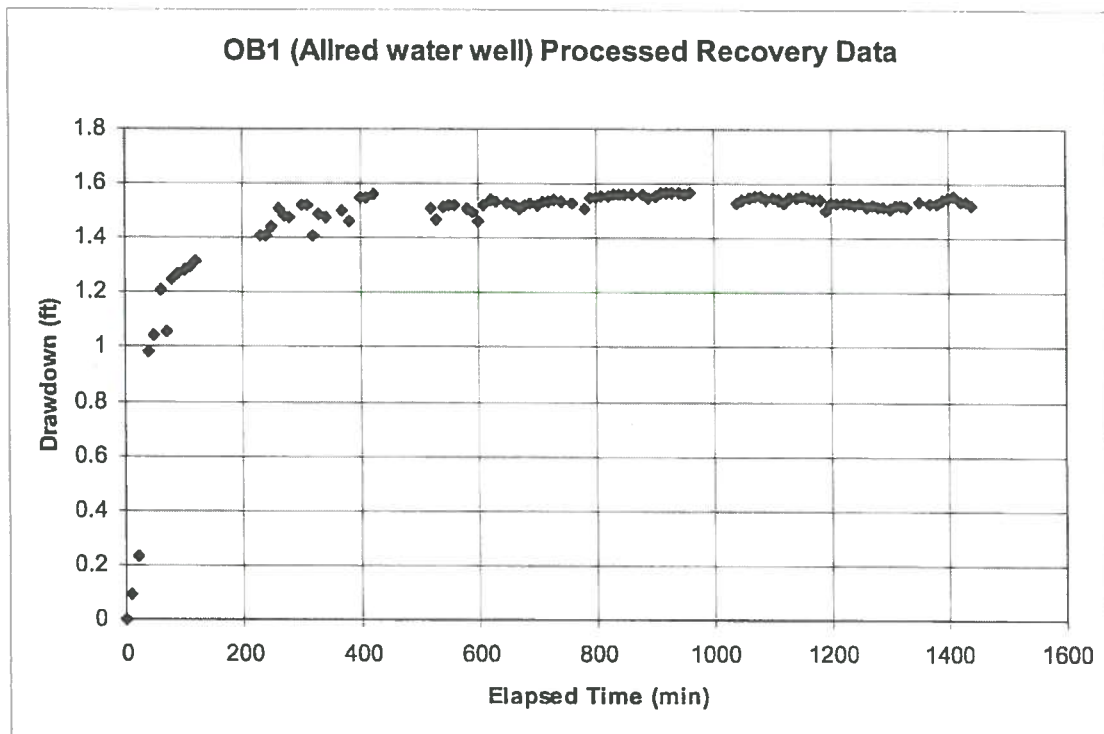
Smith Well 8-18-2010 Pumping Test Pumped at 200gpm for 24 hours



OB1 (Aired water well) Raw Data

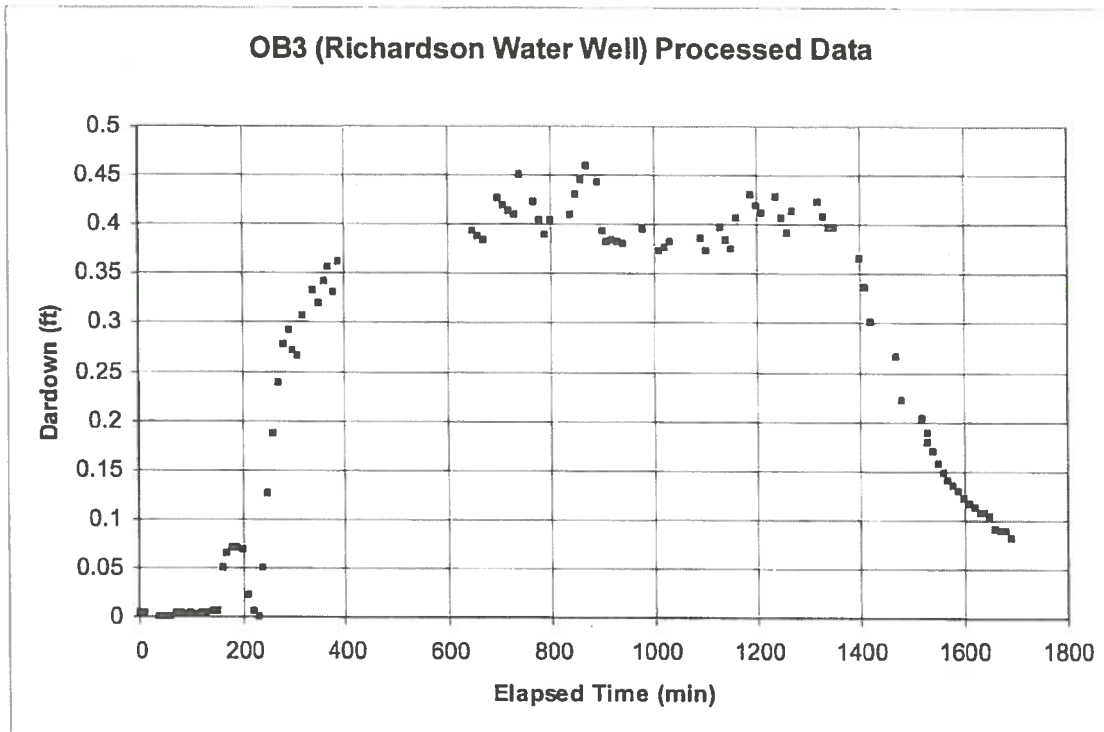








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Ground Water Development and Exploration





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Ground Water Development and Exploration

Attachment 2

WELL LOGS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
8/07

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 Malden State ID Zip 83252

3. WELL LOCATION:

Twp. 16 North ☐ or South ☒ Rge. 31 East ☒ or West ☐

Sec. 14 SE 1/4 S20 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

(Name of owner or user - Distance to R/W or L.R.) 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 (bs or ft³) _____ Placement method/procedure _____

8. CASING/LINER:

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

9" 2 1/2 250 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 _____ Diameter (nominal) _____ Material _____ Gauge or Schedule _____

155 2116 1/2 x 1/4 1600 8" Steel 250

_____ ☐ ☐ ☐ ☐

_____ ☐ ☐ ☐ ☐

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☒ N Type _____

10. FILTER PACK:

Filter material _____ From (ft) _____ To (ft) _____ Quantity (bs 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 port _____

Well test: _____ Test method: _____

Drawdown (feet) _____ Discharge or yield (gpm) _____ Test duration (minutes) _____

Pump ☐ Bailor ☐ Air ☐ Flowing artesian ☐

Water quality test or comments: _____

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in) _____ From (ft) _____ To (ft) _____ Remarks, lithology or description of repairs or abandonment, water temp. _____

10" 10 18 CLAY ☐ Y ☒ N

18 30 Cemented Gravel ☐ ☒

30 55 CLAY ☐ ☒

55 60 Cemented Gravel ☐ ☒

60 78 CLAY ☐ ☒

9" 78 98 Cemented Gravel ☒ ☐

98 98 CLAY ☐ ☒

98 98 CLAY ☐ ☒

98 100 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 _____ Date 9-19-08

*Driller _____ Date _____

*Operator II Tracy Volmer 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 800-7
8/02
DND

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

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

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

2. OWNER:
Name Robert Alfred
Address 1425 E. Continental Circle, Las Vegas
City Mineral State ID Zip 83301

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp 10 North ☐ or South ☒
Rge 3E East ☒ or West ☐
Sec 1E 1/4 NE 1/4 NE 1/4
Gov't Lot _____ Section _____
County Blaine
Lat: _____ Long: _____
Address of Well Site same City _____

City of record - name of record - City or Town or Township
Lt. _____ 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>Benckman</u>	<u>0</u>	<u>20</u>	<u>Labags</u>	<u>Overhead</u>

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

8. CASING/LINER:

Diameter	Flow	In	Depth	Material	Casing	Liner	Wooded	Threaded
<u>12"</u>	<u>0</u>	<u>160</u>	<u>20</u>	<u>Iron</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	Slot Size	Number	Diameter	Material	Casing	Liner
<u>140</u>	<u>160</u>	<u>27</u>	<u>14-6</u>	<u>1"</u>	<u>Steel</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 _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

12. WELL TESTS:

☐ Pump	☐ Bailor	☐ Air	☐ Flowing Artesian
-------------------------------	---------------------------------	------------------------------	---

Yield gal/min	Drawdown	Pumping Level	Time
<u>2000</u>			

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

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Depth	From	To	Remarks: Lithology, Water Quality & Temperature	Water
<u>10</u>	<u>0</u>	<u>20</u>	<u>Brn clay some gravel</u>	☒ Y ☐ N
<u>20</u>	<u>100</u>	<u>160</u>	<u>Brn clay some gravel</u>	☒ Y ☐ N
<u>160</u>	<u>85</u>	<u>160</u>	<u>Gravel cobbles clay Br.</u>	☒ Y ☐ N
<u>85</u>	<u>85</u>	<u>95</u>	<u>Brn clay</u>	☒ Y ☐ N
<u>95</u>	<u>120</u>	<u>130</u>	<u>Gravel Brn clay</u>	☒ Y ☐ N
<u>120</u>	<u>130</u>	<u>142</u>	<u>Brn clay</u>	☒ Y ☐ N
<u>142</u>	<u>142</u>	<u>150</u>	<u>Hard tan gravel clay</u>	☒ Y ☐ N
<u>150</u>	<u>150</u>	<u>160</u>	<u>Brn clay</u>	☒ Y ☐ N
<u>160</u>	<u>160</u>	<u>160</u>	<u>Gravel Br. clay</u>	☒ Y ☐ N

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 West Well Drilling Firm No. 543

Principal Driller Michael Frouden Date 5-15-05
and
Driller or Operator II Phil Frouden 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

15-7389



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 3

AQTESOLV PLOTS



Clearwater Geosciences, LLP
Ground Water Development and Exploration

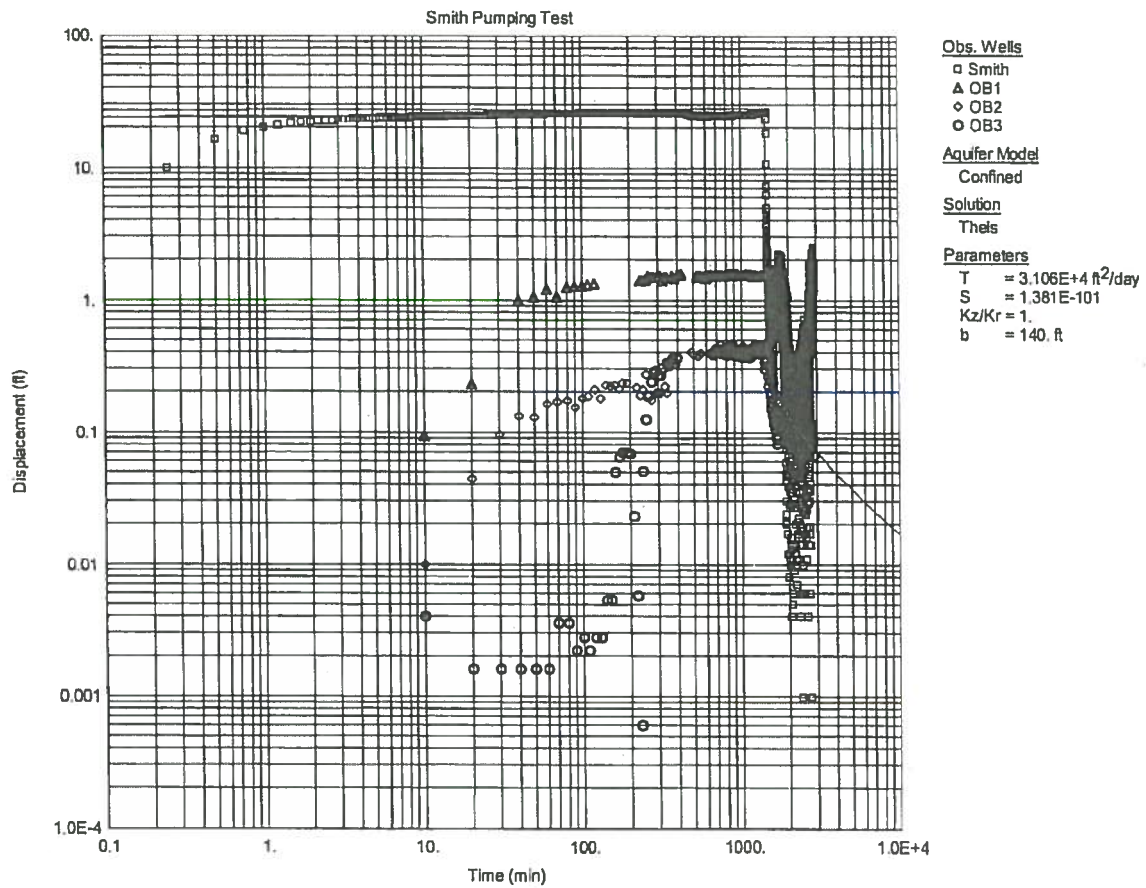


Figure 3-1 Theis confined solution matched to Smith Well.



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Ground Water Development and Exploration

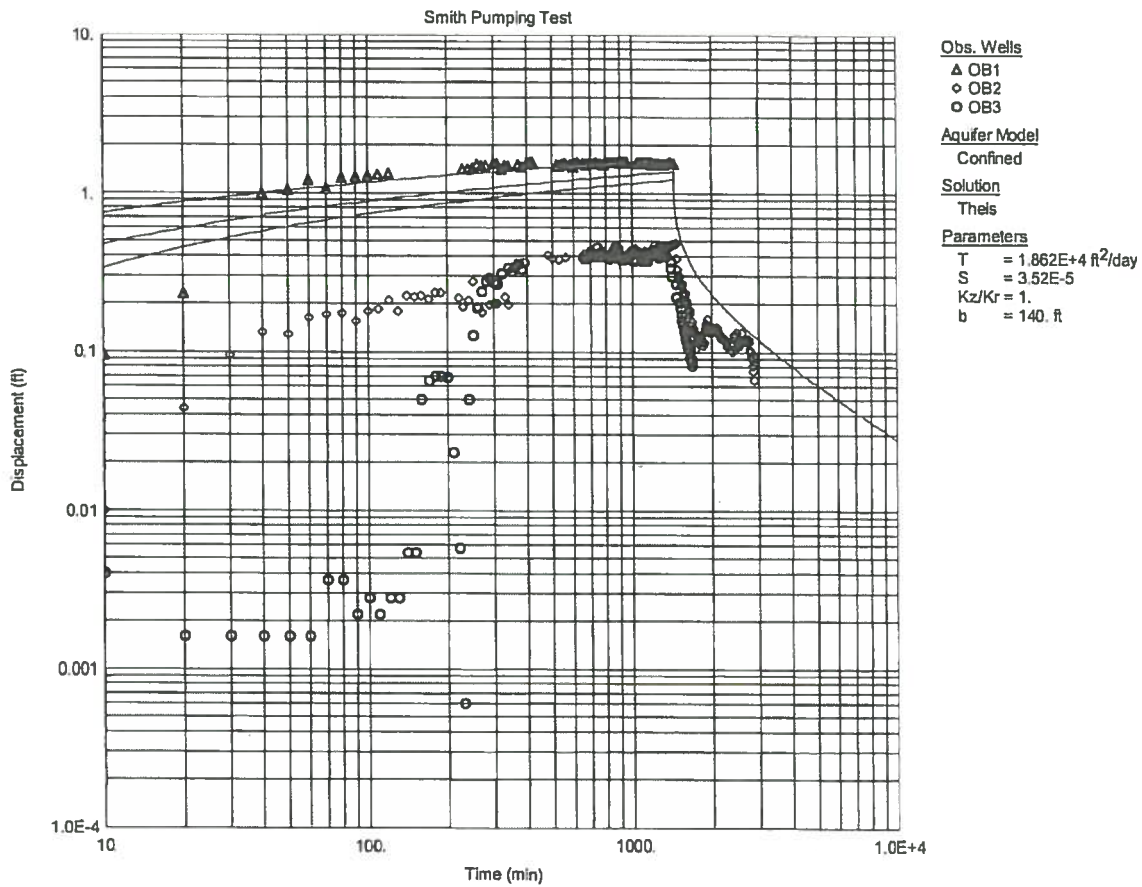


Figure 3-2 Theis confined solution matched to OB1.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

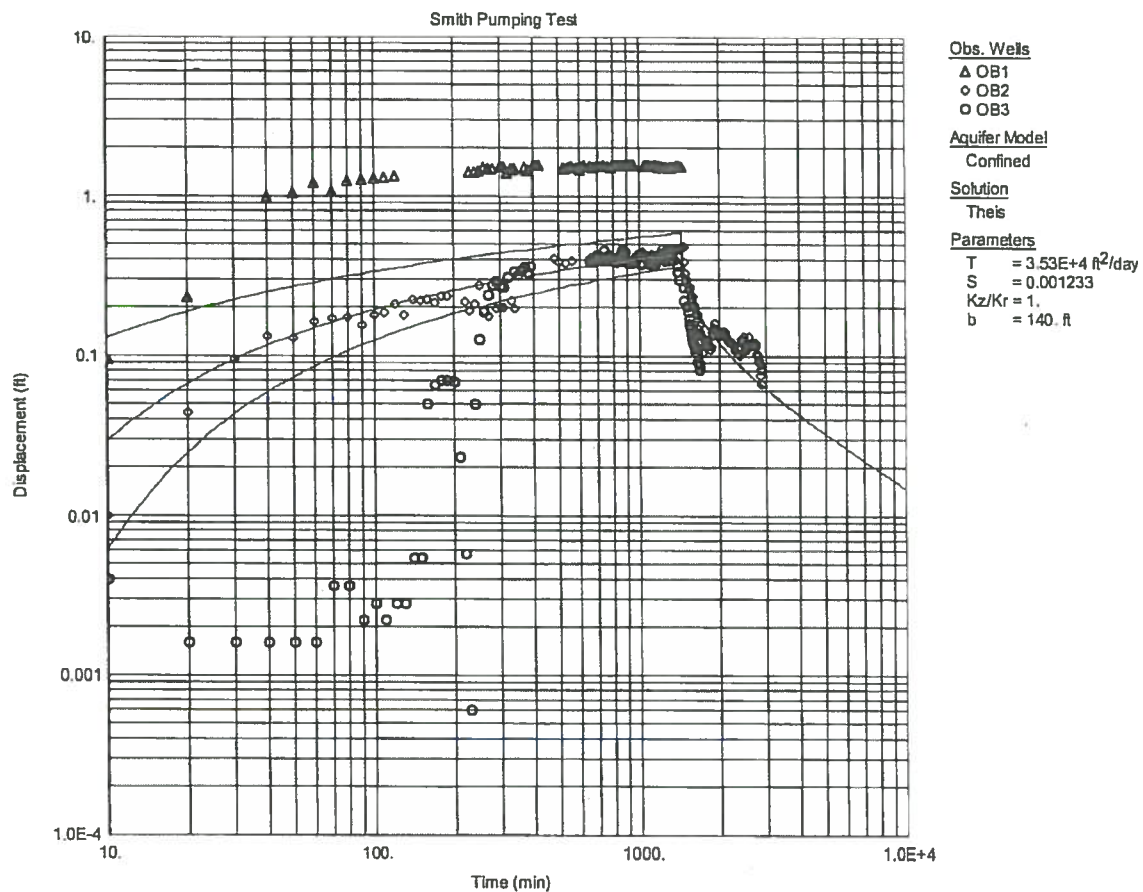


Figure 3-3 Theis confined solution matched to OB2.



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Ground Water Development and Exploration

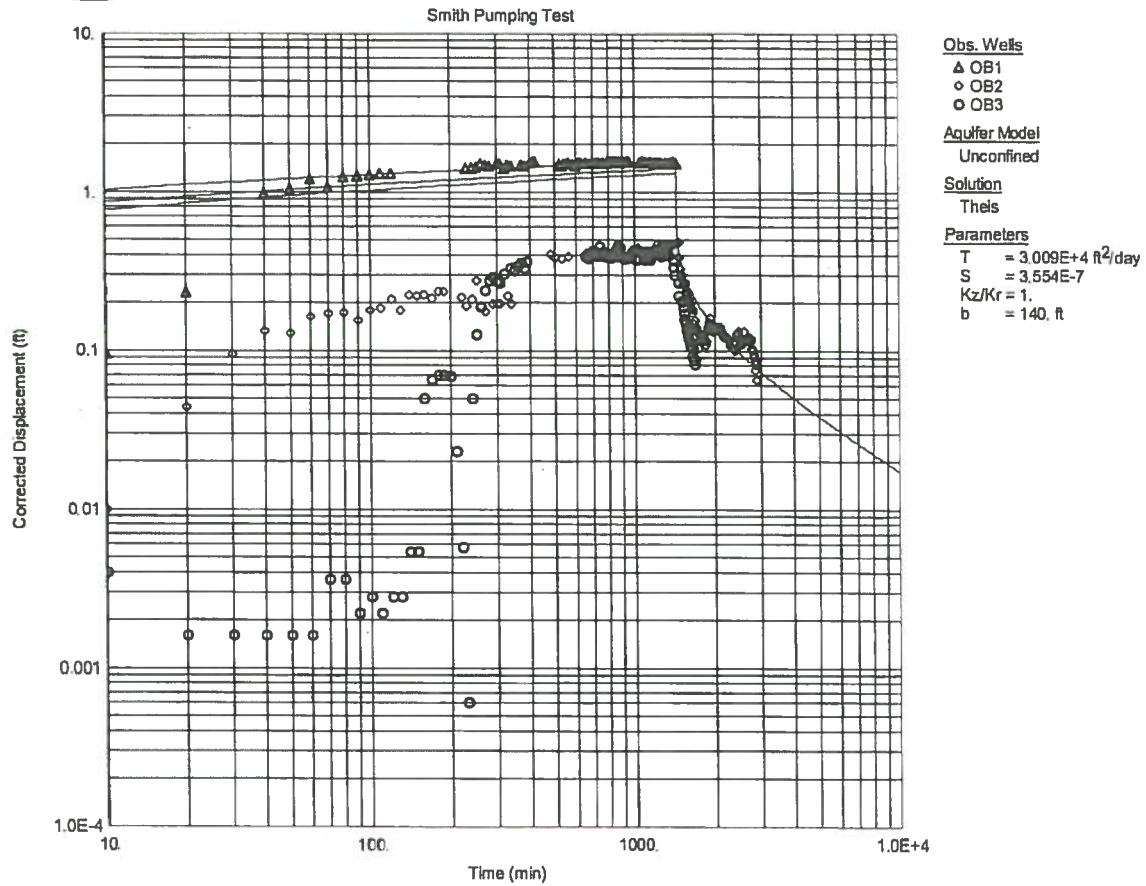


Figure 3-4 Theis unconfined solution matched to OB1



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Ground Water Development and Exploration

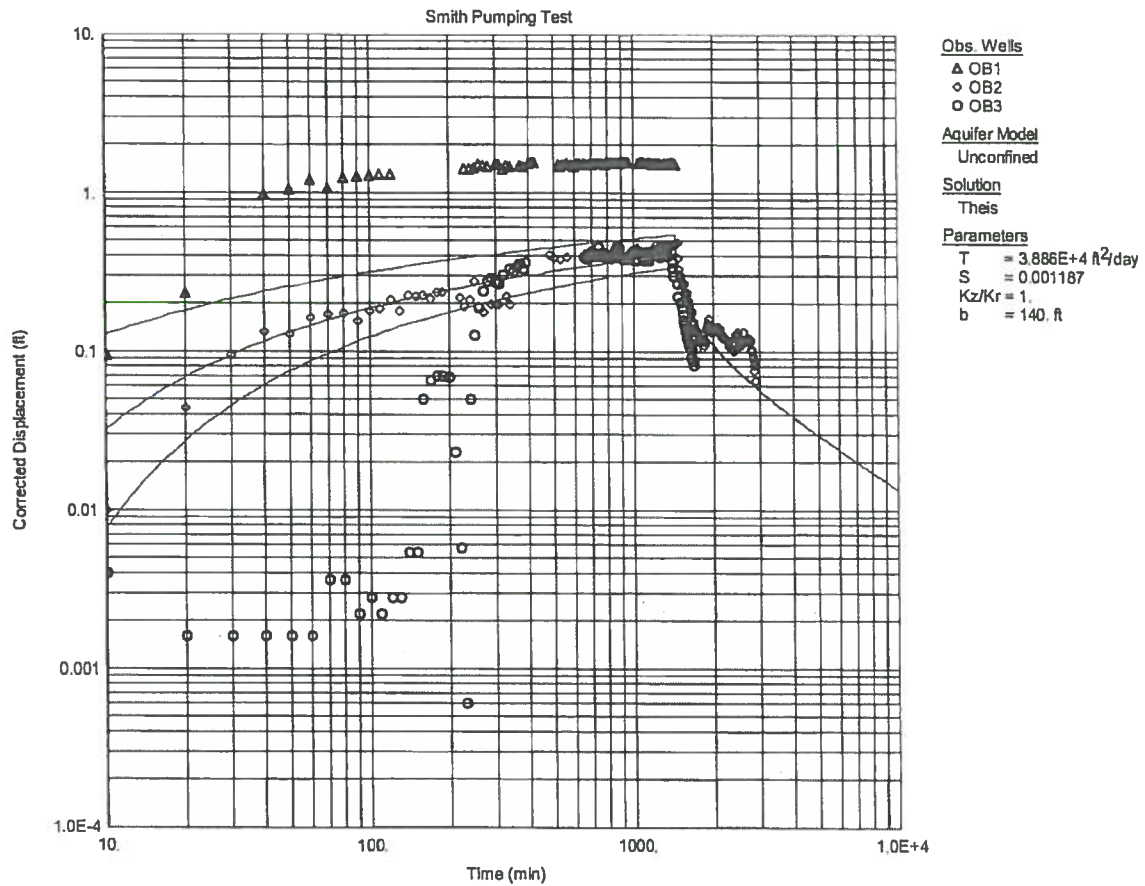


Figure 3-5 Theis unconfined solution matched to OB2.



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Ground Water Development and Exploration

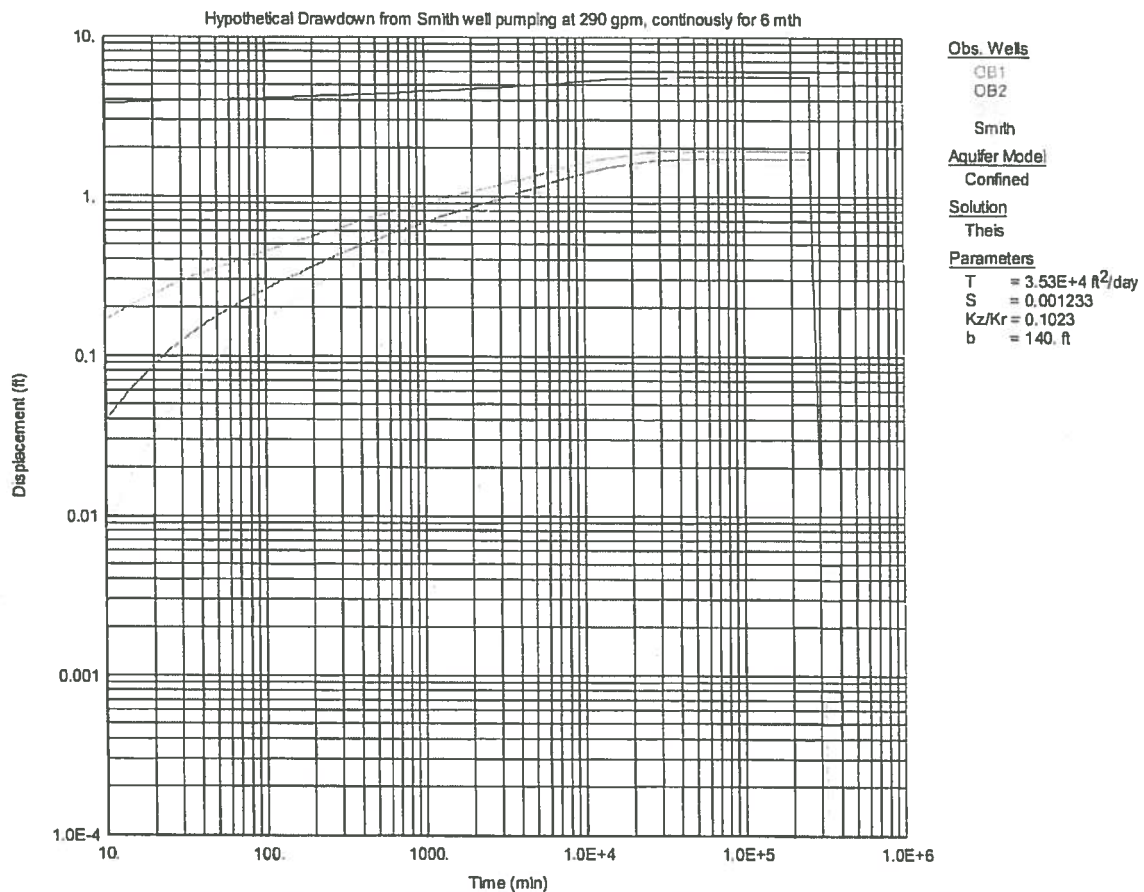


Figure 3-5 Calculated drawdown for Smith Irrigation well pumping at 290 gpm continuously for 6 months. Observation well radial distances are the same as listed in Table 1.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

Attachment 5

AQUIFER IMPACT ANALYSIS

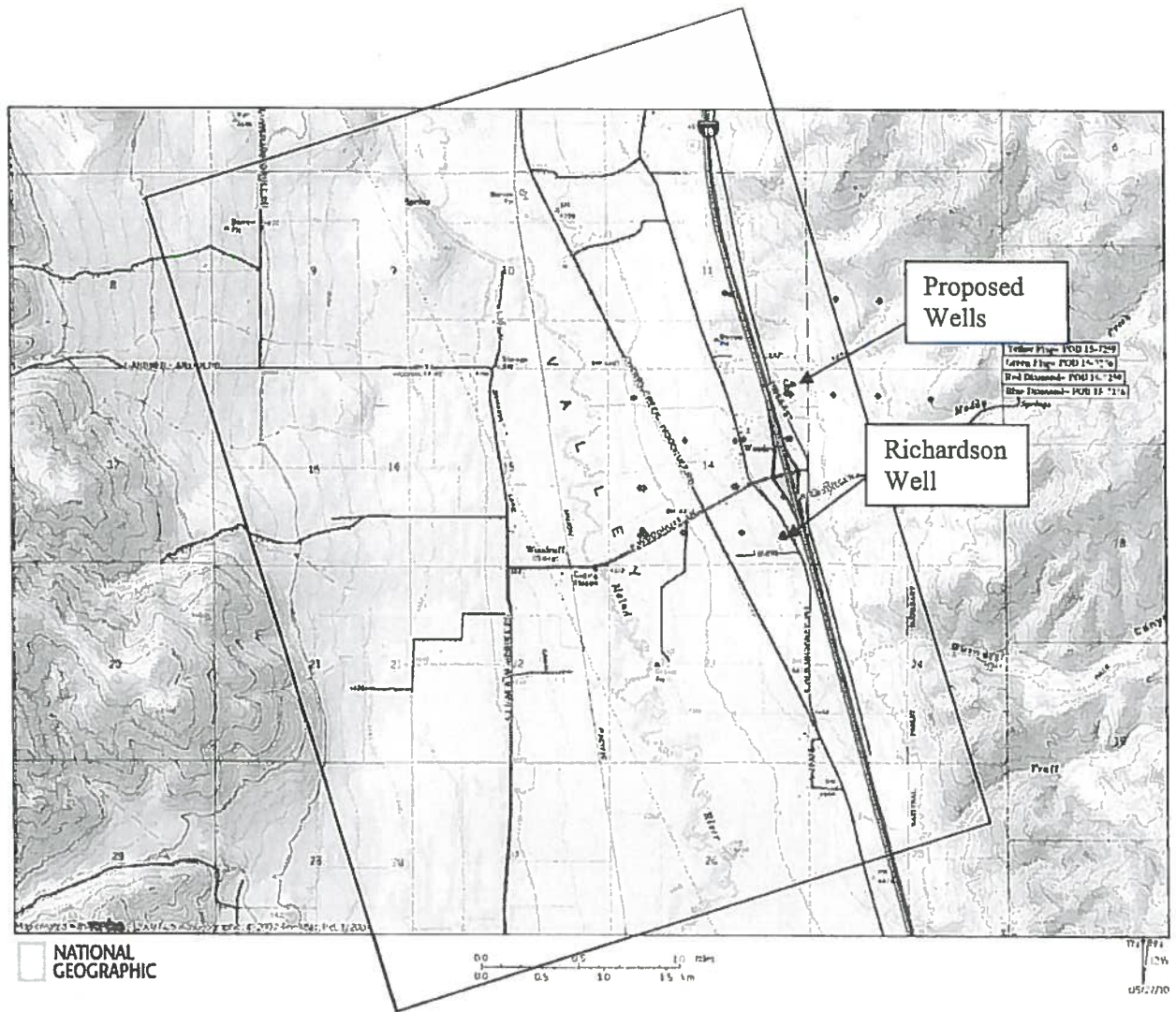


Figure 5-1 Location of proposed points of diversion for water rights, there Richardson's well and the outline of the conceptual framework used in the forward solution calculations in AQTESOLV.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

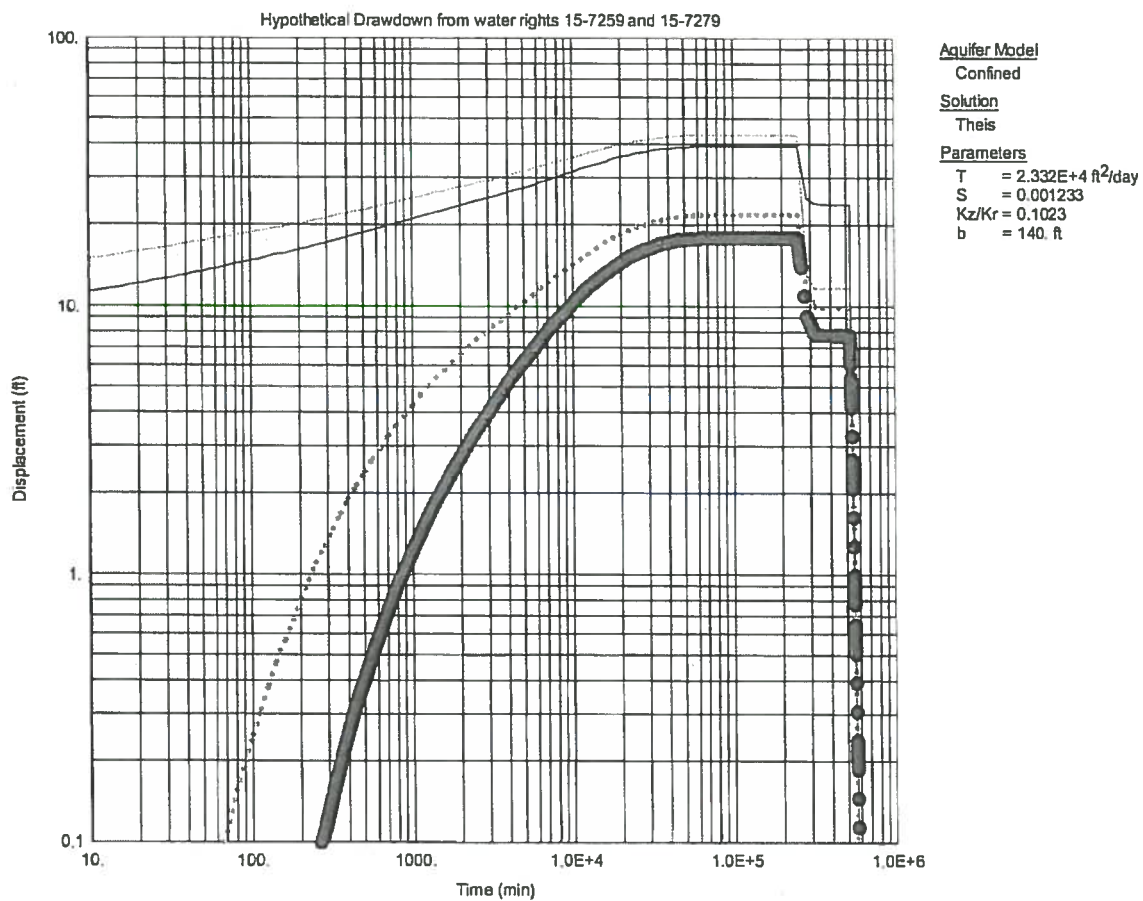


Figure 5-2 Predictive plot of drawdown at 100% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

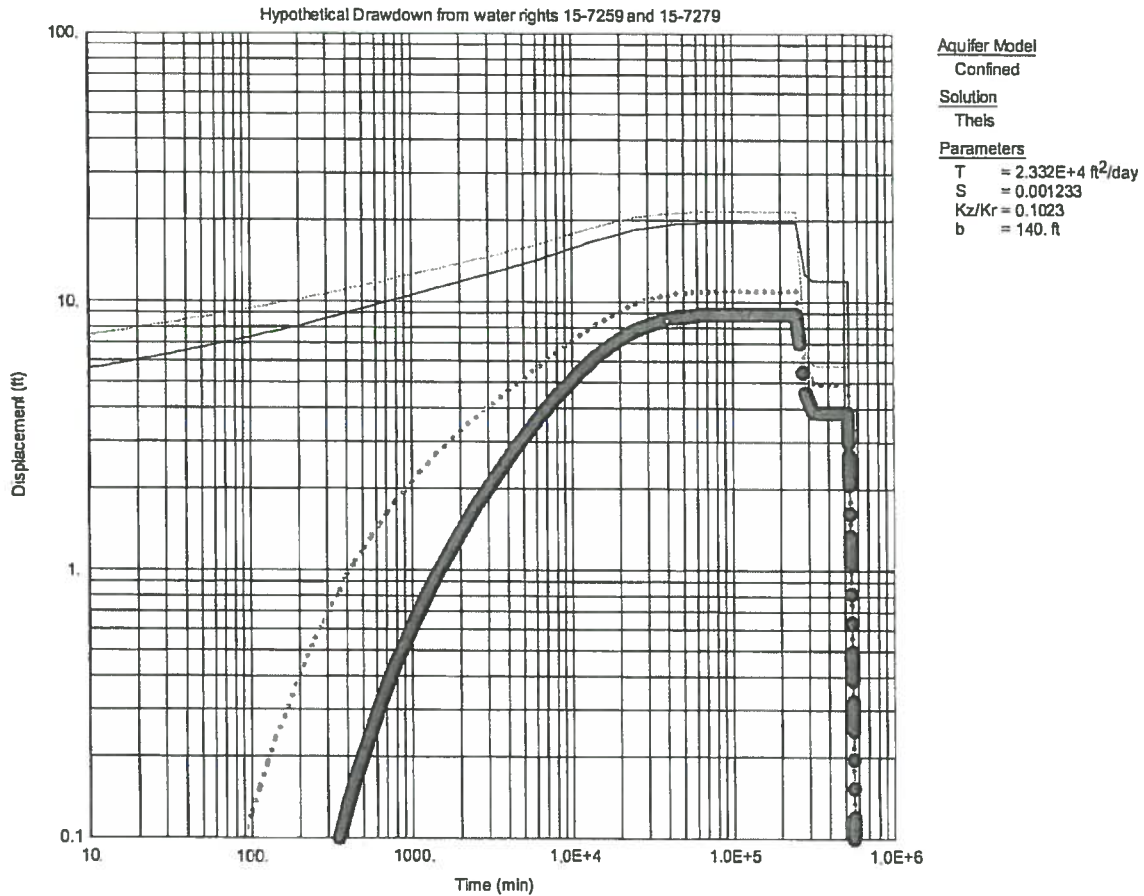


Figure 5-3 Predictive plot of drawdown at 50% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

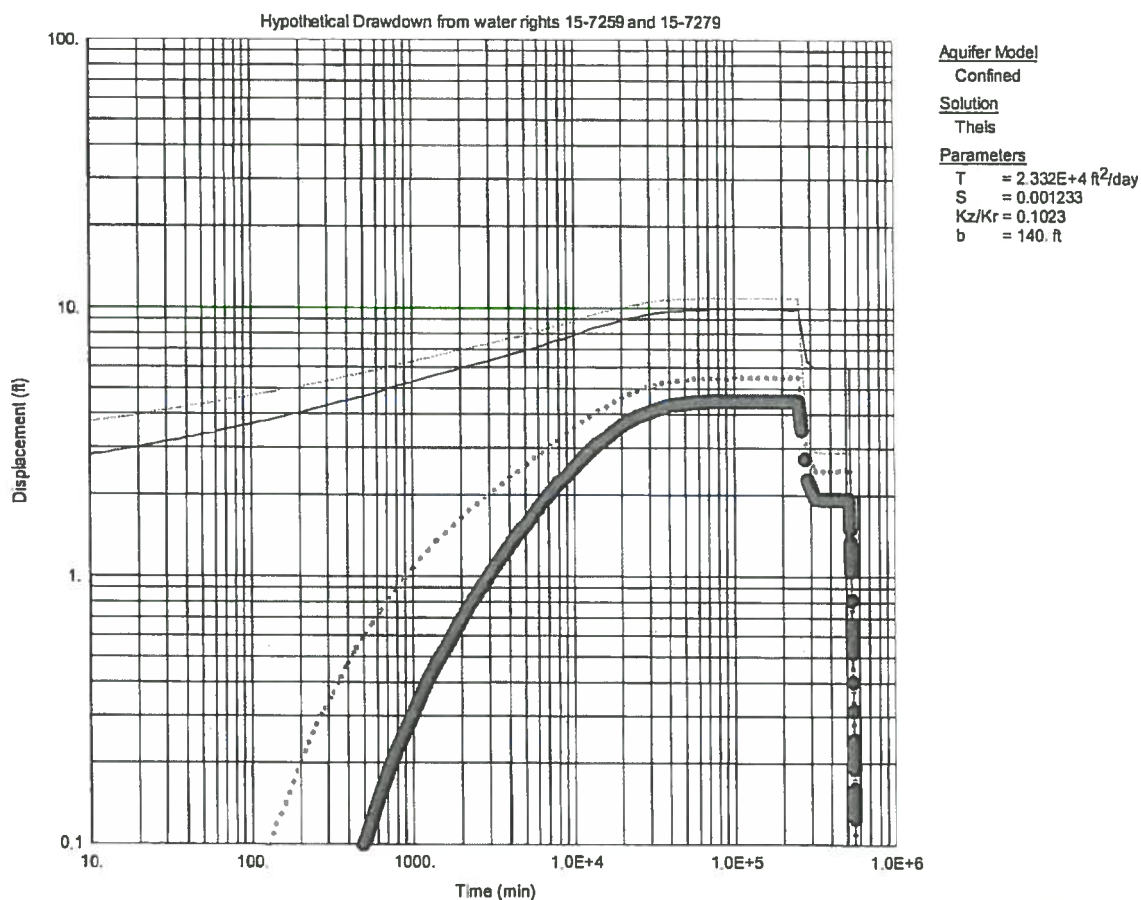


Figure 5-4 Predictive plot of drawdown at 25% of application diversion rates. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Clearwater Geosciences, LLP
Ground Water Development and Exploration

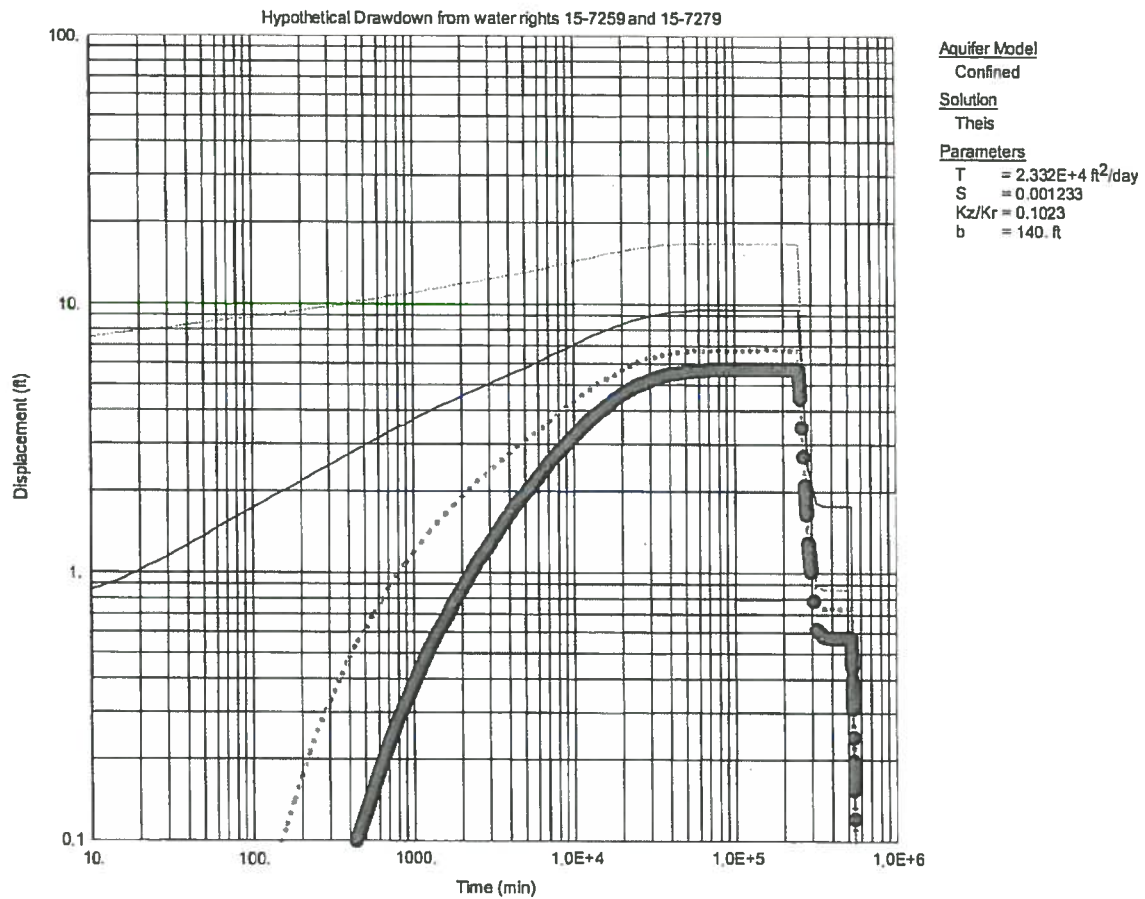


Figure 5-5 Predictive plot of drawdown for diversion rates of 900 gpm for the irrigation well and 100 gpm for the commercial well. Orange is for a location 2300 ft south from the pumping wells and the blue line is for a location 5280 ft west of the pumping wells.



Appendix B

Well logs

Use Typewriter or Ballpoint Pen

pg 1063

Office Use Only

Inspected by

Twp _____ Rge _____ Sec _____

$$\frac{1}{4} \quad \frac{1}{4} \quad \frac{1}{4}$$

Lat: : : Long: : :

2. OWNER:

Name DAVE HARRIS
Address 1010 South Woodbury Road
City Malad State Idaho Zip 83252

Sketch map location must agree with written location.

Twp. 16 North ☐ or South ☒
Rge. 36 East ☒ or West ☐
Sec. 22 NE NW SE SW
Gov't Lot _____ County DANE DA
Lat.: : : Long.: : :

Address of Well Site _____

City _____

(Give at least name of road + Distance to Road or Landmark)

Lt. _____ Blk. _____ Sub. Name _____

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

☒ New Well ☐ Modify ☐ Abandonment ☐ Other _____

☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other

SEAL/FILTER PACK			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Cement	18	7	8	hand
Clay	0	7		

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 243
Was drive shoe seal tested? ☐ Y ☒ N How? _____

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16	+1	243	.25	Steel	☐	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

☐ Perforations Method _____

☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Line
82	242	1/4x3	512			☒	☐
						☐	☐
						☐	☐

45 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or
control devices: As per Reg - in side

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time

Water Temp. Cold Bottom hole temp.

Water Quality test or comments:

Depth first Water Encountered _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
			Su		
			Attached		
			RECEIVED		
			OCT 30 1996		
			Department of Water Resources Eastern Region		
			RECEIVED		
			NOV 04 1996		
			MICROFILMED		
			DEC 08 1996		
			Department of Water Resources		
			Completed Depth 243 (Measurable)		
			Date: Started 7-6-96 Completed 10-2-96		

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

Firm Name W. K. Hilling Firm No. 210

Firm Official Derek T. Wood Date 10/9/96

and 10/10/10

Supervisor or Operator Ken Week Date 10-6-69

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

15-7 3 8 9

Well Log
Weech Drilling
Rex Weech
632 E 42nd St
Burley, Idaho
83318
208-678-7633

pg 2 of 3

057178

Date 9/26/96
Purchaser: Dave Harris
1010 South Woodruff Road
Malad, Id. 83252
Phone 1-208-766-2694

Permit #: 15-96E-0021-000
Water Right # 15-07143

Work time: 9/6/96 9/28/96
Static Water Level 45ft

Pipe: 243 ft of 16X.250 line welded casing Mitchel Lewis & Stavier machined and heat treated shoe.

Perforations:	82-90	8 rd of 8 perforations	1/2X3"
	97-105	8	
	126	1	
	130-135	5	
	138-146	8	
	150-163	13	
	175-180	5	
	195-203	6	
	205-208	3	
	212-215	3	
	219-220	1	
	224-228	3	
	235-242	8	

total 64 X8 = 512 perforations

Log:

0-15ft	Dark Brown Sandy Clay
15-22	Tan Brown sticky clay
22-30	Sand & gravel
30-40	Dark Brown Sandy Clay

MICROFILMED
DEC 3 8 1996

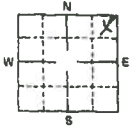
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OCT 30 1996
Department of Water Resources
Eastern Region

15-7389

40-45	gravel
45-60	Tan Brown Sandy clay
60-70	Brown sandy Clay
70-71	Gravel Acquirer
71-77	Tan Clay and Gravel
77-82	Brown Clay
82-90	Gravel (Black) waterbearing
90-97	Brown Sandy clay
97-105	Gravel (course and Black) waterbearing
105-110	Tan Brwon Clay and Gravel
110-125	Brown Clay(115-6) Black rock
125-126	Gravel waterbearing
126-130	Yellow Brown Clay
130-163	Gravel fine strips of clay (130-5,138-46,150-63) waterbearing
163-170	Brown clay and fine gravel
170-175	Tan Brown Clay and gravel
175-180	Gravel and Large Cobbles waterbearing
180-195	Brown Clay
195-203	Gravel(waterbearing)
203-205	Dark Grey Clay and Gravel
205-243	Gravel and grey clay strips (205-8,212-15,219-20,224-228,234-243, Waterbearing)

MICROFILMED
DEC 0 6 1985

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORTUSE TYPEWRITER OR
BALLPOINT PENState law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name <u>Jim Christensen</u> Address <u>93 east Woodruff Lane</u> Drilling Permit No. <u>15-94-E-033-000</u> Water Right Permit No. _____	7. WATER LEVEL Static water level <u>10</u> feet below land surface. Flowing? ☐ Yes ☒ No G.P.M. flow _____ Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☐ Cap ☐ Plug Temperature _____ °F. Quality _____ Describe artesian or temperature zones below.																																		
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Well diameter increase ☐ Modification ☐ Abandoned (describe abandonment or modification procedures such as liners, screen, materials, plug depths, etc. in lithologic log, section 9.)	8. WELL TEST DATA ☐ Pump ☒ Bailer ☐ Air ☐ Other _____ Discharge G.P.M. <u>12 GPM</u> Pumping Level <u>18 Feet</u> Hours Pumped _____																																		
3. PROPOSED USE ☒ Domestic ☐ Irrigation ☐ Monitor ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)	9. LITHOLOGIC LOG <u>074641</u> <table border="1"><thead><tr><th rowspan="2">Bore Diam.</th><th colspan="2">Depth</th><th rowspan="2">Material</th><th colspan="2">Water</th></tr><tr><th>From</th><th>To</th><th>Yes</th><th>No</th></tr></thead><tbody><tr><td>8</td><td>0</td><td>24</td><td>Brown Clay</td><td></td><td>☒</td></tr><tr><td></td><td>24</td><td>80</td><td>Blue Clay</td><td></td><td>☒</td></tr><tr><td></td><td>80</td><td>82</td><td>Brown clay</td><td></td><td>☒</td></tr><tr><td></td><td>82</td><td>100</td><td>Sand + Gravel</td><td></td><td>☒</td></tr></tbody></table>	Bore Diam.	Depth		Material	Water		From	To	Yes	No	8	0	24	Brown Clay		☒		24	80	Blue Clay		☒		80	82	Brown clay		☒		82	100	Sand + Gravel		☒
Bore Diam.	Depth		Material	Water																															
	From	To		Yes	No																														
8	0	24	Brown Clay		☒																														
	24	80	Blue Clay		☒																														
	80	82	Brown clay		☒																														
	82	100	Sand + Gravel		☒																														
4. METHOD DRILLED ☐ Rotary ☐ Air ☐ Auger ☐ Reverse rotary ☒ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)	RECEIVED JAN 27 1995 Department of Water Resources Eastern District Office RECEIVED FEB 02 1995 Department of Water Resources RECEIVED JUN 26 1995																																		
5. WELL CONSTRUCTION Casing schedule: ☐ Steel ☐ Concrete ☐ Other _____ Thickness <u>250</u> inches Diameter <u>8</u> inches From <u>100</u> feet To <u>0</u> feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet Was casing drive shoe used? ☒ Yes ☐ No Was a packer or seal used? ☐ Yes ☐ No Perforated? ☒ Yes ☐ No How perforated? ☐ Factory ☐ Knife ☒ Torch ☐ Gun Size of perforation? <u>14</u> inches by <u>4</u> inches Number _____ From _____ To _____ _____ perforations <u>95</u> feet <u>80</u> feet _____ perforations _____ feet _____ feet _____ perforations _____ feet _____ feet Well screen installed? ☐ Yes ☐ No Manufacturer _____ Type _____ Top Packer or Headpipe _____ Bottom of Tailpipe _____ Diameter _____ Slot size _____ Set from _____ feet to _____ feet Diameter _____ Slot size _____ Set from _____ feet to _____ feet Gravel packed? ☐ Yes ☐ No ☐ Size of gravel _____ Placed from _____ feet to _____ feet Surface seal depth <u>18</u> Material used in seal: ☐ Cement grout ☒ Bentonite ☐ Pudding clay ☐ _____ Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☐ Overbore to seal depth Method of joining casing: ☐ Threaded ☐ Welded ☐ Solvent Weld ☐ Cemented between strata Describe access port _____																																			
6. LOCATION OF WELL Sketch map location must agree with written location.  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Oneida</u> Address of Well Site <u>93 east Woodruff Lane</u> (give at least name of road) <u>NE 1/4 NE 1/4 Sec. 02, R. 36</u> T. <u>16</u> N ☐ or S ☒ E ☐ or W ☒		11. DRILLER'S CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>Jensen Drilling</u> Firm No. <u>515</u> Address <u>Dayton Idaho</u> Date <u>1-23-95</u> Signed by Drilling Supervisor <u>Ernie Bagley</u> and <u>Jim Jensen</u> (Operator) <u>different than the Drilling Supervisor</u>																																	

USE ADDITIONAL SHEETS IF NECESSARY — FORWARD THE WHITE COPY TO THE DEPARTMENT

15-7389

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORTUSE TYPEWRITER OR
BALLPOINT PENState law requires that this report be filed with the Director, Department of Water Resources
within 30 days after the completion or abandonment of the well.

1. WELL OWNER Name <u>PELLEY JONES</u> Address <u>71 HAYLAND Rd, Malad, ID 83252</u> Drilling Permit No. <u>15-92E-027</u> Water Right Permit No. _____		7. WATER LEVEL Static water level <u>+8'</u> feet below land surface. Flowing? ☒ Yes ☐ No G.P.M. flow <u>15</u> Artesian closed-in pressure <u>3.5</u> p.s.i. Controlled by: ☒ Valve ☐ Cap ☐ Plug Temperature <u>56</u> OF. Quality <u>FAINT odor</u> Describe artesian or temperature zones below. <u>SULFUR</u>																																																																									
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Well diameter increase ☐ Abandoned (describe abandonment procedures such as materials, plug depths, etc. in lithologic log)		8. WELL TEST DATA ☐ Pump ☐ Bailer ☐ Air ☐ Other _____ Discharge G.P.M. <u>15 GPM</u> Pumping Level <u>FLOWING</u> Hours Pumped _____																																																																									
3. PROPOSED USE ☒ Domestic ☐ Irrigation ☐ Test ☐ Municipal ☐ Industrial ☒ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)		9. LITHOLOGIC LOG <u>103451</u> <table border="1"><thead><tr><th>Bore Diam.</th><th>Depth From</th><th>To</th><th>Material</th><th>Water Yes</th><th>No</th></tr></thead><tbody><tr><td>8"</td><td>0</td><td>15'</td><td>CLAY</td><td></td><td>☒</td></tr><tr><td>8"</td><td>15'</td><td>65'</td><td>Mud Swamp</td><td></td><td>☒</td></tr><tr><td>6"</td><td>65'</td><td>73'</td><td>BLOWN CLAY</td><td></td><td>☒</td></tr><tr><td>6"</td><td>73'</td><td>79'</td><td>PER GRAVEL & SAND</td><td></td><td>☒</td></tr><tr><td>6"</td><td>79'</td><td>106'</td><td>BLOWN CLAY</td><td></td><td>☒</td></tr><tr><td>6"</td><td>106'</td><td>163'</td><td>CLAY STONE</td><td></td><td>☒</td></tr><tr><td>6"</td><td>163'</td><td>173'</td><td>PER GRAVEL & SAND</td><td></td><td>☒</td></tr><tr><td>6"</td><td>173'</td><td>233'</td><td>CLAY</td><td></td><td>☒</td></tr><tr><td>6"</td><td>233'</td><td>261'</td><td>LAYERS of CLAY & SAND STONE</td><td></td><td>☒</td></tr><tr><td>6"</td><td>261'</td><td>300'</td><td>SAND STONE</td><td></td><td>☒</td></tr><tr><td>6"</td><td>300'</td><td>400'</td><td>SAND STONE CLAY LAYERS</td><td></td><td>☒</td></tr></tbody></table>		Bore Diam.	Depth From	To	Material	Water Yes	No	8"	0	15'	CLAY		☒	8"	15'	65'	Mud Swamp		☒	6"	65'	73'	BLOWN CLAY		☒	6"	73'	79'	PER GRAVEL & SAND		☒	6"	79'	106'	BLOWN CLAY		☒	6"	106'	163'	CLAY STONE		☒	6"	163'	173'	PER GRAVEL & SAND		☒	6"	173'	233'	CLAY		☒	6"	233'	261'	LAYERS of CLAY & SAND STONE		☒	6"	261'	300'	SAND STONE		☒	6"	300'	400'	SAND STONE CLAY LAYERS		☒
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N																																																																											
W	+	E																																																																									
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USE ADDITIONAL SHEETS IF NECESSARY - FORWARD THE WHITE COPY TO THE DEPARTMENT

15-7389

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

15

1. WELL TAG NO. D 0057524

Drilling Permit No. _____

Water right or injection well # _____

2. OWNER: Russel + Joyce Stoddard

Name _____

Address 1125 E 10700SCity Malad State ID Zip 83252

3. WELL LOCATION:

Twp. 16 North ☐ or South ☒ Rge. 36 East ☒ or West ☐Sec. 22 1/4 SE 1/4 NE 1/4Gov't Lot _____ County Oneida

Lat. _____ (Deg. and Decimal minutes)

Long. _____ (Deg. and Decimal minutes)

Address of Well Site Same

(Give at least name of road + Distance to Road or Landmark) City _____

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 ft ³)	Placement method/procedure
Bentonite	0	38	19 bags	Overbore

8. CASING/LINER:

Diameter (nominal)	From (ft)	To (ft)	Gauge/Schedule	Material	Casing Liner	Threaded	Welded
6	0	186	250	Steel	☒	☐	☒
					☐	☐	☐
					☐	☐	☐
					☐	☐	☐

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 180

9. PERFORATIONS/SCREENS:

Perforations ☒ Y ☒ N Method _____Manufactured screen ☐ Y ☐ N Type _____

Method of installation _____

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

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☐ N Type _____

10. FILTER PACK:

Filter Material	From (ft)	To (ft)	Quantity (lbs or ft ³)	Placement method

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) 80 Static water level (ft) 15'Water temp. (°F) Cold Bottom hole temp. (°F) ColdDescribe access port Well Cap

Well test:

Drawdown (feet)	Discharge or yield (gpm)	Test duration (minutes)
	<u>35</u>	

Test method:

Pump ☐ Bailer ☐ Air ☒ Flowing artesian ☐Water quality test or comments: good

13. LITHOLOGIC LOG and/or repairs or abandonment:

Bore Dia. (in)	From (ft)	To (ft)	Remarks, lithology or description of repairs or abandonment, water temp.	Water	
				Y	N
10	0	38	Bm clay		☒
6	38	40	Bm clay		☒
6	40	60	Gray Blue clay silt		☒
6	60	80	Blue gray clay		☒
6	80	90	gravel	☒	
6	90	100	Bm clay		☒
6	100	105	Brown clay gravel	☒	
6	105	115	grayish Bm clay		☒
6	115	118	Bm clay sand		☒
6	118	135	gravel sand	☒	
6	135	140	clay gravel		☒
6	140	163	Bm clay w/ pockets of gravel		☒
6	163	175	Silt Sand gravel		☒
6	175	180	gravel sand	☒	☒
6	180	190	cemented gravel	☒	

RECEIVED

OCT 21 2010

Department of Water Resources
Eastern RegionCompleted Depth (Measurable): 186'Date Started: 8-2-10 Date Completed: 8-16-10

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 Mt West Drilling Co. No. 543*Principal Driller Michael Anderson Date 9-10-10*Driller Miles Anderson Date 9-10-10

*Operator II _____ Date _____

Operator I _____ Date _____

* Signature of Principal Driller and rig operator are required.

15-7389



State of Idaho

DEPARTMENT OF WATER RESOURCES

900 N Skyline Dr., Ste A, Idaho Falls, Idaho 83402-1718

Phone: (208) 525-7161 FAX: (208) 525-7177 www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Director

October 28, 2014

HEIDI BURTON
TRAVIS BURTON
PO BOX 681
MILLVILLE, UT 84326

Application For Permit No. 15-7389

Dear Applicant(s):

The Department of Water Resources has received your water right application. Please refer to the number referenced above in all future correspondence regarding this application.

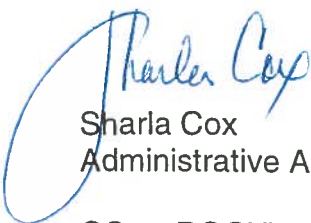
A legal notice of the application has been prepared and is scheduled for publication in the IDAHO ENTERPRISE on November 6 and 13, 2014. Protests to this application may be submitted for a period ending ten (10) days after the second publication.

If the application is protested, you will be sent a copy of each protest. All protests must be resolved before the application can be considered for approval. If the protest(s) cannot be resolved voluntarily, the Department will conduct a conference and/or hearing on the matter.

If the application is not protested, the Department will process your application and notify you of any action taken on the application. If your application is approved, the Department will send you a copy of the permit.

Please contact this office if you have any questions regarding the application.

Sincerely,


Sharla Cox
Administrative Assistant

CC: ROCKY MOUNTAIN ENVIRONMENTAL ASSOC INC
482 CONSTITUTION WAY
IDAHO FALLS, ID 83442

Cox, Sharla

From: Cox, Sharla
Sent: Tuesday, October 28, 2014 7:39 AM
To: 'Idaho Enterprise (enterprisenews@atcnet.net)'
Subject: Legal Notice for your paper
Attachments: Idaho Enterprise E-Mail.doc

Contacts: Idaho Enterprise

Sharla

*Sharla Cox
Administrative Assistant
Idaho Dept of Water Resources
900 N Skyline Dr. Ste A.
Idaho Falls ID 83402
sharla.cox@idwr.idaho.gov
208-525-7161 phone
208-525-7177 fax*

The following application(s) have been filed to appropriate the public waters of the State of Idaho:

15-7385

LAWRENCE VICTOR RICHES JR

171 MAIN ST #280

LOS ALTOS, CA 94022

Point of Diversion

NWNWSW S1 T15S R35E

SWSWSW S1 T15S R35E

NENW S12 T15S R35E

ONEIDA County

Source GROUND WATER Tributary

Use: IRRIGATION

04/01 to 10/31 5 CFS

Total Diversion: 5 CFS

Date Filed: 10/10/2014

Place Of Use: IRRIGATION

T15S R35E S1 NESW NWSW SWSW SESW

T15S R35E S12 NENE NWNE SWNE SENE NENW NWNW SWNW SENW NESW NESE NWSE SWSE SESE

Total Acres: 504

15-7389

HEIDI BURTON

TRAVIS BURTON

PO BOX 681

MILLVILLE, UT 84326

Point of Diversion

SWNE S22 T16S R36E

ONEIDA County

Source GROUND WATER Tributary

Use: IRRIGATION

04/01 to 10/31 3.98 CFS

Total Diversion: 3.98 CFS

Date Filed: 10/10/2014

Place Of Use: IRRIGATION

T16S R36E S22 NENE NWNE SWNE SENE NESE NWSE SWSE SESE

Total Acres: 199.1

Permits will be subject to all prior water rights. For additional information concerning the property location, contact Eastern Region office at (208) 525-7161. Protests may be submitted based on the criteria of Idaho Code § 42-203A. Any protest against the approval of this application must be filed with the Director, Dept. of Water Resources, Eastern Region, 900 N Skyline Dr Ste A, Idaho Falls ID 83402 together with a protest fee of \$25.00 for each application on or before November 24, 2014. The protestant must also send a copy of the protest to the applicant.

GARY SPACKMAN, Director

Published on November 6 and 13, 2014