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JAN 13 2012

DEPARTMENT OF
WATER RESOURCES

January 12, 2012

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MAR 28 2012

WATER RESOURCES
WESTERN REGION

Craig Saxton
IDWR State Office
PO Box 83720
Boise, ID 83720-0098

Subject: Parklane Company Inc. Permit 63-12593

Dear Craig:

On behalf of Parklane Company, Inc. and in response to your letter dated June 13, 2011, attached are the following documents:

1. Information Response Letter to IDWR dated April 13, 2011 (Union Block Building Water Rights)
2. Radius of Impact Memo dated January 3, 2011 (Union Block Building Water Rights)
3. Radius of Impact Memo dated June 16, 2011 (Idanha Building Water Right)
4. Beneficial Use Field Report for Permit 63-12593
- ✓ 5. Application for Transfer

Items 1 and 2 have been included to address the ground water diversion concerns outlined in your letter. Although the documents support water right action for a different system and building, we feel the information is also applicable to the Idanha Building for the following reasons:

- The Union Block Building and the Idanha diversion systems are located within 700 feet of each other.
- The water rights associated with both buildings are for similar uses and authorize diversion systems that have experienced similar problems.
- The Department has recently approved comparable remedial action proposed for the Union Block Building water rights allowing discharge of spent cooling water into the ACHD storm water system and use of the injection well as a production well.

Item 3 from Hydrogeologist Kevin Boggs, P.G., qualifies how the information provided in Items 1 and 2 for the Union Block Building ground water diversion system is applicable to the Idanha Building ground water diversion system.

Beneficial Use Field Report for Permit 63-12593. Permit 63-12593 is for a non-consumptive closed-loop heating and cooling system serving the Idanha Building. The permit allows one well to be used for diversion of fresh water and one well used for injection of spent water. The well used for diversion is 298 feet deep, with screens placed from 200 to 288 feet. The well used for injection 158 feet deep, with perforations from 118 to 158 feet. Well driller's reports are attached.

At the time of permit development, the injection well was used, although has gradually declined to the point where it will no longer accept injection flow. Since the water right was established with use of the injection well, attached is a beneficial use field report for Permit 63-12593 that recommends licensing the right based on system use and capacity during the permit's authorized development period which ended October 18, 2001, when proof of beneficial use was submitted.

Fortunately, Parklane Company has recently received approval from ACHD to discharge their spent heating and cooling water into ACHD's storm water drain system located in the alley behind the Idanha Building. This change will not result in depletion of Boise River flows. Using the ACHD system will in fact add to the Boise River flows more directly than if using the injection well, thereby potentially benefiting senior Boise River water rights during the irrigation season. As a result, use of the injection well is no longer necessary.

Application for Transfer. The Department's licensing of permit 63-12342 will enable the attached application for transfer to be processed, in which Parklane proposes using the former injection well as a second production well and elimination of the water right's injection requirement. A second production well will provide redundancy for the Idanha Building to ensure that the cooling flow requirements are met.

A \$500 check is enclosed to cover the transfer fee.

Please let me know if there are any questions. Thanks Craig.

Sincerely,



Lori Graves
Water Rights Specialist

Enclosures

1. Information Response Letter dated 4/13/2011
2. Radius of Impact Memo dated 1/3/2011
3. Radius of Impact Memo dated 6/16/2011
4. Beneficial Use Field Report for Permit 63-12593
5. Application for Transfer
6. Check for Application for Transfer Fee

Cc: Ken Howell, Parklane Co., Inc
Ben McLenna, Parklane Management Co.



MEMORANDUM

DATE: June 16, 2011

TO: Lori Graves

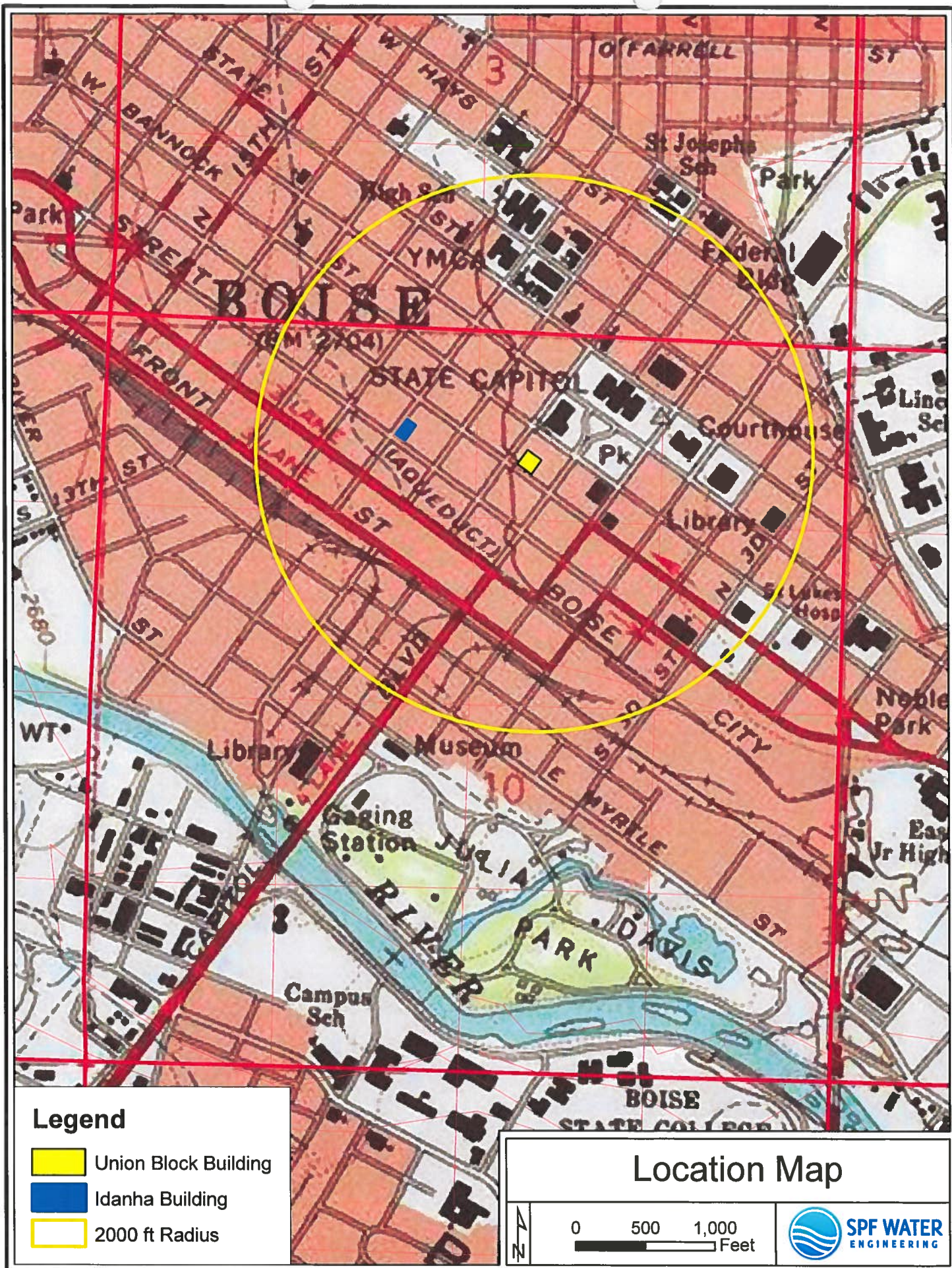
FROM: Kevin Boggs

CC: Terry Scanlan

RE: Radius of impact associated with diversion under right 63-12593

The Idaho Department of Water Resources (IDWR) requested certain information be taken into consideration before deciding on a course of action regarding the heating and cooling system authorized for the Idanha Building under permit 63-12593. The information IDWR requested is very similar to information IDWR requested for a nearby permit 63-12342 and application for permit 63-33245 for the Union Block Building, to which SPF responded via letter dated April 13, 2011 and accompanying memorandum dated January 3, 2011. The diversion and injection points associated with the Union Block applications are approximately 700 feet to the west of the diversion and injection points for the Idanha Building (see attached location map). In both situations, the applicant proposes discharging spent heating and cooling water into the ACHD storm water sytem rather than using injection wells.

SPF reviewed driller's logs associated with wells in the area (see letter Attachment B showing the locations of the logs reviewed). The subsurface sediment appears to be similar between the two sites (that is, between the Union Block Building and the Idanha Building). Therefore, SPF is providing a copy of the January 3, 2011 memorandum that details the approach to estimating the radius of influence associated with existing and proposed ground water diversion at the Union Block Building, as we believe this analysis and rationale applies in the same way to ground water diversion at the Idanha Building.





COPY

April 13, 2011

Angela Grimm, P.G.
IDWR Western Region Office
2735 Airport Way
Boise, ID 83705

Subject: Additional Information for Application No. 63-33245 and Transfer No. 76971

Dear Angie:

On behalf of Parklane Company, Inc., this letter provides additional information requested in your letter dated April 1, 2011. This additional information supports application for Transfer No. 76971 proposing use of a former injection well as a second production well for water right 65-12342 currently authorized for cooling the Union Block building and Application No. 63-33245 proposing appropriation of additional ground water from the same two wells for heating and cooling the Union Block building.

Effect on Existing Water Rights

Well and Water Right Locations. SPF Water Engineering searched for well diversions using Idaho Department of Water Resources (IDWR) online databases for well construction and water rights. All water rights and well logs within a 2,000-foot radius of the proposed well sites were evaluated. A total of 19 water rights and 37 well logs were found within the subject area.

As described in Table 1 and shown on a topographical map, both included in Attachment A, eleven active water right diversions and eight non-active water right diversions (not claimed in SRBA) were identified within a 2,000-foot radius. Nine of the sixteen water right diversions, including the two proposed (existing) well sites, are located on property owned by the applicant.

As described in Table 2 and shown on a topographical map, both included in Attachment B, thirty-seven well log reports were identified within a 2,000 foot radius. If identification was possible, associated well log reports and water rights were matched in Tables 1 and 2. Seven of the 37 well log reports describe wells constructed on property owned by the applicant.

Well logs for the proposed wells indicate the original production well is 90 foot deep with a production zone between 79 to 89 feet and a former injection well is 195 feet deep with a production zone between 150 to 195 feet. Four of the 37 wells highlighted in Table 2 divert from production zones much deeper than the proposed wells and were not considered subject to injury.

Sufficiency of Water Supply

Injury to existing water rights is not anticipated because (1) the aquifer is productive and (2) area water levels are not declining.

Anticipated worst-case drawdown associated with the proposed diversions was calculated in a memo attached to our letter dated January 5th, 2011. That analysis indicated that under continuous pumping for 154 days at the system capacity of 184 gpm, calculated drawdowns were 13 and 10 feet at radii of 1000 and 2000 feet. Actual drawdown should be substantially less because (1) effective aquifer transmissivity is likely greater than the 10,000 gpd/ft value used in the calculations, and (2) we do not anticipate continuous pumping for 154 days at the maximum diversion rate. Drawdowns of less than 15 feet should not result in injury to other water rights. As a result, we do not anticipate that other water rights will be injured by the proposed diversions.

The table below is water-level monitoring data from SPF files for a Boise Parks and Recreation Department irrigation well located at the park in front of the Capitol building. This well is approximately 1 to 2 blocks northeast of proposed wells. The total depth of the well is 90 feet. The aquifer water level has remained fairly stable since 1975 with static water level in the well typically fluctuating only 1 to 2 feet.

Capitol Park Irrigation Well	
Date	Static Depth to Water (feet)
Jul-75	32
8/3/1994	26.6
9/14/1995	33.5
8/7/1996	39
10/1/1997	32.5
10/9/1998	31.5
10/12/1999	30.5
9/2/2000	33
9/15/2001	31
8/31/2002	35
10/1/2003	34.5
9/17/2004	33
9/14/2005	33.92
9/21/2006	32'
8/28/2007	32
9/25/2008	33
8/26/2009	33.5
7/28/2010	33.42

Future monitoring of the Capitol Park Irrigation Well can be used to demonstrate that excessive drawdown of the aquifer is not occurring.

Although injury is not anticipated as a result of the proposals, any potentially affected party will have the opportunity to protest the proposals.

Thanks Angie. Please contact us with any questions.

Sincerely,



Lori Graves
Water Right Specialist



Terry M. Scanlan, P.E., P.G.
Principal Engineer/Hydrogeologist

cc: Ken Howell, Parklane Company, Inc.
Doug Bolen, Parklane Management Company

Attachments

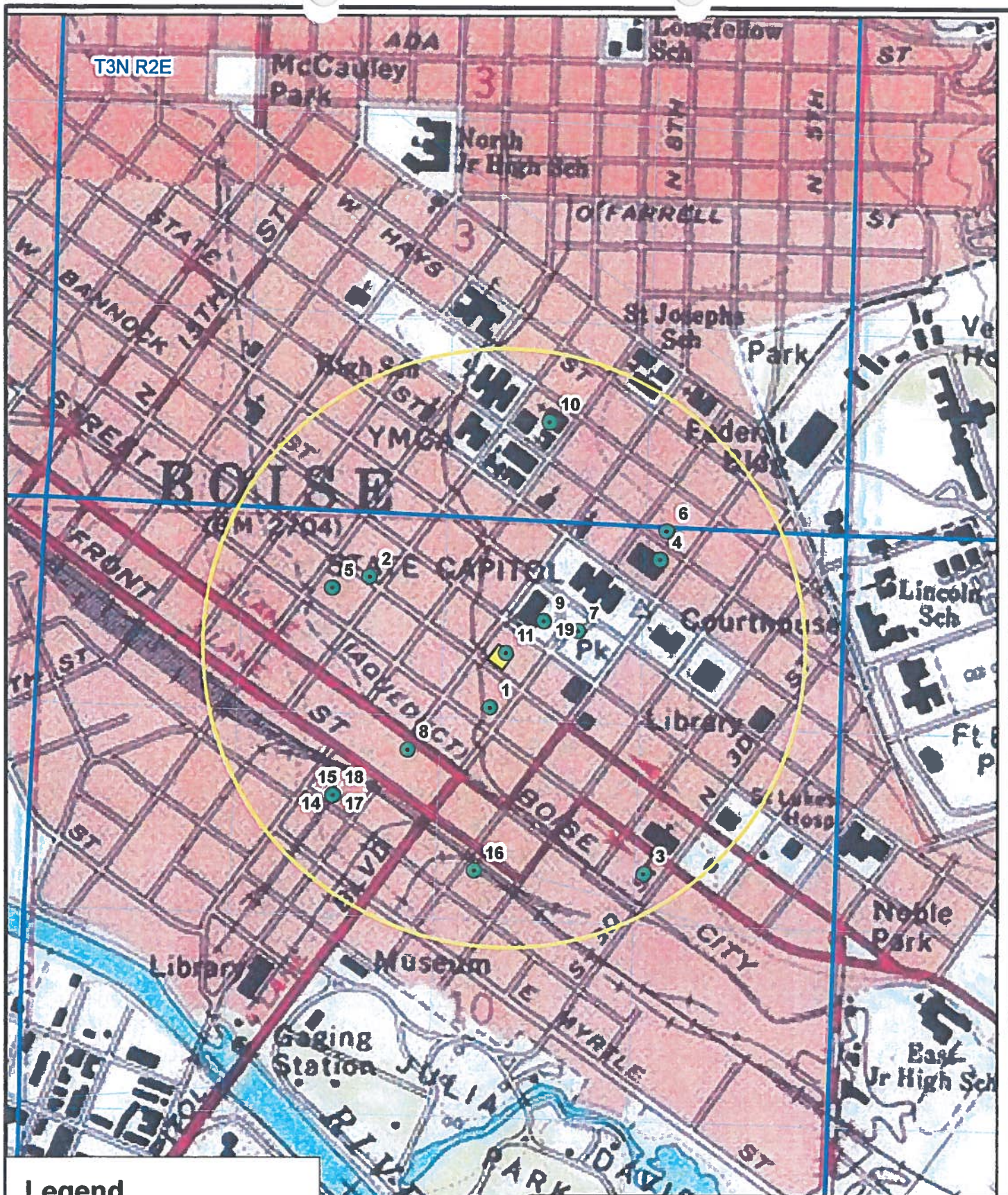
Attachment A Radii Water Right Diversions
Attachment B Radii Recorded Wells
Attachment C Well Logs for Proposed Wells

ATTACHMENT A

WATER RIGHT DIVERSIONS

Table 1: Water Right Diversions within a 2000 Foot Radius

Map No.	Water Right	Priority Date	Decreed Date	Source	cfs	afa	Owner	Use	Drilling Permit No.
1	63-2785	10/19/1949	2/16/2007	GROUND WATER	0.58	264.6	THE HARDY FOUNDATION INC	Cooling	
2	63-3024	2/16/1955	2/16/2007	GROUND WATER	0.67	485.1	WEST ONE BANK IDAHO NA	Cooling	853076
3	63-25321	4/29/1957	2/16/2007	GROUND WATER	0.60	256.4	STATE OF IDAHO	Cooling	
4	63-7168	12/21/1968	2/16/2007	GROUND WATER	0.03	4.5	STATE OF IDAHO	Irrigation	
5	63-10222	4/3/1985	2/16/2007	GROUND WATER	0.12	12.2	ALASKA CENTER LTD PARTNERSHIP	Cooling	
6	63-9341	2/6/1980	10/5/2007	GROUND WATER	2.19	680.1	STATE OF IDAHO	Heating	844017
7	63-3413	10/30/1964	2/6/2009	GROUND WATER	2.89	0.0	CITY OF BOISE	Municipal	814854
8	63-7728	2/20/1973	4/3/2009	GROUND WATER	0.15	0.0	CITY OF BOISE	Municipal	
9									722956
	63-10773	3/8/1989	n/a	GROUND WATER	0.37	37.9	W E PIERCE BUILDING ASSOC	Cooling	723175
10	63-11993	2/12/1993	n/a	GROUND WATER	0.17	17.1	PARKLANE CO	Heating	727160
11									729977
									729978
									847303
									733564
	63-12342	6/19/1996	n/a	GROUND WATER	0.26	125.0	PARKLANE CO	Cooling	
12	63-2862	5/21/1951	not claimed	GROUND WATER	0.22	0.0	J R MENDENHALL	Cooling	
13	63-3038	4/8/1955	not claimed	GROUND WATER	0.50	0.0	FIRST SECURITY BANK OF IDAHO NA	Industrial	
14	63-2924	1/14/1953	not claimed	GROUND WATER	0.50	0.0	BROADBENT EST INC	Cooling	
15	63-2582	2/6/1939	not claimed	GROUND WATER	0.50	183.0	OWYHEE HOTEL CO	Commercial	
16	63-2674	12/19/1947	not claimed	GROUND WATER	0.15	0.0	JOHN ALDAPE	Cooling	
17	63-2774	7/14/1949	not claimed	GROUND WATER	0.05	0.0	WALTER DUFRESNE	Domestic	
18									791558
	63-7791	5/8/1973	not claimed	GROUND WATER	0.34	89.4	PROVIDENT FEDERAL SAVINGS & LOAN ASSN	Industrial	819206
19	63-2579	6/21/1938	not claimed	GROUND WATER	0.22	0.0	J O JORDAN	Cooling	



Legend

- Union Block Building
- 2000 ft Radius
- Water Right Diversions

Recorded Water Right Points of Diversion

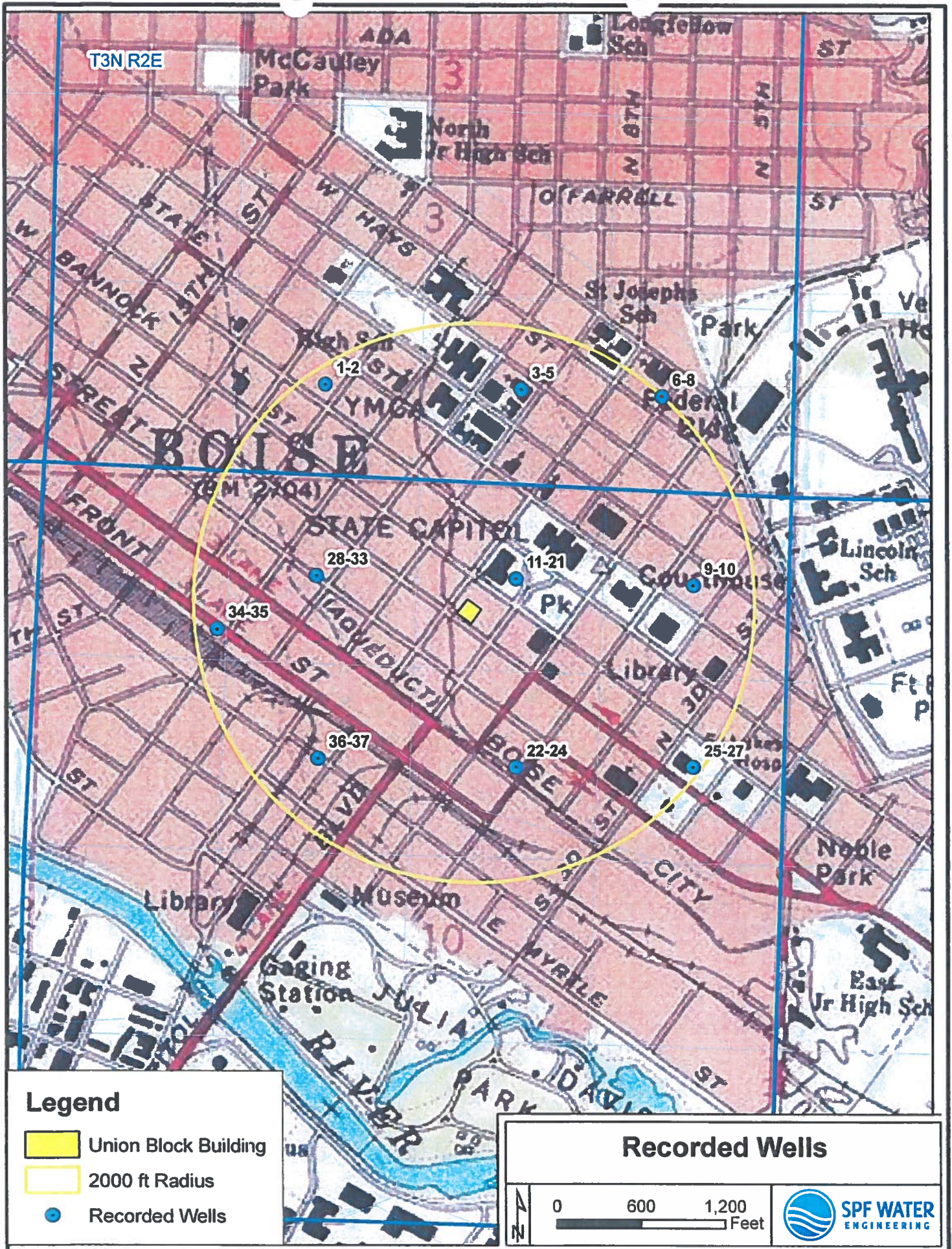


ATTACHMENT B
RECORDED WELL REPORTS

Table 2: Recorded Wells within a 2000 Foot Radius

Map No.	Contact	Associated Water Right	Use	TWP	RNG	SEC	Tract	Well Address	GPM	Static	Total Depth	Casing Depth	DIA.	Const. Date	Permit No.	Tag No.
1	MEADOW GOLD DAIRY		Industrial	03N	02E	3	SESW	805 WEST FRANKLIN ST	0	20	340			6/9/1967	791734	
2	PARKLANE CO		Irrigation	03N	02E	3	SESW	SW CORNER 9TH & STATE ST	80	35	79	69	8	8/26/1993	726531	
3	SHIRLEY, D E		Domestic	03N	02E	3	SWSE	815 W WASHINGTON	25	8	33		4	10/25/1967	808221	
4	THE CARNEGIE CO		Domestic	03N	02E	3	SWSE	805 W FRANKLIN ST	39	28	79	68	6	4/17/1995	729246	
5	PARKLANE CO	63-11993	Injection	03N	02E	3	SWSE		80	35	79	69	6	8/27/1993	721160	
6	YOUNG, LLOYD		Domestic	03N	02E	3	SESE		150	4	153			5/30/1961	820637	
7	CITY OF BOISE		Irrigation	03N	02E	3	SESE		155	25	80			12/31/9999	819323	
8	FEDERAL BLDG		Irrigation	03N	02E	3	SESE		0	35	150			7/18/1969	791732	
9	RALPH DAVIS STORE		Air Conditioning	03N	02E	10	NENE		0	26	56			1/6/1968	856517	
10	STATE OF IDAHO	63-9341	Geothermal	03N	02E	10	NENE	WELL 2 CAPITAL HALL	0	0	3030			9/4/1981	844017	
11	K CO/COMMUNITY CONTRACTING		Commercial	03N	02E	10	NWNE	202 N 9TH ST	200	30	115	85	10	10/11/1997	731027	DD0000161
12	W E PIERCE BUILDING ASSOC	63-10773	Cooling	03N	02E	10	NWNE		185	27	60	50	8	1/23/1990	723175	
13	CITY OF BOISE	63-3413	Domestic	03N	02E	10	NWNE		150	9999	125			11/6/1964	814854	
14	STATE OF IDAHO		Domestic-Multiple	03N	02E	10	NWNE		300	6	1075			3/31/1962	717877	
15	PARKLANE CO (production well)	63-12342	Industrial	03N	02E	10	NWNE	710-720 WEST IDAHO	100	30	90	79	6	7/31/1996	729977	
16	PARKLANE CO	63-12342	Injection	03N	02E	10	NWNE	710-720 W IDAHO STREET	0	30	63	63	6	8/7/1997	729978	
17	PARKLANE CO (deepened)	63-12342	Injection	03N	02E	10	NWNE	710-720 W IDAHO STREET	180	30	195	196	6	6/27/2007	847303	DD0047061
19	W E PIERCE BUILDING ASSOC	63-10773	Injection	03N	02E	10	NWNE		180	30	195	196	6	9/6/1999	733564	DD0012150
20	BELCHER BUILDING		Air Conditioning	03N	02E	10	NWNE		0	0	0			7/27/1968	853220	
21	PARIL LN UNION BLK BLDG		Injection	03N	02E	10	NWNE	710-720 W IDAHO ST	30	17	248			8/7/1996	854482	
22	IDAHO FIRST NATIONAL BANK		Domestic	03N	02E	10	SWNE	101 CAPITOL BLVD	9999	9999	83			10/19/1976	791551	
23	PARKSIDE INVESTMENTS		Heating	03N	02E	10	SWNE		30	14	52	52	10	9/15/1964	722102	
24	LAMM, CATHERN		Other	03N	02E	10	SWNE	317 W MAIN ST	15	47			12	12/8/2007	849784	
25	LAMM, CATHERN		Cooling	03N	02E	10	SENE	317 W MAIN ST	15	190			12	12/8/2007	849782	
26	STATE OF IDAHO		Cooling	03N	02E	10	SENE		380	22	195			7/31/1967	852475	
27	SKOV CARROLLE		Domestic	03N	02E	10	SENE		0	25	60			10/27/1963	773741	
28	PARKLANE CO	63-12593	Closed Loop Heat Pump	03N	02E	10	NWNE	928 W MAIN	300	15	288	-163	12	11/29/2000	765186	DD001000
29	PROVIDENT FEDERAL SAVINGS & LOAN ASSN	63-7791	Industrial	03N	02E	10	NWNE		230	29	300			6/22/1973	791556	
30	K CO/COMMUNITY CONTRACTING		Injection	03N	02E	10	NWNE	202 NORTH 9TH ST, MARY MCCARTY BUILDING	300	30	110	110	8	10/23/1997	731028	DD0000162
31	PARKLANE CO	63-12593	Injection	03N	02E	10	NWNE	928 W MAIN ST	30	158	106		6	12/2/2000	765189	DD0020067
32	IDAHO FIRST NATIONAL BANK	63-3024	Air Conditioning	03N	02E	10	NWNE	10th & IDAHO	600	21	514			5/22/1970	853076	
33	PROVIDENT FEDERAL SAVINGS & LOAN ASSN	63-7791	Air Conditioning	03N	02E	10	NWNE		100	11	62			9/18/1963	818206	
34	GOFF, ROBERT, GOFF, JEAN		Domestic	03N	02E	10	NWNE	1100 W FRONT ST	17	25			6	9/12/2010	859566	DD0059052
35	SHIPPY, ROBERT T		Domestic	03N	02E	10	NWNE	1100 W FRONT ST	17	25			2	9/12/2010	859226	DD0059051
36	IDAHO LAUNDRY & DRY CLEANERS		Commercial	03N	02E	10	SENE		0	99	630			11/19/1966	791564	
37	DRAKE PLUMBING		Irrigation	03N	02E	10	SENE		100	15	140			4/5/1973	791556	

Highlighted wells outside applicant's production zones



ATTACHMENT C

WELL REPORTS FOR PROPOSED WELLS

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

1. DRILLING PERMIT NO. 63-96-C-0397-000
Other IDWR No. 63-W-137-001

2. OWNER:
Name PARK LN Union BIK Bld.
Address 710 ~~W.~~ IDAHO ST.
City BOISE State ID Zip 83702

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N
 W E S
 Twp. 3 North ☒ or South ☐
 Rge. 2 East ☒ or West ☐
 Sec. 10 NW NE 1/4 1/4 1/4
 Gov't Lot _____ County ADA 10 acres 400 acres 1600 acres
 Lat. : : Long. : :
 Address of Well Site 710-220 W.
 City BULLIS
 (Give at least name of road + Distance to Road or Landmark)
 Lt. 43 Bk. _____ 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	
Bentonite	5	16	250	POUNDER BAGS

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 25

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

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6"	+1	25	1/4	Steel	☒	☐	☒	☐
5"	23	63	1/4	Steel	☐	☒	☒	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☒ Perforations Method _____

☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Line
~~18~~						☐	☐
21	63	1/8"			Steel	☐	X
						☐	
						☐	

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

30 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or
control devices: N/A

11. WELL TESTS:

☐ Pump ☐ Bailer ☐ Air ☐ Flowing Artesian

Yield gal./min.	Drawdown	Pumping Level	Time
~~1.0~~	~~1.0~~	~~1.0~~	~~1.0~~

Water Temp. _____ Bottom hole temp. _____

Water Quality test or comments:

_____ Depth first Water Encountered

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

[illegible]

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 Phipps Drilling Firm No. 311

Firm Official Wesley C. [Signature] Date 8-21-97

and
Supervisor or Operator Same Date

(Sign once if Firm Official & Operator)

Form 238-7
6/02

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

1. WELL TAG NO. D 0047061
DRILLING PERMIT NO. 900427-847303
Water Right or Injection Well No. 63-W-137-001

2. OWNER:
Name Ken Howell (Park Lane)
Address 817 W. Franklin
City Boise State ID Zip 83702

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 3 North ☒ or South ☐
Rge. 2 East ☒ or West ☐
Sec. 10 NW 1/4 NE 1/4 SE 1/4
Gov't Lot _____
Lat: _____ Long: _____
Address of Well Site 710-720 W. Idaho St
City Boise
(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>N/A</u>				

Was drive shoe used? ☒ Shoe Depth(s) 149
Was drive shoe seal tested? ☐ Y ☒ N How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6</u>	<u>142</u>	<u>149</u>	<u>250</u>	<u>Steel</u>	☒	☐	☐	☐
<u>5</u>	<u>145</u>	<u>150</u>	<u>258</u>	<u>St</u>	☐	☒	☐	☐
<u>5</u>	<u>195</u>	<u>196</u>	<u>258</u>	<u>St</u>	☐	☒	☐	☐

Length of Headpipe 5 Length of Tailpipe 1'6"
Packer ☒ Y ☐ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE

Perforation Method _____
Screen Type & Method of Installation Johnson - Pull Back

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>185</u>	<u>195</u>	<u>020</u>		<u>5</u>	<u>S.S</u>	☐	☐
<u>167</u>	<u>183</u>	<u>020</u>		<u>5</u>	<u>S.S</u>	☐	☐
<u>150</u>	<u>165</u>	<u>025</u>		<u>5</u>	<u>S.S</u>	☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
30 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices:
Welder Flange on casing

12. WELL TESTS:

☒ Pump	☐ Bailor	☒ Air	☐ Flowing Artesian
Yield gal./min.	Drawdown	Pumping Level	Time
<u>180</u>		<u>130</u>	<u>2</u>

Water Temp. 64 Bottom hole temp. _____

Water Quality test or comments: _____

Depth first Water Encounter _____

13. LITHOLOGIC LOG: (Describe repairs or abandonment)

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
<u>6</u>	<u>115</u>	<u>120</u>	<u>SAND Clay streaks</u>	☒	
	<u>120</u>	<u>130</u>	<u>Fine SAND</u>	☒	
	<u>130</u>	<u>140</u>	<u>Cemented SAND</u>	☒	
	<u>140</u>	<u>175</u>	<u>C. SAND</u>	☒	
	<u>175</u>	<u>185</u>	<u>Blue SAND</u>	☒	
	<u>185</u>	<u>195</u>	<u>Blue Clay-SAND streaks</u>	☒	

RECEIVED

JUL 12 2007

WATER RESOURCES
WESTERN REGION

Completed Depth 195 (Measurable)
Date: Started 6-6-07 Completed 6-27-07

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 DPWD Firm No. 332

Principal Driller Don L. [Signature] Date 6-29-07

Driller or Operator II _____ Date _____

Operator I _____ Date _____

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

FORWARD WHITE COPY TO WATER RESOURCES

MEMORANDUM

DATE: January 3, 2011

TO: Lori Graves

FROM: Kevin Boggs

CC: Terry Scanlan

RE: Radius of impact associated with diversion under right 63-12342 and permit application 63-33245

A. Purpose

The Idaho Department of Water Resources (IDWR) requested information associated with application for permit 63-33245 along with application for transfer 76971 to add a point of diversion to right 63-12342. Specifically, IDWR requested the following:

1. A determination of the radius of impact associated with diversion under right 63-12342 and permit application 63-33245, including a credible explanation for the determination.
2. A demonstration of how injury to existing water rights will be avoided within the probable radius of impact based on the proposal to return water pumped from shallow groundwater directly to the Boise River rather than injection into the shallow groundwater production zone.

This memorandum summarizes the approach to developing responses to the IDWR requests. A discussion of the results is also provided.

B. Approach

The approach to determining the radius of influence is based on the non-equilibrium well equation (Theis, 1935). The use of this approach requires user-defined inputs, including aquifer properties and diversion rate(s).

Production Zone

There are two existing wells on site. The well currently used for diversion is 90 feet deep, with screen placed from 79 to 89 feet below ground surface (bgs). The well that has been used for injection was originally 63 feet bgs, with perforations from 21 to 63 feet bgs. The injection well was subsequently deepened to 115 feet bgs in 1999 and to 195

feet bgs in 2007. The injection well is currently cased to 149 feet bgs with screen from 150 to 195 feet bgs (see Attachment A for Well Driller's Reports). Based on these data, the wells are currently capable of producing water from 79 to 195 feet bgs.

Aquifer Properties

A pumping test of a well completed in an aquifer zone between 120 to 170 feet bgs was conducted in 2002 using a test well for the Idaho Water Center (Scanlan Engineering, 2002). The test was conducted for approximately 12 hours at a rate of 105 gallons per minute (gpm). Drawdown at the end of the test was 30.28 feet, resulting in a specific capacity of 3.5 gpm/ft. Analysis of test data indicates that the aquifer zone tapped by the test well has a near-well specific capacity of approximately 20,000 gpd/ft. During the test, water levels stabilized after 2.5 hours of pumping, suggesting that overlying or underlying water-bearing zones may have contributed flow to the tested aquifer interval. The specific capacity of the test well is lower than that suggested by the transmissivity calculated from the test pump data. Given the 20,000 gpd/ft transmissivity value, the specific capacity of the well should have been closer to 10 gpm/ft, suggesting the calculated transmissivity may be too large.

The only available pumping and associated drawdown data for the project wells is on the well driller's reports. The well screened from 79 to 89 feet bgs had a specific capacity of 2.5 gpm/ft at a flow rate of 100 gpm. The injection well (screened from 150 to 195 feet bgs) had a specific capacity of 1.8 gpm/ft at a flow rate of 180 gpm. The combined specific capacity from these two zones (4.3 gpm/ft) suggests transmissivity of the aquifer is likely similar to the transmissivity in the zone tested by the Idaho Water Center well.

Given the available aquifer property data, two transmissivity values (10,000 to 20,000 gpd/ft) were used in the non-equilibrium well equation utilized to determine the radius of impact.

The aquifer storativity was assumed to be 0.001. This storativity is typical of a semi-confined aquifer, and should be representative of the aquifer interval tapped by the Union Block wells. A fully-confined aquifer (i.e., lower storativity) would have a larger radius of influence, but little or no impact on river flows. An unconfined aquifer (i.e., higher storativity) would have a smaller radius of influence, but more direct depletion to river flow.

Diversion Rates

Water right permit 63-12342 authorizes a total annual diversion volume of 125 acre feet (af). Application 63-33245 seeks additional diversion rate (up to a combined total rate of 0.41 cfs), but not additional diversion volume. Application 63-33245 is both for year-round cooling and heating use. For purposes of this analysis, we have assumed that 0.41 cfs (184 gpm) would be pumped from the wells (total combined rate) for 154 days, the duration required to reach the permitted volumetric limit of 125 af per year. This is a worst case scenario in terms of the impact to the aquifer system (i.e., this scenario would

cause more aquifer drawdown than the actual planned pumping scenario that is based on actual system demand).

Theis Non-Equilibrium Well Equation

The non-equilibrium well equation (Theis, 1935) was used to determine the radius of impact for the project. Assumptions inherent to this approach are that the aquifer is homogeneous and isotropic, uniform in thickness and areal extent, the aquifer receives no recharge, the pumping well penetrates the full aquifer thickness, water removed by discharge is removed instantaneously, the pumping well is 100 percent efficient, laminar flow exists throughout the aquifer, and that the water table or potentiometric surface has no slope. These assumptions are rarely completely satisfied under field conditions, but this method often provides an indication of the radius of influence associated with pumping. These assumptions are generally conservative in nature (that is, they tend to increase the magnitude of drawdown compared to field conditions).

C. Results

Two scenarios were evaluated to account for the range of assumed transmissivity values (10,000 and 20,000 gpd/ft). Theoretical drawdown at various distances from the pumping well(s) for each scenario is provided in Table 1.

Table 1. Radius of Impact (Scenario 1: T = 10,000 gpd/ft, S = 0.001;
Scenario 2: T = 20,000 gpd/ft, S = 0.001)

	Scenario 1	Scenario 2
Distance from Pumping Wells	Drawdown (ft)	
100	22.7	12.1
300	18.0	9.7
600	15.1	8.3
1000	12.9	7.2
1500	11.2	6.3
2000	10.0	5.7
5280	6.0	3.7

Drawdown associated with pumping 0.41 cfs (184 gpm) for 154 days at various distances from the pumping well(s) is illustrated in Figure 1. The non-equilibrium well equation suggests drawdown associated with this worst case pumping scenario could be 6.0 feet at a distance of one mile from the pumping well(s) under Scenario 1, and 3.7 feet at the same distance under Scenario 2.

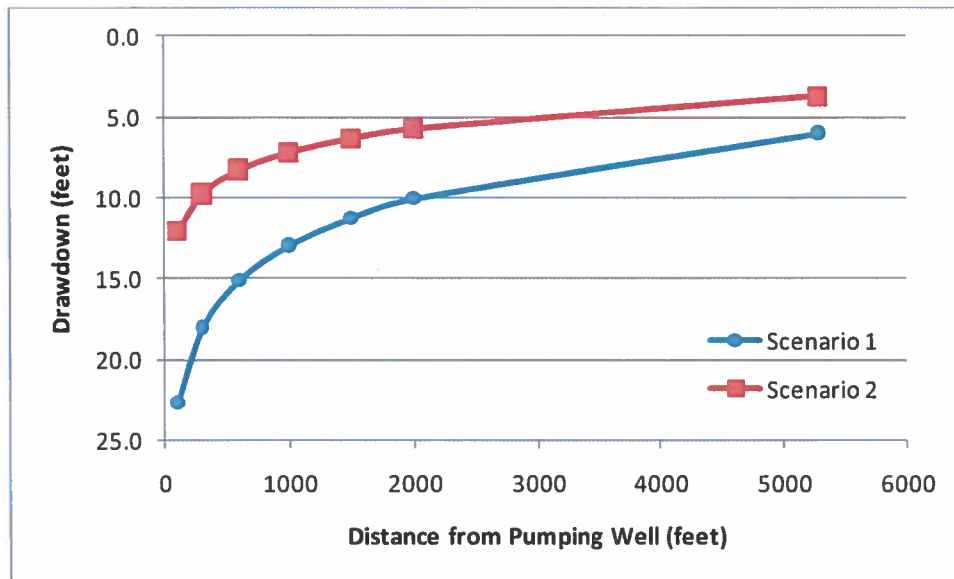


Figure 1. Theoretical drawdown associated with pumping 184 gpm (0.41 cfs) for 154 days for Scenario 1 (T = 10,000 gpd/ft, S = 0.001) and Scenario 2 (T = 20,000 gpd/ft, S = 0.001)

D. Discussion and Conclusions

Using the Theis non-equilibrium well equation, and associated assumptions, the theoretical drawdown at a distance of one mile from project pumping wells is 6.0 feet under Scenario 1. Drawdown decreases to 3.7 feet at the same distance under Scenario 2. These values are associated with pumping the wells at maximum system capacity (184 gpm) for 154 days, which is the duration required to reach the permitted annual volume of 125 acre feet per year. This pumping scenario is the most conservative approach to determine the radius of impact of the project.

Injury to existing Boise River water rights will be avoided within the theoretical radius of impact based on Parklane Company's intent to return pumped water directly to the Boise River via an ACHD storm drain rather than injecting the water into the shallow groundwater production zone. The following equation can be used to estimate the timing of peak discharge (i.e., river gains) associated with stresses to an aquifer occurring a given distance away from the discharge point,

$$T_{max} = \frac{r^2}{6D},$$

where T is time of peak discharge, r is the distance between the stress to the aquifer (for example, pumping wells) and the discharge location (i.e., Boise River), and D is the hydraulic diffusivity of the aquifer, defined as the ratio between aquifer transmissivity and storativity (Criss and Winston, 2003). In this case, the project production wells are approximately 3,114 feet away from the Boise River (that is, r is 3,114 feet). Assuming

an aquifer transmissivity of 10,000 gpd/ft and an aquifer storativity of 0.001, the peak depletion to the Boise River associated with pumping of the project wells would occur 1.2 days following pumping. By using the ACHD storm drain, water is nearly immediately released to the Boise River, and there is no chance other groundwater users would divert the water before it reaches the Boise River. Using the ACHD storm drain system will add to Boise River flow more directly (i.e., immediately rather than 1.2 days after injection into the shallow groundwater production zone), thus benefitting senior Boise River water rights during the irrigation season.

E. References

Criss, R.E. and W.E. Winston, 2003. Hydrograph for Small Basins Following Intense Storms. *Geophysical Research Letters* 30(6):1314-1318, doi: 10.1029/2002GL016808.

Scanlan Engineering, 2002. Analysis of Upper Zone Pumping Test – Idaho Water Center Exploration Well; In: University of Idaho Water Center Groundwater Cooling System Project Activity Summary.

Theis, C.V., 1935. The relation between the lowering of the piezometric surface and the rate and duration of discharge of a well using ground-water storage. *Transactions, American Geophysical Union*, 16: 519-524

F. Attachments

Attachment A: Well Driller's Reports for Project Wells

FORWARD WHITE COPY TO WATER RESOURCES

IDAHO DEPARTMENT OF WATER RESOURCES

WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

68152

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

1. DRILLING PERMIT NO. 63-96-C-0397-000
Other IDWR No. 63-W-137-001

2. OWNER:
Name PAK LN Union BIK BH.
Address 710 ~~PAK LN~~ Idaho St.
City BOISE State ID Zip 83702

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N
W
E
S
Twp. 3 North ☒ or South ☐
Rge. 2 East ☒ or West ☐
Sec. 10 NW 1/4 NE 1/4 1/4
Gov't Lot _____ County ADA 10 acres 160 acres
Lat: : : Long: : :
Address of Well Site 710-720 W.
City BOISE

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

Lt. 43 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		
<u>Bentonite</u>	<u>5</u>	<u>18</u>	<u>250</u>		<u>OVER BOP</u>

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 25

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

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
<u>6"</u>	<u>41</u>	<u>25</u>	<u>1/4</u>	<u>Steel</u>	☒	☐	☒	☐
<u>5"</u>	<u>23</u>	<u>63</u>	<u>1/4</u>	<u>Steel</u>	☐	☒	☒	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

- ☒ Perforations Method _____
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
<u>21</u>	<u>63</u>	<u>1/8"</u>			<u>Steel</u>	☐	☒

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

30 ft. below ground Artesian pressure _____ lb.
Depth flow encountered N/A ft. Describe access port or control devices: _____

11. WELL TESTS:

- ☐ Pump ☐ Bailor ☐ Air ☐ Flowing Artesian

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

Water Temp. _____ 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
<u>10"</u>	<u>0</u>	<u>5</u>	<u>Window Well</u>		☒
<u>10"</u>	<u>5</u>	<u>10</u>	<u>FILL</u>		☒
<u>10"</u>	<u>10</u>	<u>18</u>	<u>SAND & GRAVEL</u>		☒
<u>6"</u>	<u>18</u>	<u>63</u>	<u>SAND & GRAVEL</u>	☒	

RECEIVED

AUG 22 1997

RECEIVED

WATER RESOURCES
WESTERN REGION

AUG 26 1997

Department of Water Resources

Completed Depth 63 (Measurable)
Date: Started 8-1-96 Completed 8-7-96

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 Phipps Drilling Firm No. 311

Firm Official Wesley C. Phipps Date 8-21-97

and
Supervisor or Operator Same Date _____

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

847303
Office Use Only
Well ID No. 294315
Inspected by _____
Twp _____ Rge _____ Sec _____
1/4 _____ 1/4 _____ 1/4 _____
Lat: _____ Long: _____

1. WELL TAG NO. D 0047061
DRILLING PERMIT NO. 900437-847303
Water Right or Injection Well No. 63-W-137-001

2. OWNER:
Name Ken Howell (Park Lane)
Address 817 W. Franklin
City Boise State ID Zip 83722

3. LOCATION OF WELL by legal description:
You must provide address or Lot, Blk, Sub. or Directions to well.
Twp. 3 North ☒ or South ☐
Rge. 2 East ☒ or West ☐
Sec. 10 NW 1/4 NE 1/4 SE 1/4
Gov't Lot _____
Lat: _____ Long: _____
Address of Well Site 710-720 W. Idaho St
City Boise
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
N/A				

Was drive shoe used? ☒ Yes ☐ No Shoe Depth(s) 149
Was drive shoe seal tested? ☐ Yes ☒ No How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
6	142	149	250	Steel	☒	☐	☐	☐
5	145	150	258	St	☐	☒	☐	☐
5	195	196	258	St	☐	☒	☐	☐

Length of Headpipe 5 Length of Tailpipe 1'6"
Packer ☒ Y ☐ N Type _____

9. PERFORATIONS/SCREENS PACKER TYPE
Perforation Method _____
Screen Type & Method of Installation Johnson - Pull Back

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
185	195	020		5	S.S	☐	☐
167	183	020		5	S.S	☐	☐
150	165	025		5	S.S	☐	☐

10. FILTER PACK

Filter Material	From	To	Weight / Volume	Placement Method

11. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
30 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: Welder Flange on casing

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

Yield gal./min.	Drawdown	Pumping Level	Time
180		130	2

Water Temp. 64 Bottom hole temp. _____
Water Quality test or comments: _____

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

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
6	115	120	SAND Clay streaks	☒	
1	120	130	Fine SAND	☒	
1	130	140	Cemented SAND	☒	
1	140	175	C. SAND	☒	
1	175	185	Blue SAND	☒	
V	185	195	Blue Clay - sand streaks	☒	

RECEIVED
JUL 12 2007
WATER RESOURCES
WESTERN REGION

Completed Depth 195 (Measurable)
Date: Started 6-6-07 Completed 6-27-07

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 D P W D Firm No. 332
Principal Driller Don L. Pugh Date 6-29-07
Driller or Operator II _____ Date _____
Operator I _____ Date _____

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