Cefalo, James

From: Tom Wood [thomasrwood@gmail.com]
Sent: Wednesday, June 20, 2012 11:23 AM
To: Cefalo, James
Subject: Re: Application 15-7320 (Flinders Samaria Ranch)
Attachments: Josh Pasket Water Right Hydrological Report ver 2.pdf

James,

My apologies. You caught an error. When I exported the image file from AQTESOLV as an emf I labeled it incorrectly as a confined case and didn't notice the error in Microsoft Word. I have corrected the error on the attached version. It did make a slight difference in the calculated impact. I reworded the last two paragraphs on page 3 to include the new drawdown numbers.

Thanks for your careful and thoughtful review.

Tom

On Wed, Jun 20, 2012 at 9:45 AM, Cefalo, James <James.Cefalo@idwr.idaho.gov> wrote:

Tom,

I am in the middle of the final review of Application 15-7320. I had one question related to your report. Given the artesian pressures in the existing well (the proposed POD), one of the aquifer layers tapped by the well must be confined. On page 2, in the largest paragraph, you note: "For long term pumping calculations it is appropriate to use . . . a confined solution for predicting drawdown." However, on page 30 it appears that you used assumed an unconfined aquifer for the drawdown analysis. Is it just a mis-labeling on page 30 or should you run another drawdown analysis assuming a confined aquifer? I wouldn't expect the estimated drawdown to change very much if the model has to be re-run. I just want the report and water right files to be correct before signing the permit. Feel free to call me if you need to give a more detailed explanation.

Thanks

James Cefalo

Water Resources Program Manager

IDWR - Eastern Region

(208) 525-7161

Clearwater Geosciences, LLP
Ground Water Development and Exploration

May 29, 2012

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

RE: HYDROGEOLOGIC ASSESSMENT FOR PASKET WATER RIGHTS APPLICATION

Dear Mr. Cefalo:

A groundwater impact assessment is provided in this letter report for the Josh Pasket Water Right Application. The application is under the name of Flinders Samaria Ranch, LLC, No. 15-7320. The original application was placed 3/3/09 and it was not protested. Mr. Pasket has 102 acres of farm land north of Samaria, Idaho (Figure 1), which he would like to irrigate and his application is for 2 cfs.

A pumping test was conducted on April 23, 2011 in an existing well less than one mile south-southwest labeled the Davis Irrigation Well in Figure 1. The parameters from the aquifer test are used in a computer simulation to predict the potential impacts to neighboring wells ½ mile west of the proposed point of diversion (POD). This is the most conservative estimate as it places the hypothetical well closer to the western boundary of the aquifer. The closest groundwater wells are approximately ½ mile to the southwest of the proposed POD. The results of the computer analysis show that the proposed diversion rate will have a minimal or negligible impact on neighboring wells.

Nearby Wells

An evaluation was made for all existing wells and springs and permitted wells within ½ mile radius of the proposed well location. Figure 2 shows a circle of ½ mile radius centered on the proposed POD. The circle encompasses portions of sections 11, 12, 13 and 14, T15S, R35E. A search of the IDWR on-line data base indicates that there is one groundwater diversion permit in Section 11, one permitted in Section 12, no permits in section 13 and two in Section 14. The results of the water right search are provided in Tables 1 through 4.

A search was performed of the IDWR drillers' log database for wells in Sections 11, 12, 13 and 14, these wells are listed in Tables 5 through 8. Although there are a number of wells in the surrounding sections, there are only a few wells within ½ mile of the proposed Point of Diversion (POD). Six well logs were found (including the Pasket Proposed POD Well) as plotted in Figure 2 and the well logs are provided in Attachment 1. The average depth of the wells is 103 ft and the average depth to water is 14 ft. Two of the wells are artesian and these wells are also the deepest wells. There may be other wells within a ½ mile of the Pasket location but they not on record by either water right or drillers' logs in the IDWR database and it seems unlikely due to the agricultural nature of the land within ½ mile of the site (i.e. a search of satellite imagery did not reveal any residences. This search indicates that the density of water right PODs and water wells are relatively low within ½ mile of the proposed Pasket POD.

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The lithology in this area is a series of unconsolidated sands, gravels and clays. There is not a marker layer or geologic unit that can be correlated over distances between wells (~ ½ mile), at least, as described in the lithology on the well logs. The inability to correlate geologic layers is consistent with the area being situated in a cut and fill sequence of the Malad River. It is further complicated by waxing and waning cycles of Lake Bonneville. For the purposes of this investigation it is assumed that the aquifer thickness is 200 ft in this area. This is based on driller logs for three irrigations wells in Section 30, T15S, R36E about two miles southeast of the proposed POD and regional considerations of the hydrogeology. It should be noted that the aquifer is not one homogenous layer but a sequence of permeable lens of sand and gravel stringers, which are primarily confined. However, it is anticipated that locally the shallow sequences of the aquifer are unconfined.

Pumping Test

The test well is an irrigation well owned by Mr. Jeff Davis and it is located less than one mile south southeast of the location of the Pasket POD (see Figure 1). The Davis irrigation well is 140 ft deep, having an open bottom completion in gravel at 140 ft. The well log for the Davis Irrigation well is provided in Attachment 1, Figure 1-6. For the pumping test, the Davis Irrigation Well was equipped with an INSITU brand downhole pressure transducer to collect automated water levels during the pumping test. The pumping test began at 11:20 AM on April 23, 2011 and the well was pumped at a steady rate of 140 gpm for 24 hours. A plot of the data can be found in Attachment 2.

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 early time data to the Theis confined solution corrected for partial penetration. The calculated transmissivity is 9.5×10^4 ft^2/day and the storativity is unreliable because there is no observation well. The match of the late time data is presented in Figure 3-2 and the calculated transmissivity is 7.7×10^4 ft^2/day. A third calculation is performed using the Hantush method for a leaky confined aquifer and the match to the type curve is presented in Figure 3-3. The match to the leaky confined type curve is excellent and the calculated transmissivity is 6.24×10^4 ft^2/day. Based on the good match to the leaky confined solution the aquifer appears to be leaky confined in the area of the Jeff Davis Well. However, it is known that artesian conditions exist elsewhere due to artesian flow in some wells, in particular the Pasket Well. For long term pumping calculations it is appropriate to use 6.24×10^4 ft^2/day for the transmissivity with a confined solution for predicting drawdown. This transmissivity is consistent with another pumping test conducted in the Davis Stock Well located about 1 mile west of the Davis Irrigation Well (Section 22), which had a measured transmissivity of 5.1×10^4 ft^2/day. The storativity cannot be measured reliably with a single well pumping test, so an estimated value of 0.01 is used, which is typical for these types of unconsolidated aquifer materials (Freeze and Cherry, 1979).

Impact Assessment

Mr. Pasket wishes to irrigate 102 acres requiring 900 gpm or 2.0 cfs. To estimate the long-term drawdown and impact to neighboring wells from pumping of the proposed Pasket Well, the forward solution capabilities of the AQTESOLV program were employed. The input parameters to the model are listed in Table 4-1 (see Attachment 4). Boundaries in AQTESOLV were

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enabled as shown in Figure 4-1 to represent Malad Valley. As depicted in Figure 4-1 and listed in Table 4-2 the model is 32,000 ft wide and 50,000 ft long. Because the Malad Valley is bounded by mountains consisting of Paleozoic and Mesozoic sedimentary rock that do not provide much water compared to the unconsolidated valley fill, the east, west and south boundaries are were set as impermeable or "no flow" boundaries. Water is allowed to enter the model domain only through the north boundary.

In the model domain the proposed POD well is located 7400 ft east of the west boundary and 13,000 ft north of the south boundary. This represents the proximity of the proposed POD to the nearby mountains and the no flow southern boundary, which will have the effect of increasing drawdown.

Figure 4-2 shows the AQTESOLV® output plot of the forward calculation for the proposed well pumping at 2.0 cfs (900 gpm) constantly for 6 months (April 15 to Oct 15). At the end of the time period the predicted drawdown is estimated to be 7 feet in the proposed Pasket Well. The calculated drawdown for a well 1/2 mile west of the proposed well is appoximately 1 ft. This amount of drawdown will be negligible to other groundwater users in the area.

It is my professional opinion that Mr. Pasket's water right application 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: 1) Mr. Pasket will never pump continuously at the maximum rate for 180 days nor will he consume 715 acre – ft in a single year; 2) the Paleozoic/Mesozoic rocks of the mountains are not totally impermeable and will provide some water to the system, thus reducing drawdown, and 3) two canals and the Malad River are within the domain of the model and no credit for recharge/leakage is taken in the model. All of these factors will reduce the predicted drawdown presented here.

Please do not hesitate to call me if you have any questions about this letter or the calculations presented.

Respectfully,

Thomas R. Wood, PhD, PG

REGISTERED PROFESSIONAL GEOLOGIST
THOMAS R WOOD
5/29/12
NO. 643
STATE OF IDAHO

cc

Mr. Josh Pasket, 4889 S 4400 W Malad, Id 83252

References

Freeze, R.A. and J.A. Cherry, 1979, Groundwater, ISBN 0-13-365312-9, Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632.

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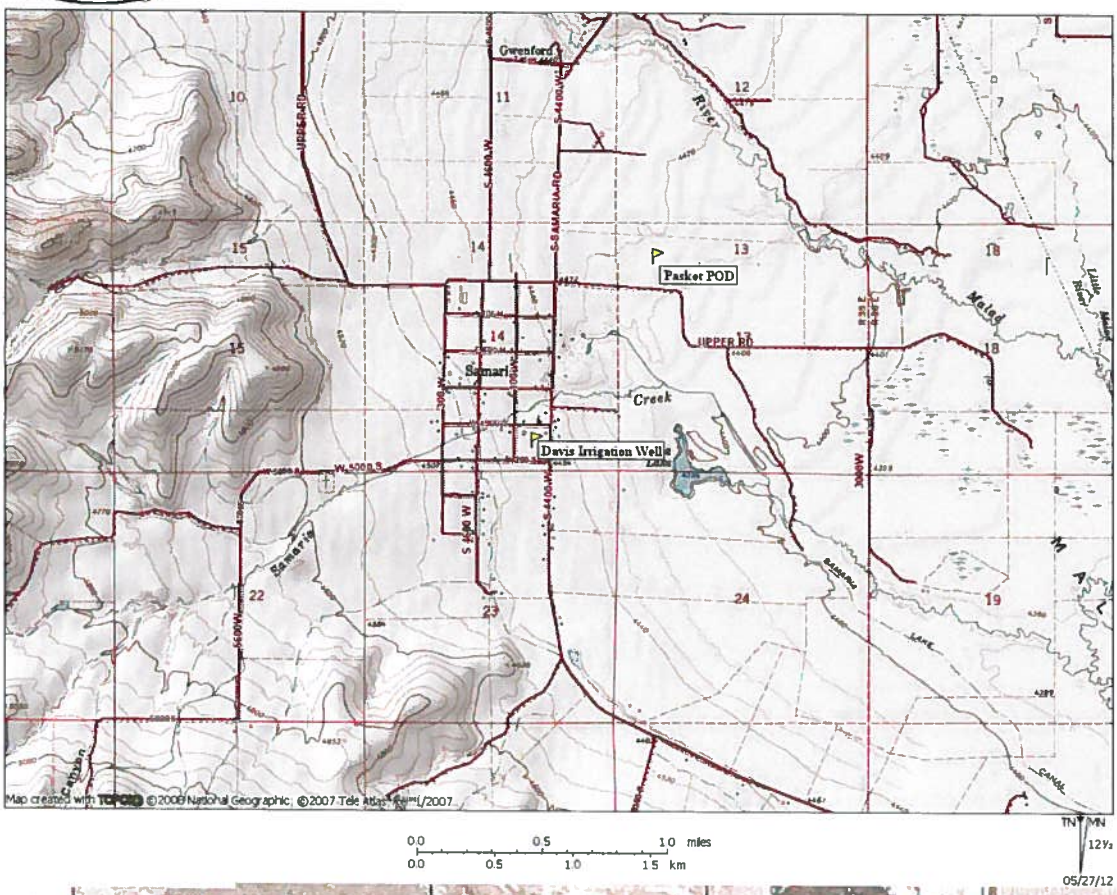

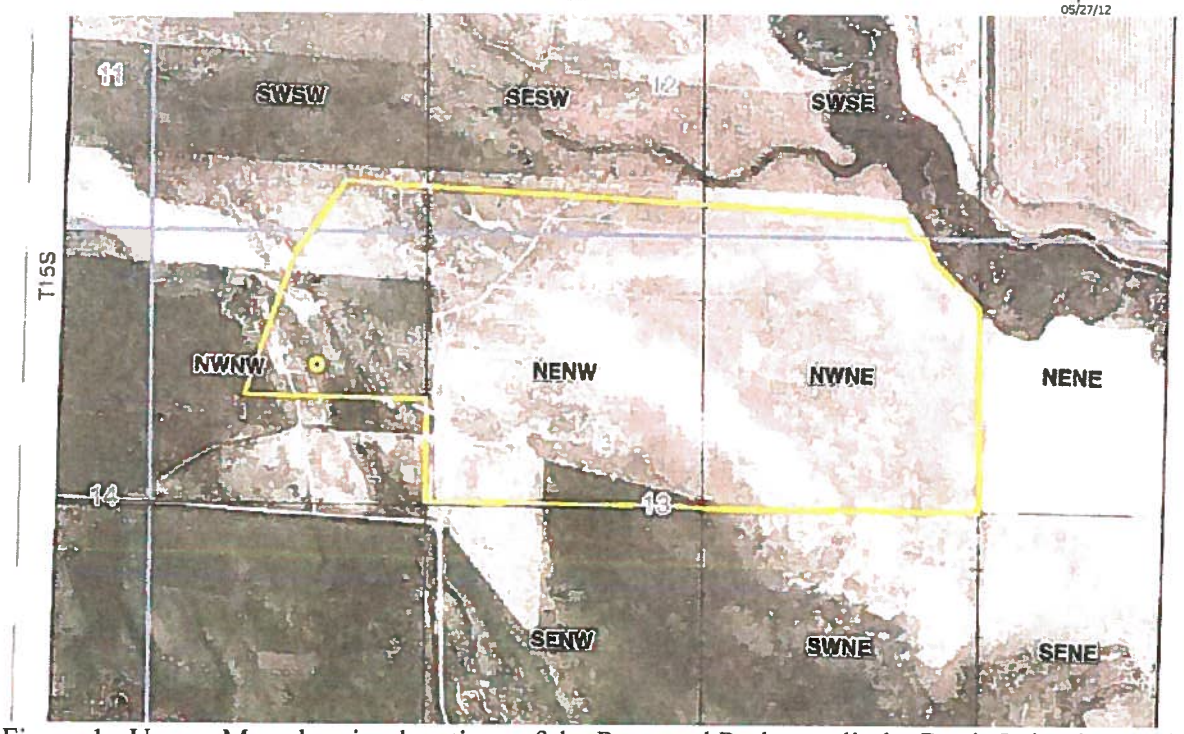

Figure 1. Upper: Map showing locations of the Proposed Pasket well, the Davis Irrigation Well used for the pumping test analysis. Lower: well location and place of use (yellow line).

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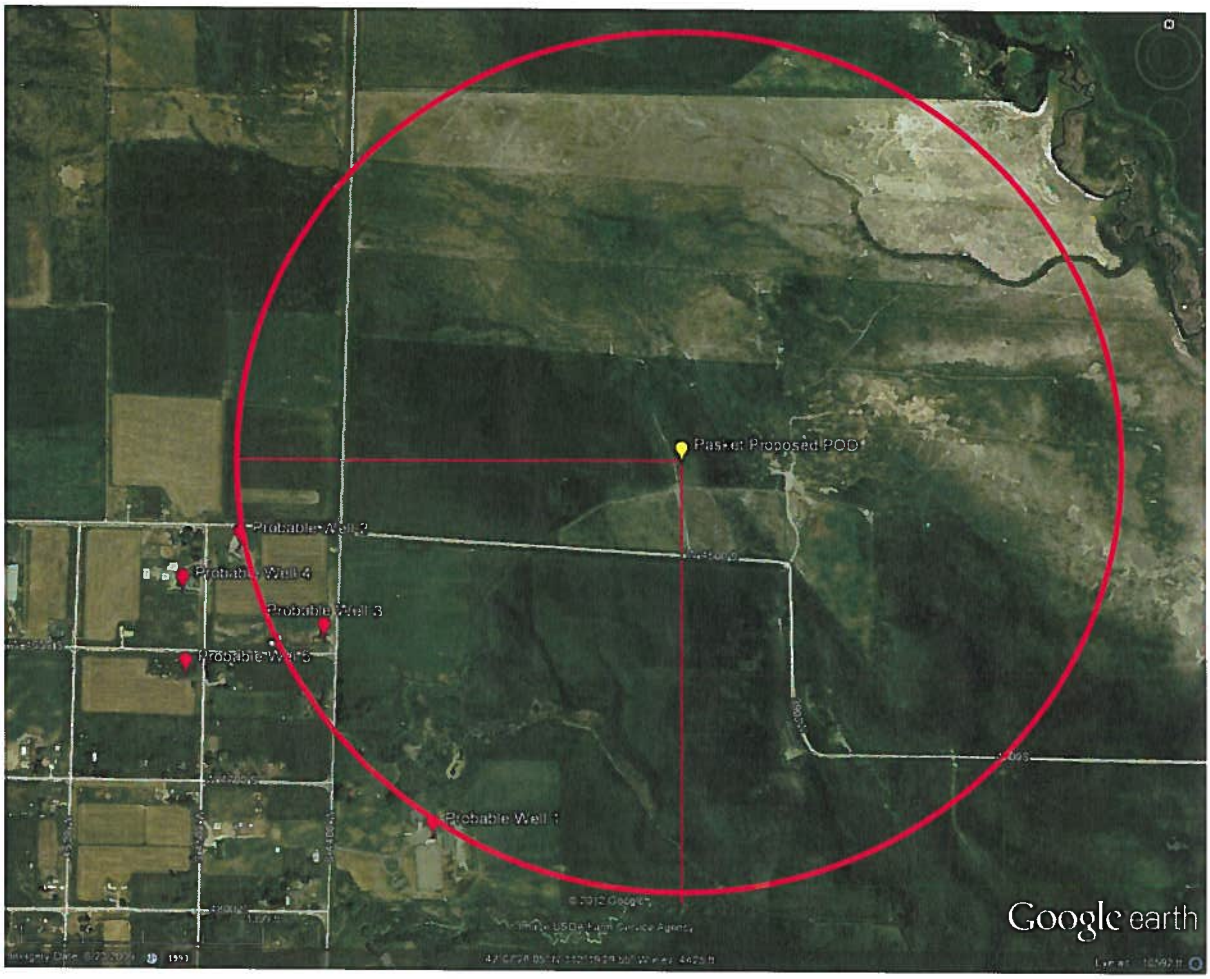

Figure 2 Google Earth image of area with a red circle of ½ mile diameter. Records of neighboring wells are limited so probable locations of wells are plotted as the exact location is not known. The two red lines are each ½ mile long. Well logs for wells can be found in Attachment 1.

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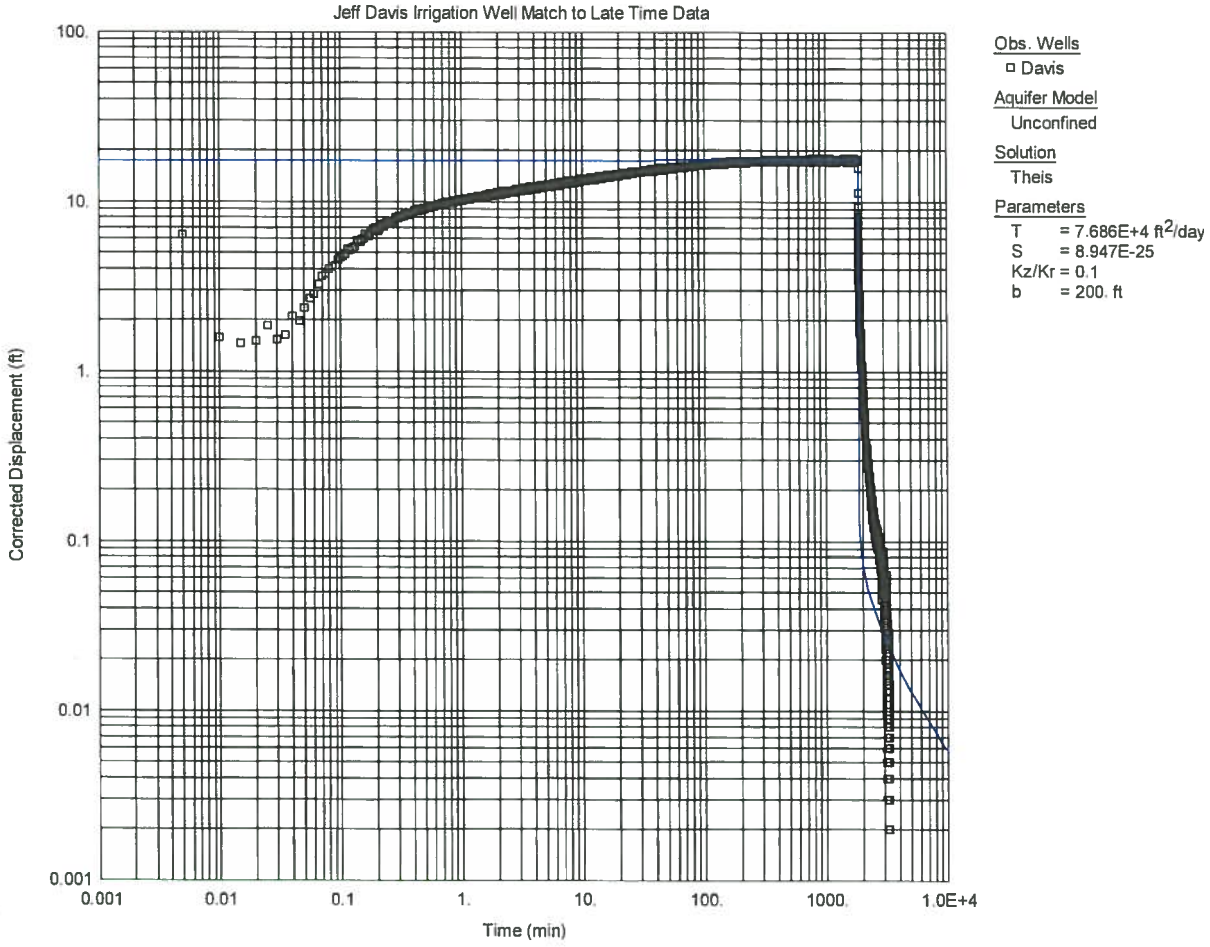

Figure 3-2 Theis unconfined solution matched to late time well data.

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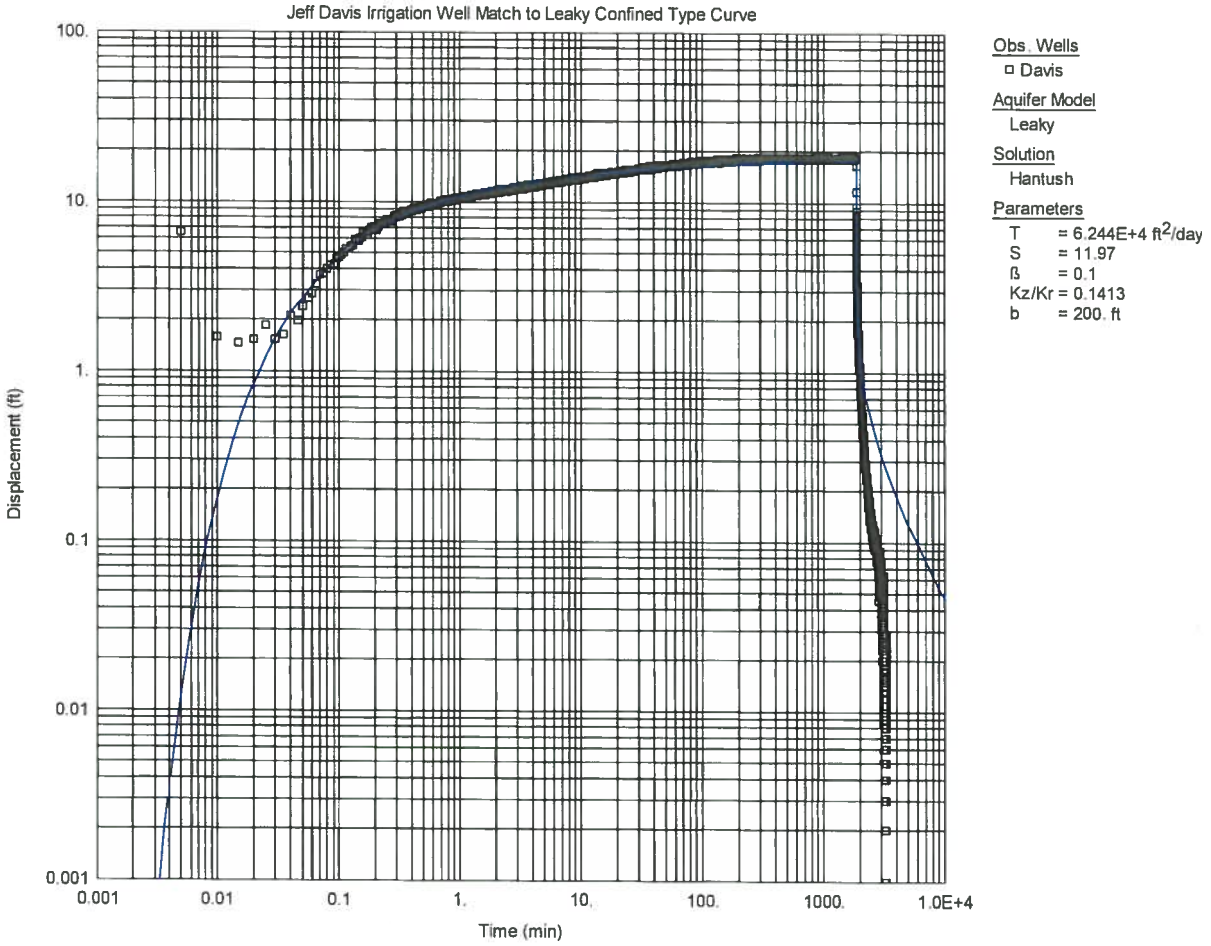

Figure 3-3 Hantush leaky confined solution matched to well data.

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Attachment 4

AQUIFER IMPACT ANALYSIS

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Table 4-1 Table of values used in AQTESOLV simulation.

Parameter	Value	Unit
Tranmissivity	64,200	ft2/d
Storativity	0.1	unitless
Flow Rate	900	gpm
Duration	259,200	min
Total volume	716	ac-ft
aquifer thickness (b)	200	ft
kz/Kr	0.01	na

Table 4-2 Table of locations for various boundary corners and wells used in the AQESOLV simulation.

Location	x	y
NW Corner	0	50000
NE Corner	32000	50000
SW Corner	0	0
SE Corner	32000	0
Pasket POD	7400	13000
Well 1/2 mile East	4760	13000

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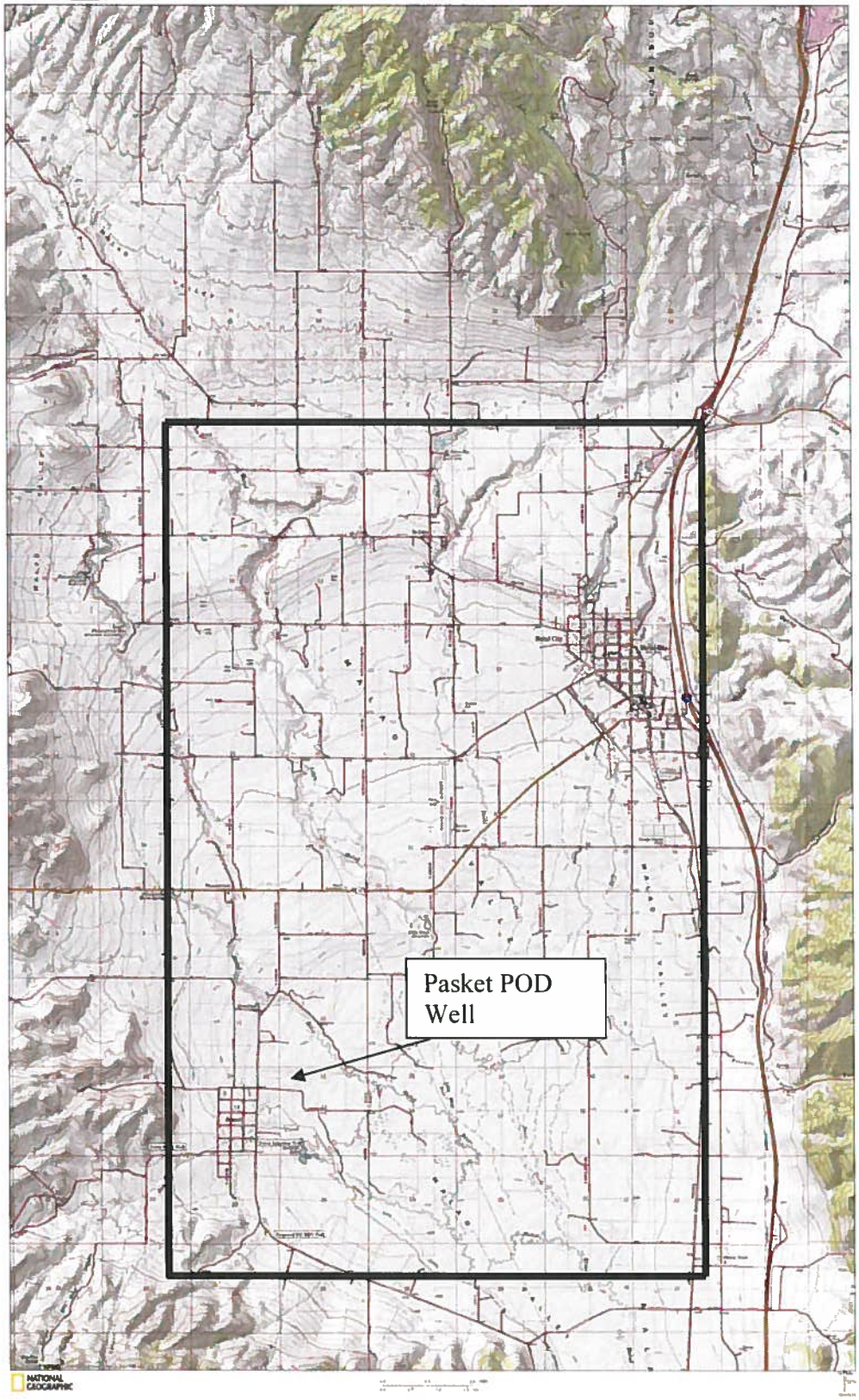

Figure 4-1 Outline of the boundaries used in the AQTESOLV forward solution calculation.

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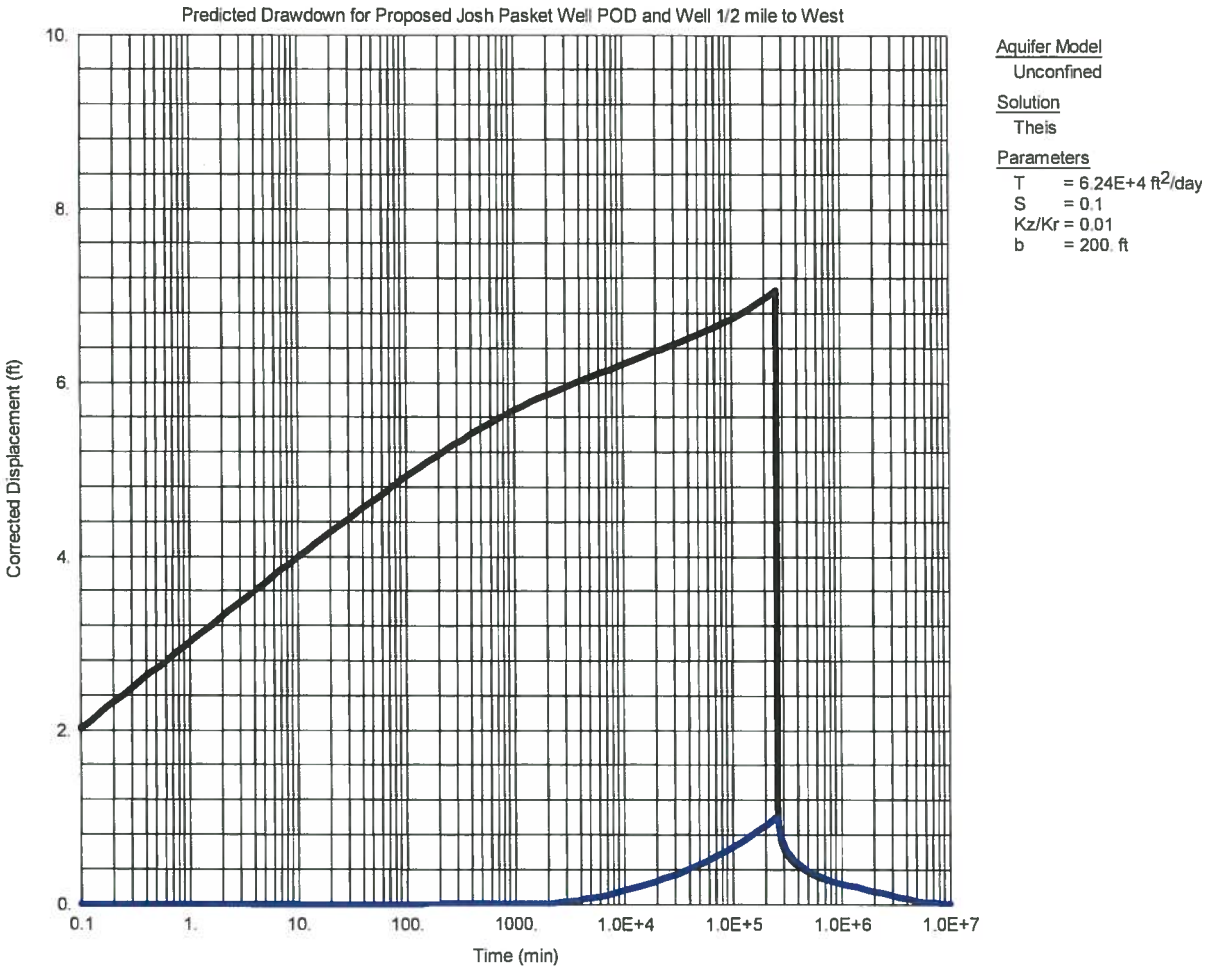

Figure 4-2 Predictive plot of drawdown at 900 gpm or 2.00 cfs for the full period of use 180 days. The black line (upper) is for the water level in the proposed Pasket Well pumping and the blue line is the water level predicted in a well ½ mile east of the proposed Pasket Well.

Key to line colors

Blue Water levels for imaginary well ½ mile east of the proposed POD
Black Water levels for proposed POD Pasket Well

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Clearwater Geosciences, LLP
Ground Water Development and Exploration

May 29, 2012

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

RE: HYDROGEOLOGIC ASSESSMENT FOR PASKET WATER RIGHTS APPLICATION

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A pumping test was conducted on April 23, 2011 in an existing well less than one mile south-southwest labeled the Davis Irrigation Well in Figure 1. The parameters from the aquifer test are used in a computer simulation to predict the potential impacts to neighboring wells ½ mile west of the proposed point of diversion (POD). This is the most conservative estimate as it places the hypothetical well closer to the western boundary of the aquifer. The closest groundwater wells are approximately ½ mile to the southwest of the proposed POD. The results of the computer analysis show that the proposed diversion rate will have a minimal or negligible impact on neighboring wells.

Nearby Wells

An evaluation was made for all existing wells and springs and permitted wells within ½ mile radius of the proposed well location. Figure 2 shows a circle of ½ mile radius centered on the proposed POD. The circle encompasses portions of sections 11, 12, 13 and 14, T15S, R35E. A search of the IDWR on-line data base indicates that there is one groundwater diversion permit in Section 11, one permitted in Section 12, no permits in section 13 and two in Section 14. The results of the water right search are provided in Tables 1 through 4.

A search was performed of the IDWR drillers' log database for wells in Sections 11, 12, 13 and 14, these wells are listed in Tables 5 through 8. Although there are a number of wells in the surrounding sections, there are only a few wells within ½ mile of the proposed Point of Diversion (POD). Six well logs were found as plotted in Figure 2 (including the Pasket Proposed POD Well the log labeled with owner Tom Flinders in Attachment 1). The average depth of the wells is 103 ft and the average depth to water is 14 ft. Two of the wells are artesian and these wells are also the deepest wells. There may be other wells within a ½ mile of the Pasket location but they are not on record by either water right or drillers' logs in the IDWR database. It seems unlikely other wells exist nearby due to the agricultural nature of the land within ½ mile of the site (i.e. a search of satellite imagery did not reveal any residences). This

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search indicates that the density of water right PODs and water wells are relatively low within ½ mile of the proposed Pasket POD.

The lithology in this area is a series of unconsolidated sands, gravels and clays. There is not a marker layer or geologic unit that can be correlated over distances between wells (~ ½ mile), at least, as described in the lithology on the well logs. The inability to correlate geologic layers is consistent with the area being situated in a cut and fill sequence of the Malad River. It is further complicated by waxing and waning cycles of Lake Bonneville. For the purposes of this investigation it is assumed that the aquifer thickness is 200 ft in this area. This is based on driller logs for three irrigations wells in Section 30, T15S, R36E about two miles southeast of the proposed POD and regional considerations of the hydrogeology. It should be noted that the aquifer is not one homogenous layer but a sequence of permeable lens of sand and gravel stringers, which are primarily confined. However, it is anticipated that locally the shallow sequences of the aquifer are unconfined.

Pumping Test

The test well is an irrigation well owned by Mr. Jeff Davis and it is located less than one mile south southeast of the location of the Pasket POD (see Figure 1). The Davis irrigation well is 140 ft deep, having an open bottom completion in gravel at 140 ft. The well log for the Davis Irrigation well is provided in Attachment 1, Figure 1-6. For the pumping test, the Davis Irrigation Well was equipped with an INSITU brand downhole pressure transducer to collect automated water levels during the pumping test. The pumping test began at 11:20 AM on April 23, 2011 and the well was pumped at a steady rate of 140 gpm for 24 hours. A plot of the data can be found in Attachment 2.

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Impact Assessment

Mr. Pasket wishes to irrigate 102 acres requiring 900 gpm or 2.0 cfs. To estimate the long-term drawdown and impact to neighboring wells from pumping of the proposed Pasket Well, the

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forward solution capabilities of the AQTESOLV program were employed. The input parameters to the model are listed in Table 4-1 (see Attachment 4). Boundaries in AQTESOLV were enabled as shown in Figure 4-1 to represent Malad Valley. As depicted in Figure 4-1 and listed in Table 4-2 the model is 32,000 ft wide and 50,000 ft long. Because the Malad Valley is bounded by mountains consisting of Paleozoic and Mesozoic sedimentary rock that do not provide much water compared to the unconsolidated valley fill, the east, west and south boundaries are set as impermeable or "no flow" boundaries. Water is allowed to enter the model domain only through the north boundary.

In the model domain the proposed POD well is located 7400 ft east of the west boundary and 13,000 ft north of the south boundary. This represents the proximity of the proposed POD to the nearby mountains and the no flow southern boundary, which will have the effect of increasing drawdown.

Figure 4-2 shows the AQTESOLV® output plot of the forward calculation for the proposed well pumping at 2.0 cfs (900 gpm) constantly for 6 months (April 15 to Oct 15). At the end of the time period the predicted drawdown is estimated to be 8.5 feet in the proposed POD. The calculated drawdown for a well 1/2 mile west of the POD is approximately 3 ft. In general, 3 feet of drawdown in a flowing artesian system might be significant; however, most of the aquifer in the area is unconfined or confined but not flowing. Under these conditions 3 feet of drawdown is negligible.

It is my professional opinion that Mr. Pasket's water right application will not excessively impact his neighbors' right to divert water. I believe that the calculated drawdown over estimates the actual drawdown to be expected for the following reasons: 1) Mr. Pasket will never pump continuously at the maximum rate for 180 days nor will he consume 715 acre – ft in a single year; 2) the Paleozoic/Mesozoic rocks of the mountains are not totally impermeable and will provide some water to the system, thus reducing drawdown, 3) two canals and the Malad River are within the domain of the model and no credit for recharge/leakage is taken in the model, and 4) the calculated impact used confined aquifer conditions for the entire domain, while it is known that unconfined conditions exist over large parts of the area. All of these factors will reduce the predicted drawdown presented here.

Please do not hesitate to call me if you have any questions about this letter or the calculations presented.

Respectfully,

Thomas R. Wood, PhD, PG

REGISTERED PROFESSIONAL GEOLOGIST
THOMAS R WOOD
5/29/12
NO. 643
STATE OF IDAHO

cc: Mr. Josh Pasket, 4889 S 4400 W Malad, Id 83252

References

Freeze, R.A. and J.A. Cherry, 1979, Groundwater, ISBN 0-13-365312-9, Prentice-Hall, Inc., Englewood Cliffs, New Jersey 07632.

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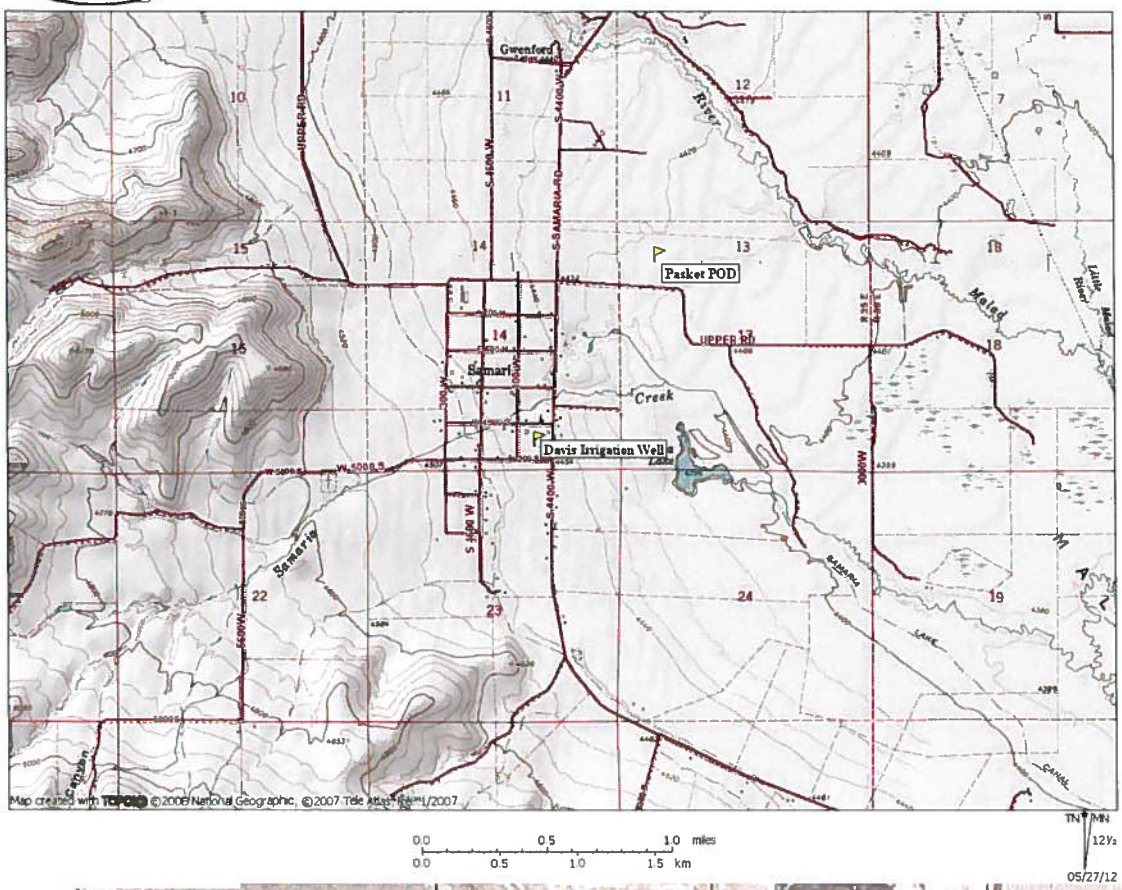

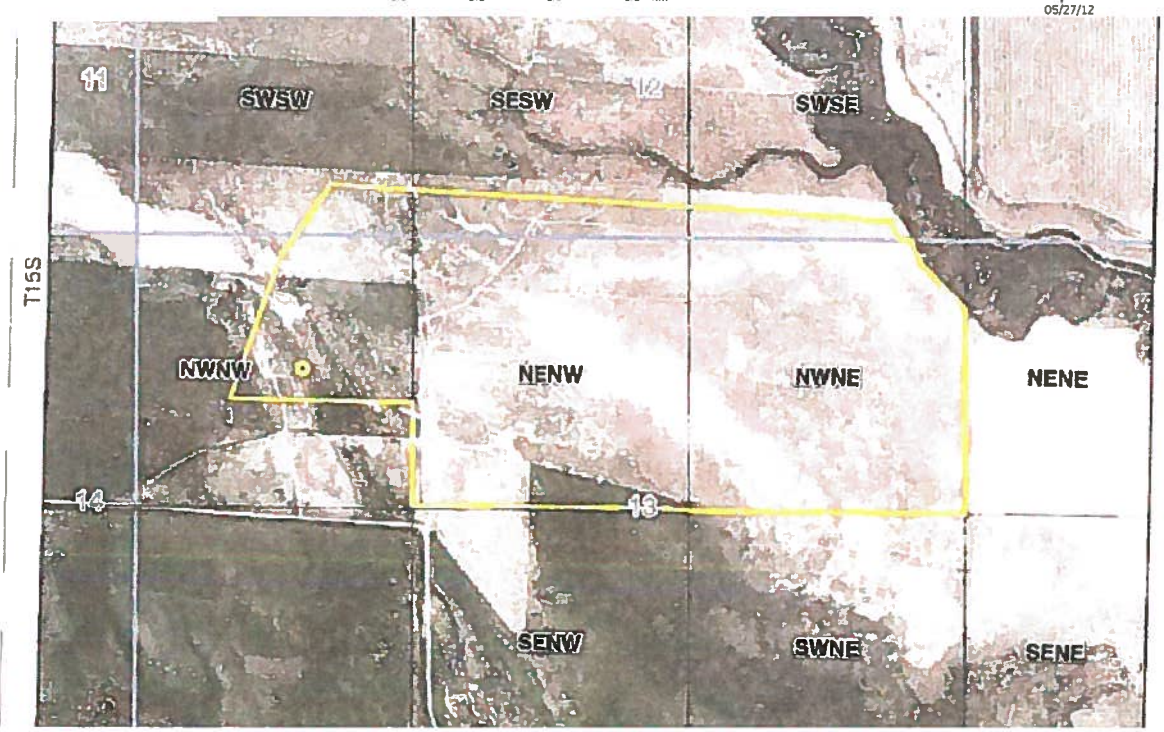

Figure 1. Upper: Map showing locations of the Proposed Pasket well, the Davis Irrigation Well used for the pumping test analysis. Lower: well location and place of use (yellow line).

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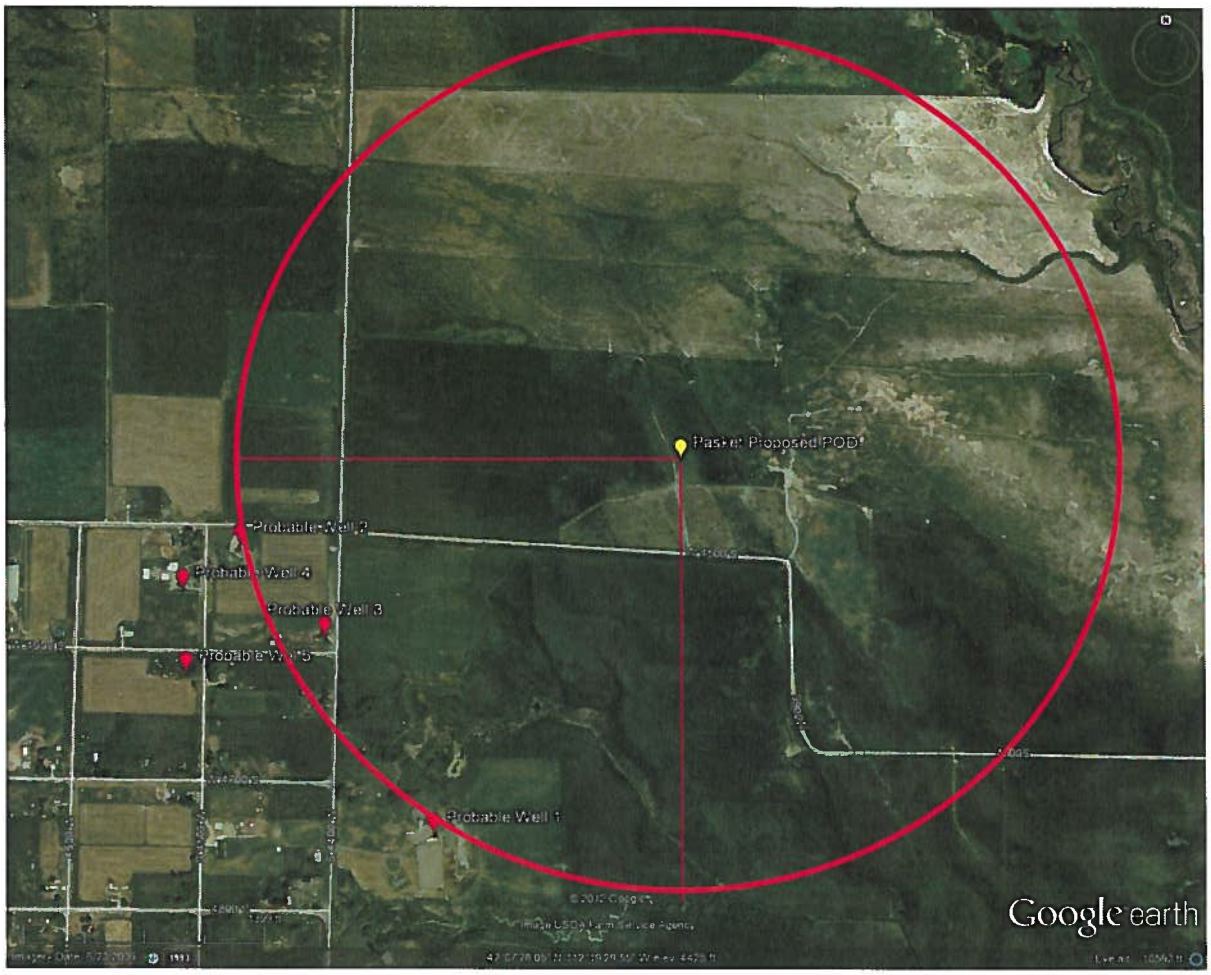

Figure 2 Google Earth image of area with a red circle of ½ mile diameter. Records of neighboring wells are limited so probable locations of wells are plotted as the exact location is not known. The two red lines are each ½ mile long. Well logs for wells can be found in Attachment 1.

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Table 1 IDWR Search results for point of diversions in T15S, R35E, Section 11

Record	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Diversion Rate	Source List	Water Uses	Owner List
1	15	7288				Active	2007-06-20	0.66	GROUND WATER	IRRIGATION, STOCKWATER	WRIGHT, LYNN A (Current)

Table 2 IDWR Search results for point of diversions in T15S, R35E, Section 12

Record	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Diversion Rate	Source List	Water Uses	Owner List
1	15	7244				Active	2003-04-21	1	GROUND WATER	IRRIGATION	JOHNSON, SHERRIE (Current); JOHNSON, STEPHEN C (Current)

Table 3 IDWR Search results for point of diversions in T15S, R35E, Section 13

Query parameters:
Township = 15S
Range = 35e
Section = 13
Search for: active Records
POD = 1

Number of records = 0

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Table 4 IDWR Search results for point of diversions in T15S, R35E, Section 14

Record	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Diversion Rate	Source List	Water Uses	Owner List
1	15	7175				Active	1999-08-30	0.32	GROUND WATER	IRRIGATION, STOCKWATER	M J DAVIS MEMORIAL LTD PARTNERSHIP (Current)
2	15	7243				Active	2004-02-26	1.3	GROUND WATER	IRRIGATION	JOHN, ELDON (Current); JOHN, MIKE (Current)

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Table 5 IDWR Search results for wells in T15S, R35E, Section 11

Contact	Use	TWP	RNG	SEC	Tract	Well Address	gpm	Static Water Level	Total Depth	Casing Depth	CSG DIA	Construction Date	Draw Down feet	gpm/ft
WRIGHT, LYNN A	Irrigation	15 S	35E	11	NENE	4400 W 3300 S		3	155		8	4/10/2009	NA	
STRONGBERG, SID	Domestic-Single Residence	15 S	35E	11	NENE	3400 S 4400 W	100	7	167	167	6	8/29/1997	NA	
BISHOP, HEIDI	Domestic-Single Residence	15 S	35E	11	SWNE	4400 W 3400 S	50	25	157	157	6	9/24/2004	NA	
WANGSGARD, KEVIN	Domestic-Single Residence	15 S	35E	11	SWNE	4550 W 3400 S	20	62	240	192	6	7/5/2004	NA	
WALDRON, REX P	Domestic	15 S	35E	11	SENE		1100	11	338			5/20/1967	62	18
VANBEBBER, BRYAN	Domestic-Single Residence	15 S	35E	11	NENW	4650 W 3000 S	40	25	180	180	6	4/23/2008	NA	
STOKES, ROBERT	Domestic	15 S	35E	11	NENW	4700 WEST 3000 SOUTH		60	180		6	8/2/2011	NA	
BATES, DANNY	Domestic-Single Residence	15 S	35E	11	SENW	3400 S 4600 W		10	170		6	4/5/2012	NA	
PRICE, EVAN P	Domestic-Single Residence	15 S	35E	11	SESE		3	3	120	95	5	11/11/1996	NA	

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Table 6 IDWR Search results for wells in T15S, R35E, Section 12

Contact	Use	TWP	RNG	SEC	Tract	Well Address	Gallons Per Minute	Static Water Level	Total Depth	Casing Depth	CSG. DIA.	Construction Date	Draw down ft	gpm/ft
WILLIAMS, JAMES BLAND	Irrigation	15S	35E	12			2000	0	334			9/1/1961	NA	
JENSEN, NEIL	Domestic-Single Residence	15S	35E	12	NWNW	1 MILE NORTH OF SAMARIA	100	25	60	60	6	6/25/1994	25	4

Table 7 IDWR Search results for wells in T15S, R35E, Section 13

Contact	Use	TWP	RNG	SEC	Tract	Well Address	Gallons Per Minute	Static Water Level	Total Depth	Casing Depth	CSG. DIA.	Construction Date	Draw down ft	gpm/ft
FLINDERS, LINDA, FLINDERS, THOMAS E	Irrigation	15S	35E	13	NWNW	RURAL AREA		0	180	180	16	11/26/2002	NA	

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Table 8 IDWR Search results for wells in T15S, R35E, Section 14

Contact	Use	TWP	RNG	SEC	Tract	Well Address	gpm	Static Water Level	Total Depth	Casing Depth	CSG DIA.	Construction Date	Drawdown	gpm/ft
BRADFORD, ROGER	Stockwater	15S	35E	14	NENE	4523 S 4500 W		7	160	160	6	10/20/2003	NA	
WALDRON, LUKE	Domestic-Single Residence	15S	35E	14	NWNE		30	25	100	100	6	4/27/1999	6	5
DELANEY, ANN	Domestic-Single Residence	15S	35E	14	NWNE	4575 WEST 4500 SOUTH	20	18	255	140	6	4/15/1998	3	7
BRAKER, SANDRA	Domestic-Single Residence	15S	35E	14	SWNE	SAMIRA	100	20	111	111	6	5/22/1996	NA	
WILLIAMS, ALVIN T	Domestic-Single Residence	15S	35E	14	SWNE	1ST N 150 W	75	24	105	105	6	9/2/1995	44	1.7
MARTENSEN, VERLA	Domestic-Single Residence	15S	35E	14	SWNE	SAMARIA	50	31	117	117	6	11/8/2008	NA	
ZUNDEL, DAVID	Domestic-Single Residence	15S	35E	14	SWNE	4700 S 4500 W NW CORNER		27	110		6	11/29/2011	NA	
JONES, ALBERT	Domestic	15S	35E	14	SENE		60	12	80			3/8/1974	NA	
HUDD EXCAVATION & CONSTRUCTION	Domestic-Single Residence	15S	35E	14	NWNW	4500 S. 4700 W.	20	27	140	140	6	10/11/1999	NA	
JOHN,	Irrigation	15S	35E	14	NWNW	62 S MAIN	300	62	180	180	10	12/11/2003	NA	

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ELDON , JOHN, MIKE						STREET								
GLEED, JULI A	Irrigation	15S	35E	14	SESWN W	4700 W 4700 S (~1 BLOCK W OF 4700 W)	1000	52	300	300	10	11/28/2005	NA	
US DEPARTMEN T OF ENERGY	Domestic-Single Residence, Irrigation	15S	35E	14	SESWN W	MALAD		0	0		0	9/28/2004	NA	
OLSEN, SHIRLEY	Domestic-Single Residence	15S	35E	14	SENW	4655 W 4700 S	30	43	114	114	6	9/27/2004	NA	
BOGGESS, CHRIS	Domestic-Single Residence	15S	35E	14	NESW	4600 W 4750 S		45	111		6	9/3/2010	NA	
EVANS, MICHAEL J	Domestic-Single Residence	15S	35E	14	NESW	4643 W 4800 S		50	140	-140	8	8/4/2000	NA	
ATKINSON, SPENCER	Domestic	15S	35E	14	NESW		0	40	104			12/5/1983	NA	
HULSE, VERNON	Domestic-Single Residence	15S	35E	14	SWSW	4920 SOUTH 4700 WEST	20	51	120	120	8	6/18/1998	ERROR	
ATKINSON, FARRELL D	Irrigation	15S	35E	14	SWSW		0	60	200	200	10	5/20/1997	NA	
TOLMAN, DEE	Domestic-Single Residence	15S	35E	14	SWSW	4680 WEST 4900 SOUTH	20	56	140	-124	6	11/18/2000	NA	
JENSEN, NEIL	Domestic-Single Residence	15S	35E	14	SESW	4655 WEST 4900 SOUTH	10	48	120	120	6	7/8/2001	NA	
HULSE, VERNON	Domestic	15S	35E	14	SESW		9999	75	147			3/28/1979	NA	

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FLINDERS, THOMAS, 0	Domestic-Single Residence	15S	35E	14	NESE	SAMARIA RD	100	0	175	174	6	11/20/1996	NA	
JONES, ALBERT	Domestic-Single Residence	15S	35E	14	NWSE		100	50	123	123	6	6/9/1997	NA	
HIGLAY, LIN	Domestic-Single Residence	15S	35E	14	NWSE	Malad	40	33	120	-120	6	11/27/2000	NA	
BERRY, MARVIN	Domestic-Single Residence	15S	35E	14	NWSE	4716 S 4500 W	30	30	116	116	6	7/14/2008	NA	
EVANS, JOHN J	Domestic-Single Residence	15S	35E	14	SWSE	5071 S 4600 E	50	44	135	135	6	9/29/2007	NA	
TOLMAN, DEE	Domestic-Single Residence	15S	35E	14	SWSE	4921 S 4500 W	40	36	120	120	6	4/15/2006	NA	
ANDERSON, BILLY J	Domestic-Single Residence	15S	35E	14	SWSE	128 SOUTH MAIN STRET	25	36	140	-140	6	11/23/2000	NA	
M J DAVIS MEMORIAL LP	Irrigation	15S	35E	14	SWSE	130 S MAIN ST	180	21	140	-140	8	6/29/2000	NA	

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Attachment 1
WELL LOGS

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Form 238-7 3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 057767

Use Typewriter or Ballpoint Pen

Office Use Only
Inspected by_____
Twp____ Rge____ Sec____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 15-96-E-0030-000
Other IDWR No _____

2. OWNER:
Name THOMAS FLINDERS
Address 5850 OLD RANCH RD.
City PARK CITY State UT Zip 84098

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S — K

Twp 15 North ☐ or South ☒
Rge 35 East ☒ or West ☐
Sec 14, NE 1/4 SE 1/4 ____1/4 ____1/4
Gov't Lot ____ County ONEIDA
Lat: : : Long: : :
Address of Well Site SAMARIA RD.
City SAMARIA
(Give at least name of road + Distance to Road or Landmark)

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/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	5	Over Bore

Was drive shoe used? ☒Y ☐N Shoe Depth(s) 174'
Was drive shoe seal tested? ☐Y ☐N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	0	174	.280	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☐ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
	None					☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
_____ ft. below ground Artesian pressure 0 lb.
Depth flow encountered 174 ft. Describe access port or control devices: Valve

11. WELL TESTS:
☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
100			

Water Temp. Cold Bottom hole temp. Cold
Water Quality test or comments: _____
Depth first Water Encountered 18

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8½	0	20	Clay		✗
P½	20	90	Clay & Gravel	✗	
6	90	63	Clay & Gravel		✗
6	63	74	Clay		✗
6	74	81	Gravel & Water	✗	
6	81	123	Clay		✗
6	123	148	Clay & Gravel		✗
6	148	158	Clay & Gravel & Sand		✗
6	158	160	Gravel & Sand	✗	
6	160	173	Clay		✗
6	173	175	Gravel with sand	✗	

RECEIVED
NOV 22 1996
Department of Water Resources
Eastern Region

RECEIVED
DEC 05 1996
Department of Water Resources

MICROFILMED
FEB 05 1997

Completed Depth 174 (Measurable)
Date: Started 11-16-96 Completed 11-20-96

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Firm Name Mountain West Drilling Firm No. 543
Firm Official Mike Frandsen Date 11-20-96
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Figure 1-1 Well log for Tom Flinders Well. (Probable Well 1 in Figure 2)

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 0051491
DRILLING PERMIT NO.
Water Right or Injection Well No.

2. OWNER:
Name Merle Mortenson
Address 1398 E. Sidehill Lane
City Idaho Falls State ID Zip 83401

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well
Twp. 15 North ☐ or South ☒
Rge. 36 East ☒ or West ☐
Sec 14, ____ 1/4 (To acres) SW 1/4 (To acres) NE 1/4
Gov't Lot ____ County Oneida
Lat: : Long: : :
Address of Well Site Samaria
(Give at least name of road + Distance to Road or Landmark) 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
Bentonite	0	20	7 bags	Overbord

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 117
Was drive shoe seal tested? ☐ Y ☐ N How?

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	0	117	.250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

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
97	117	1/4-6	45	6	Steel	☒	☐
						☐	☐
						☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
31 ft. below ground Artesian pressure ____ lb
Depth flow encountered ____ ft. Describe access port or control devices

12. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
50			

Water Temp Cold Bottom hole temp. Cold
Water Quality test or comments: good
Depth first Water Encounter 70

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
10	0	20	Brn clay		X
6	20	60	Brn clay		X
6	60	70	gravel	X	
6	70	80	Brn clay		X
6	80	93	gravel	X	
6	93	98	Brn clay gravel		X
6	98	115	gravel	X	
6	115	117	Brn clay		X

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NOV 2-5 2008
Department of Water Resources
Eastern Region

Completed Depth 117 (Measurable)
Date Started 11-6-08 Completed 11-8-08

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 NW. Water Well Drilling Firm No. 543
Principal Driller Michael Frandsen Date 11-10-08
and
Driller or Operator II Miles Frandsen Date 11-9-08
Operator I ____ Date ____
Principal Driller and Rig Operator *Required.*
Operator I must have signature of Driller/Operator II

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Figure 1-2 Well log for Mortenson Well. (Probable Well 2 in Figure 2)

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Form 238-7
3/95

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT
Use Typewriter or Ballpoint Pen

093825

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____1/4 ____1/4 ____1/4
Lat: : : Long: : :

1. DRILLING PERMIT NO. 15-96-E-0000-000
Other IDWR No. _____

2. OWNER:
Name Sandra Braker
Address 62 South main
City Malad State ID Zip 83252

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 15 North ☐ or South ☒
Rge. 35 East ☒ or West ☐
Sec. 14 , 10 acres 1/4 SW 40 acres 1/4 NE 160 acres 1/4
Gov't Lot ____ County Oneida
Lat: : : Long: : :
Address of Well Site _____
Samaria City _____
(Give at least name of road + Distance to Road or Landmark)
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/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite + Puddling clay	0	35	5	Over Bore

Was drive shoe used? ☒Y ☐N Shoe Depth(s) 111
Was drive shoe seal tested? ☐Y ☐N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	0	111	250	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
☒ Perforations Method machine
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
100	110	1/2	30	4	Steel	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
20 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
100			

Water Temp. Cold Bottom hole temp Cold
Water Quality test or comments: good
Depth first Water Encountered 35

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
8½	0	35	Clay		X
8½	35	40	Clay + Gravel hard	X	
6	40	60	Clay + Gravel		X
6	60	100	Clay		X
6	100	111	Clay + Gravel	X	

RECEIVED
JUN 17 1996
Department of Water Resources
Eastern Region

RECEIVED
JUL 17 1996
Department of Water Resources
SEP 11 1996

Completed Depth 111 (Measurable)
Date Started 5-21-96 Completed 5-22-96

13. DRILLER'S CERTIFICATION
I/We certify that all minimum well construction standards were complied with at the time the rig was removed.
Firm Name Mountain West Drilling Firm No. 543
Firm Official Mike Frandsen Date 5-27-96
and
Supervisor or Operator _____ Date _____
(Sign once if Firm Official & Operator)

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Figure 1-3 Well log for Braker well. (Probable Well 3 in Figure 2)

Clearwater Geosciences, LLP
Ground Water Development and Exploration

Form 238-7
1/94

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT 057169

Use Typewriter or Ball Point Pen

1. DRILLING PERMIT NO. 15 - 95 - E - 013 - 000
Other IDWR No.

2. OWNER:
Name Alvin + Williams
Address 385 S. 2nd W
City Jerome State ID Zip 83252

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 15 North ☐ or South ☒
Rge. 23 East ☒ or West ☐
Sec. 14, 1/4 SW 1/4 NE 1/4
Gov't Lot ___ County Gooding

Address of Well Site 1st N 150 W City Jerome
(Give at least name of road + Distance to Road or Landmark)

Lt. ___ Blk. ___ Sub. Name ___

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

5. TYPE OF WORK
☒ New Well ☐ Modify or Repair ☐ Replacement ☐ Abandonment

6. DRILL METHOD
☐ Mud Rotary ☒ Air Rotary ☐ Cable ☐ Other ___

7. SEALING PROCEDURES

SEAL/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
granular bent.	0	27	600#	dry pour

Was drive shoe used? Y☐ N☒
Was drive shoe seal tested? Y☐ N☐ How? ___

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	+18"	105'	.25	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe 18" Length of Tailpipe ___

9. PERFORATIONS/SCREENS
☒ Perforations Method Touch 100 cut
☐ Screens Screen Type ___

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
85	105	.25x1"	30	6	Steel	☒	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
24 ft. below ground Artesian pressure ___ lb.
Depth flow encountered 96 ft. Describe access port or control devices: Wood Cap

11. WELL TESTS:
☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min	Drawdown	Pumping Level	Time
75 gpm	Non-	100'	4 hrs.

Water Temp. 47° Bottom hole temp. ~ 85° C
Water Quality test or comments: good

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
88	0	27	Hard clay		X
6	27	32	gravel	X	
6	32	70	gray clay		X
6	70	109	gravel	X	

RECEIVED
OCT 28 1996
Department of Water Resources

OCT 10 1996
Department of Water Resources
Western District Office

MICROFILMED
DEC 06 1996

Completed Depth 105' (Measurable)
Date: Started 8-14-96 Completed 9-2-96

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

Firm Name DR Drilling Firm No 542
Firm Official Richard Romero Date 10-1-96
and
Supervisor or Operator ___ Date ___
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Figure 1-4 Well log for Williams Well. (Probable Well 4 in Figure 2)

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

USE TYPEWRITER OR BALL POINT PEN

State of Idaho
Department of Water Administration

WELL DRILLER'S REPORT

RECEIVED
Department of Water Resources
Eastern District Office

State law requires that this report be filed with the Director, Department of Water Administration within 30 days after the completion or abandonment of the well. MAY 30 1974

1. WELL OWNER
Name Albert Jones
Address 315 No 200 W
Malad Idaho
Owner's Permit No.

2. NATURE OF WORK
☑ New well ☐ Deepened ☐ Replacement
☐ Abandoned (describe method of abandoning)

3. PROPOSED USE
☑ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type)
☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection

4. METHOD DRILLED
☐ Cable ☑ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION
Diameter of hole 6 inches Total depth 80 feet
Casing schedule: ☑ Steel ☐ Concrete

Thickness	Diameter	From	To
.250 inches	6 inches	+1 feet	80 feet
inches	inches	feet	feet
inches	inches	feet	feet
inches	inches	feet	feet

Was a packer or seal used? ☑ Yes ☐ No
Perforated? ☑ Yes ☐ No
How perforated? ☐ Factory ☐ Knife ☑ Torch
Size of perforation 3/8 inches by 3 inches

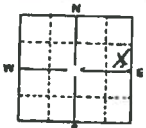
Number	From	To
10 perforations	59 feet	80 feet
perforations	feet	feet
perforations	feet	feet

Well screen installed? ☐ Yes ☑ No
Manufacturer's name
Type Model No.
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 18 Material used in seal ☑ Cement grout ☐ Puddling clay ☐ Well cuttings
Seeding procedure used ☐ Slurry pit ☐ Temporary surface casing ☑ Overbore to seal depth

6. LOCATION OF WELL
Sketch map location must agree with written location.



BH
B15
Subdivision Name
Lot No. 2 Block No. 3
Samaria Townsite
County Oneida
SE¼ NE¼ Sec. 14 T. 15 N/S, R. 35 E/W

7. WATER LEVEL
Static water level 12 feet below land surface
Flowing? ☐ Yes ☑ No G.P.M. flow
Temperature 47° F. Quality
Artesian closed-in pressure p.s.i.
Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA
☐ Pump ☐ Bailer ☑ Other

Discharge G.P.M.	Draw Down	Hours Pumped
60 gpm		2 hrs

9. LITHOLOGIC LOG 044915

Hole Diam.	Depth From	Depth To	Material	Water Yes	Water No
6	0	6	Top soil		L
	6	22	Clay-midground		L
	22	44	Clay		L
	44	69	Red Band stone	L	
	69	80	Sand stone w/ground	L	

10. Work started 3/8/74 finished 3/8/74

11. DRILLERS CERTIFICATION
Firm Name Northwest D & D Firm No. 238
Address 422 Pershing Date
Signed by (Firm Official) Judy Mitchell
and
(Operator) Dean Mitchell

MICROFILMED

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

Figure 1-5 Well log for Jones Well. (Probable Well 5 in Figure 2)

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : : Long: : :

1. WELL TAG NO. D 001194
DRILLING PERMIT NO. [redacted] 764131
Other IDWR No. _____

2. OWNER:
Name M. J. Memorial Limt partnship
Address 3525 Hinsley Pt
City Colorado Springs Colorado Zip 80919

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N / W / E / S

Twp. 15 North ☐ or South ☑
Rge. 35 East ☑ or West ☐
Sec. 14 SW 1/4 SW 1/4 ____ 1/4
Gov't Lot ____ County Oneida
Lat: : : Long: : :
Address of Well Site 130 South Main
City Samaria
(Give at least name of road + Distance to Road or Landmark)

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/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20		OVERBORE

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
8	+1	140	250	Steel	☑	☐	☑	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
Perforations Method _____
Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
	NONE					☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
21 ft. below ground Artesian pressure ____ lb.
Depth flow encountered ____ ft. Describe access port or control devices: _____

11. WELL TESTS:
☐ Pump ☐ Bailer ☑ Air ☐ Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time
120-180		140	1½

Water Temp. _____ Bottom hole temp. _____
Water Quality test or comments: _____
Depth first Water Encounter _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
16	0	20	clay +		
8	20	40	Clay		
	40	80	Clay + gravel		
	80	100	gravel		
	100	110	Sand gravel	✓	
	110	120	Large gravel	✓	
	120	140	" "	✓	

RECEIVED
SEP 18 2000
Department of Water Resources

RECEIVED
SEP 06 2000
Department of Water Resources
Eastern Region

Completed Depth 140 (Measurable)
Date: Started 6-21-00 Completed 6-29-00

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

Company Name Lundstrom Well Dr. Firm No. 118
Firm Official Arnold Lundstrom Date 6-29-00
and
Driller or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Figure 1-6 Well log for Jeff Davis Irrigation Well.

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Form 238-7
11/97

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only
Inspected by _____
Twp ____ Rge ____ Sec ____
____ 1/4 ____ 1/4 ____ 1/4
Lat: : Long: : :

1. WELL TAG NO. D 0026275
DRILLING PERMIT NO. 78856
Other IDWR No. _____

2. OWNER:
Name Tom Flinders
Address 4889 S 4400W
City Malad State ID Zip 83252

3. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

Twp. 15 North ☐ or South ☒
Rge. 35 East ☒ or West ☐
Sec. 13 ____ 1/4 NW 1/4 NW 1/4
Gov't Lot ____ County Oneida
Lat: : Long: : :
Address of Well Site Same
City Malad
(Give at least: name of road + distance to road or Landmark)

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/FILTER PACK Material	From	To	AMOUNT Sacks or Pounds	METHOD
Bentonite	0	20	20	overbore

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 180'
Was drive shoe seal tested? ☐ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16"	0	180	375	steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS
Perforations Method machined
Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
50	70	1/4"	160	16"	Steel	☒	☐
137	139	1/4"	16	16"	Steel	☒	
156	155	1/4"	40	16"	Steel	☒	

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
0 ft. below ground Artesian pressure 2 lb.
Depth flow encountered _____ ft. Describe access port or control devices: 4" valve

11. WELL TESTS:
☐ Pump ☒ Bailer ☐ Air Flowing Artesian

Yield gal/min	Drawdown	Pumping Level	Time

Water Temp. Cold Bottom hole temp Cold
Water Quality test or comments _____
Depth first Water Encounter 241'

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia	From	To	Remarks: Lithology, Water Quality & Temperature	Water Y	Water N
20"	0	2	Brown clay		X
20"	2	20	White clay		X
16"	20	28	White Clay	X	
16"	28	50	Gray Clay		X
16"	50	60	Black & Gray Gravel		
16"	60	80	Gravel & Clay	X	
16"	80	90	Brown clay		X
16"	90	95	Brown clay & Gravel		X
16"	95	100	Brown clay		X
16"	100	129	white clay		X
16"	129	131	Gravel + Sand	X	
16"	131	135	grey sand	X	
16"	135	140	Good gravel	X	
16"	140	145	red sand clay gravel		X
16"	145	150	red clay		X
16"	150	155	red clay & gravel -	X	
16"	155	160	Blue Clay		X
16"	160	175	Blue clay		X
16"	175	180	gravel	X	

RECEIVED

Completed Depth 180' (Measurable)
Date: Started 11-07-02 Completed 11-26-02

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

Company Name Mountain West Well Drilling Firm No. 543
Firm Official Michael Prandini Date 1-6-03
and
Driller or Operator _____ Date _____
(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

Figure 1-7 Well log for Tom Flinders Well (Pasket Proposed POD in Figure 2).

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Attachment 2
DATA PLOTS

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

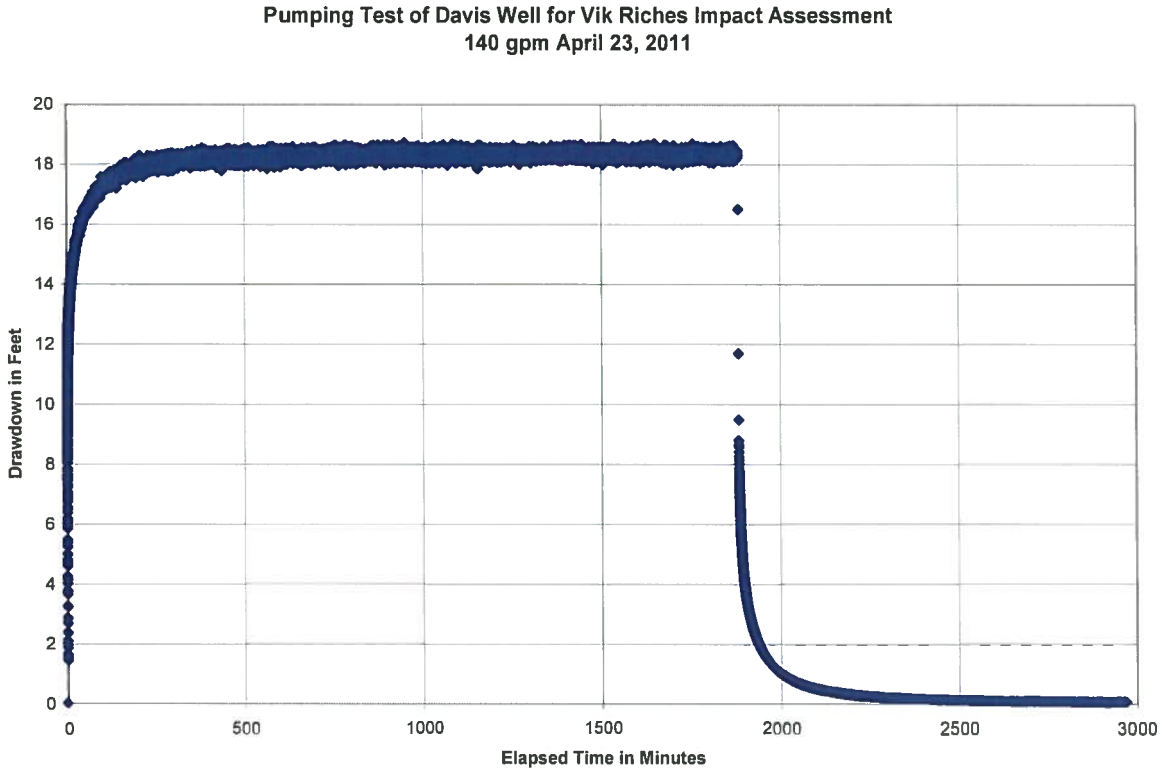

Figure 2-1. Plot of entire data set for pumping test of the Jeff Davis Irrigation well.

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Attachment 3
AQTESOLV PLOTS

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

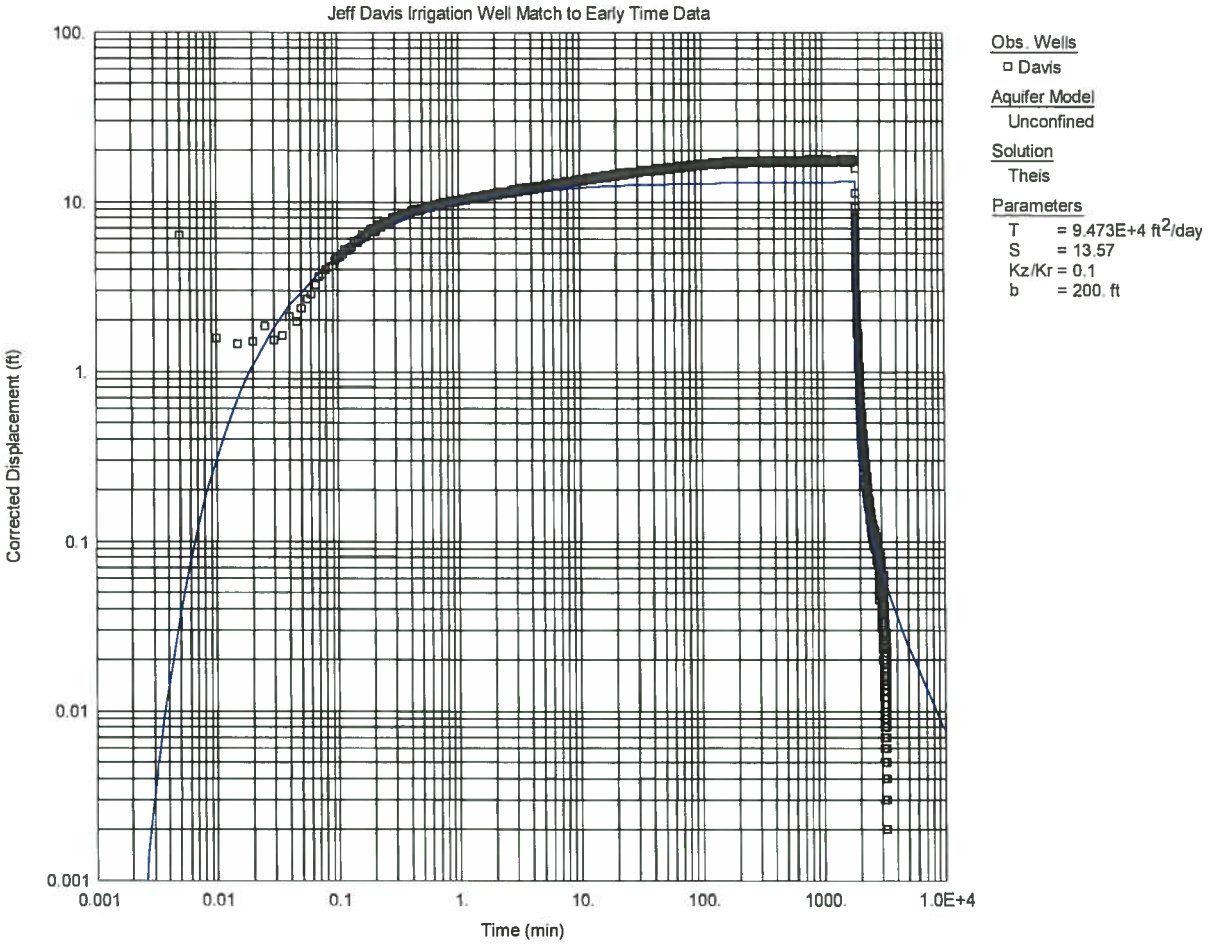

Figure 3-1 Theis unconfined solution matched to early time well data.

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

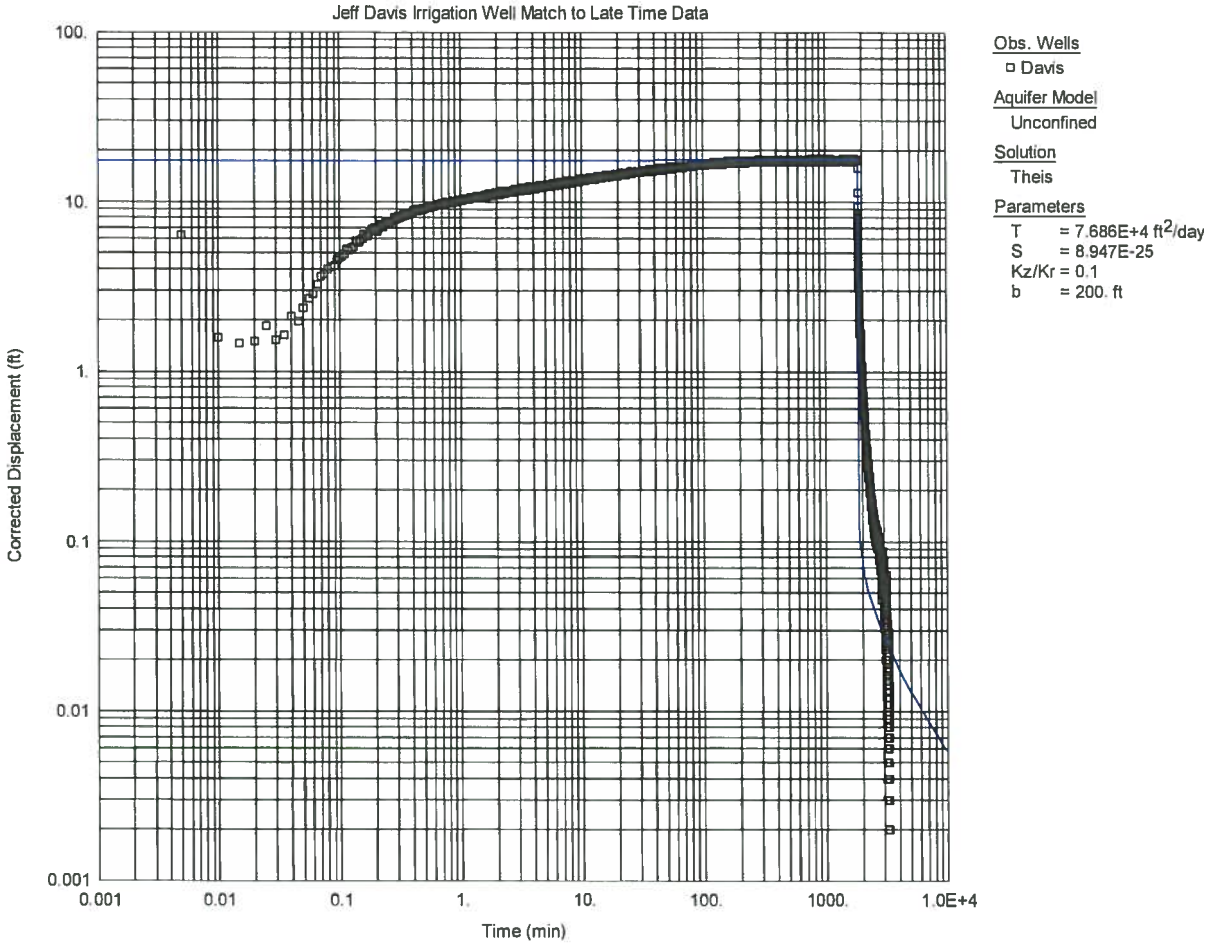

Figure 3-2 Theis unconfined solution matched to late time well data.

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

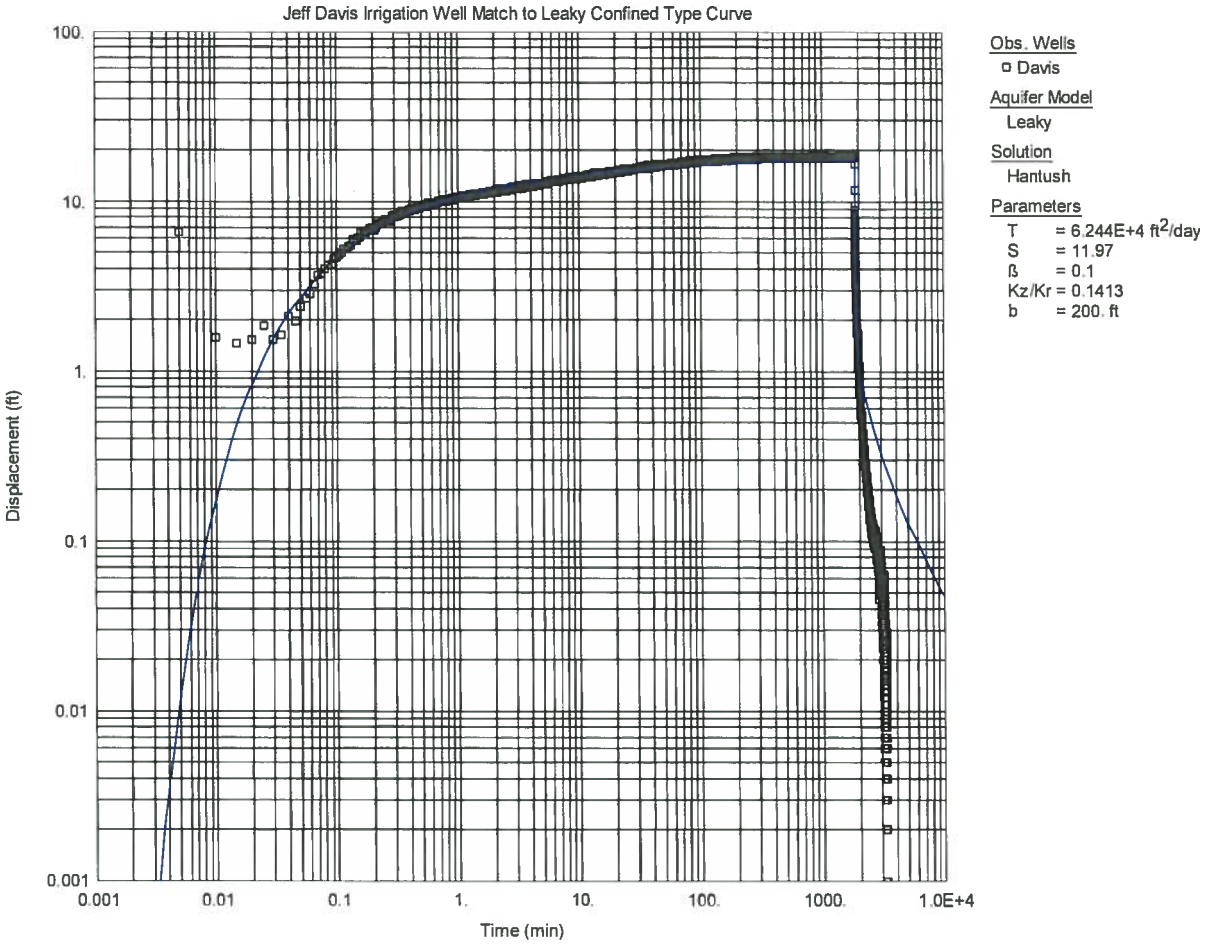

Figure 3-3 Hantush leaky confined solution matched to well data.

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Attachment 4

AQUIFER IMPACT ANALYSIS

1818 East 49th South, Idaho Falls, ID 83404, Ph. 208-589-5555 Fax 542-1489

Table 4-1 Table of values used in AQTESOLV simulation.

Parameter	Value	Unit
Tranmissivity	64,200	ft2/d
Storativity	0.01	unitless
Flow Rate	900	gpm
Duration	259,200	min
Total volume	716	ac-ft
aquifer thickness (b)	200	ft
kz/Kr	0.1	na

Table 4-2 Table of locations for various boundary corners and wells used in the AQESOLV simulation.

Location	x	y
NW Corner	0	50000
NE Corner	32000	50000
SW Corner	0	0
SE Corner	32000	0
Pasket POD	7400	13000
Well 1/2 mile East	4760	13000

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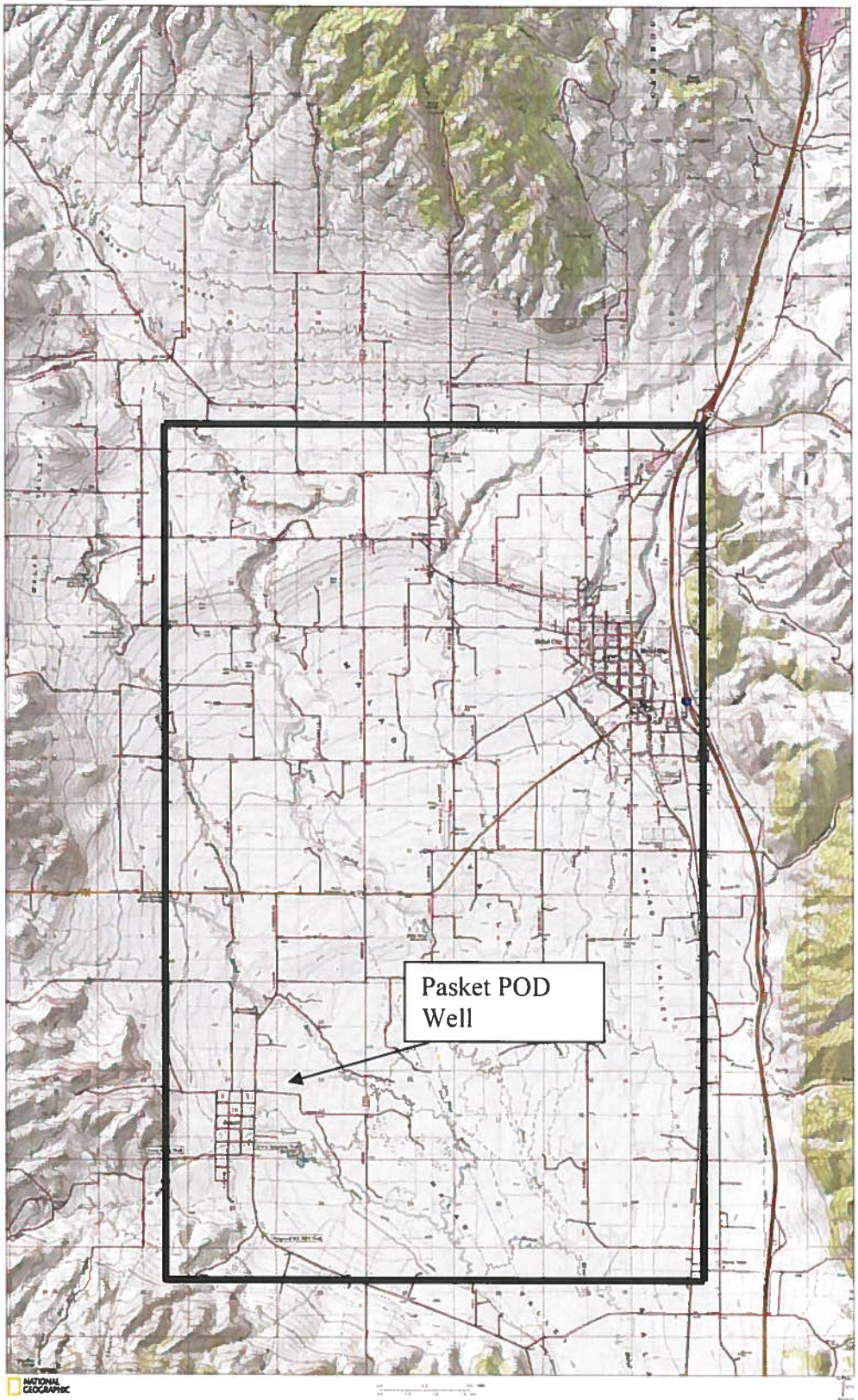

Figure 4-1 Outline of the boundaries used in the AQTESOLV forward solution calculation.

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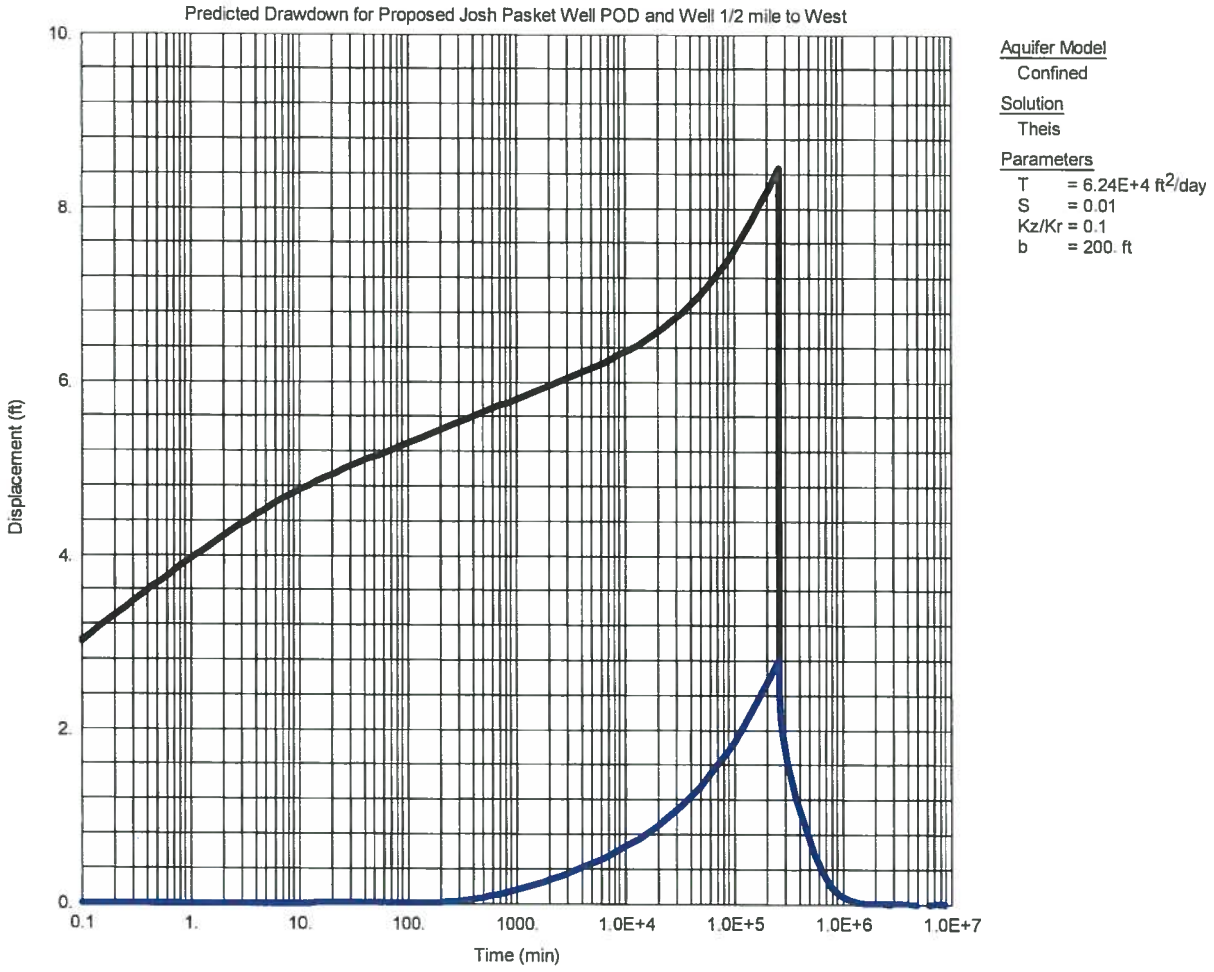

Figure 4-2 Predictive plot of drawdown at 900 gpm or 2.00 cfs for the full period of use 180 days. The black line (upper) is for the water level in the proposed Pasket Well pumping and the blue line is the water level predicted in a well ½ mile east of the proposed Pasket Well.

Key to line colors

Blue Water levels for imaginary well ½ mile east of the proposed POD
Black Water levels for proposed POD Pasket Well

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