

Van Bussum, Monica

From: Dave Shaw [dshaw@eroresources.com]
Sent: Tuesday, February 21, 2012 4:37 PM
To: Van Bussum, Monica
Cc: Mitchell Sorensen; Steve Hannula
Subject: Water Supply Bank Applications for Water Right Nos 34-7052 and 34-7110
Attachments: IDWR Impact Analysis Feb 2012 Final.pdf

Monica,

The attached letter and attachments are in response to item number 4 in your February 6 letter to Mitchell Sorensen regarding the above lease and rental applications. Please let me know if you have questions or if you need any additional information.

Dave

David Shaw

ERO Resources Corporation

208.373.7983 dshaw@eroresources.com | www.eroresources.com



February 21, 2012

Monica Van Bussum
Idaho Department of Water Resources
322 East Front Street
Boise, ID 83720-0098

RE: Water Supply Bank Application to Lease and Rent Water Right Nos. 34-7052
& 34-7110

Dear Ms. Van Bussum:

In your letter dated February 6, 2012 to Mitchell D. Sorensen, with the same subject title as this letter, you identified four matters that need to be addressed before the Department can process the subject applications. The fourth matter states that *the Department will require an assessment of the impact the proposed pumping will have on wells within one-half (0.5) miles of the proposed point of diversion.*

The following responds to that matter.

1. Introduction

The subject water supply bank applications seek to move the point of diversion and place of use of water rights 34-7052 and 34-7110 to a new location, but remaining within the Big Lost River Valley. Figure 1 shows the “from” wells, conveyances, and place of use and the “to” wells, conveyances, and place of use. As shown, the points of diversion will be moved approximately 2 miles northwest in the valley. As shown by the many irrigation pivots in Figure 1, the dominant use of water in the valley is for irrigation. The irrigation is confined to the valley bottom and is sharply bounded on the west and east with steeper topography and changes in geology. The new location of the point of diversion remains in the same water bearing zone as the “from” location, which is the shallow ground water system that interacts with the surface water.

The proposed changes to the point of diversion and place of use will keep the use of water in the same ground water system as it has historically been used. On a system-wide scale, there is no net impact resulting from the proposed changes. The potential impacts will be to ground water wells near the proposed points of diversion.

a) Hydrogeology Background

The conceptual model of the hydrogeology in the Big Lost River Valley is described in the Idaho Department of Water Resources (IDWR) report titled *Review of Ground-Water Conditions in the Big Lost River Valley* (IDWR, 1982). The preface

Denver
1842 Clarkson St.
Denver, CO 80215
303.830.1188

Boise
3314 Grace St.
Boise, ID 83703
208.373.7983

Durango
1065 Main Avenue
Durango, CO 81301
970.422.2136

Western Slope
P.O. Box 932
161 South 2nd St.
Hotchkiss, CO 81419
970.872.3020

The hydrographs show ground water levels are dependent on seasonal water yield from the watershed. Ground water and surface water development for irrigation purposes have not created a systemic decline of ground water levels.

According to the measurement records, the downward spikes in the hydrographs result from pumping of the wells at the time of the measurement.

c) Review of Nearby Wells

Figure 2 shows the location of wells within ½ mile of the proposed points of diversion. Table 1 summarizes the well log information from wells that have records in the IDWR well log database (Attachment 2). Most of the wells are for domestic use and are less than 170 feet deep. The four nearby irrigation wells are slightly deeper with the deepest being 223 feet.

The lithologic descriptions in the well logs describe the subsurface to be composed of sands and gravels, consistent with the geologic descriptions in IDWR, 1982.

2. Potential Impact to Existing Water Rights

a) Theis Analysis

A Theis Analysis can be used to examine the extent of water level drawdown at different radii from a pumping well. The Theis Analysis relates the theoretical drawdown as a function of discharge, aquifer transmissivity, and aquifer storage properties. There are a number of parameters, including hydraulic conductivity, storativity, aquifer thickness, and discharge that need to be estimated for the analysis. This method cannot take into account natural heterogeneity of the aquifer, dynamic recharge of ground water, or other transient conditions. Also, the analysis uses simplifying assumptions that may not be reflective of actual conditions.

The end result is an approximation of potential impact, but the results must be viewed within the proper limits of the analysis.

b) Components of Theis Analysis

Transmissivity

Transmissivity describes the rate at which water can move through the aquifer. The well driller's pump test data were used to determine an estimate of transmissivity (Table 1).

The shallow aquifer is assumed to be unconfined. For purposes of a Theis Analysis, storativity is assumed to be 0.15.

Aquifer Thickness

The sand and gravel encountered in the wells have an unknown thickness, because the bottom of the layer is not identified in the well logs. The deepest well on Table 1 is 223 feet. The corresponding lithologic description shows no indication that the bottom of the sand and gravel was encountered. On average, the static water level is approximately 80 feet below ground, suggesting that the water bearing thickness is the difference between 223 feet and 80 feet, which is 143 feet.

Bassick and Jones (1992) report similar well constructions in their test area.

For the Theis Analysis the aquifer thickness is assumed to be 150 feet thick.

Discharge

The Theis Analysis requires a continuous pumping rate through the duration of the time period analyzed. A continuous pumping rate is calculated by estimating the annual volume and determining what rate would produce that volume. The actual pumping rate of water will vary throughout the irrigation season.

The water supply bank rental seeks 2,195.5 ac-ft for irrigation between April 1 and Nov 1, a time interval of 214 days. A continuous diversion rate of 5.17 cfs for 214 days produces 2195.5 ac-ft. A continuous diversion rate of 5.17 cfs is used in the Theis Analysis.

c) Conclusions from Theis Analysis

The Theis Analysis results are included in Figure 2. Using the parameter values for transmissivity (61,000 to 180,000 ft²/day), aquifer thickness (150 feet), storativity (0.15 unconfined), and pumping rate (5.17 cfs) as described above, the calculated drawdown at the nearest well (400 feet) is 1.6 to 4.1 feet after a full irrigation season of pumping.

The calculated drawdown at 2,640 feet radius is 0.9 to 1.9 ft after a full irrigation season of pumping.

A significant factor that the Theis Analysis does not account for is recharge and movement of ground water. Both of these factors will tend to diminish the drawdown effects due to pumping. Given the significant amount of surface water use in the vicinity and the interaction between the surface water and ground water it

points of diversion will experience additional drawdown beyond normal irrigation and seasonal fluctuations. However, the magnitude of the additional drawdown is estimated as small relative to the overall fluctuations and will not cause a permanent and long-term decline to water levels.

4. Proposed Monitoring for Wells in the NW¹/₄NW¹/₄ Section 21 Twp 5N Rge 26E, B.M.

The lease applicant plans to initiate a monitoring program in 2012 to measure depth to ground water and depth to ground water changes in the vicinity of the wells that are the proposed points of diversion for the lease of water right 34-7052. Applicant is presently investigating existing wells in the area to identify, if possible, a non-used well that the applicant can access to install depth to water recording equipment. If a non-used well cannot be obtained, a well that is still in use will be identified and instrumented with a data logger.

The discharge from these wells is currently measured and will be instrumented as part of this data collection effort to record the timing and amount of discharge from these two wells. The discharge of other wells in the area may also be instrumented with recording equipment if access can be obtained from other water users.

Applicant proposes this data collection effort as part of a long term effort to correlate pumping in this vicinity with depth to ground water and water supply to the basin as measured at the Big Lost River below Mackay Reservoir stream gage, locally known as the 2B gage. The hydrographs described earlier in this report show the correlation between the water supply as measured at the 2B gage and depth to ground water. Any attempt to measure the effects of ground water pumping on ground water levels will need to take into account what appear to be the larger effects of water supply in the lower Big Lost River basin on ground water levels.

Applicant will have the necessary data logging equipment in place and operational before the beginning of the 2012 irrigation season.

5. References

Crosthwaite, E.G., C.A. Thomas and K.L. Dyer. 1970. Water Resources in the Big Lost River Basin, South-Central, Idaho. USGS Open File Report .

IDWR. 1982. Review of Ground-Water Conditions in the Big Lost River Valley. Stanley Szczepanowski. December.

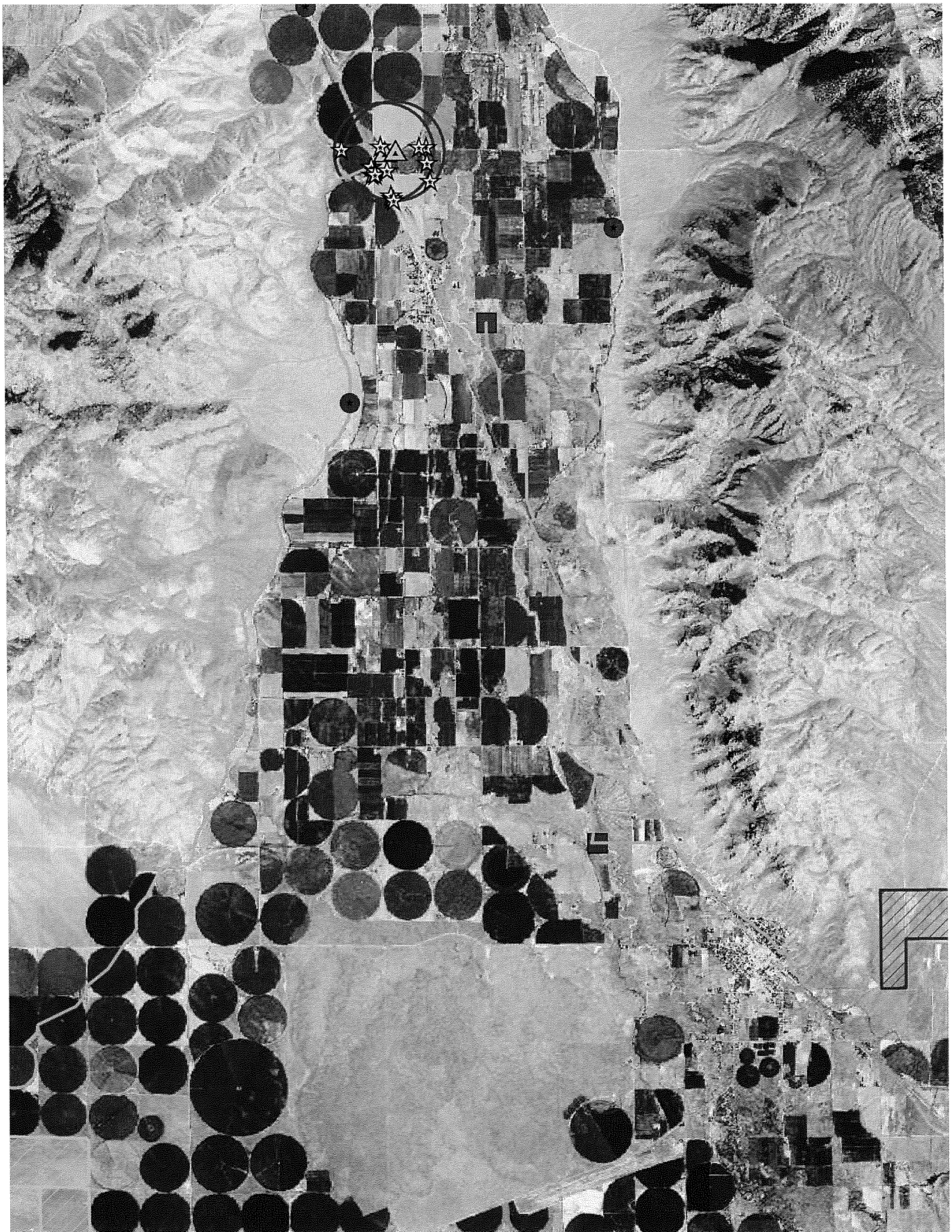
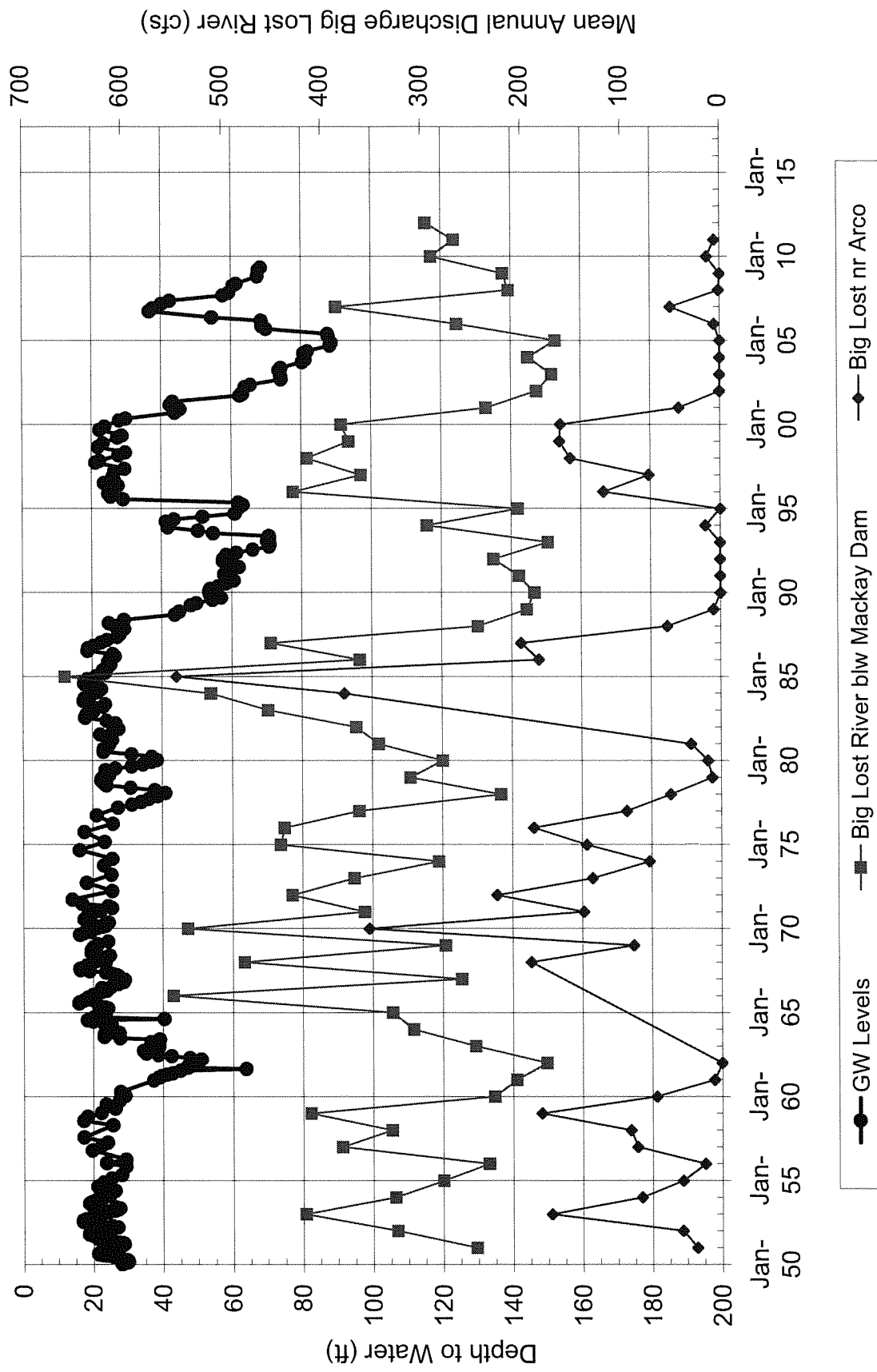


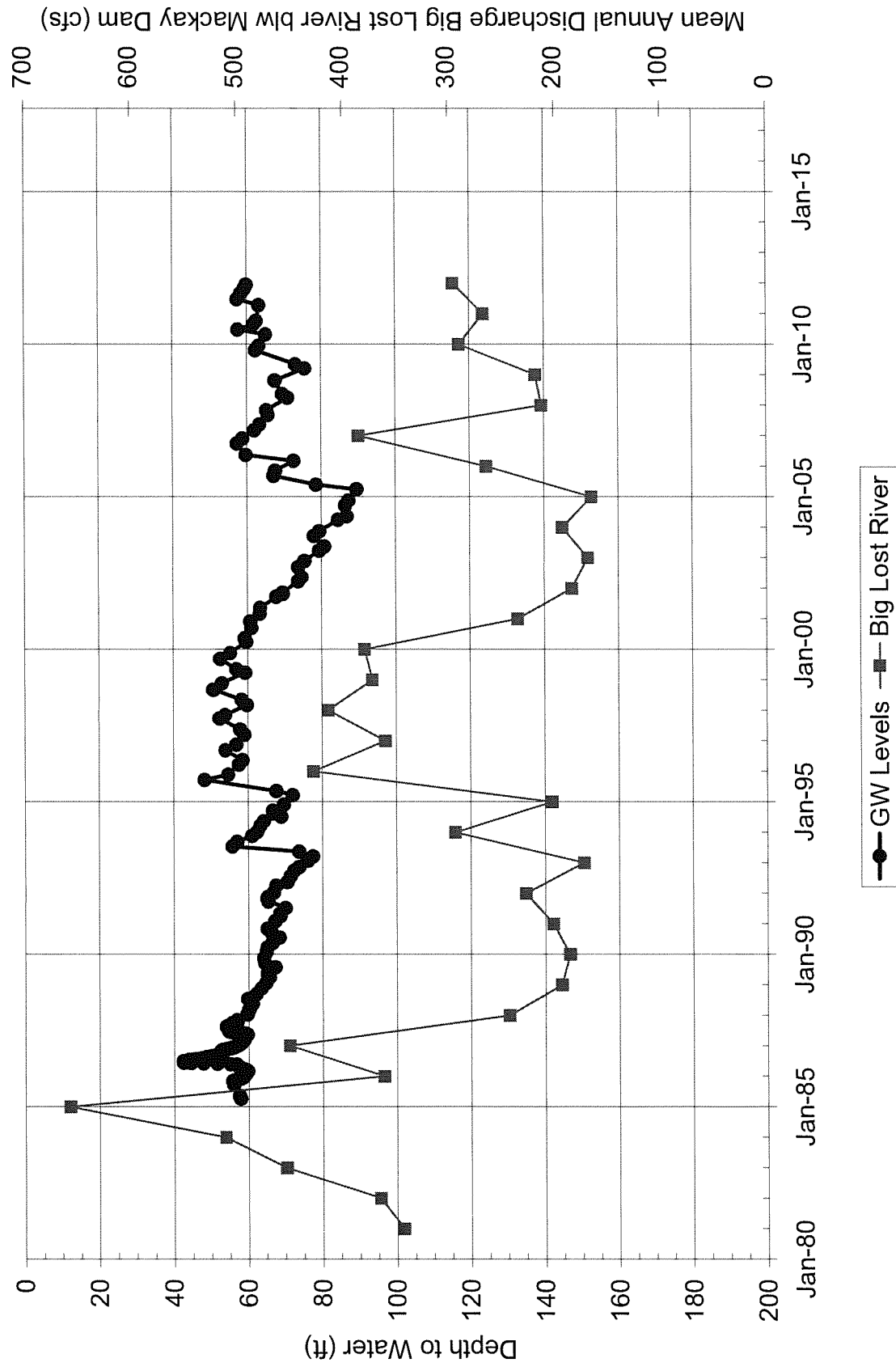
Table 1. Well Log Summary in the Vicinity of T5N, R26E, Section 19, Butte County

NAME	Twp	Rge	Sec	QQ	Type	Total Depth ft	SWL ft	GPM	Distance ft	Year
Huelsman	5	26	16	SW SW	Dom.	140	79	40	400	2006
King	5	26	16	SE SW	Dom.	120	57	60	1260	1989
King	5	26	16	SW SE	Dom.	120	88	80	1670	1990
Dee	5	26	17	NE SE	Irr.	220	90	?	?	1994
Moss	5	26	21	NW NE	Dom.	140	94	60	1830	2002
Moss	5	26	21	NW NW	Dom.	97	57	30	1150	1988
Jackson	5	26	21	SW NE	Irr.	223	79	?	1780	1992
Paylor	5	26	21	SW NE	Dom.	140	82	40	2450	2002
Rindfleisch	5	26	21	SW NE	Dom.	170	92	80	?	2002
Holt	5	26	21	NW NW	Dom.	160	102	50	1550	2005
P.U. Ranch	5	26	21	NW NW	Irr.	200	80	?	1550	1990
Cain	5	26	21	SW NW	Dom.	100	42	80+	2360	1996
Price	5	26	21	SW NW	Dom.	100	60	25	1680	1977
Jones	5	26	21	SW NW	Irr.	175	50	2700	2640	1956
Cain	5	26	21	NW SW	Dom.	140	94	50	2640	2002

Water Levels in 5N26E-23CDA1 compared to Big Lost River Flow



Water Levels in 5N26E-5DCB1



ATTACHMENT 2
Well Logs from within ½ mile of Subject Wells

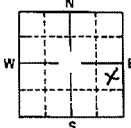
WELL DRILLER'S REPORT

State 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.

[illegible]

WELL DRILLER'S REPORT

State 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>Ronald Dee</u> Address <u>P.O. Box 452 Maese T.O. 83255</u> Drilling Permit No. <u>34-94-E-003-000</u> Water Right Permit No. <u>Tr. 3930/34-02318 etc.</u>	7. WATER LEVEL Static water level <u>90</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 <u>This well replaced 34-94-E-0019</u> ☒ 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 _____ <table border="1"><thead><tr><th>Discharge G.P.M.</th><th>Pumping Level</th><th>Hours Pumped</th></tr></thead><tbody><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr><tr><td> </td><td> </td><td> </td></tr></tbody></table>	Discharge G.P.M.	Pumping Level	Hours Pumped																																											
Discharge G.P.M.	Pumping Level	Hours Pumped																																													
3. PROPOSED USE ☐ Domestic ☒ Irrigation ☐ Monitor ☒ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)	9. LITHOLOGIC LOG <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>20"</td><td>0</td><td>15</td><td>Large Gravel</td><td> </td><td> </td></tr><tr><td>15"</td><td>15</td><td>155</td><td>Gravel Sand Clay</td><td> </td><td> </td></tr><tr><td>16"</td><td>161</td><td>164</td><td>Red Clay & Sand</td><td> </td><td> </td></tr><tr><td>16"</td><td>164</td><td>192</td><td>Hard Broken Riolite</td><td> </td><td> </td></tr><tr><td>16"</td><td>192</td><td>213</td><td>Broken Limestone</td><td> </td><td> </td></tr><tr><td>16"</td><td>213</td><td>220</td><td>Hard Broken Riolite</td><td> </td><td> </td></tr></tbody></table>	Bore Diam.	Depth		Material	Water		From	To	Yes	No	20"	0	15	Large Gravel			15"	15	155	Gravel Sand Clay			16"	161	164	Red Clay & Sand			16"	164	192	Hard Broken Riolite			16"	192	213	Broken Limestone			16"	213	220	Hard Broken Riolite		
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4. METHOD DRILLED ☐ Rotary ☐ Air ☐ Auger ☐ Reverse rotary ☒ Cable ☐ Mud ☐ Other _____ (backhoe, hydraulic, etc.)	RECEIVED MAY 04 1994 Department of Water Resources																																														
5. WELL CONSTRUCTION Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____ Thickness Diameter From To <u>250</u> inches <u>20"</u> inches + <u>0</u> feet <u>155</u> feet <u>250</u> inches <u>16"</u> inches <u>0</u> feet <u>184</u> 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>3/8</u> inches by <u>7</u> inches Number From To <u>3400</u> perforations <u>183</u> feet <u>150</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>50'</u> Material used in seal: ☒ Cement grout ☐ Bentonite ☐ Puddling 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 <u>Pump base</u>	RECEIVED APR 28 1994 Department of Water Resources Eastern District Office																																														
6. LOCATION OF WELL Sketch map location must agree with written location.  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>Butte</u> Address of Well Site _____ (give at least name of road) T. <u>5</u> N ☒ or S ☐ <u>NE</u> 1/4 <u>SE</u> 1/4 Sec. <u>17</u> , R. <u>26</u> E ☒ or W ☐	10. Work started <u>March 7</u> ⁹⁴ finished <u>April 7</u> ⁹⁴																																														
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>Vollmer Well Drilling</u> Firm No. <u>383</u> Address <u>3206. Custer Blvd Aberdeen, ID 83210</u> Date <u>April 15, 1994</u> Signed by Drilling Supervisor <u>[Signature]</u> and (Operator) <u>[Signature]</u> (If different than the Drilling Supervisor)																																															

WELL DRILLER'S REPORT

State 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.

[illegible]

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

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 0024400
 DRILLING PERMIT NO. - - - 779394
 Other IDWR No. _____

2. OWNER:

Name ANDREAS L. PATE
Address 3264 N. 3350 W.
City Mesa State ID Zip 83255

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N
 W E S
 Twp. 5 North ☒ or ☐ South ☐
 Rge. 26 East ☒ or ☐ West ☐
 Sec. 21 1/4 3/4 1/4 1/4
 Gov't Lot _____ County Bartlett 10 acres 40 acres 160 acres
 Lat. : : Long. : :
 Address of Well Site SALES A2
 City MOORE
 (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			AMOUNT	METHOD
Material	From	To	Sacks or Pounds	
Roundabout	0	30	300	2200 Rops

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 1200

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

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
60	71	1410	252	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe_____ Length of Tailpipe_____

9. PERFORATIONS/SCREENS

Perforations Method torch cut

Screens	Screen Type
---------	-------------

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
122	128	10/32	34	60	570+1	☐	☐
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

82 ft. below ground Artesian pressure (b.

Depth flow encountered _____ ft. Describe access port or control devices: 700 of 600

11. WELL TESTS:

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
90		130	12 h 40

Water Temp. cold Bottom hole temp. _____

Water Quality test or comments:

Depth first Water Encounter P2

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Water

[illegible]

Completed _____ Depth 140 _____ (Measurable)
Date: Started 6/28/02 Completed 6/29/02

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 Cotnam, D. J. Inc. Firm No. 226

Firm Official [Signature] Date 7-2-02

and _____

Driller or Operator Don K. Wallace Date 7-29-07

(Sign once if Firm Official & Operator)

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 00037547
DRILLING PERMIT NO. _____
Water Right or Injection Well No. _____

2. OWNER:

Name Chris + Tina Holt
Address 3278N 3250W
City Moore State ID Zip 83255

3. LOCATION OF WELL by legal description:

You must provide address or Lot, Blk, Sub. or Directions to well.

Twp. 5 North ☒ or South ☐
Rge. 26 East ☒ or West ☐
Sec. 21 1/4 NW 1/4 NW 1/4
Gov't Lot _____ 10 acres _____ 40 acres _____ 160 acres _____
County Battle

Lat: _____ : _____ Long: _____ : _____
Address of Well Site 3275N 3350W

City Moore

(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 Material	From	To	Weight / Volume	Seal Placement Method
<u>Bentonite</u>	<u>0</u>	<u>20</u>	<u>350</u>	<u>Over Bore</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	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6 1/2</u>	<u>160</u>	<u>250</u>	<u>250</u>	<u>steel</u>	☒	☐	☒	☐

Length of Headpipe _____ Length of Tailpipe _____

Packer ☐ Y ☐ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method torch cut

Screen Type & Method of Installation _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>148</u>	<u>158</u>	<u>1/8x3</u>	<u>15</u>	<u>6</u>	<u>steel</u>	☒	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

102 ft. below ground Artesian pressure _____ lb.

Depth flow encountered _____ ft. Describe access port or control devices: _____

TOP OF WELL CAP

12. WELL TESTS:

☐ Pump ☐ Bailor ☒ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
<u>50</u>		<u>150</u>	<u>2 hrs</u>

Water Temp. COLD Bottom hole temp. _____

Water Quality test or comments: Good - clear

Depth first Water Encounter 102

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Water

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>8</u>	<u>0</u>	<u>1</u>	<u>Brown top soil</u>	☒	☐
<u>1</u>	<u>34</u>	<u>76</u>	<u>Tight Gravel + sand</u>	☒	☐
<u>6</u>	<u>34</u>	<u>76</u>	<u>Brown clay + gravel</u>	☒	☐
<u>76</u>	<u>89</u>	<u>117</u>	<u>Brown clay</u>	☒	☐
<u>89</u>	<u>117</u>	<u>129</u>	<u>SAND + Gravel</u>	☒	☐
<u>117</u>	<u>129</u>	<u>160</u>	<u>SANDY mud</u>	☒	☐
<u>129</u>	<u>160</u>		<u>SAND + Gravel</u>	☒	☐

RECEIVED

DEC 13 2005

Department of Water Resources
Eastern Region

Completed Depth 160 (Measurable)

Date: Started 8/1/05 Completed 8/2/05

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 H+H Firm No. 541

Principal Driller Doug Henricks Date 9/1/05

and Driller or Operator II _____ Date _____

Operator I _____ Date _____

Principal Driller and Rig Operator Required.

Operator I must have signature of Driller/Operator II.

**WELL LOG AND REPORT TO THE
STATE RECLAMATION ENGINEER OF IDAHO**

RECEIVED
FEB 3 1956

17040218

Department of Reclamation

Log No. 035579
Rec. _____, 19____
Well No. _____
Permit No. 2-25647

(DO NOT FILL IN)

Owner Dave Jones, Driller Gushman and Johnson
Address Moore, Idaho Address Blackfoot, Idaho. Lic. No. 16
Location of Well: SW 1/4 NW 1/4 Sec. 21, T. 5N, N 1/2, R. 26 E 1/4 Butte County.
and _____ feet N/S, and _____ feet E/W from _____ corner of _____ 1/4 Sec.
Water will be used for Irrigation Total depth of well 175 ft.
Size of drilled hole 18 inch Weight of casing per linear foot 60
Thickness of casing 5/16 Casing material Steel
e.g., pipe, concrete, wood.
Diameter, length and location of casing 18 inch casing from 0 to 175 ft.
(Casing 12" in diameter and under give inside diameter; casing over 12" in diameter give outside diameter.)
Number and size of perforations 59 ft. to 83 ft. located 407 perf. feet to _____ feet
83 ft. to 172 ft. 948 "
from surface of ground. 1355 perf, in all.
Other perforations: _____
If flowing well, give flow in c.f.s. not _____ or g.p.m. _____ and shut in pressure _____
If non-flowing well, give depth of standing water from surface 50 ft.
If flowing well, describe control works _____
(Type and size of valve, etc.)
On pumping test delivery was 300 in. g.p.m. or _____ c.f.s. Drawdown was 32 ft. feet
Length of time pumped during check was _____ hr. _____ min. Water temp. 51 ° Fahrenheit.
Date of commencement of well April 25, 1955 Date of completion of well May 24, 1956
Type of well rig Bucyrus Erie 36L

CASING RECORD

Diam. Casing	From Feet	To Feet	Length	"Remarks" — Seals, Grouting, Etc.
<u>18 "</u>	<u>0</u>	<u>175</u>	<u>175</u>	

25647 ✓

GENERAL INFORMATION — Pumping Test, Quality of Water, Etc.

SW 1/4 NW 1/4 Sec. 21 T. 5N R. 26 E

3020

